



**IC Realtime
IP Camera Web 2.X**

User's Manual
V2.1.1





Foreword

General

This manual introduces the functions, configuration, general operation, and system maintenance of the network camera.

Safety Instructions

The following signal words may appear in the manual.

Signal Words	Meaning
 WARNING	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
 CAUTION	This indicates a potential risk which, if not avoided, may result in property damage, data loss, lower performance, or unpredictable result.
 TIPS	Provides methods to help you solve a problem or save you time.
 NOTE	Provides additional information as the emphasis and supplement to the text.

Revision History

Version	Revision Content	Release Date
V2.1.1	Manual Revision	April 2022

Privacy Protection Notice

As the device user or data controller, you may 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 that include but are not limited to: Providing clear and visible identification to inform people of the existence of the surveillance area and provide required contact information.

About the Manual

- The manual is for reference only. Slight differences may 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 may be found between the electronic version and the paper version.
- All designs and software are subject to change without prior written notice. Product updates may result in some differences appearing between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.
- There may 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 to 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 to a final explanation.

Important Safeguards and Warnings

Electrical Safety

- All installation and operation shall conform to your local electrical safety codes.
- The power supply must conform to the requirements of ES1 in IEC 62368-1 standard and be no higher than PS2. Note that the power supply requirements are subject to the device label.
- Make sure that the power supply is correct before operating the device.
- A readily accessible disconnecting device shall be incorporated in the building installation wiring.
- Prevent the power cable from being trampled or pressed, especially the plug, power socket and the junction box.

Environment

- Do not aim the device at strong light to focus, such as lamp light and sun light; otherwise, it may cause over brightness or light marks, which are not device malfunctions, and affect the longevity of Complementary Metal-Oxide Semiconductor (CMOS).
- Do not place the device in a damp, dusty extremely hot or cold environment, or locations with strong electromagnetic radiation or unstable lighting.
- Keep the device away from any liquid to avoid damage to the internal components.
- Keep the indoor device away from rain or damp to avoid fire or lightning.
- Keep sound ventilation to avoid heat accumulation.
- Transport, use and store the device within the range of allowed humidity and temperature.
- Heavy stress, violent vibration or water splash are not allowed during transportation, storage and installation.
- Pack the device with standard factory packaging or the equivalent material when transporting the device.
- Install the device in a location where only the professional staff with relevant knowledge of safety guards and warnings can access it. The accidental injury may happen to the non-professionals who enter the installation area when the device is operating normally.

Operation and Daily Maintenance

- Do not touch the heat dissipation component of the device to avoid scald.
- Carefully follow the instructions in the manual when disassembling the device; otherwise, it may cause water leakage or poor image quality due to unprofessional operations. Make sure that the gasket ring is flat and properly installed in the groove before installing the cover. Contact after-sales service for desiccant replacement if there is condensed fog on the lens after unpacking or when the desiccant turns green (Not all models are included with the desiccant).
- We recommend using the device together with a lightning arrester to improve

the lightning protection.

- We recommend grounding the device to enhance reliability.
- Do not touch the image sensor (CMOS) directly. Dust and dirt could be removed with air blower, or you can wipe the lens gently with a soft cloth that is moistened with alcohol.
- You can clean the device body with a soft dry cloth, and for stubborn stains, use the cloth with mild detergent. To avoid possible damage on device body coating which could cause a performance decrease, do not use volatile solvents such as alcohol, benzene, diluent to clean the device body, nor can strong, abrasive detergent be used.
- The Dome cover is an optical component. Do not touch or wipe the cover with your hands directly during installation or operation. For removing dust, grease or fingerprints, wipe gently with moistened oil-free cotton with diethyl or moistened soft cloth. You can also remove dust with an air blower.



- Strengthen the protection of network, device data and personal information by adopting measures that include but not limited to using a strong password, changing passwords regularly, upgrading the firmware to the latest version, and isolating the computer network. For some devices with old firmware versions, the ONVIF password will not be changed automatically along with changing the system password, and you need to upgrade the firmware or manually change the ONVIF password.
- Use standard components or accessories provided by the manufacturer and make sure that the device is installed and maintained by professional engineers.
- Do not expose the surface of the image sensor to laser beam radiation in an environment where a laser beam device is used.
- Do not provide two or more power supply sources for the device unless otherwise specified. A failure to follow this instruction may cause damage to the device.

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1 Overview

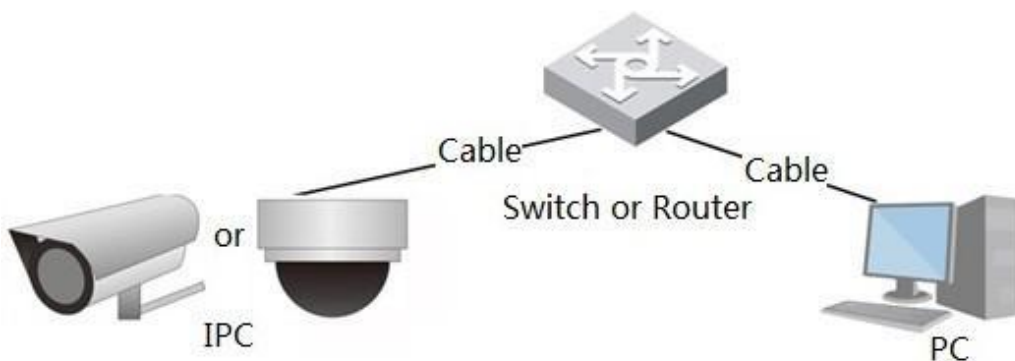
1.1 Introduction

An IP camera (Internet Protocol camera), is a type of digital video camera that receives control data and sends image data through the internet. They are commonly used for surveillance, requiring no local recording device, but only a local area network, although adding them to an NVR greatly increases its utility. IP cameras are divided into single-channel and multi-channel cameras according to the Lens quantity. For a multi-channel camera, you can set the parameters for each channel or lens.

1.2 Network Connection

In the general IP Camera (IPC) network topology, IPC is connected to PC through a network switch or router.

Figure 1-1 General IPC network



You can acquire the IP address by searching on ConfigTool, and then access IPC through the network.

1.3 Function

Functions may vary with different devices according to the actual product specifications.

1.3.1 Basic Function

Real-time Monitoring

- Live view.
- When live viewing the image, you can enable audio, and voice talk.



- Adjust the PTZ image to the proper position.
- Snapshot or triple snapshot of the monitoring image for subsequent view and processing.

Record

- Record events when monitoring for subsequent view and processing.
- Configure coding parameters, and adjust the live view image.
- Auto record as scheduled.
- Play back recorded video and pictures.
- Download recorded video and pictures.
- Alarm linked recording.

Account

- Add, modify and delete user group, and manage user authorities according to the user group.
- Add, modify and delete users, and configure user authorities.
- Modify user password.

1.3.2 Intelligent Function

Alarm

- Set alarm prompt mode and tone according to alarm type.
- View alarm prompt message.

Smart Track

- Set calibration and parameters for smart track and enable alarm track.
- Switch between smart track and PTZ camera auto track.

Video Detection

- Motion detection, video tampering detection, and scene changing detection.
- When an event is triggered, the system can activate linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Intelligent Motion Detection

- Avoid the alarms triggered by environmental changes such as lights and shadows.
- When an event is triggered by a Person or Vehicle, the system can activate linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Audio Detection

- Audio input abnormal detection and intensity change detection.
- When an event is triggered, the system can activate linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

IVS

- Tripwire, intrusion, abandoned object, moving object, fast-moving, parking detection,



people gathering, and loitering detection.

- When an event is triggered, the system can activate linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Crowd Map

- View crowd distribution in real-time for a timely arm to avoid accidents like stampedes.
- When an event is triggered, the system can activate linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Face Detection

- This function detect faces and displays the related attributes on the live interface.
- When an event is triggered, the system can activate linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Face Recognition

- After detecting a face, the system will compare the detected face with faces in the face database, and activates events.
- Query the recognition result.

People Counting

- Count the people flow in/out of the detection area and generate a report.
- When an event is triggered, the system can activate linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Heat Map

- Counts the cumulative density of moving objects.
- View report of the heat map.

ANPR

- Recognizes plate number in the detection area, and display the related information on the live interface.
- When an event is triggered, the system can activate alarm output, send email and snapshots.

Video Metadata

- Takes a snapshot of people, non-motor vehicles and vehicles, and displays the related information on the live interface.
- When an alarm is triggered, the system links alarm output.

Alarm Setting

- An event will be triggered when an external alarm input device on the IPC is triggered.
- When an event is triggered, the system can activate linkages such as recording,

alarm output, sending email, PTZ operation, and snapshot.

Abnormality

- SD card error, network disconnection, illegal access, voltage detection, and security exception.
- When there is an SD card error or illegal access is triggered, the system can activate the alarm output and send an email.
- When a network disconnection event is triggered, the system can activate recording and alarm output.
- When the input voltage is more or less than the rated voltage, the event is triggered and the system can activate sending email.

2 Configuration Flow

See Figure 2-1. For details, see Table 2-1. Configure the device according to the local environment.

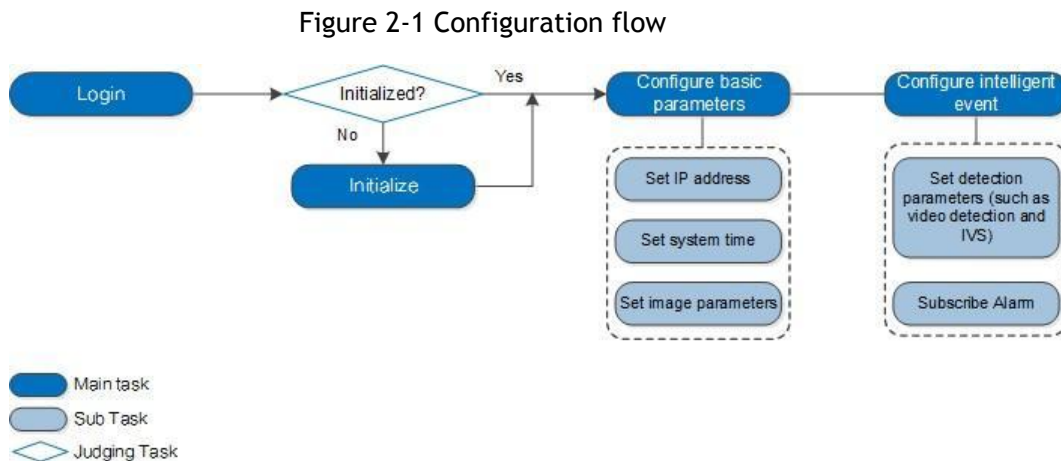


Table 2-1 Description of flow

Configuration	Description	Reference
Login	Open a web browser and enter the IP address to log in to the web interface, The camera IP address is on 192.168.1.108/ DHCP by default.	"4.1 Login"
Initialization	Initialize the camera when it is used for the first time.	"3 Device Initialization"
Basic parameters	IP address	Change the IP address according to network requirements and local standards.
	Date & time	Set the date and time to ensure the recording time is correct.

	Image parameters	Adjust image parameters according to the environment to ensure the image quality.	"4.5.1 Conditions"
Intelligent Event	Detection rules	Configure the necessary detection rules, such as video detection and IVS.	"5 Event"
	Subscribe alarm	Subscribe alarm event. When the subscribed event is triggered, the system will record the event on the alarm tab.	"5.1.2 Subscribing Alarm"

3 Device Initialization

The device initialization is a mandatory step for first-time use. This manual is based on the operation of the web interface. You can also initialize the device through the ConfigTool, NVR, or platform ITM-9000.



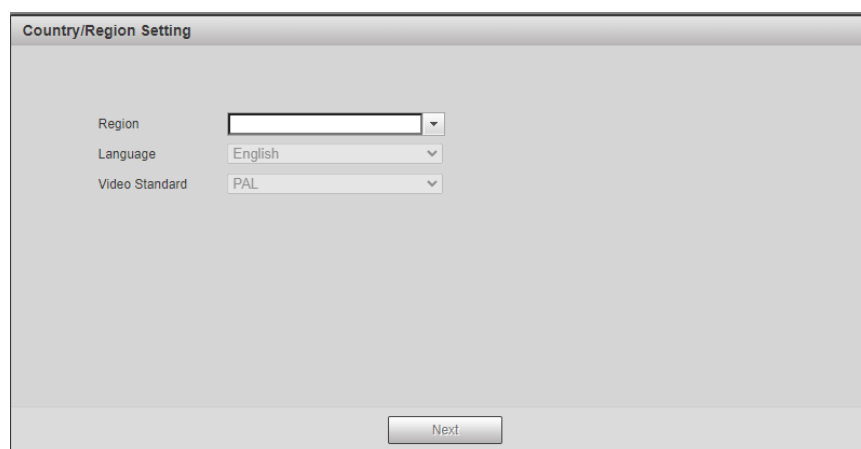
- To ensure the device's security, keep the password properly secured after initialization and change the password regularly.
- When initializing the device, make sure the PC IP and device IP are on the same network.

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



The IP is set on DHCP (or 192.168.1.108 if it is not plugged into a network with DHCP) by default.

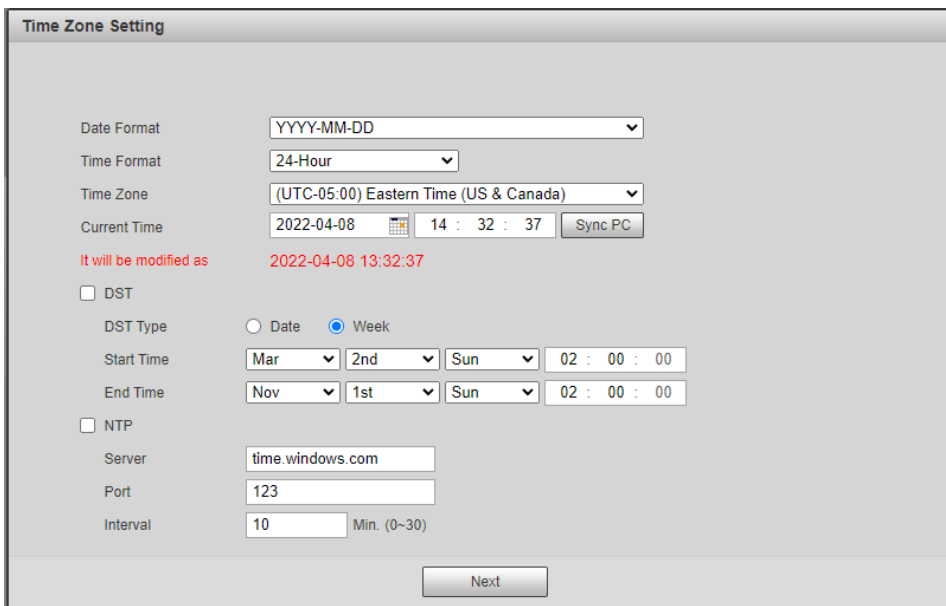
Figure 3-1 Device initialization



Step 2 Set the Region, Language, and Video Standard (NTSC for North America) and then click **Next**.

Step 3 Set the Time Zone settings and then click **Next**.

Figure 3-2 Time Zone Setting



The screenshot shows the 'Time Zone Setting' window with the following configuration:

- Date Format: YYYY-MM-DD
- Time Format: 24-Hour
- Time Zone: (UTC-05:00) Eastern Time (US & Canada)
- Current Time: 2022-04-08 14:32:37 (Sync PC)
- It will be modified as: 2022-04-08 13:32:37
- DST: DST
 - DST Type: Date Week
 - Start Time: Mar 2nd Sun 02:00:00
 - End Time: Nov 1st Sun 02:00:00
- NTP: NTP
 - Server: time.windows.com
 - Port: 123
 - Interval: 10 Min. (0~30)

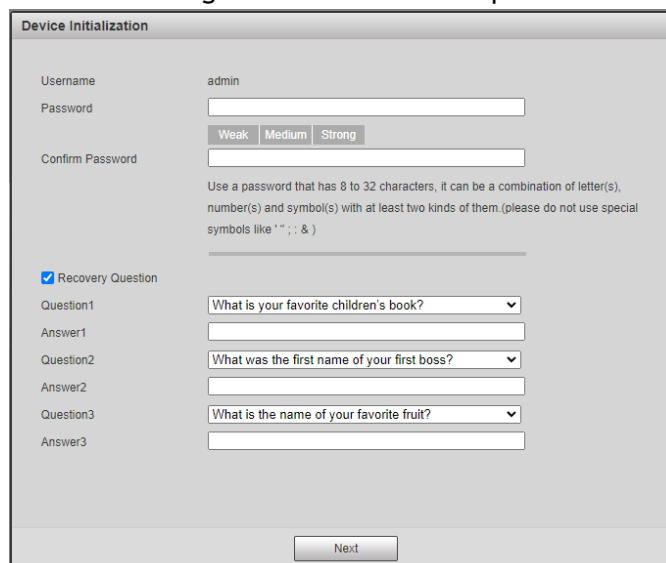
A 'Next' button is located at the bottom center of the window.

Step 4 Set the password for the admin account as well as the security questions in case the password is lost. Click **Next** when finished to save.

Table 3-1 Description of password configuration

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

Figure 3-3 Password Setup



The screenshot shows the 'Device Initialization' window with the following configuration:

- Username: admin
- Password: [Input field]
- Confirm Password: [Input field]
- Recovery Question: Recovery Question
 - Question1: What is your favorite children's book? [Dropdown]
 - Answer1: [Input field]
 - Question2: What was the first name of your first boss? [Dropdown]
 - Answer2: [Input field]
 - Question3: What is the name of your favorite fruit? [Dropdown]
 - Answer3: [Input field]

A 'Next' button is located at the bottom center of the window.

4 Basic Configuration

The chapter introduces the basic configuration, including login, live view, PTZ operation, playback, camera configuration, network configuration, storage configuration, and system configuration.

4.1 Login

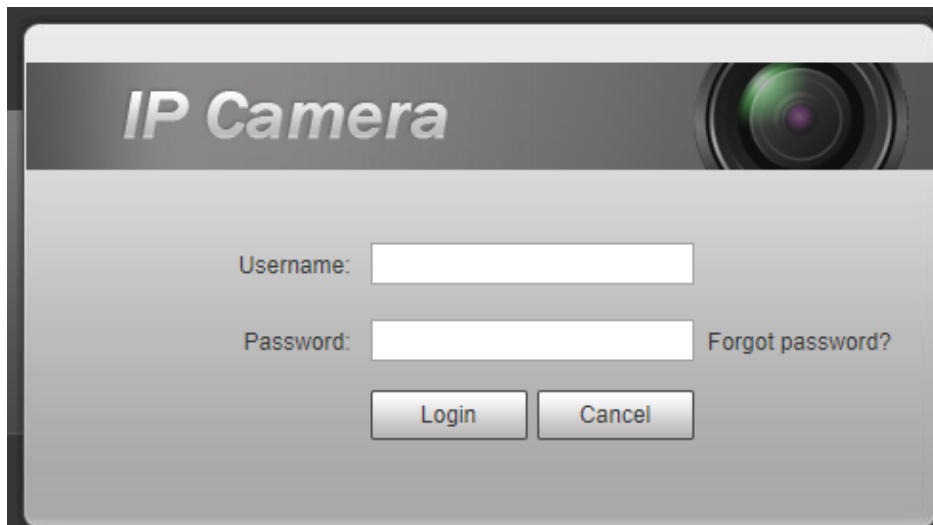
This section introduces how to log in to and log out of the web interface. This section takes IE Explorer 9 as an example. If using HTML5 with other web browsers, some options may not appear.



- You need to initialize the camera before logging in to the web interface. For details, see "3 Device Initialization".
- Follow the instructions to download and install the plug-in for the first login.

Step 1 Open the Internet Explorer (IE) browser (or any browser of your choice), then enter the IP address of the camera (192.168.1.108 by default) in the address bar and press Enter.

Figure 4-1 Login



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



Click **Forgot password?**, to reset the password through the security questions that were set during the initialization. If security questions were not set up you will have to open the camera and do a hard reset.

Step 3 Click **Login**.

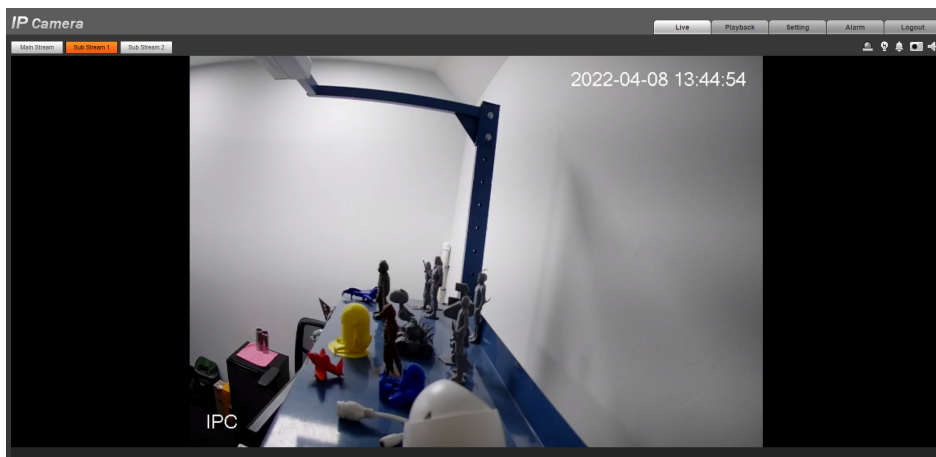
- **Live:** Click **Live** to view the IPC's real-time monitoring image.
- **Playback:** Click **Playback** to playback or download recorded video or image files.
- **Setting:** Click **Setting** to configure the basic and intelligent functions of the camera.
- For the camera with multiple channels, select channel numbers to set the parameters of the channels.

4.2 Live

This section introduces the Live View layout of the interface and function configuration.

- Alarm: Select **Alarm** to subscribe and view alarm information.
- Logout: Select **Logout** to go to the login interface.
- The system will sleep automatically after idling for a period of time.

Figure 4-2 Live



4.2.1 Live Interface

This section introduces the system menu, encode bar, live view function bar, and window adjustment bar.

Log in and click the **Live** tab.



The functions and interfaces of different models may vary.

Figure 4-3 Live

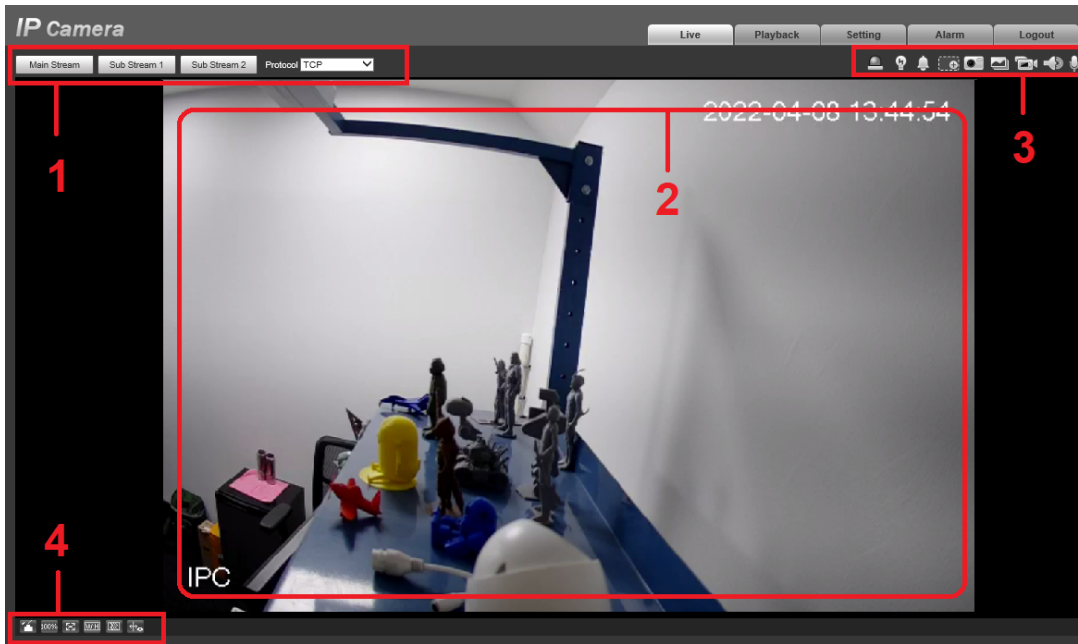
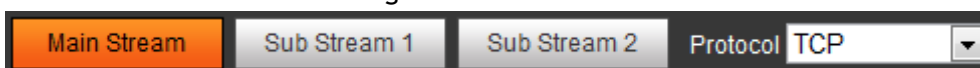


Table 4-1 Description of function bar

No.	Function	Description
1	Encode bar	Sets stream type and protocol.
2	Live view	Displays the real-time monitoring image.
3	Live view function bar	Functions and operations in live viewing.
4	Window adjustment bar (available with IE+ Plugins)	Adjustment operations in live viewing.

4.2.2 Encode Bar

Figure 4-4 Encode bar



- **Main Stream:** This is the camera's high-resolution stream, but also requires large bandwidth. This option can be used for storage and monitoring. For details, see "4.5.2.1 Video".
- **Sub Stream:** This is the camera's lower resolution stream that may result in a smooth image, and requires less bandwidth. This option is normally used to replace mainstream when network bandwidth or PC resources are insufficient. For details, see "4.5.2.1 Video".
- **Protocol:** You can select the network transmission protocol as needed, and the options are **TCP**, **UDP**, and **Multicast**.


















Before selecting **Multicast**, make sure that you have set the **Multicast** parameters.











4.2.3 Live View Function Bar

Options in the Live function Bar vary dispensing on IPC model. For the live view function bar, see Table 4-2.

Table 4-2 Description of live view function bar

Icon	Function	Description
	Manual Position	<p>Manually position the tracking PTZ to the selected location of the corresponding panoramic camera.</p> <p>Click the icon and click or select randomly on the image of the panoramic camera channel, the tracking PTZ camera will automatically position the selected location.</p> <p></p> <ul style="list-style-type: none"> For multi-sensor panoramic network camera + PTZ camera. Before enabling manual position, make sure that you have enabled alarm track and smart track calibration. For details, see "5.2 Setting Smart Track". For the panoramic network cameras, before enabling manual position, make sure that you have enabled panoramic linkage. For details, see "5.3 Setting Panoramic Calibration".
	Regional Focus	<p>Selects the channel image of the tracking PTZ. Click the icon and click or select randomly on the channel image of the tracking PTZ camera, and then the PTZ camera can perform autofocus upon the selected region.</p>
	Wiper	<p>Controls the wiper of the camera.</p> <p>Click the icon to enable or disable the wiper function.</p>
	Ranging	<p>Click the icon, select a point on the ground, and the distance between the camera and the selected point will be displayed.</p> <p></p> <p>Before using this function, you need to set the installation of the device first. For details, see "4.5.2.3.12 Configuring Ranging".</p>

Icon	Function	Description
	Gesture	Controls PTZ by operating the mouse on the live view of the tracking PTZ camera. Select the live view of the tracking PTZ camera, click the icon, press the left button, and drag the image to control PTZ. You can zoom in or out of the image by rolling the mouse wheel.
	Manual Track	Click the icon, and select tracking target on the live view of the tracking PTZ camera, the camera tracks the selected target automatically.
	Vehicle Density	Click the icon and select an area on the live image, the camera will automatically count the number of the vehicles in the selected area, and display the number on the Live interface.
	Relay-out	Displays alarm output state. Click the icon to force to enable or disable alarm output. Alarm output state description: <ul style="list-style-type: none"> • Red: Alarm output enabled. • Grey: Alarm output disabled.
	Warning Light	Displays the warning light state. Click the icon to enable or disable the warning light forcibly.
	Alarm	Displays alarm sound state. Click the icon to enable or disable the alarm sound forcibly.
	Crowd Map	Click the icon to display the crowd map on the Live interface.  <ul style="list-style-type: none"> • This can only be viewed if the Crowd map function was enabled. • The positions of the icon may vary depending on models.
	Digital Zoom	You can zoom in or out of the video image through two operations. <ul style="list-style-type: none"> • Click the icon, and then select an area in the video image to zoom in; right-click on the image to resume the original size. In the zoom-in state, drag the image to view other areas. • Click the icon, and then scroll the mouse wheel the video image to zoom in or out.

Icon	Function	Description
	Snapshot	<p>Click the icon to capture one picture of the current image. The snapshot will be stored on your computer.</p> <p></p> <p>For viewing or configuring the storage path, see "4.5.2.5 Path".</p>
	Triple Snapshot	<p>Click the icon to capture three pictures of the current image. The snapshots will be stored on your computer.</p> <p></p> <p>For viewing or configuring the storage path, see "4.5.2.5 Path".</p>
	Record	<p>Click the icon to record the camera video stream. The video will be stored on your computer.</p> <p></p> <p>For viewing or configuring the storage path, see "4.5.2.5 Path".</p>
	Easy Focus	<p>Click the icon, the AF Peak (focus eigenvalue) and AF Max (max focus eigenvalue) are displayed on the video image.</p> <ul style="list-style-type: none"> • AF Peak: The eigenvalue of image definition is displayed during focus. • AF Max: The best eigenvalue of image definition. • The smaller the difference between AF peak value and the AF max value, the better the focus is. <p></p> <p>Easy focus closes automatically after five minutes.</p>
	Audio	<p>Click the icon to enable or disable audio output.</p>
	Talk	<p>Click the icon to enable or disable the audio talk.</p>












4.2.4 Window Adjustment Bar







4.2.4.1 Adjustment





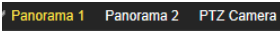

This section introduces the image adjustment options.

Table 4-3 Description of adjustment bar

Icon	Function	Description
	Image Adjustment	<p>Click the icon, and then the Image Adjustment interface is displayed on the right side of the Live interface. You can then adjust brightness, contrast, hue, and saturation.</p> <ul style="list-style-type: none">  (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): Change the value when the image brightness is proper but contrast is not enough.  (Hue adjustment): Makes the color deeper or lighter. The (default) recommended value is made by the light sensor.  (Saturation adjustment): Adjusts the image saturation. This value does not change image brightness.
	Original Size	<p>Click the icon, and it toggles to . The video displays with original size; click  to disable.</p>

Icon	Function	Description
	Full Screen	<p>Click the icon to enter full-screen mode; double-click or press Esc to exit.</p>

	Width: Height	Click the icon to resume the original ratio or change the ratio.
	Fluency	<p>Click the icon to select the fluency: Realtime, Fluency, and Normal.</p> <ul style="list-style-type: none"> • Realtime: Guarantees the real-time display of the image. When the bandwidth is not enough, the image may not be smooth. • Fluency: Guarantees the fluency of the image. There may be a delay between live view and real-time images. • Normal: A Balance of Realtime and Fluency.
	Rule Info	Click the icon, and then select Enable to display smart rules and detection box; select Disable to turn off the display. It is enabled by default.
	PTZ	Click the icon, and the PTZ control panel will be displayed on the right side of the Live interface. You can control and call PTZ functions. For details, see "4.3.3 Calling PTZ".
	Zoom and Focus	Adjust the focal length to zoom in and out video image. Click the icon, and the Zoom and Focus configuration interface will be displayed on the right side of the Live interface. You can control and call PTZ function. For details, see "4.2.4.2 Zoom and Focus".
	Fisheye	Click the icon, and then the Fisheye configuration interface will be displayed at the right side of the Live interface. For details, see "4.2.4.3 Fisheye".

Icon	Function	Description
	Face	<ul style="list-style-type: none"> Click the icon, and the face detection or face recognition results are displayed on the Live interface. For face recognition, see "5.10.1 Setting Face Detection". For face detection: see "5.11 Setting Face Detection".
	Video Metadata	Click the icon, and the video metadata results will be displayed on the Live interface. For details, see "5.17 Setting Video Metadata".
	Window Layout	<p>When viewing the multi-channel image, you can select different display layouts.</p> <p>For Multi-Sensor Panoramic + PTZ Camera:</p> <ul style="list-style-type: none"> The live interface will show Panorama 1 and Panorama 2 by default if you choose dual-channel mode. If you switch from three-channel mode or dual-channel mode to single-channel mode, the live window will show Panorama 1 by default. Click   and select the camera you want to view.
	Crowd Map	Click the icon and select the Enable checkbox. The Crowd Map interface is displayed. For details, see "5.9 Setting Crowd Map".

4.2.4.2 Zoom and Focus

You can adjust the focal length to zoom in or out video images and the image clarity.



The focus will adjust automatically after zooming in or out.

Figure 4-5 Zoom and focus

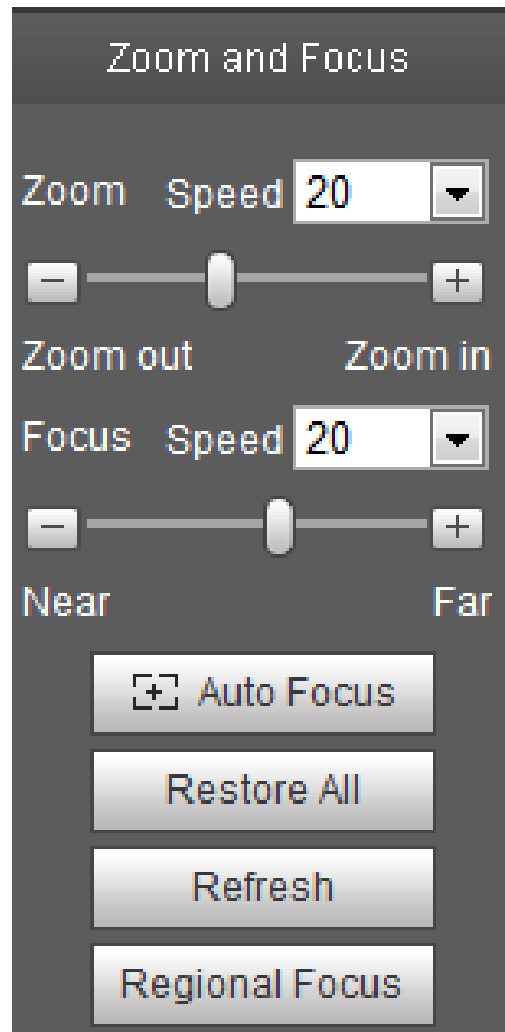




Table 4-4 Description of zoom and focus

Parameter	Description
Zoom	<p>Changes the focal length of the camera to zoom in or out the image.</p> <ol style="list-style-type: none"> 1. Set the Speed value. The Speed is the adjustment range in one click. The greater the value is, the more the image will zoom in or out in one click. 2. Click or hold + or– button, or drag the slider to adjust zoom.
Focus	<p>Adjusts the optical back focal length to make the image clearer.</p> <ol style="list-style-type: none"> 1. Set the Speed value. The Speed is the adjustment range in one click. The greater the value is, the more the adjustment in one click. 2. Click or hold + or– button, or drag the slider to adjust focus.
Auto Focus	<p>Adjusts image clarity automatically.</p>  <p>Do not make any other operations during auto focus process.</p>
Restore All	<p>Restores focus to the default value and corrects any errors.</p>  <p>You can restore the focus if the image has poor clarity or has been zoomed in too frequently.</p>
Regional Focus	<p>Focus on the subject of a selected area.</p> <p>Click Regional Focus, and then select an area in the image, the camera will auto focus in that area.</p>
Refresh	<p>Acquires the latest zoom settings of the device.</p>


4.2.4.3 Fisheye







You can select the installation mode, display mode and VR mode of fisheye devices as needed. For details, see Table 4-5.



- **Install Mode:** Select the installation mode according to the camera mounting situation.
- **Display Mode:** Select the display mode of live view.
- **VR Mode:** Select VR mode to display images in stereo mode.









Table 4-5 Description of fisheye configuration



Parameter	Description
Installation mode	Includes ceiling mount, wall mount, and ground mount.
Display mode	<p>The display mode of the current image. There are different display modes for each installation mode.</p> <ul style="list-style-type: none"> • Ceiling: 1P+1, 2P, 1+2, 1+3, 1+4, 1P+6, 1+8. • Wall: 1P, 1P+3, 1P+4, 1P+8. • Ground: 1P+1, 2P, 1+3, 1+4, 1P+6, 1+8. <p> The image will be on original size by default when switching</p>

		installation mode.
Ceiling/Wall/ Ground mount	 Original image	The original image before dewarping.
Ceiling/Ground mount	 1P+1	<p>360° rectangular panoramic image screen + independent sub-screens.</p> <ul style="list-style-type: none"> You can zoom or drag the image on all the screens. You can move the start point (left and right) on a rectangular panoramic image screen.
	 2P	<p>Two associated 180° rectangular images screens, and at any time, the two screens form a 360° panoramic image. It is also called a dual-panoramic image.</p> <p>You can move the start point (left and right) on the two rectangular panoramic image screens and the two screens are linked to each other.</p>
	 1+2	<p>Original image screen + two independent sub-screens. Ground Mount does not support this display mode.</p> <ul style="list-style-type: none"> You can zoom or drag the image on all the screens. You can rotate the image on the original image screen to change the start point.
	 1+3	<p>Original image screen + three independent sub-screens.</p> <ul style="list-style-type: none"> You can zoom or drag the image on all the screens. You can rotate the image on the original image screen to change the start point.
	 1+4	<p>Original image screen + four independent sub-screens.</p> <ul style="list-style-type: none"> You can zoom or drag the image on all the screens. You can rotate the image on the original image screen to change the start point.

	 1P+6	<p>360° rectangular panoramic screen + six independent sub-screens.</p> <ul style="list-style-type: none"> You can zoom or drag the image on all the screens. You can move the start point (left and right) on a rectangular panoramic image screen.
	 1P+8	<p>Original image screen + eight independent sub-screens.</p> <ul style="list-style-type: none"> You can zoom or drag the image on all the screens. You can rotate the image on the original image screen to change the start point.

Parameter	Description	
Wall mount	 1P	<p>180° rectangular panoramic image screen (from left to right). You can drag the image on all the screens (up and down) to adjust the vertical view.</p>
	 1P+3	<p>180° rectangular panoramic image screen + three independent sub-screens.</p> <ul style="list-style-type: none"> You can zoom or drag the image on all the screens. You can drag the image on all the screens (upper and lower) to adjust the vertical view.
	 1P+4	<p>180° rectangular panoramic image screen + four independent sub-screens.</p> <ul style="list-style-type: none"> You can zoom or drag the image on all the screens. You can drag the image on all the screens (upper and lower) to adjust the vertical view.
	 1P+8	<p>180° rectangular panoramic image screen + eight independent sub-screens.</p> <ul style="list-style-type: none"> You can zoom or drag the image on all the screens. You can drag the image on all the screens (upper and lower) to adjust the vertical view.
	 <p>Panorama</p>	<p>Drag or cross the screen 360° to unfold the distortion panorama, and you can drag the image in the left/right direction.</p>

VR mode	 Semi-circle	<ul style="list-style-type: none"> You can drag the image in the upper/lower/left/right direction. Press I to display the panorama, and press O to resume the original size. Press S to rotate the image in an anticlockwise direction. Press E to stop the rotation. Scroll the mouse wheel to zoom the image.
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Parameter	Description	
	 Cylinder	<p>Displays the distortion panorama in 360° circularity.</p> <ul style="list-style-type: none"> You can drag the image in the upper/lower/left/right direction. Press I to display the panorama, and press O to return to the original size. Press S to rotate the image in an anticlockwise direction, and press E to stop the rotation. Scroll the mouse wheel to zoom the image.
	 Asteroid	<ul style="list-style-type: none"> You can drag the image in the upper/lower/left/right direction. Press I to display the panorama, and press O to return to the original size. Press the left mouse button to slide down to display the image on the plane surface. Scroll the mouse wheel to zoom the image.

4.3 PTZ Operation

This section introduces PTZ parameter configuration, PTZ control, and PTZ function configuration.

4.3.1 Configuring External PTZ Protocol

If using the IP camera with serial control, you will need to configure PTZ protocol when accessing an external PTZ camera; otherwise the camera cannot control the external PTZ camera.

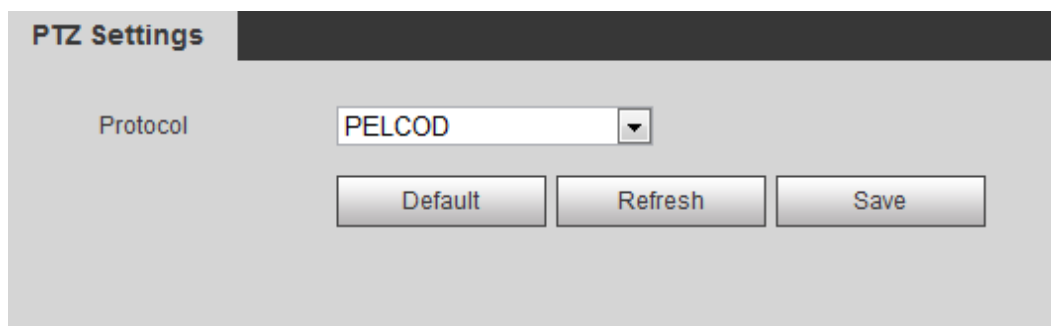
Prerequisites

- Access external PTZ through RS-485.
- You have configured the parameters of serial port. For details, see "4.8.5.1 Serial Port Settings".

Procedure

Step 1 Select **Setting > PTZ Setting > Protocol**.

Figure 4-7 PTZ setting



Step 2 Select the PTZ protocol.

Step 3 Click **OK**.

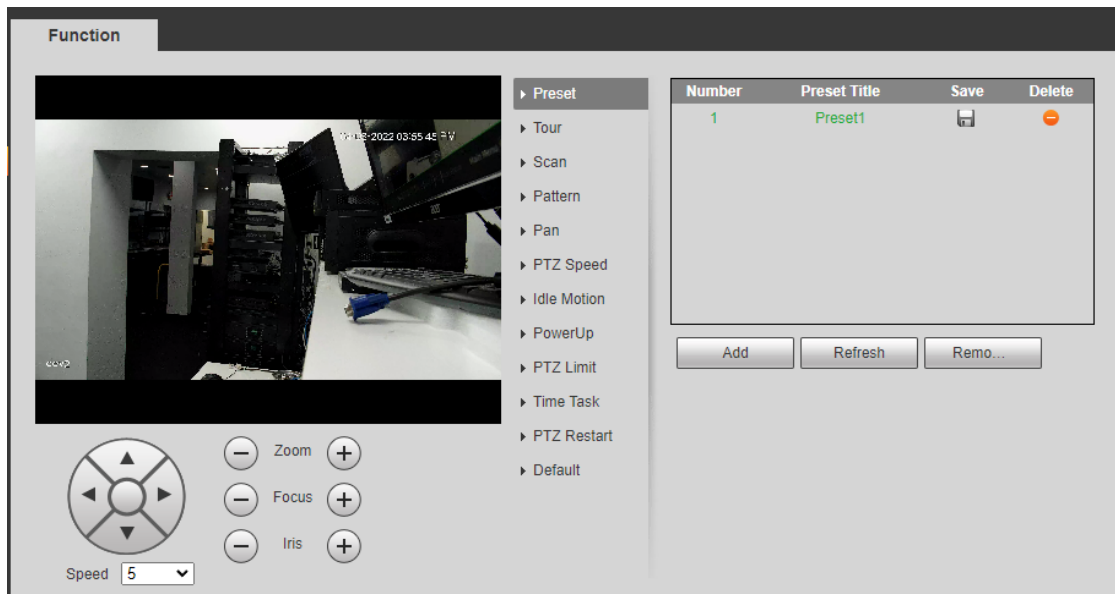
4.3.2 Configuring PTZ Function




4.3.2.1 Preset

A preset is a user-specified position that the camera can make quick orientation to. It includes PTZ pan and tilt coordinates, camera focus, and zoom position.

Step 1 Select **Setting > PTZ Settings > Function > Preset**.

Figure 4-8 Preset




Step 2 Set the speed, click ,  and  to adjust the parameters of direction, zoom, focus and iris, to move the camera to the desired position.

Step 3 Click **Add** to add the current position as a preset, and the preset will be displayed in preset list.

Step 4 Double-click the preset title to edit it.

Step 5 Click  to save the preset.

Related Operations

- Click  to delete the preset.
- Click **Remove All** to remove all presets.

4.3.2.2 Tour

Tour means a series of movements that the camera makes along several presets.

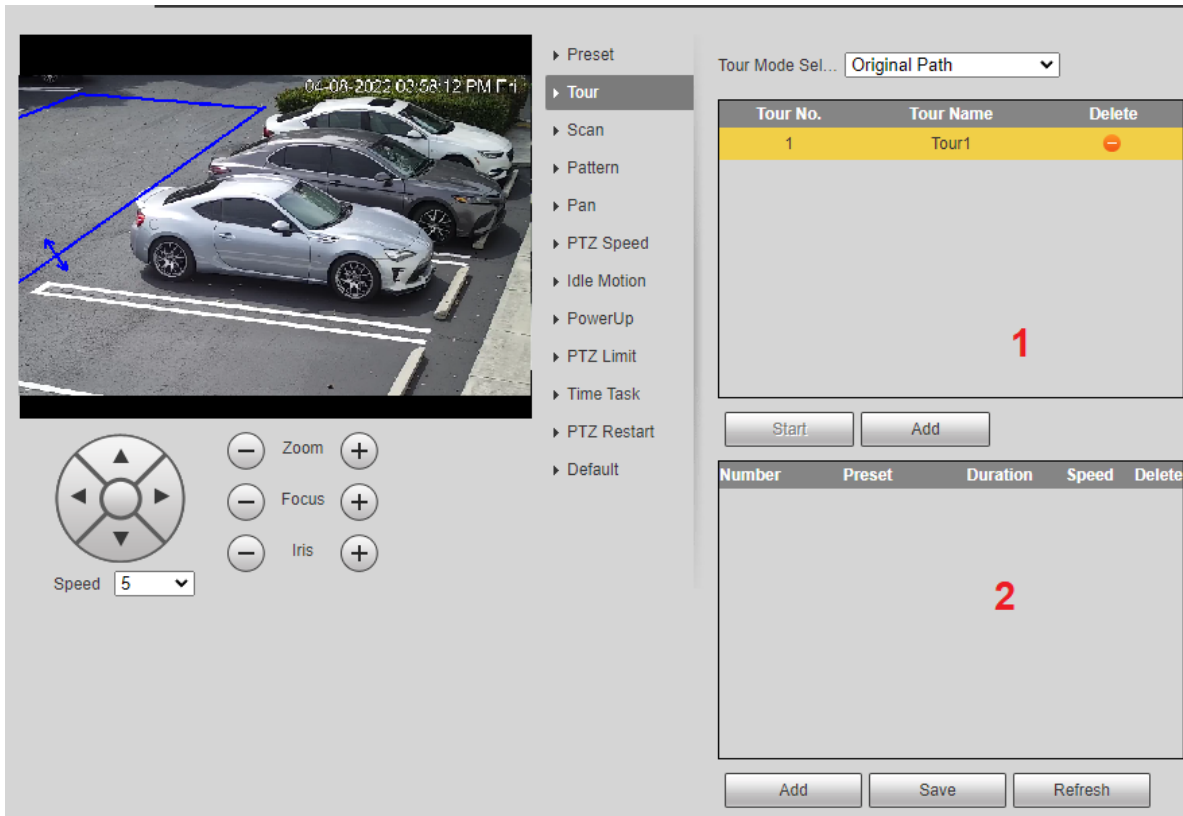
Prerequisites

You have set several presets.

Procedure

Step 1 Select **Setting > PTZ settings > Function > Tour**.

Figure 4-9 Tour



Step 2 Click **Add** ① to add tour.

Double-click the tour name to edit the name.

Step 3 Click **Add** ② to add preset.

Double-click the duration to set the duration.

Step 4 Select the tour mode.

- Original path: The PTZ camera moves in the order of the selected presets.
- Shortest path: The PTZ camera ranks presets by distance, and moves in the optimal path.

Step 5 Click **Save**.

Step 6 Click **Start** to start touring.



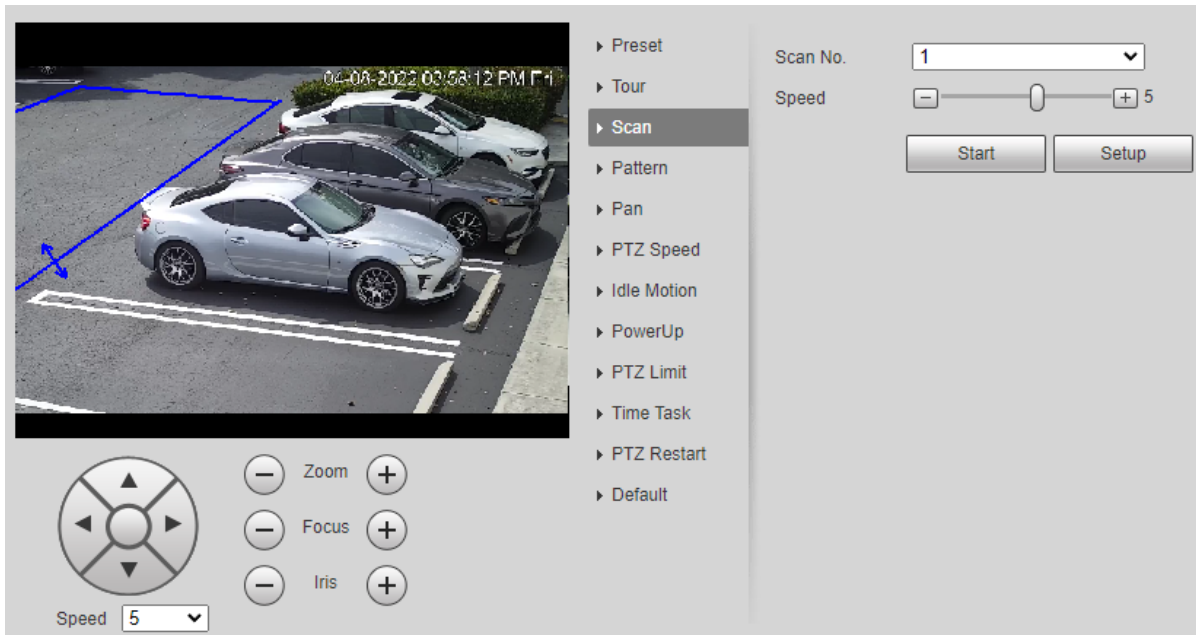
- If you operate a PTZ during a tour, the camera will stop the tour.
- It is recommended to set up idle motion to automate the activation of the tour.
- Click **Stop** to stop touring.

4.3.2.3 Scan

When a Scan is enabled, the camera will move horizontally at a certain speed between the configured left and right limits.

Step 1 Select **Setting > PTZ settings > Function > Scan**.

Figure 4-10 Scan



Step 2 Select the scan number and set the speed. **Step 3**

Click **Setup** to set the left limit and right limit.

- 1) Click **Set Left Limit** to set the current position to be the left limit.
- 2) Click **Set Right Limit** to set the current position to be the right limit.

Step 4 Click **Start** to start scanning. Click **Stop** to stop scanning.



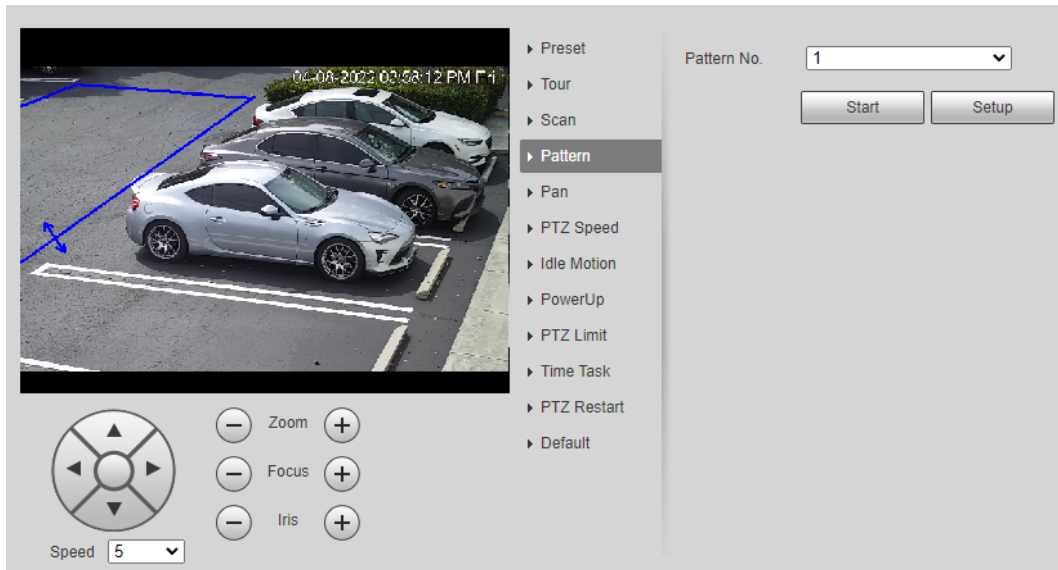
- If you operate a PTZ during a scan, the camera will stop the tour.
- It is recommended to set up idle motion to automate the activation of the tour.

4.3.2.4 Pattern

A Pattern is a recorded series of operations that you make to the camera, and when the pattern starts, the camera performs the operations repeatedly. The operations include horizontal and vertical movements, zoom, and preset calling. Record and save the operations as a pattern to call the pattern path directly.

Step 1 Select **Setting > PTZ settings > Function > Pattern**.

Figure 4-11 Pattern



Step 2 Select the pattern number.

Step 3 Click **Setup**, and then click **Start Rec.** Adjust the parameters of direction, zoom, focus and iris according to the environmental conditions.

Step 4 Click **Stop Rec** to stop recording.

Step 5 Click **Start** to start patterning.

Step 6 Click **Stop** to stop patterning.



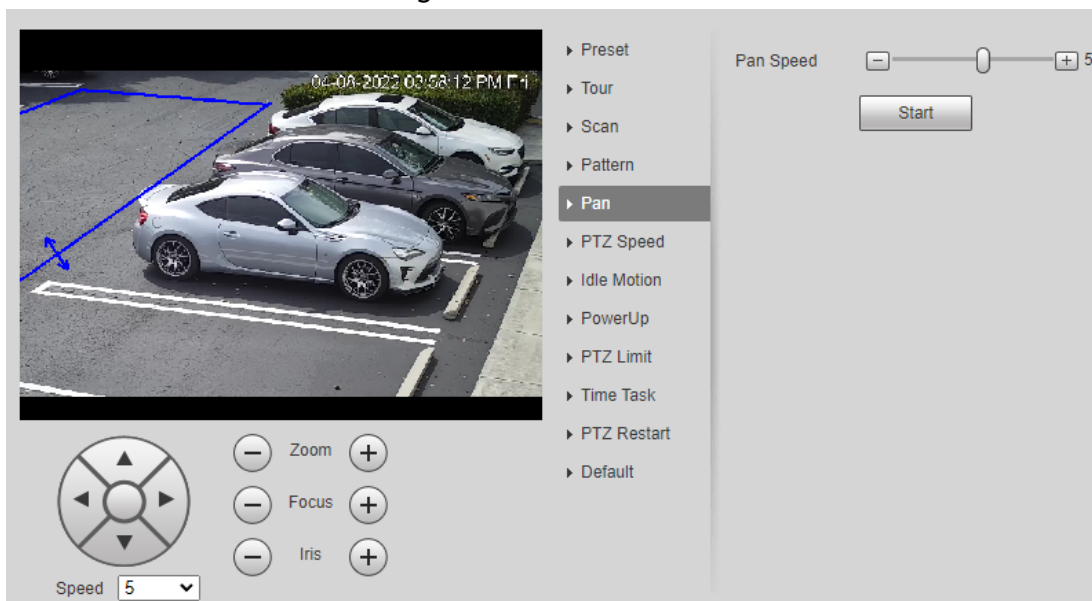
- If you operate a PTZ during a pattern, the camera will stop the tour.
- It is recommended to set up idle motion to automate the activation of the tour.

4.3.2.5 Pan

Enable Pan, the camera can realize continuous 360° horizontal rotation at a certain speed.

Step 1 Select **Setting > PTZ settings > Function > Pan.**

Figure 4-12 Pan



Step 2 Set the pan speed and click **Start**, and the camera starts horizontal rotation.

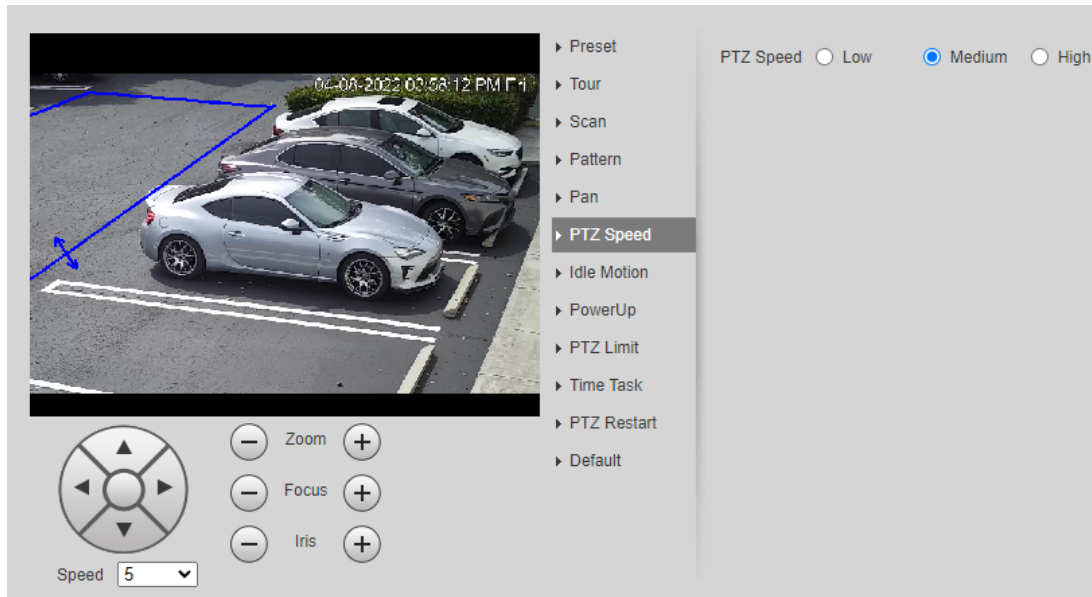
Click **Stop** to stop rotation.

4.3.2.6 PTZ Speed

PTZ speed means the rotation speed of the PTZ camera during touring, pattern, or auto-tracking.

Step 1 Select **Setting** > **PTZ settings** > **Function** > **PTZ Speed**.

Figure 4-13 PTZ speed



Step 2 Select the PTZ speed: **Low**, **Middle**, and **High**.



Speed under the direction buttons refers to the rotation angle of the PTZ camera for each press of the direction button.

4.3.2.7 Idle Motion

The Idle motion is a PTZ operation that is configured in advance when it does not receive any valid command within the set time. These operations include preset, scan, tour, or pattern.

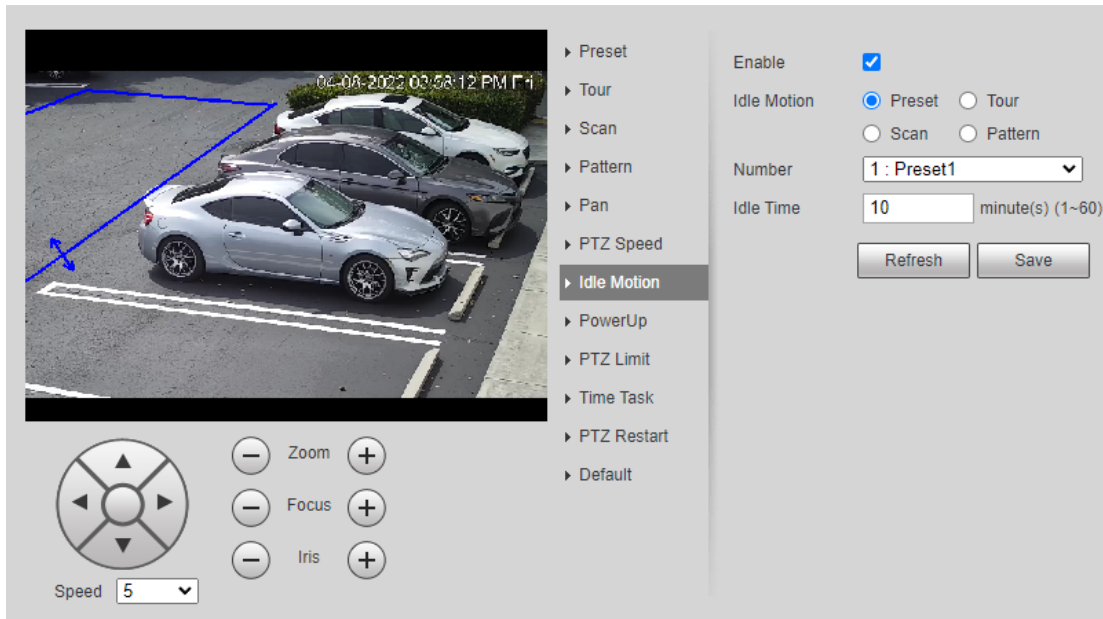
Prerequisites

You have configured the PTZ motions, including preset, scan, tour, or pattern.

Procedure

Step 1 Select **Setting** > **PTZ settings** > **Function** > **Idle Motion**.

Figure 4-14 Idle motion



- Step 2** Select the **Enable** checkbox to enable the idle motion function. **Step 3** Select the idle motion and set the idle time. You need to select the corresponding number for some selected idle motions, such as **Preset001**.

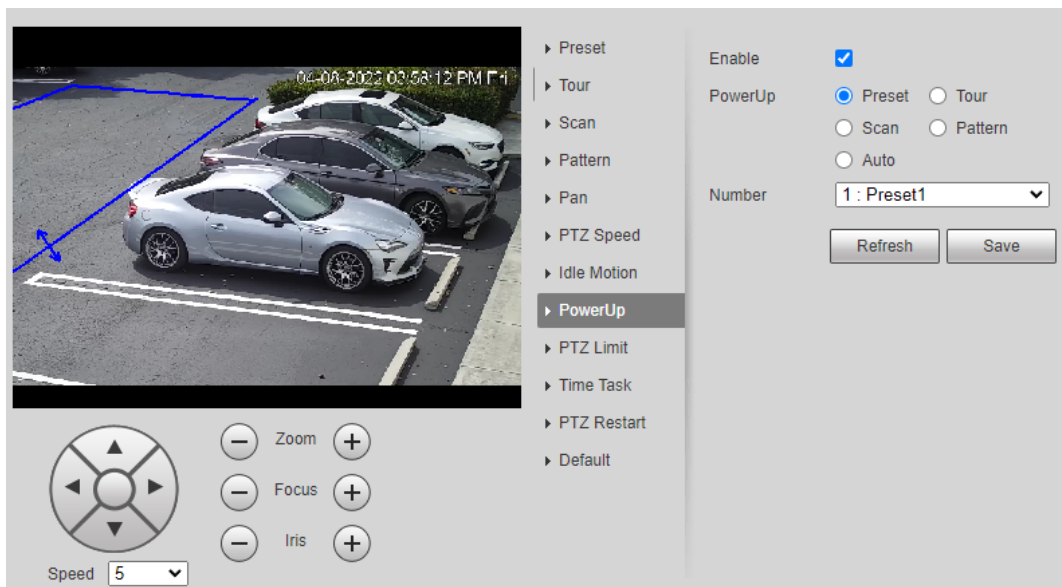
Step 4 Click **Save**.

4.3.2.8 PowerUp

After setting the Powerup motion, the camera will perform the configured motion after it is powered on.

Step 1 Select **Setting > PTZ settings > Function > PowerUp**.

Figure 4-15 PowerUp



Step 2 Select the **Enable** checkbox to enable the power up function.

Step 3 Select the power up motion.



If you select **Auto**, the system will perform the last motion that is executed for more than 20 s before power-off.

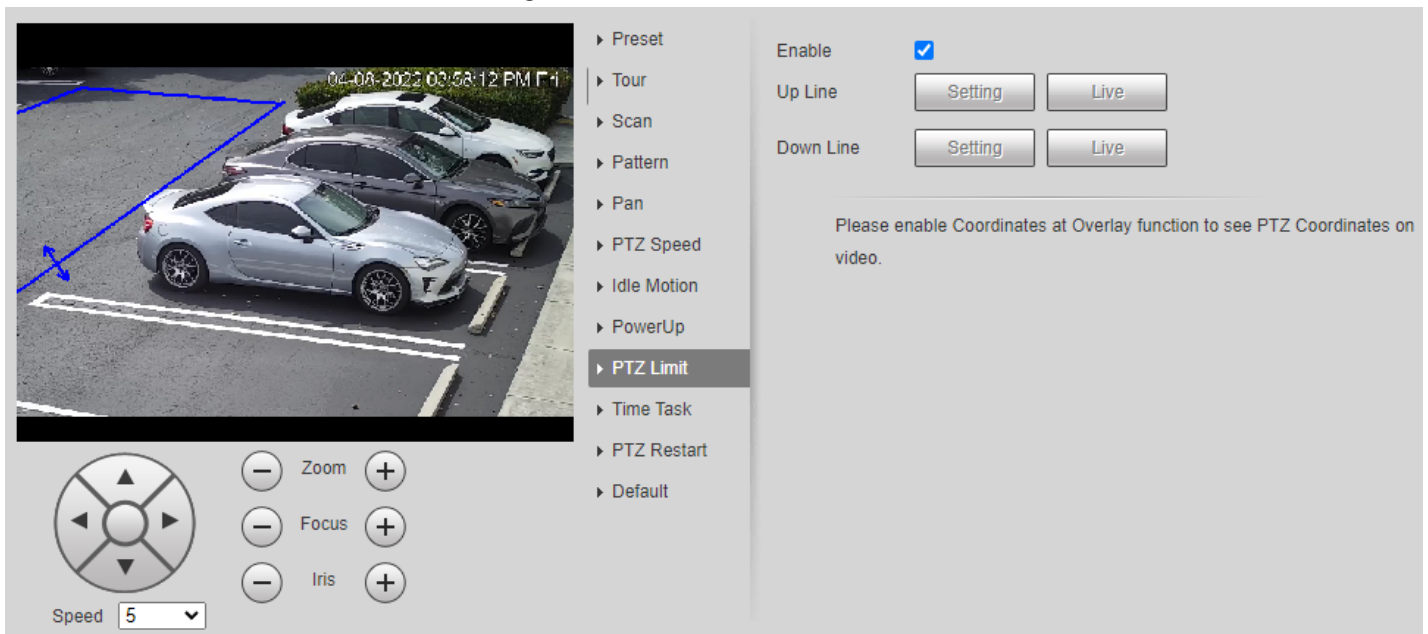
Step 4 Click OK.

4.3.2.9 PTZ Limit

After setting PTZ limit, the camera can only rotate within the configured area.

Step 1 Select **Setting > PTZ settings > Function > PTZ Limit**.

Figure 4-16 PTZ limit



Step 2 Adjust the direction buttons, and then click **Setting**^① to set the up line; click **Setting**^② to set the down line.

Click **Live** to view the configured up line and down line.

Step 3 Select the **Enable** checkbox to enable the PTZ limit function.

4.3.2.10 Time Task

After setting time task, the camera performs the motions during the configured period.

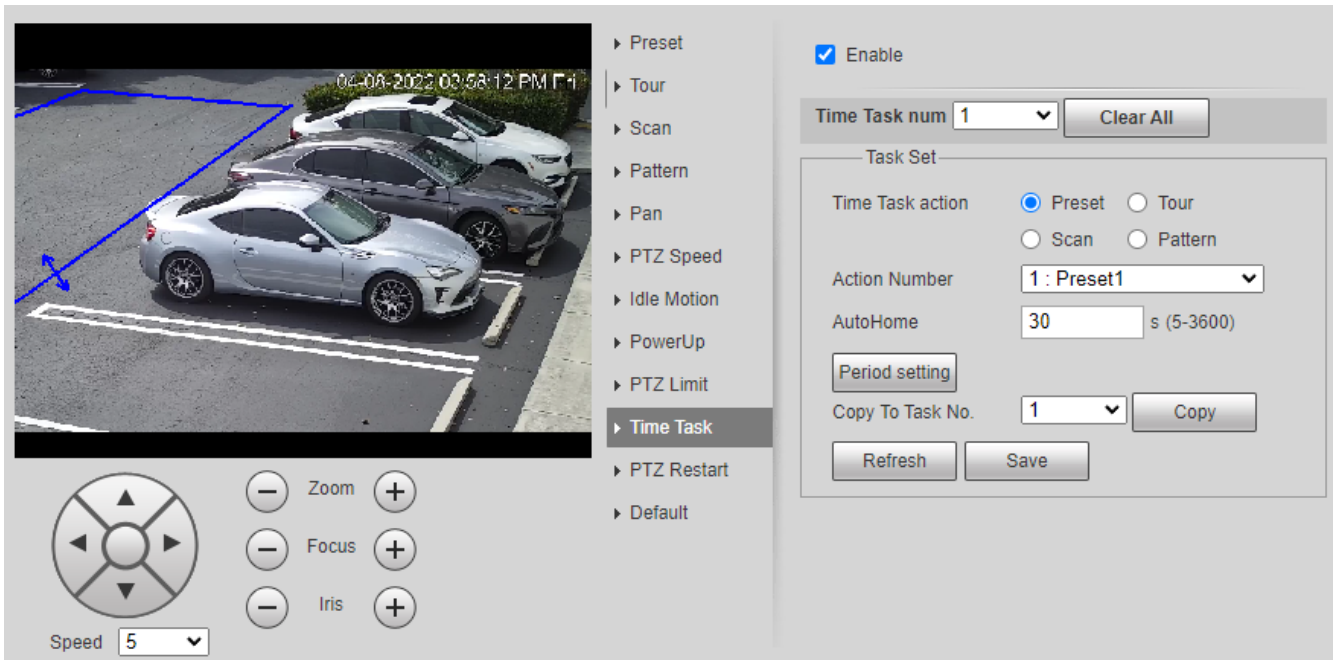
Prerequisites

You have configured the PTZ motions, including preset, scan, tour, and pattern.

Procedure

Step 1 Select **Setting > PTZ settings > Function > Time Task**.

Figure 4-17 Time task



Step 2 Select the **Enable** checkbox to enable the time task function.

Step 3 Select the time task number.

Step 4 Select the time task action.

You need to select the corresponding action number for some selected time task actions.

Step 5 Set the auto home time in **AutoHome**.

AutoHome: When you call PTZ, the time task will be interrupted. After setting **AutoHome** time, the camera will resume the time task automatically.

Step 6 Click the **Period setting** to set the time of the task, and then click **Save**.

For setting arm time, see "5.1.1.1 Setting Period".

Step 7 Click **Save**.

Related Operations

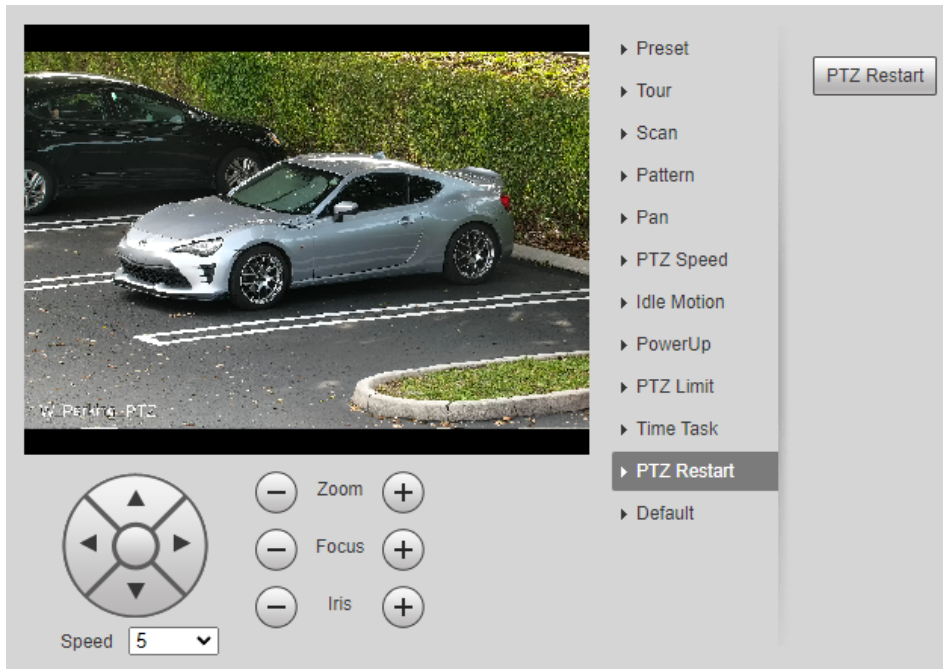
You can copy the configurations of the existing task numbers to other task numbers.

1. Select the existing task number in **Time Task num**.
2. Select the task number to be configured in **Copy To Task No**.
3. Click **Copy**.
4. Click **Save**.

4.3.2.11 PTZ Restart

Step 1 Select **Setting > PTZ settings > Function > PTZ Restart**.

Figure 4-18 PTZ restart



Step 2 Click **PTZ Restart** to restart PTZ.

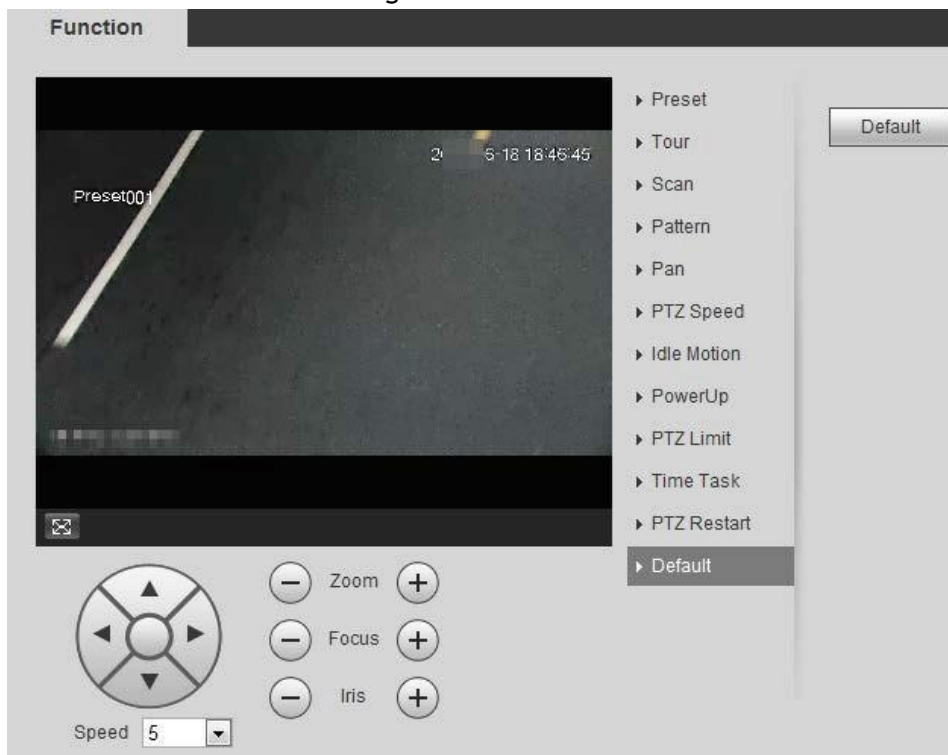
4.3.2.12 Default



Be careful when doing this operation. It will restore the camera to default configuration, and result in data loss.


Step 1 Select **Setting > PTZ settings > Function > Default**.

Figure 4-19 Default



Step 2 Click **Default** and the PTZ function is restored to default.

4.3.3 Calling PTZ

Click  on Live interface, and the PTZ configuration panel is displayed. You can control PTZ and call PTZ function.

4.3.3.1 PTZ Control







You can rotate device, zoom image, and adjust iris through PTZ control or virtual joystick. See Figure 4-20 and Figure 4-21.

Figure 4-20 PTZ control



Figure 4-21 Joystick



-  : Rotates the PTZ direction using the directional buttons. PTZ supports eight directions: left/right/up/down/upper left/upper right/bottom left/bottom right. Click , and draw a box in the image, PTZ will rotate, focus and quickly position the defined scene.
-  : Rotate PTZ direction through joystick. Select and hold , and drag it to the direction that you need, then PTZ will move to the defined direction.
- Speed: Measure the rotation speed. The higher the speed value is, the faster the speed becomes.
- Zoom, focus and iris: Click  or  to adjust zoom, focus and iris.

4.3.3.2 PTZ Function

Select the PTZ function from the drop-down list to call the corresponding functions, including Scan, Preset, Tour, Pattern, Pan, Go to, Assistant and Light Wiper. See Figure 4-22. For details, see Table 4-6. Before calling PTZ function, see "4.3.2 Configuring PTZ Function" to configure PTZ function.



- If an external PTZ is connected to the camera, the configurations are valid only when the corresponding functions are available on the external PTZ.
- The range of PTZ function (such as preset and tour) depends on the PTZ protocol.

Figure 4-22 PTZ function

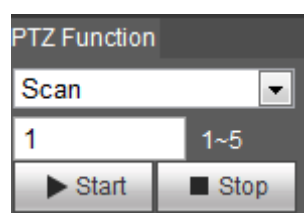


Table 4-6 Description of PTZ function

Parameter	Description
Scan	Set the scan number and click Start , the camera moves horizontally at a certain speed between the set left and right limit. Click Stop to stop scanning.
Preset	Set the preset number and click Go to , the camera quickly positions the corresponding preset.
Tour	Set the tour number and click Start , the camera moves in the order of the selected presets. Click Stop to stop touring.
Pattern	Set the pattern number and click Start , the camera moves continuously according to the operation recording. Click Stop to stop patterning. Operation recording includes the information of manual operation, focus and zoom.
Pan	Click Start , and the camera rotates 360° at a certain speed in horizontal direction.
Go to	Set the horizontal angle, vertical angle, and zoom. Click Go to to position a certain point accurately.
Assistant	Set the assistant number and click Aux On to enable the corresponding assistant function to adjust the camera. Click Aux Off to disable the corresponding assistant function.
Light/Wiper	Set the light or wiper of the camera. <ul style="list-style-type: none"> Click Enable to enable light/wiper function. Click Disable to disable light/wiper function.

4.4 Playback

This section introduces playback related functions and operations, including video playback and picture playback.



- Before playing back video, configure record time range, record storage method, record schedule and record control. For details, see "5.1.1.2.1 Setting Record Plan".
- Before playing back picture, configure snapshot time range, snapshot storage method, snapshot plan. For details, see "5.1.1.3.1 Setting Snapshot Plan".

4.4.1 Playback Interface

Click the **Playback** tab, and the **Playback** interface is displayed.

Figure 4-23 Video playback

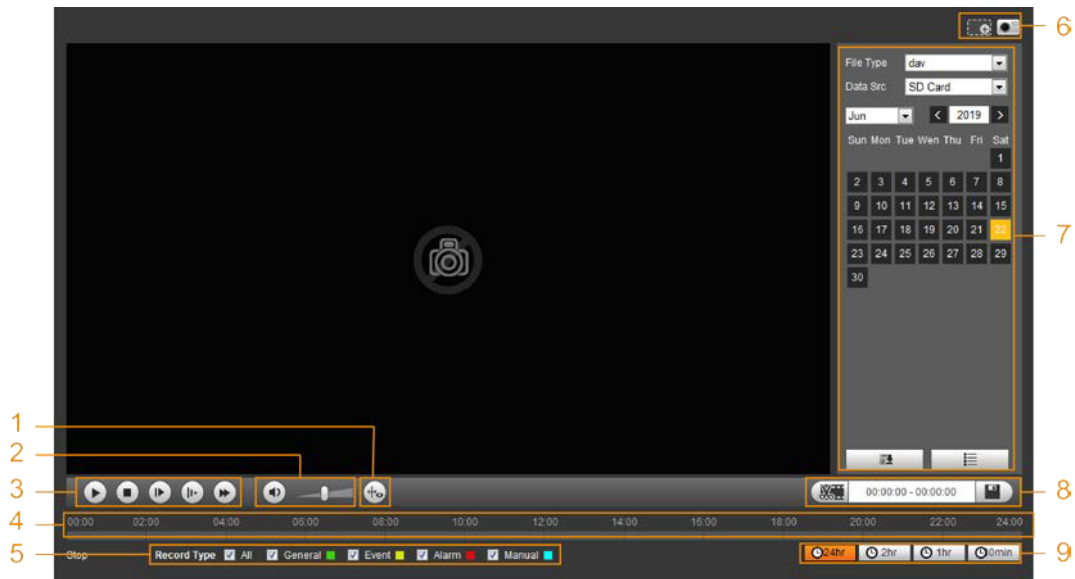


Figure 4-24 Picture playback

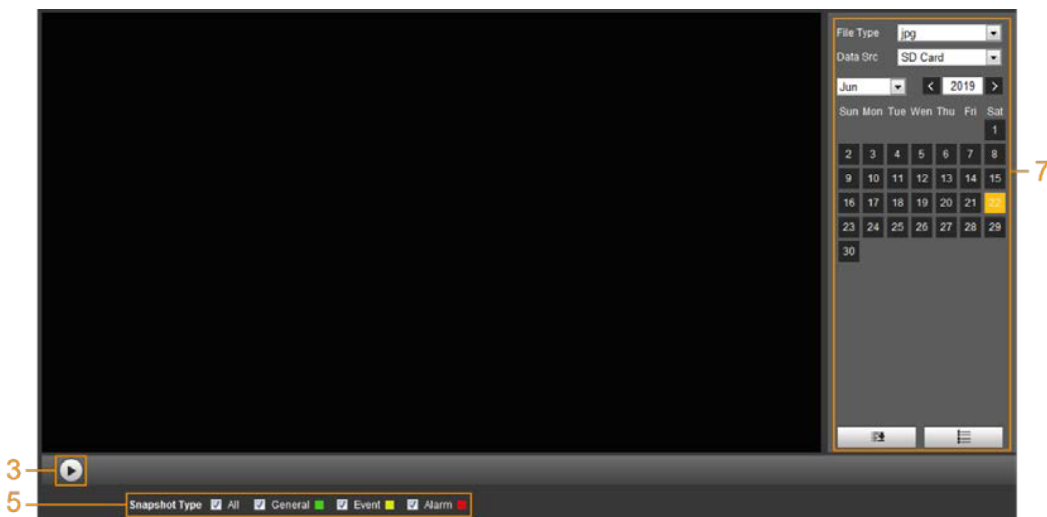















Table 4-7 Playback interface description

No.	Function	Description
1	Fisheye	Click the  icon to select display mode according to the installation mode during playback.  This function is only available on fisheye cameras.
	Rules Info	Click the  icon to display intelligent rules and object detection box. It is enabled by default.  Rules Info is valid only when rules are enabled during recording.

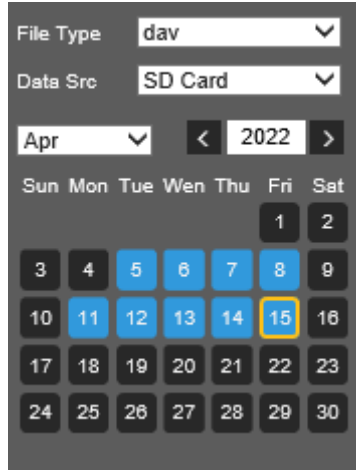
2	Sound	<p>Controls the sound during playback.</p> <ul style="list-style-type: none"> : Mute mode. : Vocal state. You can adjust the sound.
3	Play control bar	<p>Controls playback.</p> <ul style="list-style-type: none"> : Click the icon to play back recorded videos. : Click the icon to stop playing back recorded videos. : Click the icon to play the next frame. : Click the icon to slow down the playback. : Click the icon to speed up the playback.
4	Progress bar	<p>Displays the record type and the corresponding period.</p> <ul style="list-style-type: none"> Click any point in the colored area, and the system will play back the recorded video from the selected moment. Each record type has its own color, and you can see their relations in Record Type bar.
5	Record/ Snapshot Type	<p>Select the record type or snapshot type.</p> <ul style="list-style-type: none"> Record type includes General, Event, Alarm, Manual. Snapshot type includes General, Event, Alarm.
6	Assistant	<ul style="list-style-type: none"> : You can zoom in or out video image of the selected area through two operations. : Click the icon to capture one picture of the current video, and it will be saved to the configured storage path.
7	Playback video	<p>You can select the file type, data source, and record date.</p>
8	Video clip	<p>Clip a certain recorded video and save it. For details, see "4.4.3 Clipping Video".</p>
9	Time format progress bar	<p>Includes 4 time formats: 30 minutes, 1 hour, 2 hour and 24 hours.</p>

4.4.2 Playing back Video or Picture

This section introduces the operation of video playback and picture playback. This section utilizes video playback as an example.

Step 1 Select **dav** from the **Record Type** drop-down list and **SD card** from the **Data Src** drop-down list. If **jpg** is selected from **Record Type** drop-down list when playing back pictures, you do not need to select a data source.

Figure 4-25 File type selection



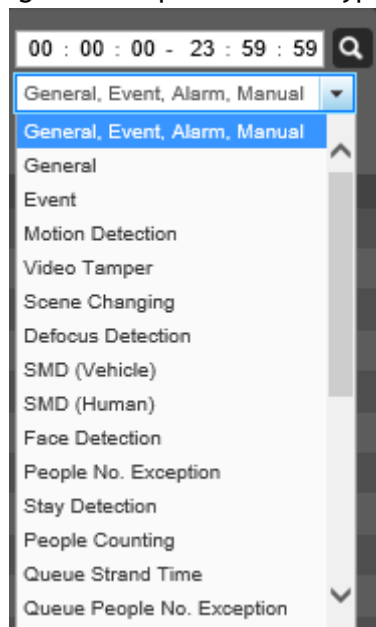
Step 2 Select the record type in **Record Type**.

Figure 4-26 Record type selection



When selecting **Event** as the record type, you can select the specific event types from the playback file list, such as **Motion Detection**, **Video Tamper** and **Scene Changing**.

Figure 4-27 Specific event types




Step 3 Select the month and year of the video that you want to play.



The dates highlighted in blue color indicate there were videos recorded on those days.

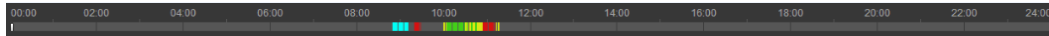
Step 4 Play video.



- Click  in the control bar.

The system will play the recorded video of the selected date (in the order of time).

- The system will play the recorded video of the selected date (in the order of time).
- Click any point in the colored area on the progress bar. The playback starts from that moment.

Figure 4-28 Progress bar

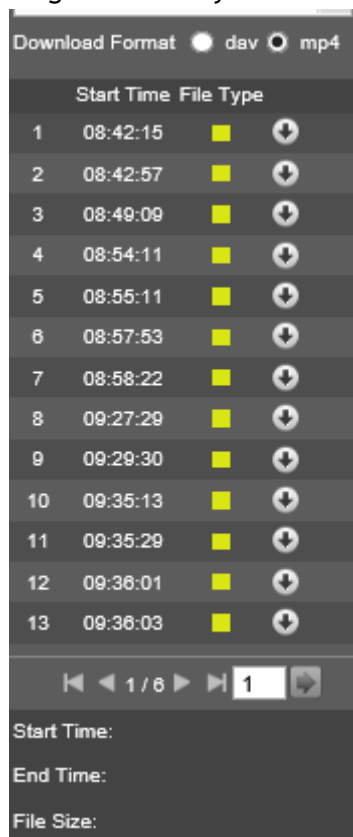



- Click the  icon to list the video files of the selected date. Enter the start time and end time, and then click  to search all files between the start time and end time. Double-click the file in the list, and the system plays the video and displays file size, starting time, and ending time.

4.4.3 Clipping Video

This section allows you to clip a certain video time frame. This will only work with Internet Explorer and plugins installed.

Figure 4-29 Playback file list



Step 1 Click the  icon to list the video files of the selected date.

Step 2 Select **dav** or **mp4** in **Download Format**.




Step 3 Click on the progress bar to select the start time of the target video, and then click . See Figure 4-30.

Figure 4-30 Clipping video



Step 4 Click again on the progress bar to select the end time of the target video, and then click .

Step 5 Click  to download the video.

The system will prompt that it cannot play back and download at the same time.

Step 6 Click **OK**.

The playback stops and the clipped file is saved in the configured storage path. For the configuration of storage path, see "4.5.2.5 Path".

4.4.4 Downloading Video or Picture

Download video or picture to a defined path on your PC. You can download a single video or picture file, or download them in batches. This section utilizes downloading videos as an example.




- Playback and downloading at the same time is not supported.
- Operations may vary with different browsers.
- For details on viewing or setting storage path, see "4.5.2.5 Path".

4.4.4.1 Downloading a Single File

Step 1 Select **dav** from the **Record Type** drop-down list and **SD card** from the **Data Src** drop-down list.

Select **jpg** from the **Record Type** drop-down list when playing back pictures, and you do not need to select data source.

Step 2 Click the  icon to list the video files of the selected date. See Figure 4-29.

Step 3 Select **dav** or **mp4** in **Download Format**. Click  next to the file to be downloaded.

The system starts to download the file to the configured path. When downloading pictures, you do not need to select the download format.

4.4.4.2 Downloading Files in Batches


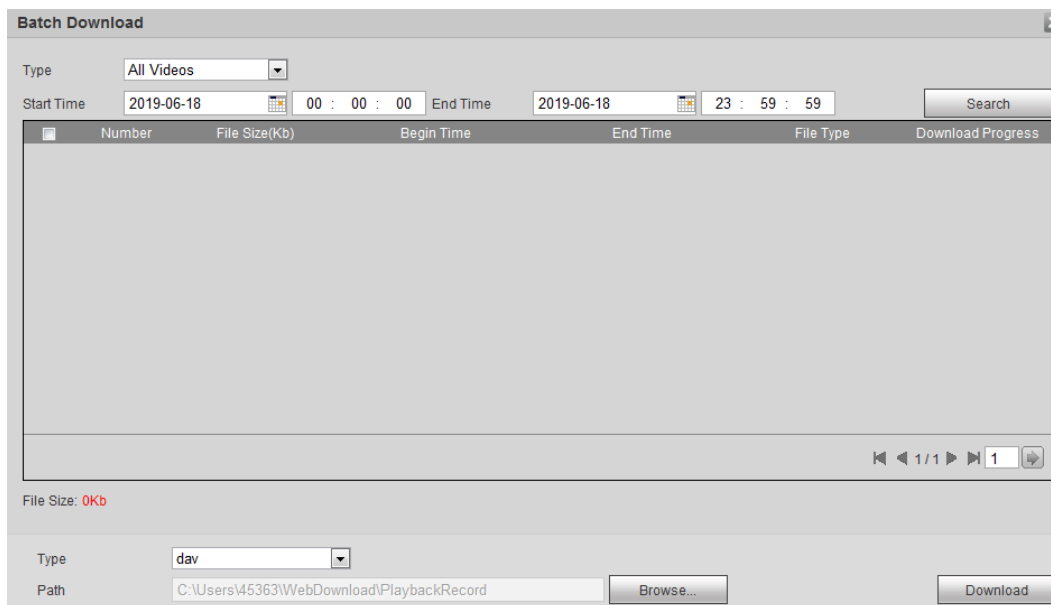
Step 1 Click  on the playback interface.

Figure 4-31 Batch download



Step 2 Select the record type, set the start time and end time, and then click **Search**.

The searched files are listed.

Step 3 Select the files to be downloaded, select **dav** or **mp4** from the **Format** drop-down list, and then set the storage path. Click **Download**.

The system starts to download the file to the configured path. When downloading picture, you do not need to select the download format.

4.5 Camera

This section introduces the camera stream settings, including conditions, video and audio options.



Camera options and parameters may vary depending on models.

4.5.1 Conditions

This section allows you to configure the image and lighting parameters of the camera to ensure the best image quality.

4.5.1.1 Conditions

Configure parameters according to the install location, including picture settings, exposure, backlight and white balance.

4.5.1.1.1 Interface Layout

Configure camera parameters to improve the scene clarity, and ensure that image quality is optimized. See Figure 4-32.

- Under profile, you can select between 9 different styles, such as normal, day, night or flowing

light mode. Parameters (such as contrast and saturation) will change to match the style. You can

also further modify the configurations for select modes (such as picture, exposure and backlight) after changing the main style. Flowing light is suitable for situations where there is dim lighting, and the panoramic function is unable to effectively detect targets.





- ◇ After switching to flowing light, the mode in the exposure menu is automatically set to manual. The shutter time is adaptive, working at a maximum speed of 333 ms.
- ◇ By default the backlight is off. The wide dynamic effect function can be determined by identifying the overexposure in the picture. This gives you control over overexposure in the picture.
- A camera with PTZ function supports zoom, focus and iris operations. See Figure 4-33. Configure speed, click the direction buttons,  and  to adjust the direction, zoom, focus and iris and so on, to adjust the camera to the proper position.

Figure 4-32 Camera conditions

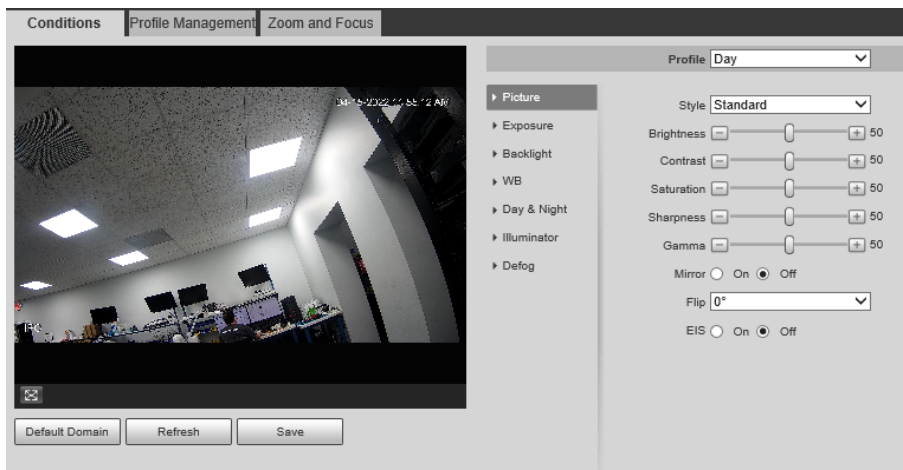
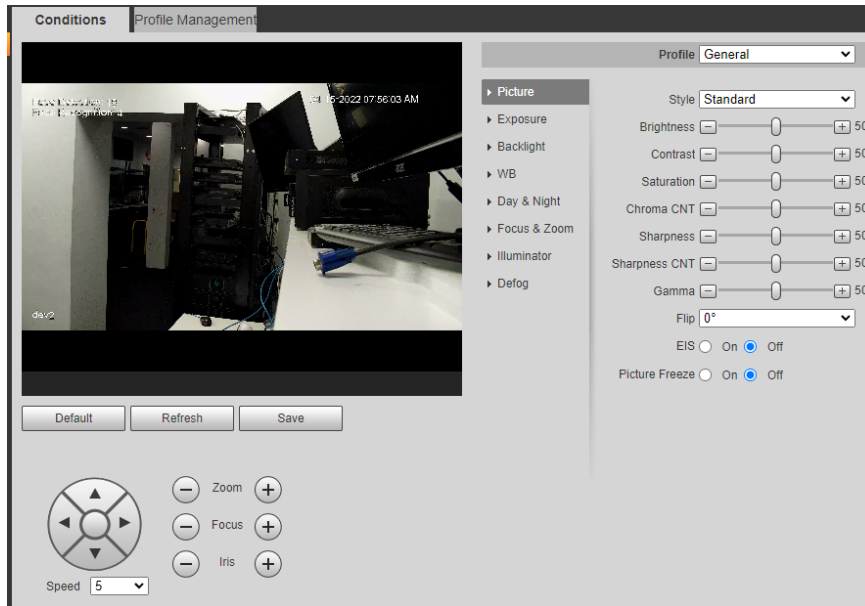


Figure 4-33 Camera conditions (PTZ camera)

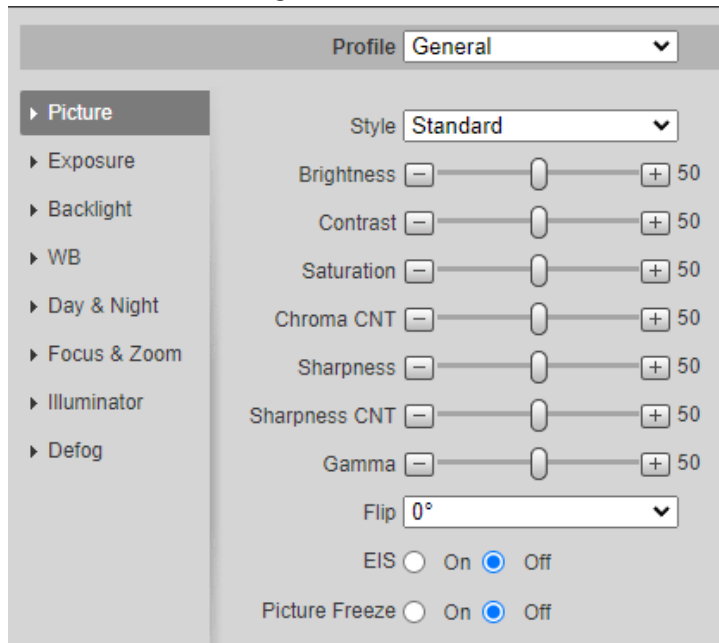


4.5.1.1.2 Picture

You can configure picture parameters like brightness, contrast or image flip as necessary.

Step 1 Select **Setting > Camera > Conditions > Conditions > Picture**.

Figure 4-34 Picture




Step 2 Configure picture parameters.

Table 4-8 Description of picture parameters

Parameter	Description
Style	<p>Select the picture style from soft, standard and vivid.</p> <ul style="list-style-type: none"> • Soft: The default image style, displays the normal color of the image. • Standard: The hue of the image is weaker than normal, and the contrast is smaller.

	<ul style="list-style-type: none"> • Vivid: The image is more vivid than normal.
Brightness	Changes the value to adjust the picture brightness. The greater the value, the brighter the picture will be, and the smaller the darker. The picture may be hazy if the value is configured too big.
Contrast	Changes the contrast of the picture. The greater the value, the more the contrast will be between bright and dark areas, and the smaller the less. If the value is set too big, the dark area would be too dark and bright area easier to get overexposed. The picture may be hazy if the value is set too small.
Saturation	Makes the color deeper or lighter. the greater the value, the deeper the color will be, and the lower the lighter. The saturation value does not change image brightness.

Parameter	Description
Sharpness	Changes the sharpness of picture edges. the greater the value, the clearer the picture edges will be, and if the value is set too big, picture noises are more likely to appear.
Gamma	Changes the picture brightness and improves the picture dynamic range in a non-linear way. the greater the value, the brighter the picture will be, and the smaller the darker.
Mirror	If On is selected, the picture will display with the left and right sides reversed.
Flip	<p>Changes the display direction of the picture, see the options below.</p> <ul style="list-style-type: none"> • 0°: Normal display. • 90°: The picture rotates 90° clockwise. • 180°: The picture rotates 90° counterclockwise. • 270°: The picture flips upside down. <p></p> <p>For some models, the 90° and 180° modes are only supported if the resolution is 1080p or lower. For details, see "4.5.2.1 Video".</p>
EIS	Corrects device shaking with a different comparison algorithm and improves the image clarity, effectively solving the picture shaking issue.
Optical Dejitering	The lens vibration will be sensed by the gyroscope sensor, and the corresponding compensation is calculated using the intelligent anti-shake algorithm. The movable parts inside the lens are driven to offset the vibration, which greatly reduces the blurring of the image caused by the vibration.
Picture Freeze	When a preset is called, the image displays the preset location, not the rotation image.

Step 3 Click **Save**.

4.5.1.1.3 Exposure

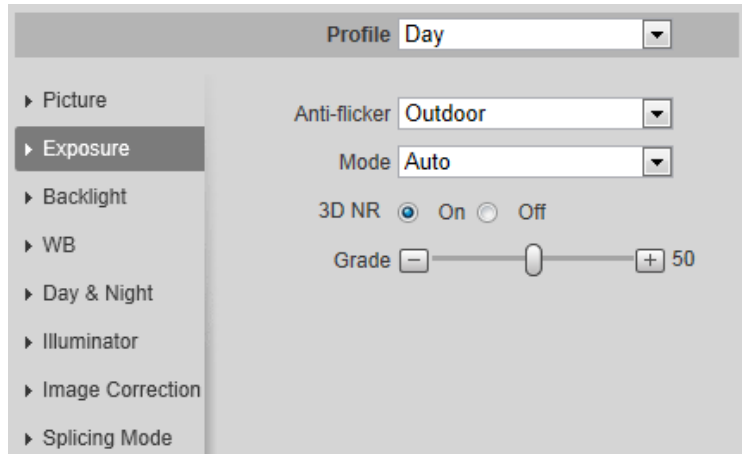
This section allows you to configure the iris and shutter settings to improve image clarity.



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

Step 1 Select **Setting > Camera > Conditions > Conditions > Exposure**.


Figure 4-35 Exposure



Step 2 Configure exposure parameters.

Table 4-9 Description of exposure parameters

Parameter	Description
Anti-flicker	<p>Options are: 50 Hz, 60 Hz and Outdoor.</p> <ul style="list-style-type: none"> 50 Hz: If the power source is 50 Hz, the IPC will adjust the exposure according to ambient light automatically to ensure that there is no striping in the image will appear. 60 Hz: If the power source is 60 Hz, the IPC will adjust the exposure according to ambient light automatically to ensure that there is no striping in the image will appear. Outdoor: Select if in an outdoor location.

Mode	<p>Device exposure modes.</p> <ul style="list-style-type: none"> • Auto: Adjusts the image brightness according to the environmental condition automatically. • Gain Priority: If the image brightness is not enough and the gain has reached an upper or lower limit, the camera adjusts the shutter value automatically to ensure the image at the ideal brightness. You can configure gain range to adjust gain level when using gain priority mode. • Shutter priority: If the image brightness is not enough and the shutter value has reached upper or lower limit, the system adjusts gain value automatically to ensure the image at ideal brightness. • Iris priority: The camera iris value is set to a fixed set value. If the image brightness is not enough and the shutter value has reached upper or lower limit, the system adjusts gain value automatically to ensure the image at ideal brightness. • Manual: Configure gain and shutter value manually to adjust image brightness. <p></p> <p>If the Anti-flicker is set to Outdoor, you can select Gain priority or Shutter priority in the Mode list.</p>
Exposure Comp	The value ranges from 0 to 50. The greater the value is, the brighter the image will be.
Shutter	Set the effective exposure time. The smaller the value, the shorter the exposure time will be.
Shutter range	When selecting Shutter Priority or Manual in Mode , and setting Customized Range in Shutter , you can set shutter range, and the unit is ms.
Gain	When selecting Gain Priority or Manual in Mode , you can set shutter range. With minimum illumination, the camera increases Gain automatically to acquire clearer images.
Iris	If selecting Aperture Priority in Mode , you can set iris range.

Parameter	Description
Auto Iris	<p>This configuration is available only when the camera is equipped with auto-iris lens.</p> <ul style="list-style-type: none"> When auto iris is enabled, the iris size changes automatically according to the ambient lighting condition, and the image brightness changes accordingly. When auto iris is disabled, the iris stays at full size and does not change no matter how ambient lighting condition changes.
2D NR	Average single-frame dots and other dots around to reduce noise.
3D NR	Works with multi-frame (no less than 2 frames) images and reduces noise by using the frame information between previous and latter frames.
Grade	This configuration is available only when the 3D DNR is enabled. The greater the DNR level is, the better the result will be.

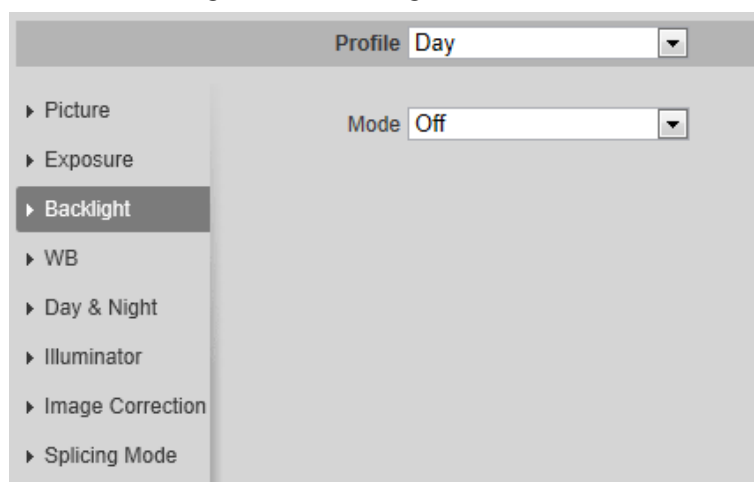
Step 3 Click **Save**.

4.5.1.1.4 Backlight

Backlight options offer better image clarity dispensing on the different lighting conditions using Auto, BLC, WDR, or HLS.


Step 1 Select **Setting > Camera > Conditions > Conditions > Backlight**.

Figure 4-36 Backlight



Step 2 Configure backlight parameters.

Table 4-10 Description of backlight parameters

Backlight mode	Description
Auto	The system adjusts image brightness according to ambient lighting condition automatically to ensure image clarity.
BLC	<p>Backlight Compensation. If BLC is enabled, the camera increases light exposure for darkened areas, making subjects appear more naturally lit and increasing detail. However, using BLC will make bright outdoor areas appear very light. You can select Default mode or Customized mode.</p> <ul style="list-style-type: none"> • When in Default mode, the system adjusts the exposure according to ambient lighting conditions automatically to ensure the clarity of the darkest area. • When in Customized mode, the system auto-adjusts exposure only to the set area according to ambient lighting conditions to ensure the image of the set area at ideal brightness.
WDR	<p>Wide Dynamic Range. If WDR is enabled, the camera will dim bright areas and compensates for dark areas to ensure the clarity of all the areas. the greater the value, the brighter the dark will be, but with a greater noise effect.</p> <p></p> <p>There may be a few seconds of video loss when the device is switching to WDR mode from other modes.</p>
HLC	<p>Highlight Compensation. If HLC is enabled, the camera automatically detects strong light sources and reduces light exposure, greatly improving the clarity of bright areas. The greater the value, the more obvious the HLC effect will be.</p>

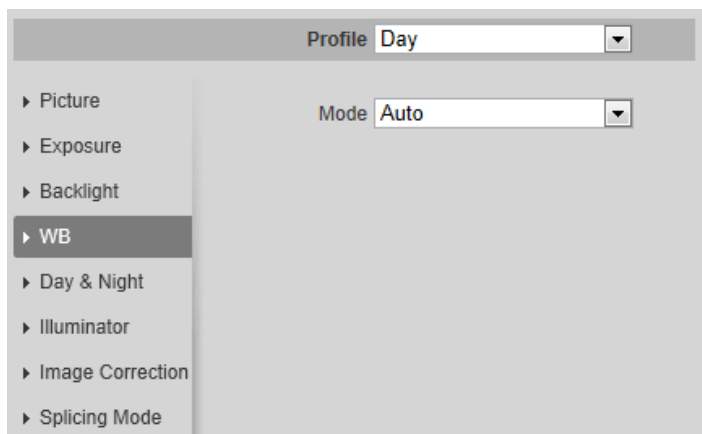
Step 3 Click **Save**.

4.5.1.1.5 WB

White balance (WB) is used to adjust colors on the image to match the color of the light source so that white objects appear white.

Step 1 Select **Setting > Camera > Conditions > Conditions > WB**.

Figure 4-37 WB



Step 2 Configure WB parameters.

Table 4-11 Description of WB parameters

WB mode	Description
Auto	The system compensates WB according to color temperature to ensure color precision.
Natural	The system auto compensates WB to environments without artificial light to ensure color precision.
Street Lamp	The system compensates WB for outdoor night scenes to ensure color precision.
Outdoor	The system auto compensates WB to most outdoor environments with natural or artificial light to ensure color precision.
Manual	Configure red and blue gain manually; the system auto compensates WB according to color temperature.
Regional Custom	The system compensates WB only to the set area according to color temperature to ensure color precision.

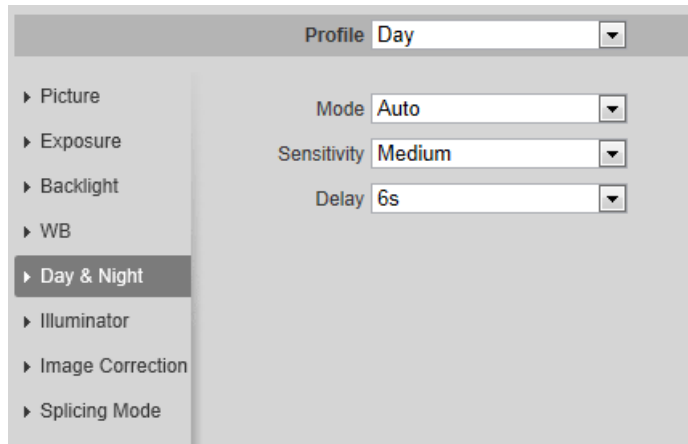
Step 3 Click **Save**.

4.5.1.1.6 Day & Night

The section configures the camera behavior when day or night mode is toggled. The system switches between color and black-and-white mode according to the environmental condition.


Step 1 Select **Setting > Camera > Conditions > Conditions > Day & Night**.

Figure 4-38 Day and night



Step 2 Configure day and night parameters.

Table 4-12 Description of day and night parameters

Parameter	Description
Mode	<p>You can select a device display mode from Color, Auto, and B/W.</p>  <p>Day & Night configuration is independent of profile management configuration.</p> <ul style="list-style-type: none"> • Color: The system displays a color image. • Auto: The system switches between color and black-and-white display according to the environment. • B/W: The system displays a black-and-white image.
Sensitivity	<p>This configuration is available only when you set Auto in Mode. You can configure camera sensitivity when switching between color and black-and-white mode.</p>
Delay	<p>This configuration is available only when you set Auto in Mode. You can configure the delay when the camera switches between color and black-and-white mode. The lower the value is, the faster the camera switches between color and black-and-white mode.</p>

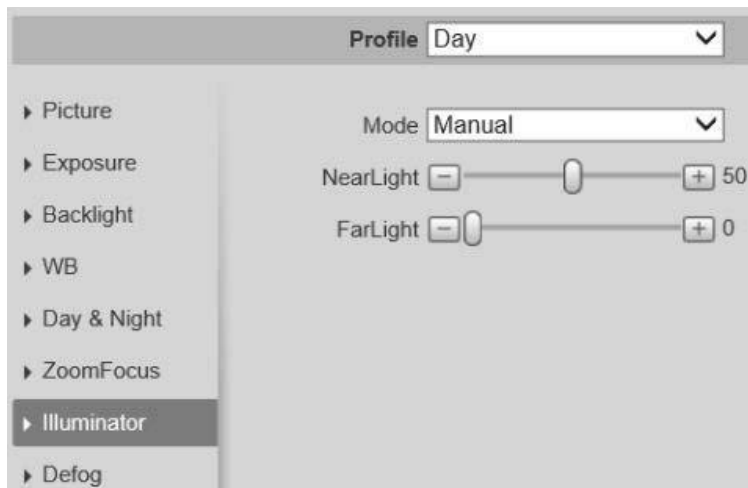
Step 3 Click **Save**.

4.5.1.1.7 Zoom and Focus

Initialize the lens to adjust zoom and focus. (Only PTZ/ motorized Varifocal cameras support lens initialization)





Step 1 Select **Setting > Camera > Conditions > Conditions > ZoomFocus**.

Figure 4-39 Zoom and focus



Step 2 Configure zoom and focus parameters.

Table 4-13 Description of zoom and focus parameters

Parameter	Description
Digital Zoom	Select On to enable the digital zoom function.
Zoom Speed	Adjusts zoom speed. the greater the value, the higher the speed will be.
Mode	Sets focus mode. <ul style="list-style-type: none"> • Auto: When the image moves or the object changes in the scene, the camera will focus automatically. • Semi Auto: Click  or  correspond to Focus or Zoom, the camera will focus. Calling a preset, manually positioning, or rotating PTZ also will trigger focus. • Manual: Click  or  correspond to Focus to adjust the focus.
Focus Limit	When the focal length is too short, the camera will focus on the dome cover. Sets the shortest focus distance to avoid focusing on the dome cover. You can also change the focus speed by changing focal length.
Sensitivity	The sensitivity of triggering focus. the greater the value, the easier the focus will be triggered.

Step 3 Click **Save**.



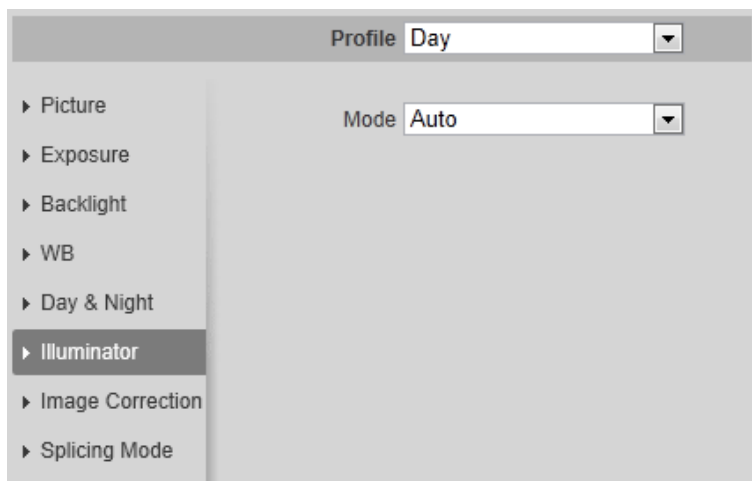
Click **Lens Initialization**, the lens will adjust the zoom and focus parameters.

4.5.1.1.8 Illuminator

This configuration is available only for devices equipped with an illuminator.

Step 1 Select **Setting > Camera > Conditions > Conditions > Illuminator**.

Figure 4-40 Illuminator



Step 2 Configure illuminator parameters.

Table 4-14 Description of illuminator parameters

Illuminator	Description	
Fill Light	<p>Set Fill Light for Active Deterrence (sound and siren) cameras.</p> <ul style="list-style-type: none"> • IR Mode: If the IR illuminator is enabled, the white light will be disabled. • White Light: If the white light is enabled, the IR illuminator will be disabled. • Smart illumination. The camera will switch the illuminators according to the environmental conditions. When the ambient light reaches the threshold of IR illuminator, the IR illuminator is enabled. The white light is enabled when the target appears in surveillance area, disabled when the target is out of the surveillance area, and then the IR illuminator is enabled according to the ambient light. <p>When selecting Smart Illumination as Fill Light, you need to set the illuminator delay. It is 60 seconds by default, and the range is 30-300 seconds.</p>	
	Manual	Allows you to adjust the brightness of the illuminator manually.
	Auto	The system adjusts the illuminator intensity according to the ambient lighting condition.
	Smart IR	

Mode	ZoomPrio	<p>The camera adjusts the illuminator intensity automatically according to the change in the ambient light.</p> <ul style="list-style-type: none"> • When the ambient light turns darker, the system turns on the low beam lights first. If the brightness is still not enough, then it will turn on the high beam lights. • When the ambient light becomes brighter, the system dims high beam lights until they are off first, and then the low beam lights. • If the focus reaches a certain wide-angle, the system will not turn on the high beam light to avoid over-exposure at a short distance. In the meantime, you can configure light compensation manually to fine-tune IR light intensity.
	Off	The Illuminator will be disabled.

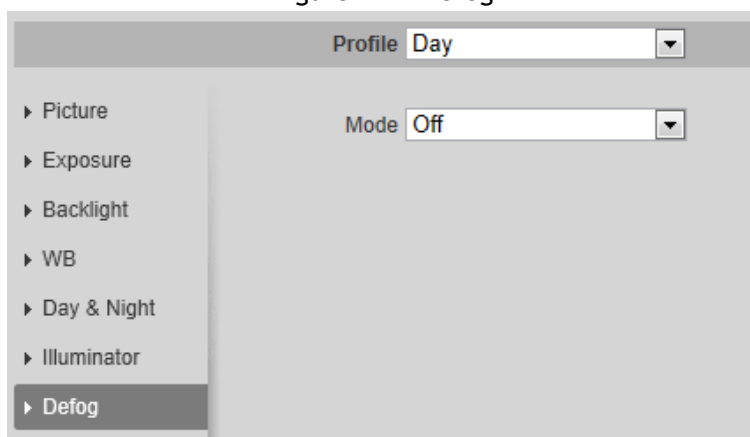
Step 3 Click **Save**.

4.5.1.1.9 Defog

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

Step 1 Select **Setting > Camera > Conditions > Conditions > Defog**.

Figure 4-41 Defog



Step 2 Configure defog parameters.

Table 4-15 Description of defog parameters

Defog	Description
Manual	Configure function intensity and atmospheric light mode manually, and then the system adjusts image clarity accordingly. The atmospheric light mode can be adjusted automatically or manually.

Auto	The system adjusts image clarity according to the environmental conditions.
Off	Defog function is disabled.

Step 3 Click **Save**.

4.5.1.1.10 Fisheye

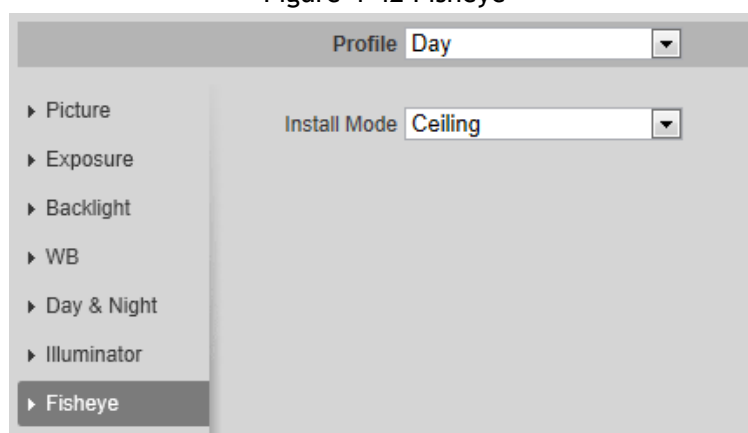
This function allows you to dewarp the 360 fisheye cameras to different layouts.



This function is only available on fisheye device.

Step 1 Select **Setting > Camera > Conditions > Conditions > Fisheye**.

Figure 4-42 Fisheye



Step 2 Set install mode and record mode.

Table 4-16 Description of fisheye parameters

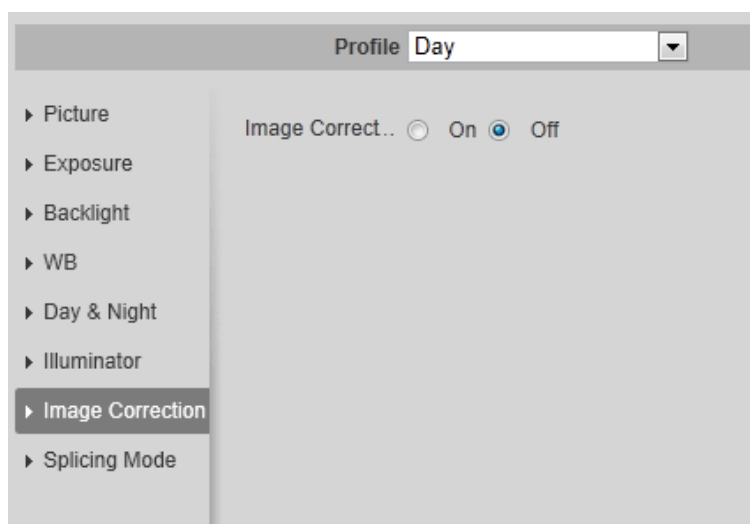
Parameter	Description
Install Mode	Select Ceiling , Wall , or Ground depending on the install environment.
Record Mode	<ul style="list-style-type: none"> • 1O: The original image before correction. • 1P: 360° rectangular panoramic image. • 2P: Only available if the install mode is Ceiling or Ground. Two associated 180° rectangular image screens, and at any time, the two screens form a 360° panoramic image. • 1R: Original image screen + independent sub-screen. You can zoom or drag the image in all the screens. • 2R: Original image screen + two independent sub-screens. You can zoom or drag the image in all the screens. • 4R: Original image screen + four independent sub-screens. You can zoom or drag the image in all the screens. • 1O + 3R: Original image screen + three independent sub-screens. You can zoom or drag the image in original image screen, and move the image (upper and lower) in sub-screens to adjust the vertical view.

Step 3 Click Save.

4.5.1.1.11 Image Correction

The image correction function corrects some bent objects (such as roads) in the image of panoramic splicing cameras at the cost of influencing the field of view.

Figure 4-43 Image correction

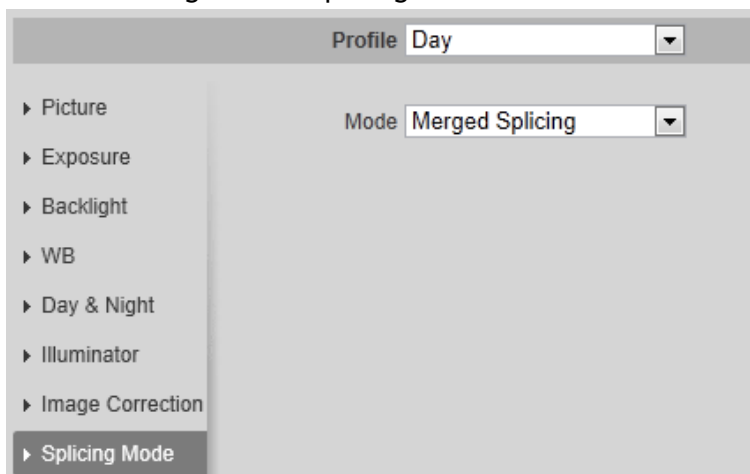


- If the camera has multiple sensors, the image correction function will only be displayed if the number of splicing sensors is 4 or less.
- If the image correction is enabled, intelligent events and sub stream 2 are disabled automatically.

4.5.1.1.12 Splicing Mode

For Panoramic multi lens cameras, select the splicing mode to splice several images of different lenses into a panoramic image. You can select **Merged Splicing** or **Splicing for Mode**.

Figure 4-44 Splicing mode



4.5.1.2 Profile Management

You can set different time periods with their own image condition settings.

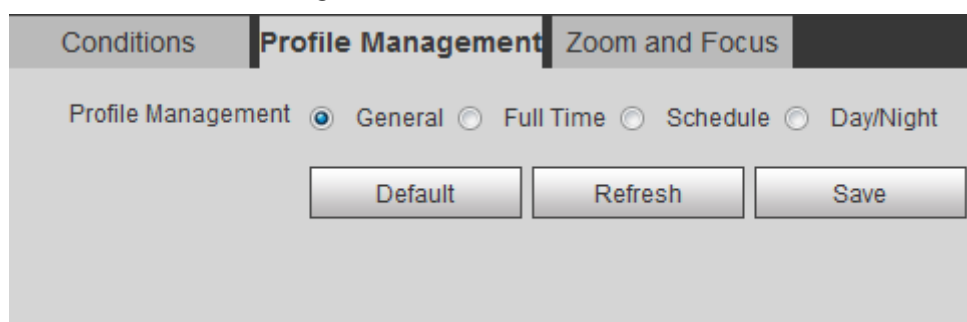
Step 1 Select **Setting > Camera > Conditions > Profile Management**.

The **Profile Management** interface is displayed.

Step 2 Manage profile.

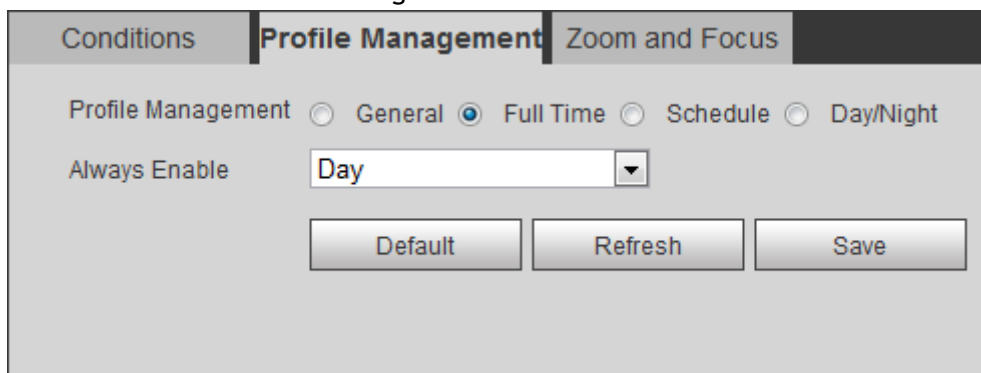
- When **Profile Management** is set as **General**, the camera works under the **default** configuration.

Figure 4-45 General



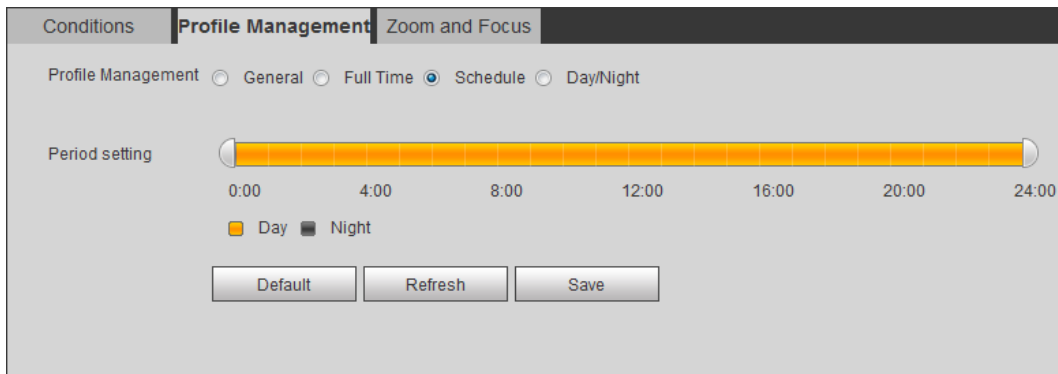
- When **Profile Management** is set as **Full Time**, you can select **Day** or **Night** in the **Always Enable** list, the camera works under **Always Enable** configuration.

Figure 4-46 Full time



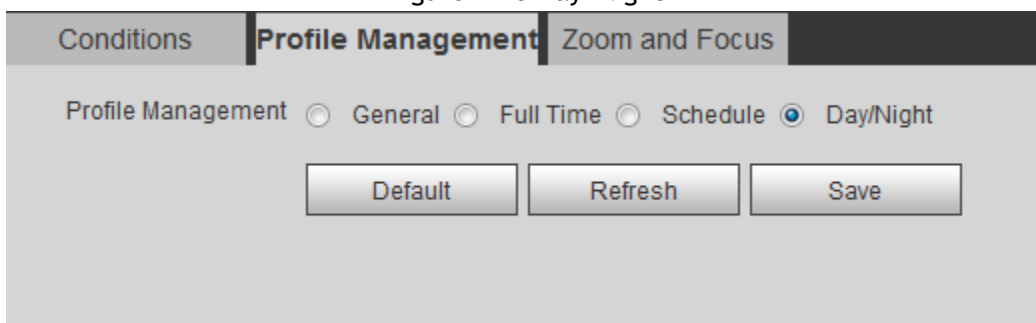
- When **Profile Management** is set as **Schedule**, you can drag the slide block to set certain time as **Day** or **Night**. For example, set 8:00-18:00 as day, and 0:00-8:00 and 18:00-24:00 as night.

Figure 4-47 Schedule



- When **Profile Management** is set as **Day & Night**, the camera works under **Day & Night** configuration.

Figure 4-48 Day/Night



Step 3 Click **Save**.

4.5.1.3 Zoom and Focus

You can adjust image clarity through auto or manual focus; and adjust the image size through zoom. For details, see "4.2.4.2 Zoom and Focus".

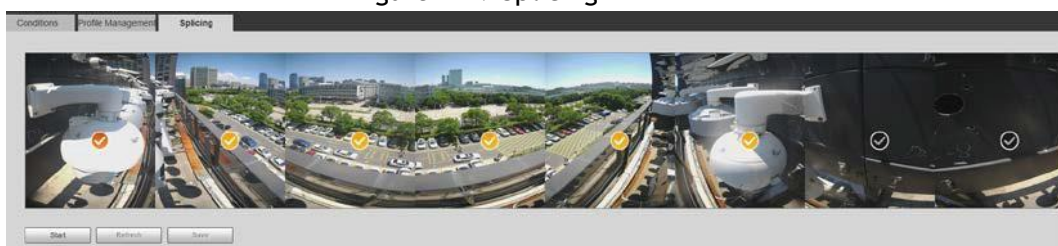
4.5.1.4 Splicing

A panoramic camera contains multiple images captured by different lenses to create a single image. Before splicing, make sure that the camera scene is covering a large area and there are no objects blocking the


camera from taking a clear picture, otherwise, the splicing may fail.

Step 1 Select **Setting > Camera > Conditions > Splicing**.

Figure 4-49 Splicing



Step 2 Select the lenses that need to be spliced.

You will need to select the continuous splicing screens. The screen with the icon  (deeper color) is the first screen of the splicing. You can select any screen as the first one, and then select the following screens continuously. The system supports the splicing of 2 to 8 lenses.



- This function is available on select Panoramic camera models.
- For Multi-Sensor Panoramic + PTZ Camera, the 4-sensor device supports 2 to 4 lenses splicing; the 6-sensor device supports 2 to 6 lenses splicing; the 8-sensor device supports 2-8 lenses splicing.

Step 3 Click **Start**.

The system will start to splice the image.

- Some cameras restart automatically after splicing is complete, You can view the results of the splicing in the **Live** window.
- Some cameras display splicing live window after splicing is complete. Click **OK**, and then the default window will appear. Click **OK** to have the splicing take effect.

4.5.2 Setting Video Parameters

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



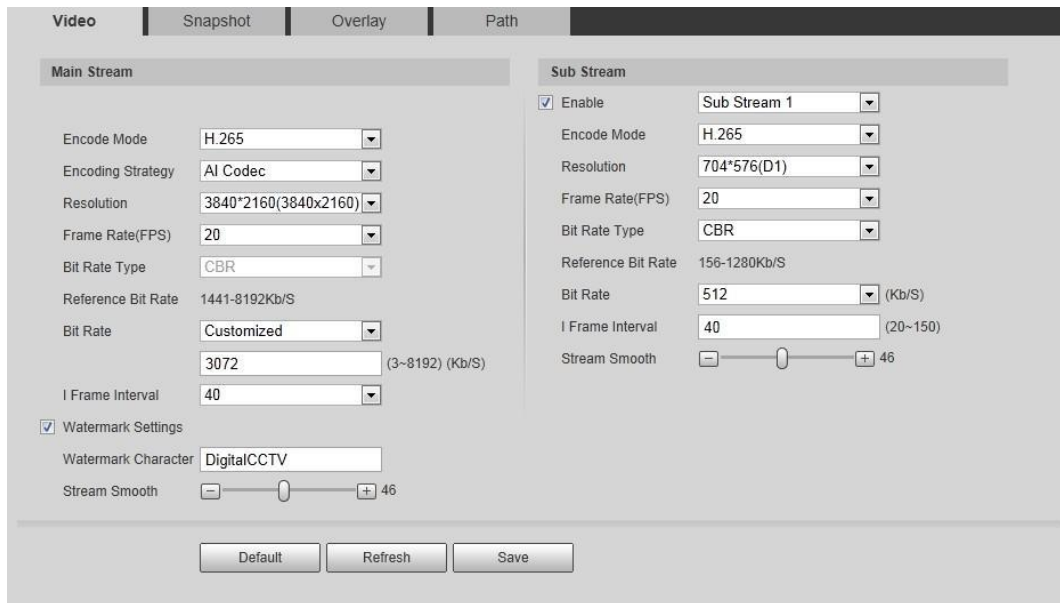
Click **Default**, and the device is restored to the default configuration. Click **Refresh** to view the latest configuration.

4.5.2.1 Video

This section contains video stream parameters, such as stream type, encode mode, resolution, frame rate, bit rate type, bit rate, I frame interval, SVC, and watermark.


Step 1 Select **Setting > Camera > Video > Video**.

Figure 4-50 Video







Step 2 Configure video parameters.

Table 4-17 Description of video parameters

Parameter	Description
Enable	<p>Select the Enable checkbox to enable sub stream. It is enabled by default. Disabling sub stream can cause issues with viewing on mobile apps.</p>  <ul style="list-style-type: none"> You can enable multiple sub streams simultaneously if it is supported by the camera model. When the device enables image correction, intelligent event and sub stream 2 are closed automatically.
Encode Mode	<p>Select encode mode.</p> <ul style="list-style-type: none"> H.264: Main profile encode mode. Compared with H.264B, it requires smaller bandwidth. H.264H: High profile encode mode. Compared with H.264, it requires smaller bandwidth. H.264B: Baseline profile encode mode. It requires smaller bandwidth. H.265: Main profile encode mode. Compared with H.264, it requires smaller bandwidth. MJPEG: This mode requires high bit rate value to ensure clarity, and is only typically used with some legacy type streaming Integration.

Parameter	Description
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<p>Encoding Strategy</p>	<p>Select the encoding strategy as necessary.</p> <ul style="list-style-type: none"> • General: Disables smart codec. • Smart Codec: Enable smart codec to improve video compressibility and save storage space. It is applicable to static scenes. • AI Code: When the bandwidth and storage space are restricted, the camera will select the encoding strategy with a lower bit rate to save storage space. It is applicable to dynamic scenes. <p>When AI codec is enabled, the Bit Rate Type is CBR, and it cannot be changed. Compared to general mode, AI codec has a lower bite rate. This function is only available on cameras with AI functions.</p> <p></p> <p>If smart codec and AI codec are enabled, the camera will not support the third stream, ROI, and smart event detection (IVS).</p>
<p>Resolution</p>	<p>The resolution of the video. the greater the value, the clearer the image will be, but the greater the bandwidth required.</p>
<p>Video Clip</p>	<p>This function is available only for sub stream 2 of some select models.</p> <ul style="list-style-type: none"> • Main stream <ol style="list-style-type: none"> 1. Select the resolution as needed, and click  next to Resolution. The Area interface is displayed. 2. Clip the image on the Area interface, and then click Save. View the clipped video on Live interface. • Sub stream 2 <ol style="list-style-type: none"> 1. Select Video Clip, and click . The Area interface is displayed. 2. View the clipped video on Live interface (only the live interface of sub stream 2 displays the clipped area).
<p>Frame Rate (FPS)</p>	<p>The number of frames in one second of video. the greater the value, the clearer and smoother the video will be.</p>

Bit Rate Type	<p>The bit rate control type during video data transmission. You can select bit rate type from:</p> <ul style="list-style-type: none"> • 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. <p> If the Encode Mode is set as MJPEG, the Bit Rate Type can be only be set as CBR .</p>
Quality	<p>This parameter can be configured only when the Bit Rate Type is set as VBR.</p> <p>The better the quality is, the larger the bandwidth requested.</p>

Parameter	Description
Reference Bit Rate	The most suitable bit rate value range recommended to the user according to the defined resolution and frame rate.
Max Bit Rate	<p>This parameter can be configured only when the Bit Rate Type is set as VBR.</p> <p>You can select the value of the Max Bit Rate according to the Reference Bit Rate value. The bit rate then changes as the monitoring scene changes, but the max bit rate will stay close to the defined value.</p>
Bit Rate	<p>This parameter can be configured only when the Bit Rate Type is set as CBR.</p> <p>Select bit rate value in the list according to desired conditions. You can also customize the value.</p>
I Frame Interval	<p>This parameter can be configured only when Encoding Strategy is set as General or AI Codec.</p> <p>The number of P frames between two I frames. The smaller the value, the higher the image quality, and the range changes as Frame Rate(FPS) changes. It is recommended to set I Frame Interval twice as big as Frame Rate(FPS).</p> <p>When selecting AI Codec in Encoding Strategy, you can only select the value same as or twice as big as Frame Rate(FPS).</p>
SVC	<p>Scaled video coding, able to encode a high quality video bit stream that contains one or more subset bit streams. When sending stream, to improve fluency, the system will quit some data of related lays according to the network status.</p> <ul style="list-style-type: none"> • 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 Settings	You can verify the watermark to check if the video has tampered.
Watermark Character	<ol style="list-style-type: none"> 1. Select the checkbox to enable watermark function. 2. The default character is DigitalCCTV.

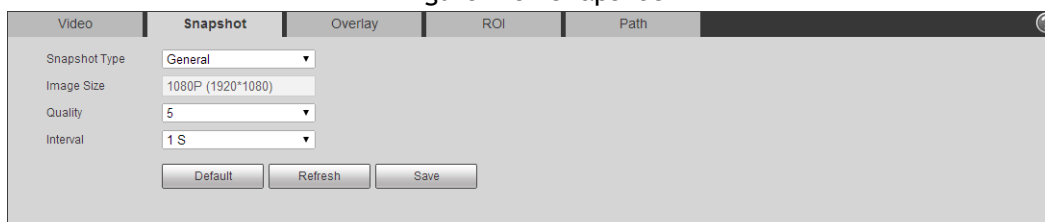
Step 3 Click **Save**.

4.5.2.2 Snapshot

You can configure snapshot parameters, including snapshot type, image size, quality and interval.

Step 1 Select **Setting > Camera > Video > Snapshot**.

Figure 4-51 Snapshot



Step 2 Configure snapshot parameters.

Table 4-18 Description of snapshot parameter

Parameter	Description
Snapshot Type	<p>You can select General and Event.</p> <ul style="list-style-type: none"> General: The system takes snapshot as scheduled. For details, see "4.7.2 Setting Schedule". Event: The system takes snapshot when the video detection, audio detection, event, or alarm is triggered. This function requires the corresponding event to be enabled.
Image Size	The same resolution as the main stream.
Quality	Configures the snapshot quality. There are six levels of Image quality, the sixth being the best.
Interval	<p>Configures the snapshot frequency.</p> <p>Select Customized to configure snapshot frequency manually.</p>

Step 3 Click **Save**.

4.5.2.3 Overlay

This section configures overlay information displayed on the **Live** interface.

4.5.2.3.1 Configuring Privacy Masking

Enable this function when you need to protect the privacy of some areas on the video image.



Functions may vary with different models.

Privacy Masking (1)

Step 1 Select **Setting > Camera > Video > Overlay > Privacy Masking**.

Figure 4-52 Privacy masking (1)

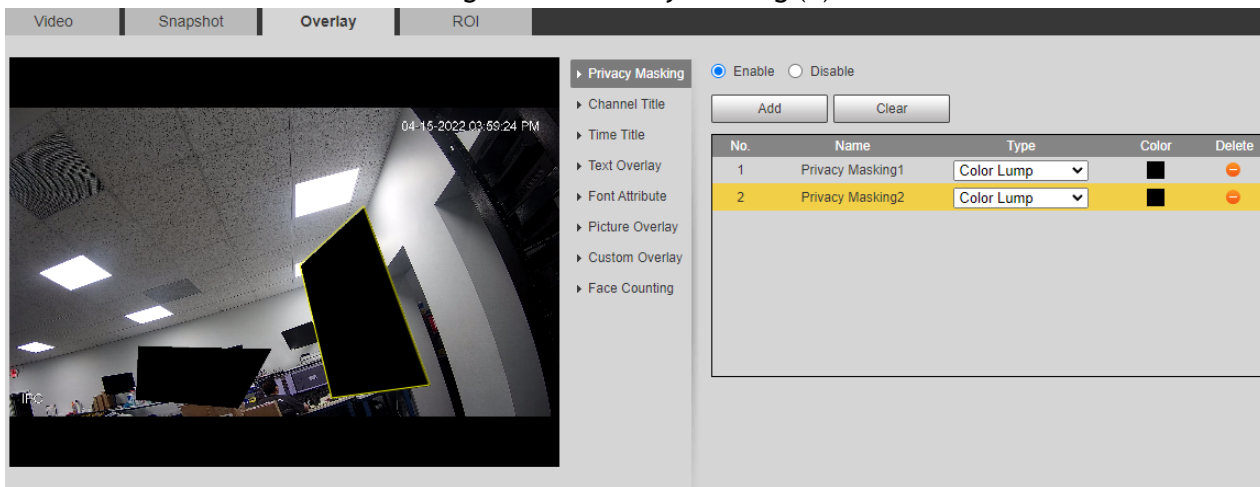
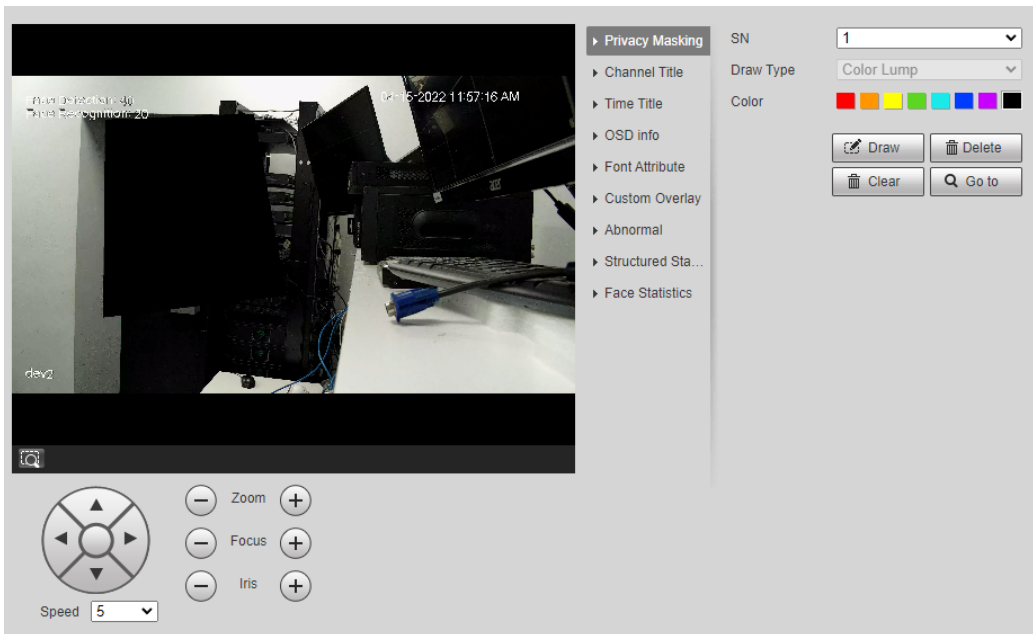


Figure 4-53 Privacy masking (PTZ dome)



Step 2 Configure privacy masking.

- PTZ dome
 1. Select the SN.
 2. Adjust the live image to the proper location through PTZ, select the color, and then click **Draw**. Press the mouse button to draw rectangles. The configuration takes effect immediately.
 3. Other operations:
 - ◇ Select the SN, and click **Go to**, the PTZ will rotate to the masked area.
 - ◇ Select the SN, and click **Delete** to delete the masking rectangles.
 - ◇ Click **Clear**, and then click **OK** to clear all masking rectangles.

- Other cameras
 1. Select **Enable**, and then drag the block to the area that you need to cover.



- ◇ You can drag 4 rectangles max.
- ◇ Click **Remove All** to delete all the area boxes; select one box, and then click **Delete** or right-click to delete it.

2. Adjust the size of the rectangle to protect privacy.
3. Click **Save**.

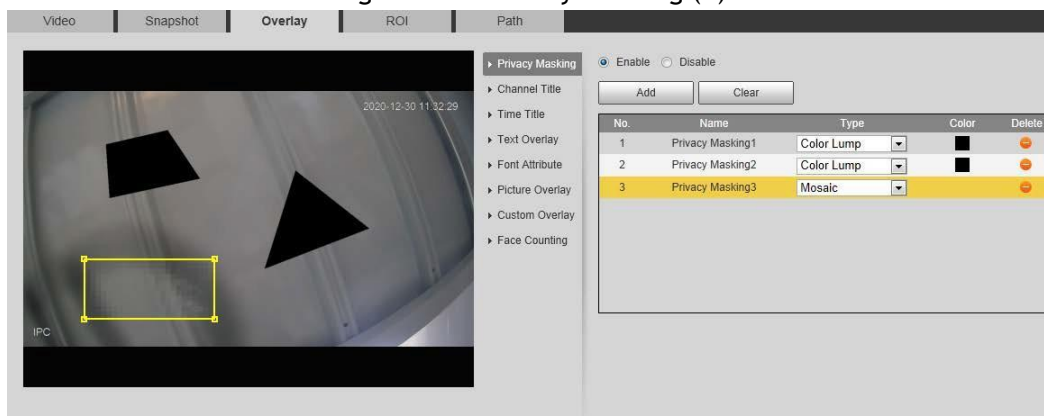
Privacy Masking (2)

- You can select the type of masking from **Color Lump** and **Mosaic**.
- When selecting **Color Lump**, you only can draw triangles and convex quadrilaterals as blocks. You can drag 8 blocks at most, and the color is black.
- When selecting **Mosaic**, you can draw rectangles as blocks with mosaic. You can draw 4 blocks at most.
- **Color Lump + Mosaic (≤4)**: You can draw 8 blocks at most.
- Step 1 Select **Setting > Camera > Video > Overlay > Privacy Masking**.


Step 2 Select **Enable**.

Step 3 Click **Add**, select the masking type, and then draw blocks in the image as needed.

Figure 4-54 Privacy masking (2)



Related Operations

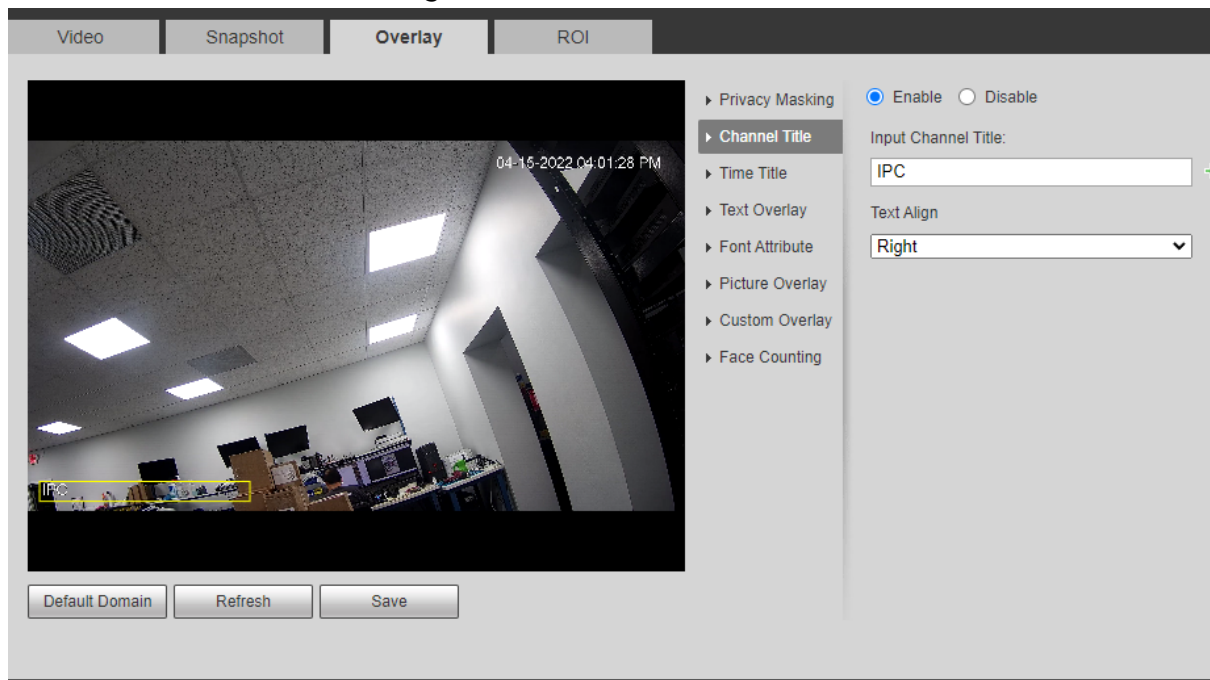
- View and edit the block
 - Select the privacy masking rule to be edited in the list, then the rule is highlighted, and the block frame is displayed in the image. You can edit the selected block as needed, including moving the position, and adjusting the size.
- Edit the block name
 - Double-click the name in **Name** to edit the block name.
- Delete the block
 - ◇ Click  to delete blocks one by one.
 - ◇ Click **Clear** to delete all blocks.

Configuring Channel Title

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


Step 1 Select **Setting > Camera > Video > Overlay > Channel Title**.

Figure 4-55 Channel title



Step 2 Select the **Enable** checkbox, enter the channel title, and then select the text align.



Click  to expand the channel title, and you can expand 1 line at most.

Step 3 Move the title box to the position that you want in the image. **Step**

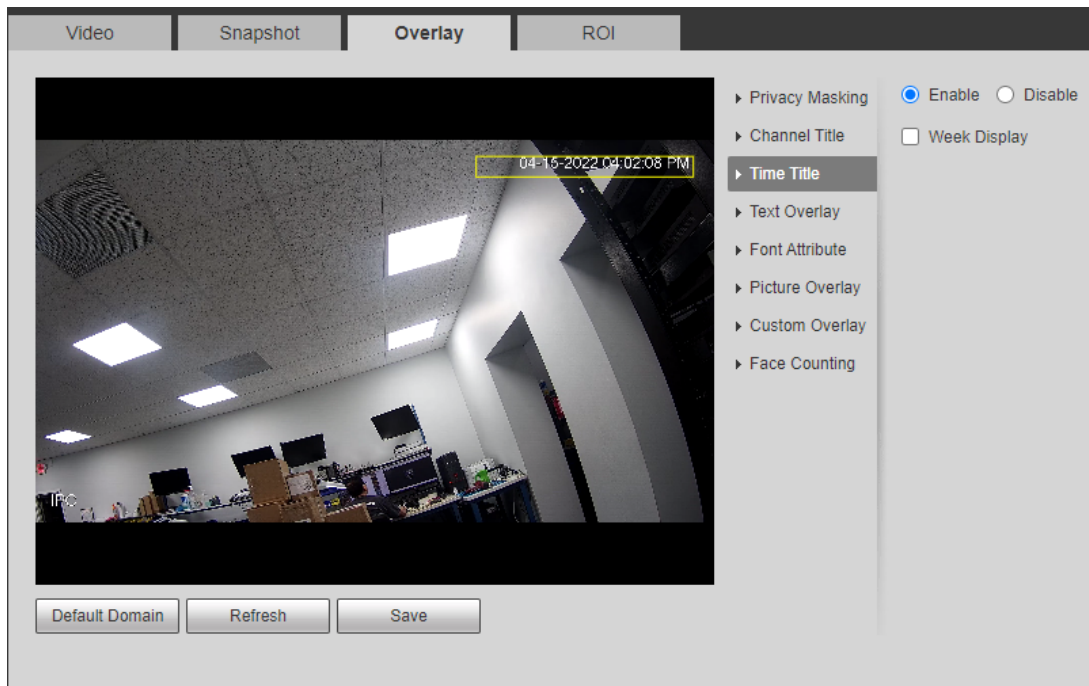
4 Click **Save**.

4.5.2.3.2 Configuring Time Title

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

Step 1 Select **Setting > Camera > Video > Overlay > Time Title**.

Figure 4-56 Time title



Step 2 Select the **Enable** checkbox.

Step 3 Select the **Week Display** checkbox.

Step 4 Move the time box to the position that you want in the image. **Step**

5 Click **Save**.

4.5.2.3.3 Configure Text Overlay

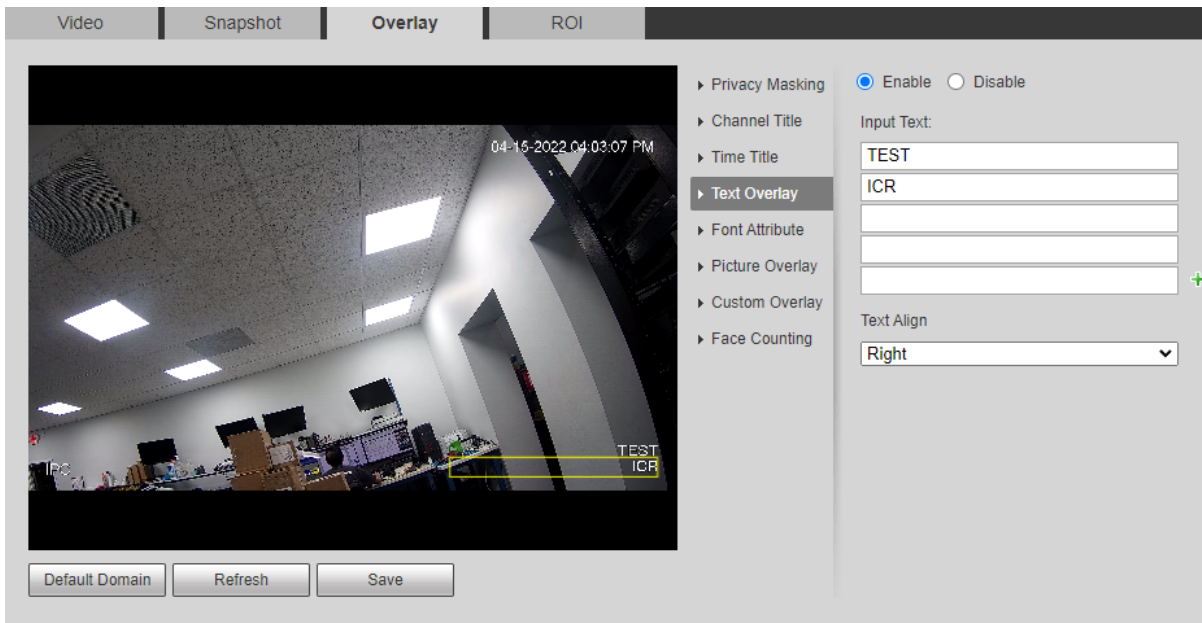
You can enable this function if you need to display text in the video image.



Text overlay and picture overlay cannot be enabled simultaneously. An IPC connecting to mobile NVR with private protocol will display GPS information as priority.

Step 1 Select **Setting > Camera > Video > Overlay > Text Overlay**.

Figure 4-57 Text overlay



Step 2 Select the **Enable** checkbox, enter the text you need, and then select alignment. The text will be displayed in the video image.



Click to expand the text overlay, and you can expand 9 lines at most.

Step 3 Move the text box to the position that you want in the image. **Step**

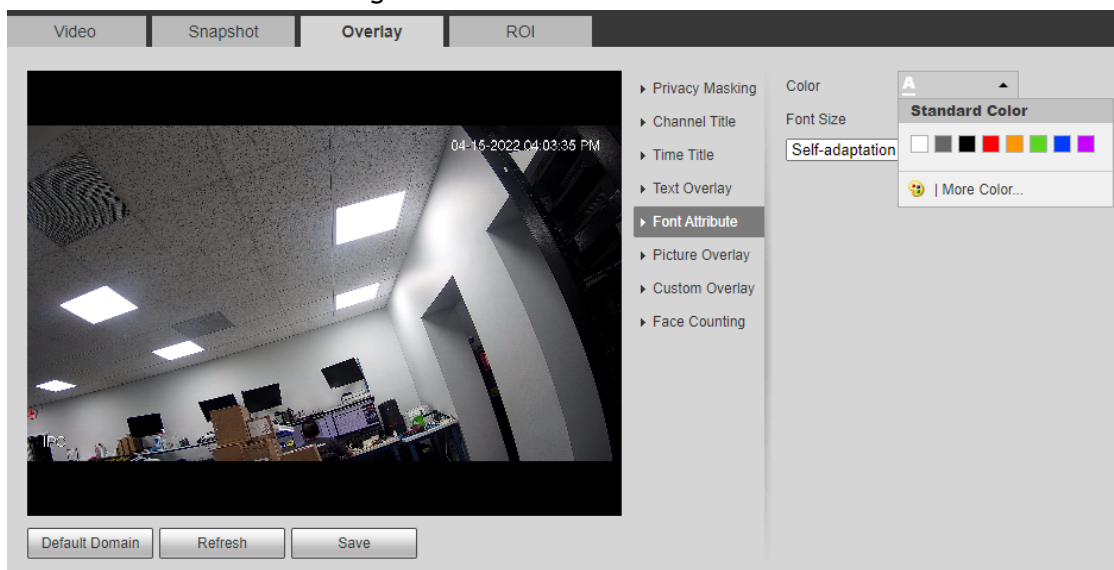
4 Click **Save**.

4.5.2.3.4 Configure Font Attribute

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

Step 1 Select **Setting > Camera > Video > Overlay > Font Attribute**.

Figure 4-58 Font attribute



Step 2 Select the font color and size.

Click **More Color** to customize the font color.

Step 3 Click **Save**.

4.5.2.3.5 Configure Picture Overlay

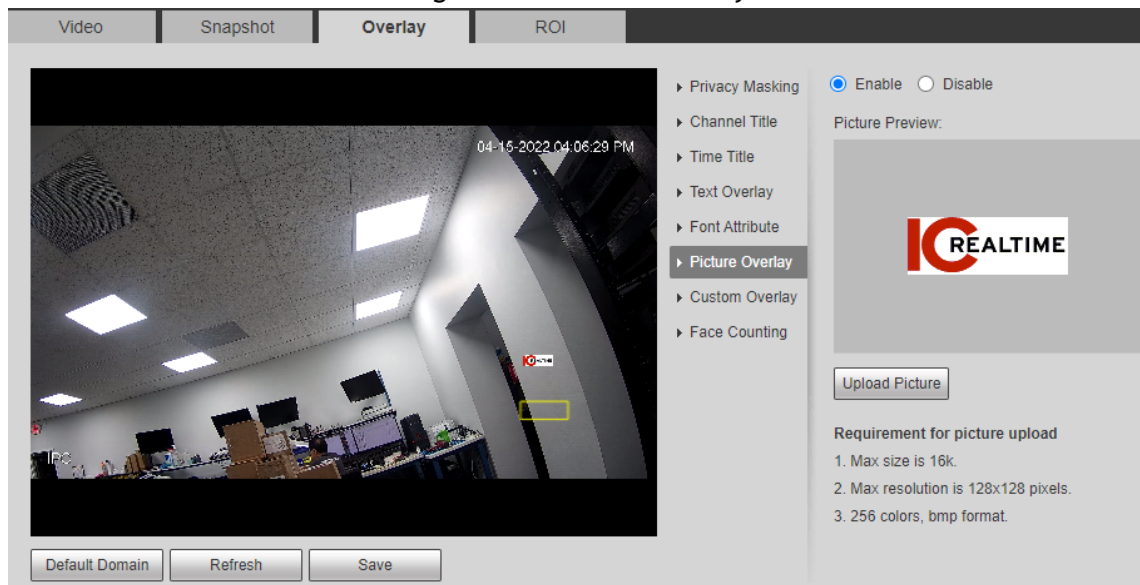
You can enable this function if you need to display picture information on the video image.



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

Step 1 Select **Setting > Camera > Video > Overlay > Picture Overlay**.

Figure 4-59 Picture overlay



Step 2 Select the **Enable** checkbox, click **Upload Picture**, and then select the picture to be overlaid.

The picture is displayed on the video image.

Step 3 Move the overlaid picture to the position that you want in the image. Step

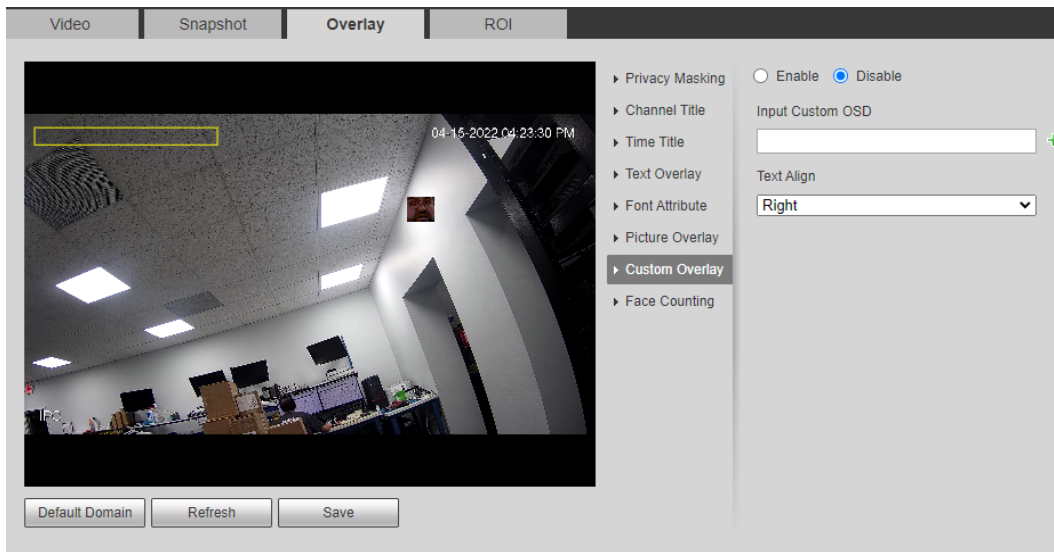
4 Click **Save**.

4.5.2.3.6 Configure Custom Overlay

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

Step 1 Select **Setting > Camera > Video > Overlay > Custom Overlay**.

Figure 4-60 Custom overlay



Step 2 Select the **Enable** checkbox, and then select the text align.



Click  to expand the custom overlay, and you can expand 1 line at most.

Step 3 Move the custom box to the position that you want in the image. **Step**

4 Click **Save**.

4.5.2.3.7 Configuring OSD Info

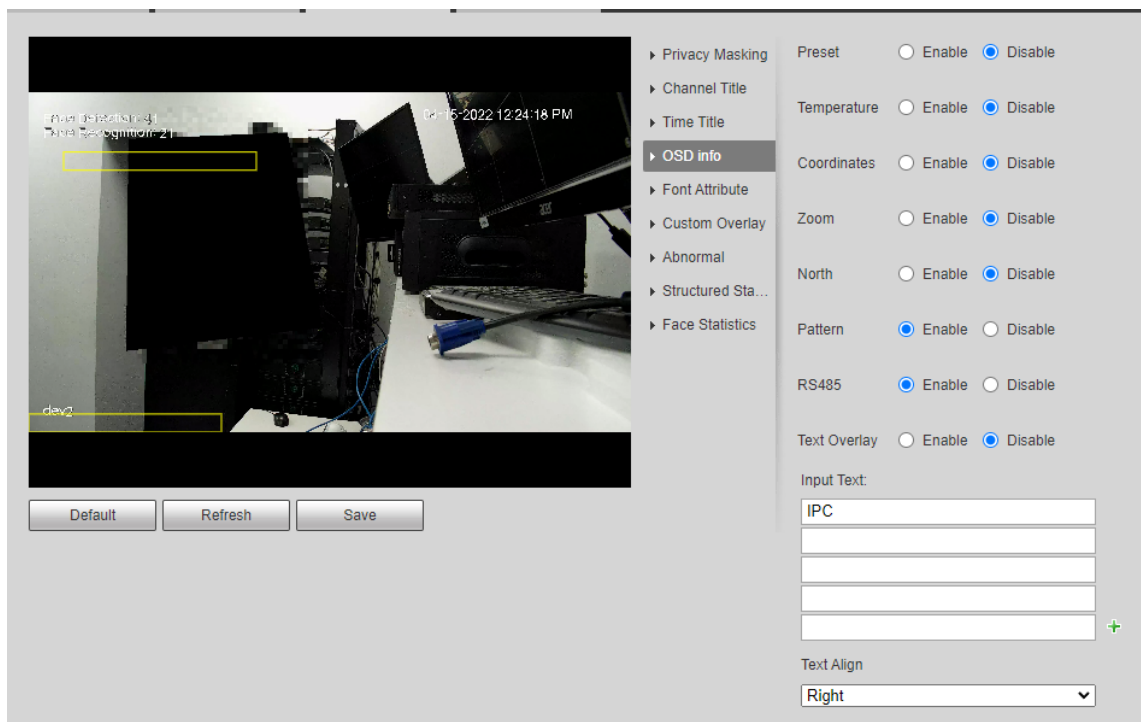
You can enable this function if you want to display the information of preset, PTZ coordinates, zoom, tour and location on the video image.



Only tracking PTZ supports OSD info function.


Step 1 Select **Setting > Camera > Video > Overlay > OSD Info**.

Figure 4-61 OSD information



Step 2 Configure OSD information.

Table 4-19 Description of OSD information

Parameter	Description
Preset	Select Enable , and the preset name is displayed in the image when the camera turns to the preset, and it will disappear 3 s later.
Temperature	Select Enable and the internal temperature of the current device is displayed.
Coordinates	Select Enable and the PTZ coordinates info is displayed in the image.
Zoom	Select Enable and the zoom info is displayed in the image. such as  , which means 12x zoom rate.
North	Select Enable and the north direction is displayed in the image.
RS485	Select Enable and it will enable RS-485 communication function.
Text	Select Enable and set text, and the text is displayed in the image.
Input Text	
Text Align	Alignment mode of the displayed information in the image.

Step 3 Move the OSD box to the position that you want in the image. **Step**

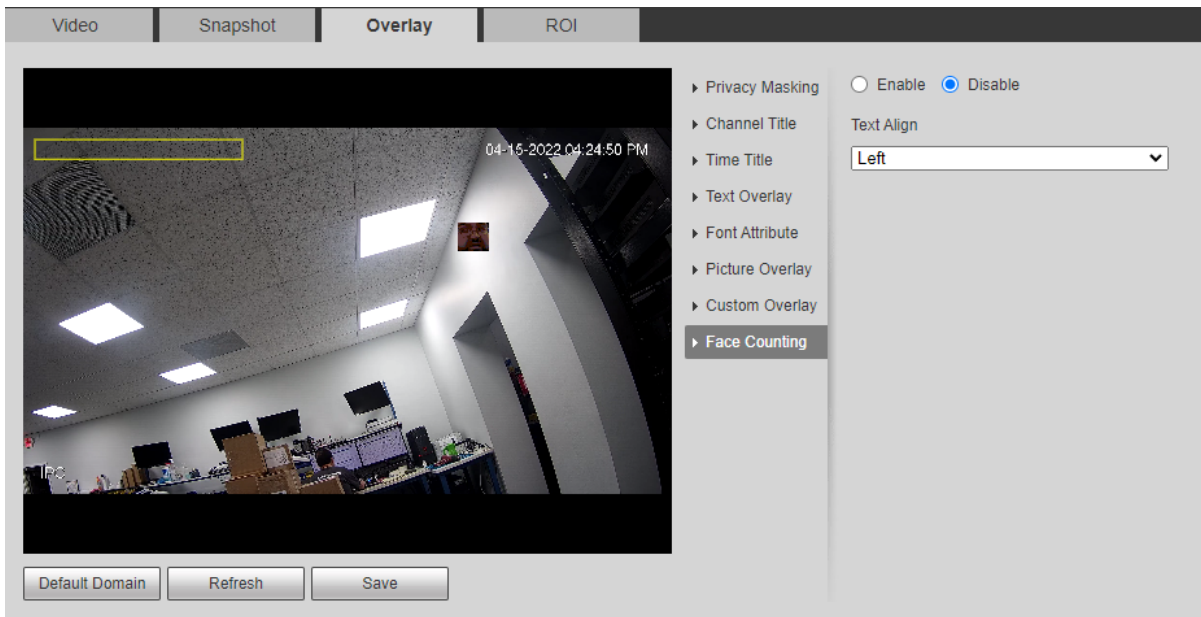
4 Click **Save**.

4.5.2.3.8 Configuring Counting

The image displays statistics of the people entering and leaving numbers. When the overlay function is enabled during intelligent rules configuration, this function is enabled simultaneously.

Step 1 Select **Setting > Camera > Video > Overlay > Counting**.

Figure 4-62 Counting



Step 2 Select the **Enable** checkbox, and then configure the counting method and alignment.

Step 3 Move the counting box to the position that you want in the image.

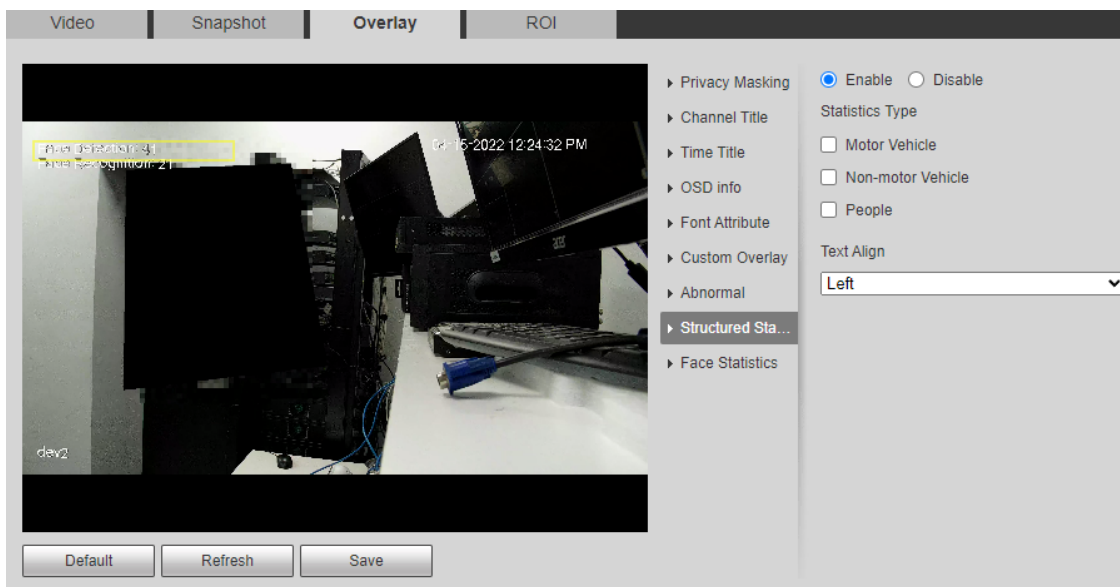
Step 4 Click **Save**.

4.5.2.3.9 Configuring Structured Statistics

The image displays structured statistics. When the overlay function is enabled during intelligent rules configuration, this function is enabled simultaneously.

Step 1 Select **Setting > Camera > Video > Overlay > Structured Statistics**.

Figure 4-63 Structured statistics



Step 2 Select the **Enable** checkbox, select the statistics type, and then select text align.

Step 3 Move the structured statistics box to the position that you want in the image.

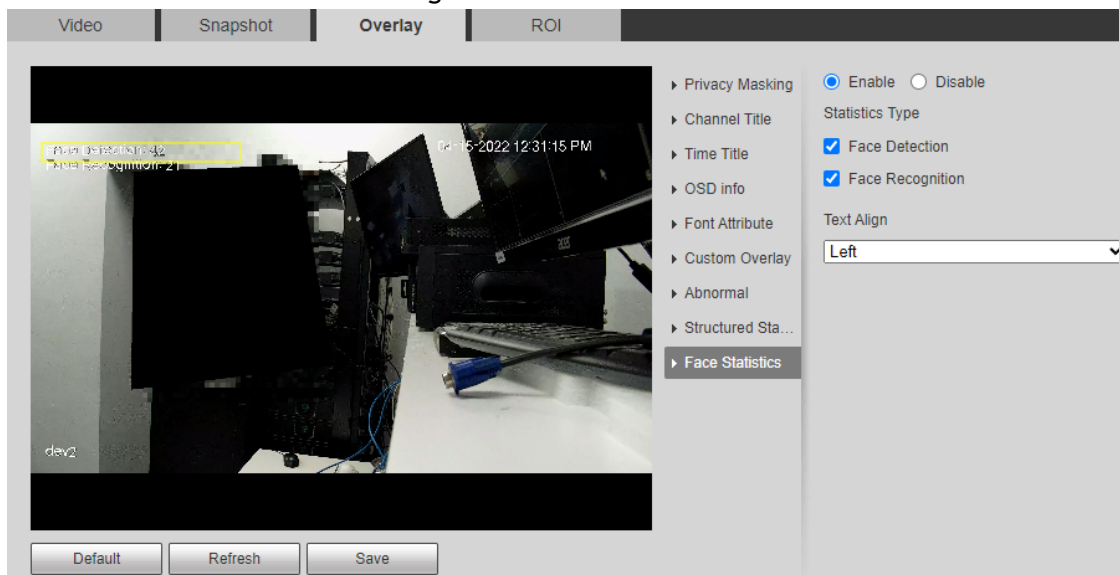
Step 4 Click **Save**.

4.5.2.3.10 Configuring Face Statistics

The image displays face statistics information. When the overlay function enabled during intelligent rules configuration, this function is enabled simultaneously.

Step 1 Select **Setting > Camera > Video > Overlay > Face Statistics**.

Figure 4-67 Face statistics



Step 2 Select the **Enable** checkbox, and select text align.

Step 3 Move the structured statistics box to the position that you want in the image.

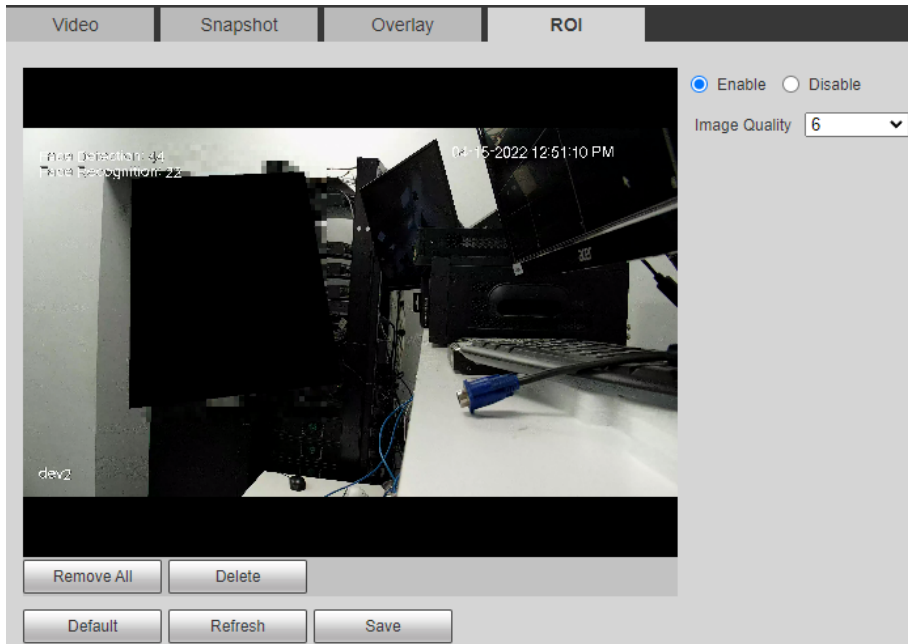
Step 4 Click **Save**.

4.5.2.4 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 **Setting > Camera > Video > ROI**.

Figure 4-68 ROI



Step 2 Select the **Enable** checkbox, draw the area on the image, and then configure the image quality of ROI.



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

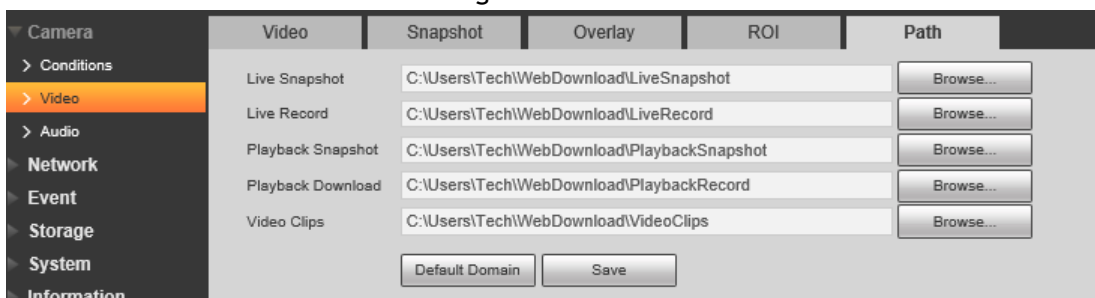
Step 3 Click **Save**.

4.5.2.5 Path

This section allows you to configure the storage path for live snapshot, live record, playback snapshot, playback download, and video clips. This section is only available when using Internet Explorer with plugins installed.

Step 1 Select **Setting > Camera > Video > Path**.

Figure 4-69 Path



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

Table 4-20 Description of path

Parameter	Description
Live Snapshot	The snapshot of live interface. The default path is C:\Users\admin\WebDownload\LiveSnapshot.
Live Record	The recorded video of live interface. The default path is C:\Users\admin\WebDownload\LiveRecord.
Playback Snapshot	The snapshot of playback interface. The default path is C:\Users\admin\WebDownload\PlaybackSnapshot.
Playback Download	The downloaded video of playback interface. The default path is C:\Users\admin\WebDownload\PlaybackRecord.
Video Clips	The clipped video of playback interface. The default path is C:\Users\admin\WebDownload\VideoClips.



Admin in the path refers to the account being used.

Step 3 Click **Save**.

4.5.3 Audio

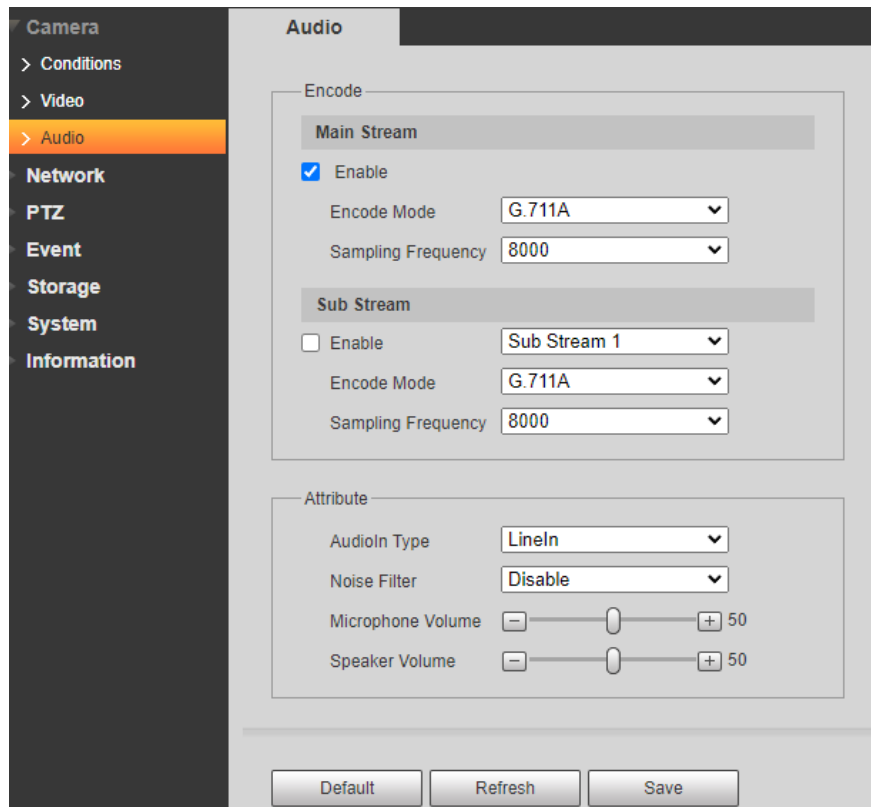
This section allows you to configure audio parameters and alarm audio.

4.5.3.1 Configuring Audio Parameter

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

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

Figure 4-70 Audio



Step 2 Select the **Enable** checkbox in **Main Stream** or **Sub Stream**.
For the camera with multiple channels, select the channel number.



Please be mindful of local laws and regulations when enabling and recording audio.

Step 3 Configure audio parameters.



Table 4-21 Description of audio parameters

Parameter	Description
Encode Mode	You can select audio Encode Mode from G.711A , G.711Mu , AAC , G.726 . 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 value, the more the samples in a second, and the restored signal will be more accurate. You can select audio Sampling Frequency from 8K , 16K , 32K , 48K , 64K .
Audio in Type	You can select audio in type from: <ul style="list-style-type: none"> • Line-in: Requires external audio device. • Mic: Not require an external audio device. Uses the camera’s built-in microphone.
Noise Filter	Enable this function to auto filter ambient noise.
Microphone Volume	Adjusts microphone volume.
Speaker Volume	Adjusts speaker volume.

Step 4 Click **Save**.

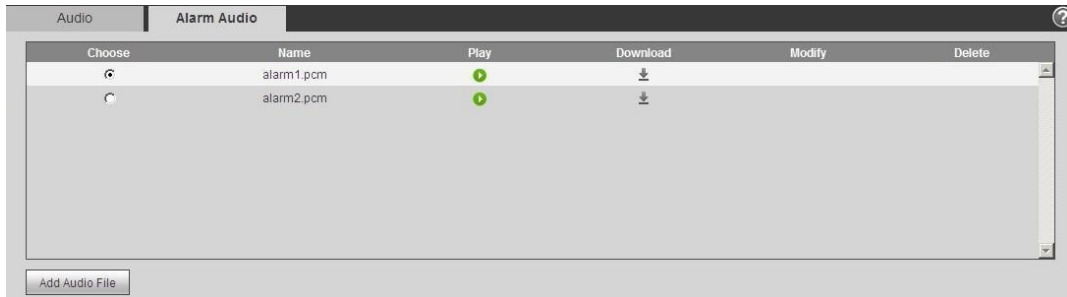
4.5.3.2 Configuring Alarm Audio

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

- Click  to play the selected audio.
- Click  to download the audio to local storage.

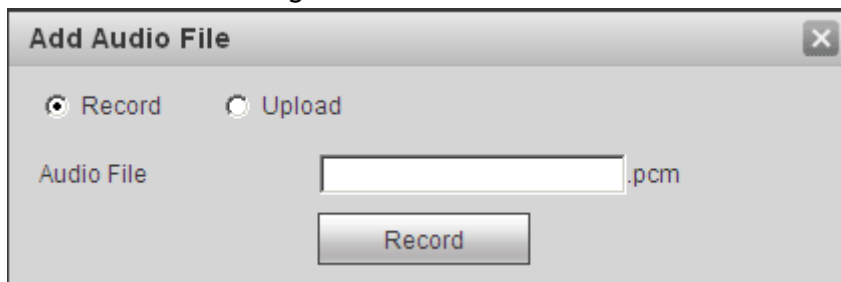
Step 1 Select **Setting > Camera > Audio > Alarm Audio**.

Figure 4-71 Alarm audio




Step 2 Click **Add Audio File**.

Figure 4-72 Add audio file



Step 3 Configure the audio file.

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



Depending on the model, the camera may support audio files with .mp3 or .wav format.

Step 4 Select the desired file.

4.6 Network

This section introduces network configuration.

4.6.1 TCP/IP

This section allows you to configure the IP address and DNS (Domain Name System) server according to the local network standards and requirements.

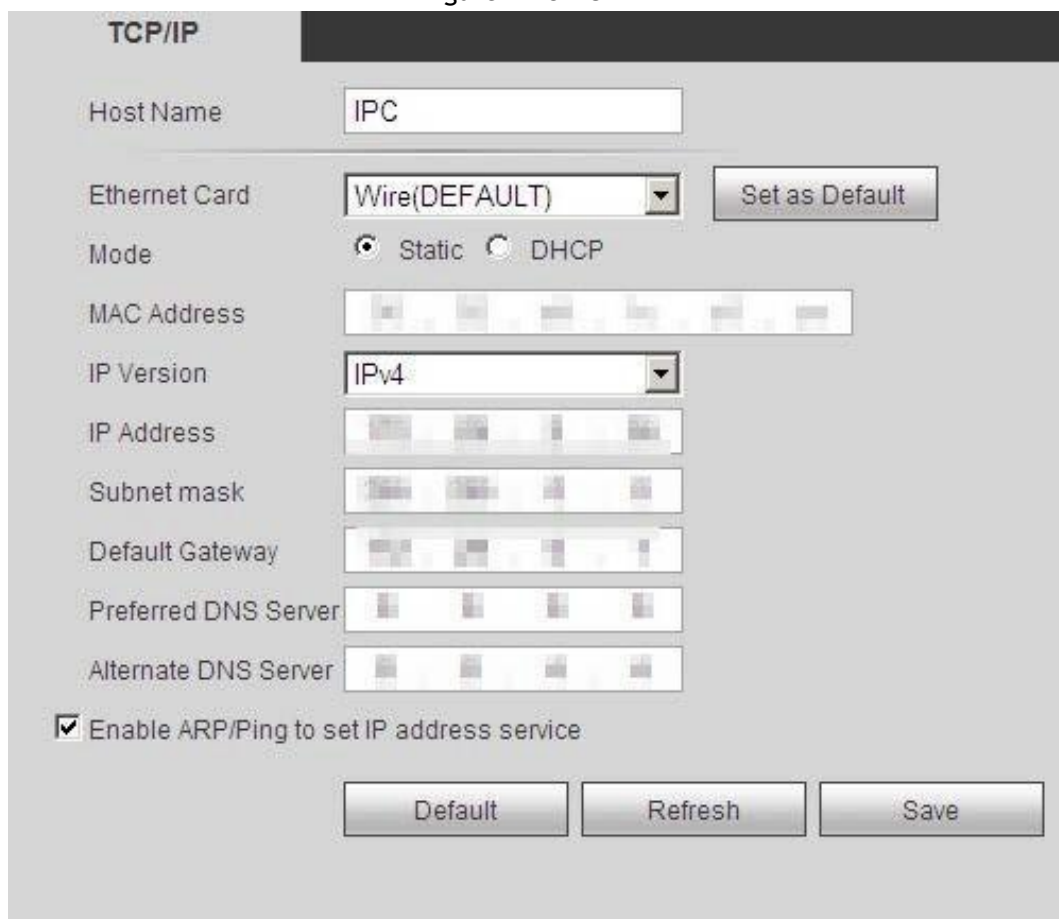
Prerequisites

The camera is connected to a local network.

Procedure

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

Figure 4-73 TCP/IP




Step 2 Configure TCP/IP parameters.

Table 4-22 Description of TCP/IP parameters

Parameter	Description
Host Name	Enter the host name, and the maximum length is 15 characters.
Ethernet Card	Select the Ethernet card to be configured, and the default one is Wired . The Wireless option is for WiFi camera models.
Mode	Select an IP mode: <ul style="list-style-type: none"> • Static (192.168.1.108 if no DHCP pool) Configure IP Address, Subnet Mask, and Default Gateway manually, and then click Save, the login interface with the configured IP address is displayed. • DHCP (default) The camera will acquire an IP address automatically if there is DHCP server in the network.
MAC Address	Displays host MAC address.
IP Version	Select IPv4 or IPv6 .

IP Address	When you select Static in Mode , enter the IP address and subnet mask as necessary.
Subnet Mask	

Parameter	Description
Default Gateway	 <ul style="list-style-type: none"> IPv6 does not have subnet mask. The default gateway must be in the same network segment with the IP address.
Preferred DNS	IP address of the preferred DNS.
Alternate DNS	IP address of the alternate DNS.
Enable ARP/Ping to set IP address service	<p>Select the checkbox and acquire the camera MAC address. You can then modify and configure the device IP address with ARP/ping command.</p> <p>This is enabled by default. If this is not enabled, the IP address cannot be configured with a ping packet.</p> <p>A demonstration of configuring IP address with ARP/Ping.</p> <ol style="list-style-type: none"> Have the camera and a PC within the same local network, and then acquire a usable IP address. Get the MAC address of the camera from the device label. Open command editor on the PC and enter the following command. <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Windows syntax↕</p> <pre>arp -s <IP Address> <MAC> ↵ ping -l 480 -t <IP Address> ↵</pre> <p>Windows example↕</p> <pre>arp -s 192.168.0.125 11-40-8c-18-10-11↵ ping -l 480 -t 192.168.0.125↵</pre> <p>UNIX/Linux/Mac syntax↕</p> <pre>arp -s <IP Address> <MAC> ↵ ping -s 480 <IP Address> ↵</pre> <p>UNIX/Linux/Mac example↕</p> <pre>arp -s 192.168.0.125 11-40-8c-18-10-11↵ ping -s 480 192.168.0.125↵</pre> </div> <ol style="list-style-type: none"> Restart the camera. Check the PC command line, if information such as Reply from 192.168.0.125... is displayed, the configuration is successful. Enter <code>http://(IP address)</code> in the browser address bar to log in.

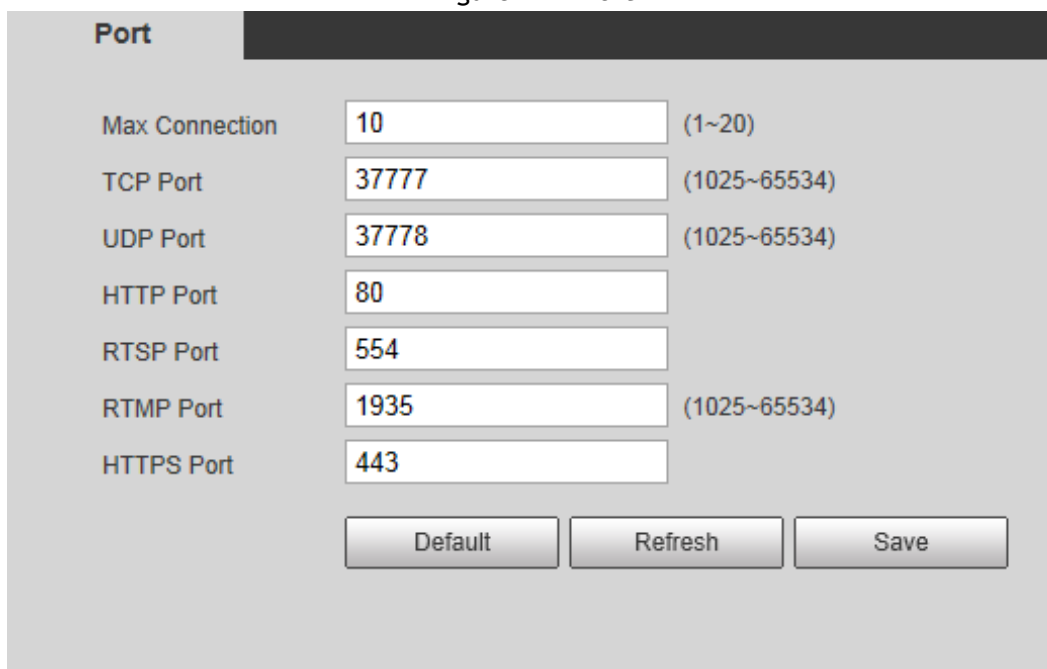
Step 3 Click **Save**.

4.6.2 Port

This section allows the configuration of 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 **Setting > Network > Port**.

Figure 4-74 Port



The screenshot shows the 'Port' configuration page. It features a table with the following fields and values:

Port	Value	Range
Max Connection	10	(1~20)
TCP Port	37777	(1025~65534)
UDP Port	37778	(1025~65534)
HTTP Port	80	
RTSP Port	554	
RTMP Port	1935	(1025~65534)
HTTPS Port	443	

At the bottom of the page, there are three buttons: **Default**, **Refresh**, and **Save**.

Step 2 Configure port parameters.




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

Table 4-23 Description of port parameters

Parameter	Description
RTSP Port	<ul style="list-style-type: none"> Real time streaming protocol port, the value is 554 by default. You can use software like VLC player to view the RTSP stream with a command. <p>URL format example: <code>rtsp://username:password@ip:port/cam/realmonitor?channel=1&subtype=0</code></p> <ul style="list-style-type: none"> Username: The user name, such as admin. Password: The password, such as admin. IP: The device IP, such as 192.168.1.112. Port: Leave it if the value is 554 by default. Channel: The channel number, which starts from 1. For example, if you are using channel 2, then the channel=2. Subtype: The bit stream type; 0 means main stream (Subtype=0) and 1 means sub stream (Subtype=1). <p>Example: If you require the sub stream of channel 2 from a certain device, then the URL should be: <code>rtsp://admin:admin@10.12.4.84:554/cam/realmonitor?channel=2&subtype=1</code> If user name and password are not needed, then the URL can be: <code>rtsp://ip:port/cam/realmonitor?channel=1&subtype=0</code></p>
RTMP Port	Real Time Messaging Protocol. The port that provides RTMP service. It is 1935 by default.
HTTPS Port	HTTPS communication port. It is 443 by default.

Step 3 Click Save.

 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.

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

4.6.3 PPPoE

Point-to-Point Protocol over Ethernet, a type of remote access protocol that the camera uses to connect to the internet by acquiring a WAN dynamic IP address. You will need to acquire the PPPoE username and password from the internet service provider, and then set up network connection through PPPoE.

Prerequisites

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

Procedure

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

Figure 4-75 PPPoE



Step 2 Select the **Enable** checkbox, and then enter user name and password.



- Disable UPnP while using PPPoE to avoid possible network issues.
- After making a PPPoE connection, the device IP address cannot be modified through web interface

Step 3 Click **Save**.

The success prompt box and then the real-time WAN IP address will be displayed. You can access the camera remotely through the given IP address.

4.6.4 DDNS

DDNS, most commonly known as Dynamic DNS, can dynamically update DNS records without the need for human interaction. It will automatically update the domain to the external IP when it changes. IC Realtime cameras come equipped with ICDDNS and feature custom domain name registration.

Prerequisites

Check the type of DNS server supported by the camera.

Procedure

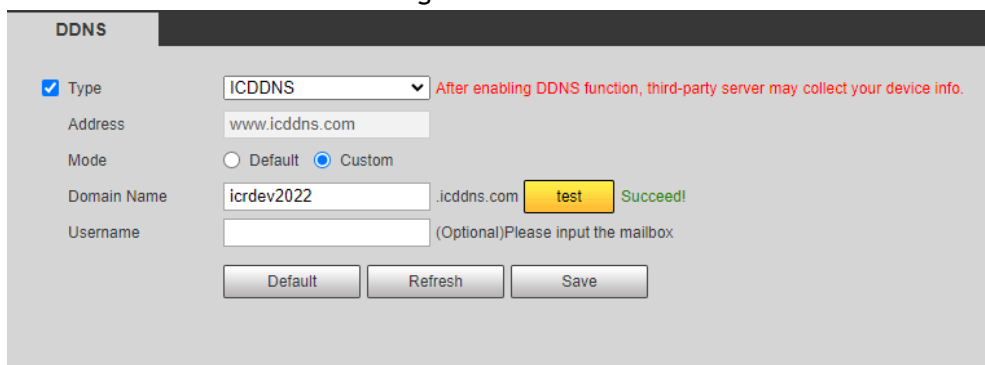
Step 1 Select **Setting > Network > DDNS**.



- Third party server may collect your device information after DDNS is enabled.

- You can register and log in to the ICDDNS website, to view and manage all the connected devices in your account.

Figure 4-76 DDNS



Step 2 Select **Type**, and configure the parameters as needed.

Table 4-24 Description of DDNS parameters

Parameter	Description
Type	Name and web address of the DDNS service providers, see below:
Web Address	<ul style="list-style-type: none"> • ICDDNS web address: www.icddns.com • NO-IP DDNS web address: dynupdate.no-ip.com • Dyndns DDNS web address: members.dyndns.org
Domain Name	The domain name you registered on the DDNS website or a custom domain you create if using ICDDNS.
Test	Only when selecting ICDDNS type, and custom domain you can click test to check whether the domain name registration is successful.
Username	Enter the username and password that you got from the DDNS server provider. You need to register an account (including username and password) on the DDNS server provider's website. This is optional if using ICDDNS.
Password	
Interval	The update cycle of the connection between the device and the server, and the time is 10 minutes by default.

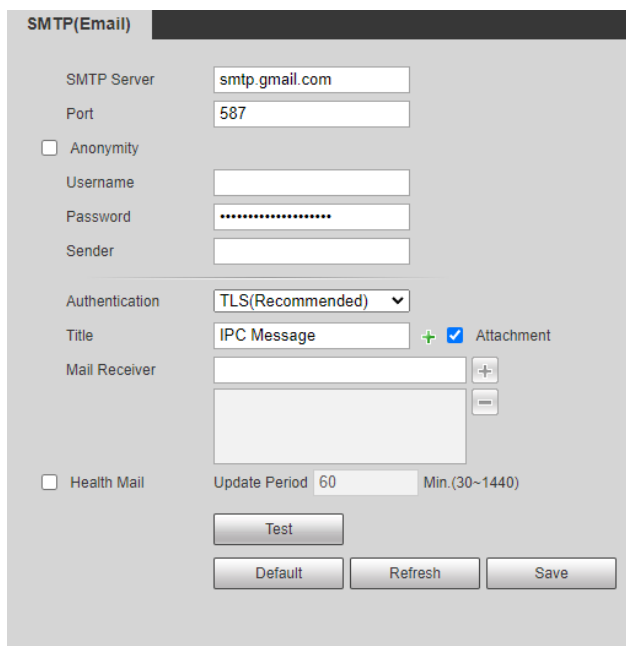
Step 3 Click **Save**.

4.6.5 SMTP (Email)

This section allows for configuring email parameter and enable email linkage. The IPC can send an email to the defined address when the corresponding alarm is triggered.


Step 1 Select **Setting > Network > SMTP (Email)**.

Figure 4-77 SMTP (Email)




Step 2 Configure SMTP (Email) parameters.


Table 4-25 Description of SMTP (Email) parameters

Parameter	Description
SMTP Server	SMTP server address
Port	The port number of the SMTP server.
Username	The account of SMTP server.
Password	The password of SMTP server.
Anonymity	If selected, the sender's information is not displayed in the email.
Sender	Sender's email address.
Authentication	Select Authentication from None , SSL and TLS .  For details, see Table 4-26.
Title	The subject field for the email.
Attachment	Select the checkbox to allow attachments (such as snapshots) in the email.
Mail Receiver	Receiver's email address. Supports 3 addresses at maximum.
Health Mail	The system sends a test mail to check if the connection is successfully configured. Select Health Mail and configure the Update Period , and then the system will send a test mail as the set interval.

For the configuration of major mailboxes, see Table 4-26.

Table 4-26 Description of major mailbox configuration

Mailbox	SMTP server	Authentication	Port	Description
Google	smtp.gmail.com	SSL	465	<ul style="list-style-type: none"> The authentication type cannot be None. The SMTP service in your mailbox must be enabled.  <p>You may need to create an app password in your Google account to use as the password.</p>
		TLS	587	

Mailbox	SMTP server	Authentication	Port	Description
Yahoo	smtp.mail.yahoo.com	SSL	465	<ul style="list-style-type: none"> The authentication type cannot be None. The SMTP service in your mailbox must be enabled  <p>You may need to create an app password in your Yahoo account to use as the password.</p>
		TLS	587	

Step 3 Click **Save**.

Step 4 Click **Test** to test whether the emails can be sent and received successfully.

4.6.6 UPnP

UPnP (Universal Plug and Play), is a protocol that establishes mapping a relation between the local area and wide area network. This function enables you to remotely access your camera by automatically port forwarding with your router.

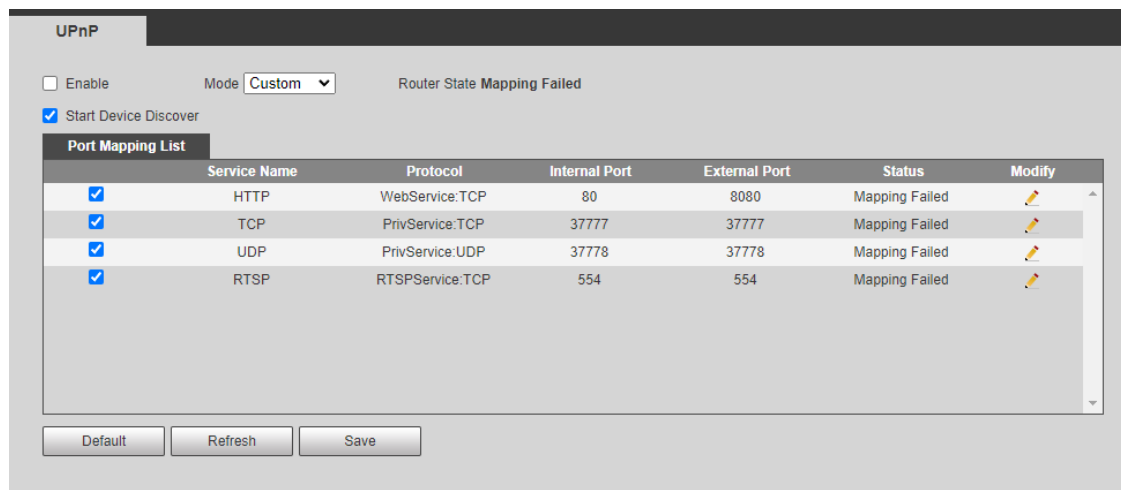
Prerequisites

- Make sure the UPnP service is installed in the local Router.
- Log in the router, and configure WAN IP address to set up internet connection.
- Enable UPnP in the router.
- Connect your IP Camera to the LAN port of the router.
- In the camera, select **Setting > Network > TCP/IP**, in **IP Address**, select **DHCP** to acquire an IP address automatically.


Procedure

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

Figure 4-78 UPnP



Step 2 Select the **Enable** checkbox, and there are two mapping modes: **Custom** and **Default**.

- Select **Custom**, click  to modify the external port as needed.
- Select **Default**, to finish mapping with an unoccupied port automatically, and you cannot modify port mapping

Step 3 Click **Save**.

4.6.7 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.
- Acquire the MIB file from technical support.

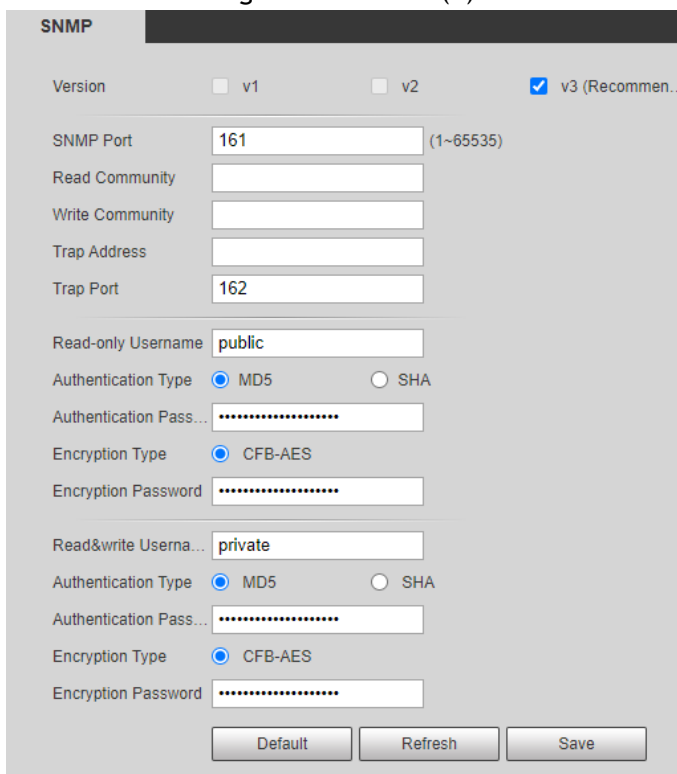
Procedure

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

Figure 4-79 SNMP (1)



Figure 4-80 SNMP (2)



The image shows a configuration window for SNMP. At the top, the title is 'SNMP'. Below it, there are three radio buttons for 'Version': 'v1', 'v2', and 'v3 (Recommen...)', with 'v3' selected. Below the version selection are several input fields: 'SNMP Port' (161), 'Read Community', 'Write Community', 'Trap Address', and 'Trap Port' (162). There are two sections for user authentication. The first section is for 'Read-only Username' (public) with 'Authentication Type' set to MD5 and 'Encryption Type' set to CFB-AES. The second section is for 'Read&write Userna...' (private) with 'Authentication Type' set to MD5 and 'Encryption Type' set to CFB-AES. At the bottom, there are three buttons: 'Default', 'Refresh', and 'Save'.

Step 2 Select SNMP version to enable SNMP.


- Select **V1** to only process information of V1 version.
- Select **V2** to only process information of V2 version.
- Select **V3**, (**V1** and **V2** will become unavailable.) You can configure user name, password and authentication type from your server.





Using **V1** and **V2** is less secure, and **V3** is recommended.

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

Table 4-27 Description of SNMP parameters

Parameter	Description
SNMP Port	The listening port of the software agent in the device.
Read Community, Write Community	The read and write community string that the software agent supports.  You can enter number, letter, underline and dash to form the name.
Trap Address	The target address of the Trap information sent by the software agent in the device.
Trap Port	The target port of the Trap information sent by the software agent in the device.

Read-only Username	<p>Set the read-only username accessing the device, it is public by default.</p>  <p>You can enter number, letter, and underline to form the name.</p>
Read/Write Username	<p>Set the read/write username access device, it is public by default.</p>  <p>You can enter number, letter, and underline to form the name.</p>
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.

Result

Step 3 Click **Save**.

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 the version to search.
5. Unfold all the tree lists displayed in the MG-SOFT MIB Browser, to view the configuration information, video channel amount, audio channel amount, and software version.



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

4.6.8 Bonjour

Bonjour allows for zero-configuration networking between different types of devices. You can use it to find other Apple services on a network, connect to other devices like network printers (that provide Bonjour support), or access shared drives.

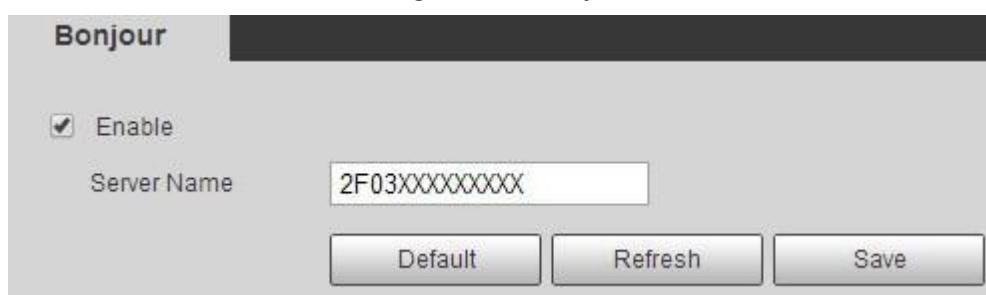


Bonjour is enabled by default.

Procedure

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

Figure 4-81 Bonjour



Step 2 Select the **Enable** checkbox, and then configure server name.

Step 3 Click **Save**.

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

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

4.6.9 Multicast

Multicast is where data transmission is addressed to a group of destination computers simultaneously. When multiple users are streaming the IPC video image simultaneously through the network, it may 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 **Setting > Network > Multicast**.

Figure 4-82 Multicast



Step 2 Select the **Enable** checkbox, and enter IP address and port number.

Table 4-28 Description of multicast parameters

Parameter	Description
Multicast Address	The multicast IP address of Main Stream/Sub Stream is 224.1.2.4 by default, and the range is 224.0.0.0-239.255.255.255.

Port	The multicast port of corresponding stream: Main Stream: 40000; Sub Stream1: 40016; Sub Stream2: 40032, and all the range is 1025-65500.
------	---

Step 3 Click **Save**.

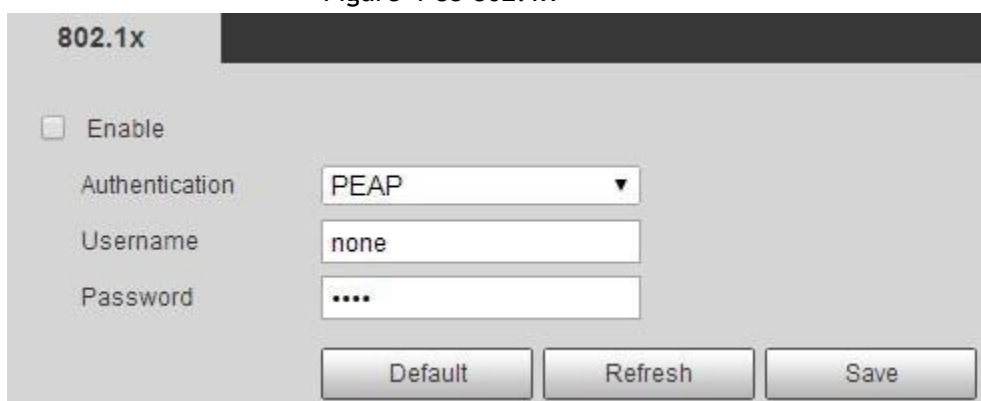
In the **Live** interface, select **RTSP** in **Multicast** to view the video image with multicast protocol.

4.6.10 802.1x

Some local networks require 802.1x authentication in order to be able to join.

Step 1 Select **Setting > Network > 802.1x**.

Figure 4-83 802.1x



Step 2 Select the **Enable** checkbox, and then configure parameters.

Table 4-29 Description of 802.1x parameters

Parameter	Description
Authentication	PEAP (protected EAP protocol).
Username	The user name that was authenticated on the server.
Password	Corresponding password.

Step 3 Click **Save**.

4.6.11 QoS

QoS is Quality of Service that 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.

0-63 means 64 degrees of priority; 0 for the lowest and 63 the highest.

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

Figure 4-84 QoS



Step 2 Configure QoS parameters.

Table 4-30 Description of QoS parameters

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

Step 3 Click **Save**.

4.6.12 Access Platform

4.6.13.1 P2P

P2P is a private network traversal technology that enables users to manage devices easily without requiring DDNS, port forwarding/ mapping or transit server. You can scan the QR code with your smart phone, to add and manage devices on the mobile phone client.

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

Figure 4-87 P2P



- If P2P is enabled and the status is Online, remote management on the device is supported.
- When P2P is enabled and the status is Offline, make sure the IPC is connected to a network and set it on DHCP.

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

Step 3 Tap the + at the upper right corner.

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

Step 5 Follow the instructions to finish the settings.

4.6.13.2 ONVIF

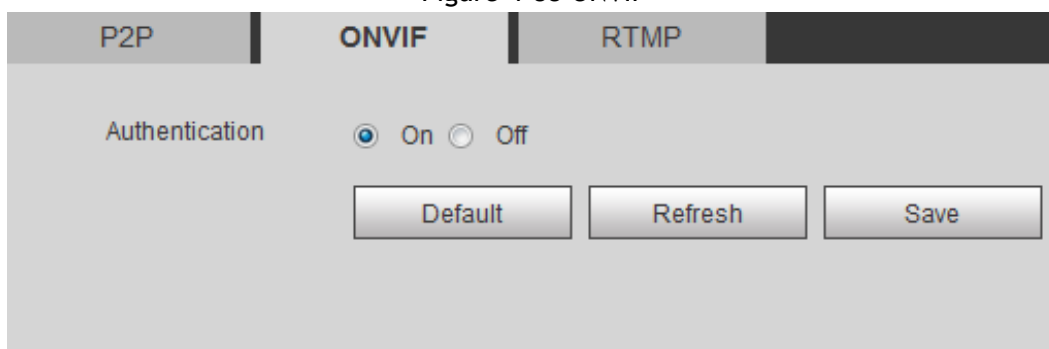
The ONVIF authentication is **On** by default, which allows the network video products (including NVRs and other recording devices) from other manufacturers to connect to your device.



ONVIF is enabled by default.

Step 1 Select **Setting > Network > Port > ONVIF**.

Figure 4-88 ONVIF



Step 2 Select **On** in **Authentication**.

Step 3 Click **Save**.

4.6.13.3 RTMP

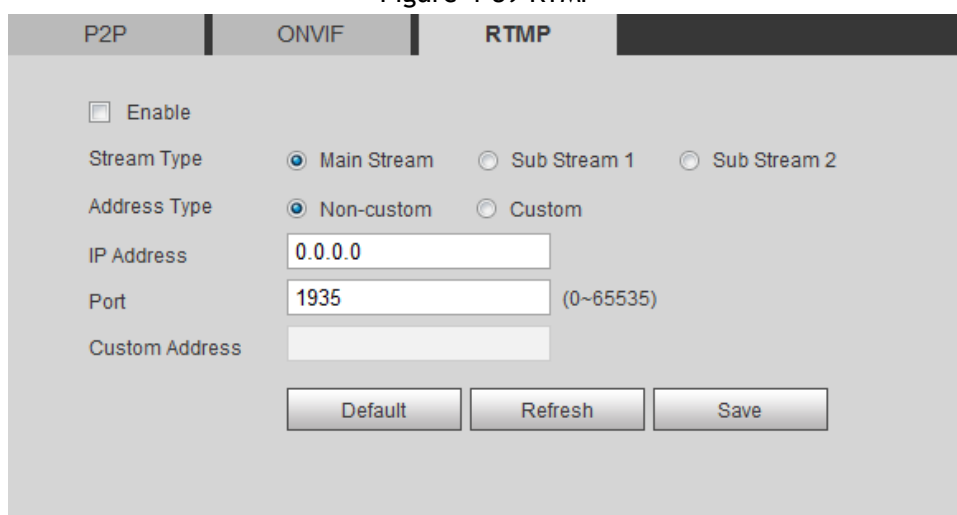
Using RTMP, you can access the third-party platforms (such as Ali and YouTube) to stream video live view.



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

Step 1 Select **Setting > Network > Port > RTMP**.

Figure 4-89 RTMP



Step 2 Select the **Enable** checkbox.



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

Step 3 Configure RTMP parameters. .

Table 4-32 Description of RTMP parameters

Parameter	Description
Stream Type	The stream for live view. Make sure that the video format is the H.264, H.264 B and H.264H, and the audio format is AAC.
Address Type	Includes Non-custom and Custom . <ul style="list-style-type: none"> • Non-custom: Enter the server IP and domain name. • Custom: Enter the path allocated by the server.
IP Address	When selecting Non-custom , you need to enter server IP address and port. <ul style="list-style-type: none"> • IP address: Support IPv4 or domain name. • Port: We recommend that you use the default one.
Port	
Custom Address	When selecting Custom , you need to enter the path allocated by the server.

Step 4 Click **Save**.

4.7 Storage

This section introduces how to manage saved resources (such as recorded video) and storage space. The storage management helps to make efficient use of storage space.

4.7.1 Setting Storage Plan

- Setting record plan and record control to achieve all-time recording, recording in a specific period or alarm linked recording. For details, see "5.1.1.2.1 Setting Record Plan" and "5.1.1.2.2 Setting Record Control".
- Set the snapshot schedule as needed. For details, see "5.1.1.3.1 Setting Snapshot Plan".

4.7.2 Setting Schedule

You can configure record schedule, snapshot schedule and holiday schedule. Set certain days as holiday, and when the **Record** or **Snapshot** is selected in the holiday schedule, the system takes snapshot or records video as holiday schedule defined.

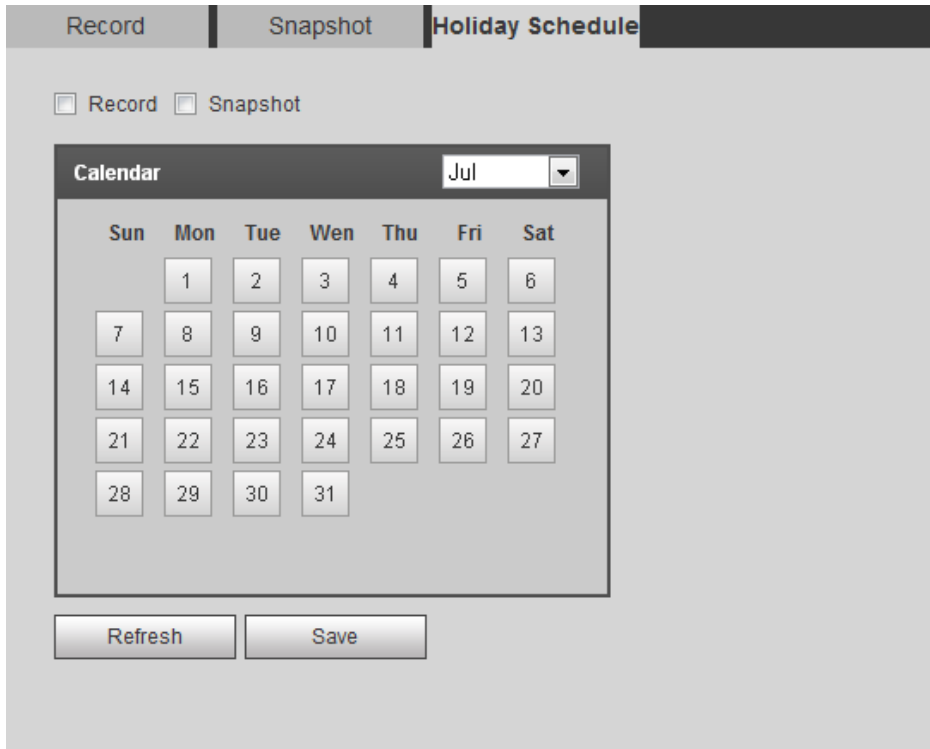
Prerequisites

- Set the record mode to be **Auto** in **Record Control**. For details, see "5.1.1.2.1 Setting Record Plan".
- Configure holiday record and snapshot schedule. For details, see "5.1.1.2.1 Setting Record Plan" and "5.1.1.3.1 Setting Snapshot Plan".

Procedure

Step 1 Select **Setting > Storage > Schedule > Holiday Schedule**.

Figure 4-90 Holiday schedule



Step 2 Select **Record** or **Snapshot**.

Step 3 Select the days you need to set as holiday.
Those days with yellow color indicates that they were set as holidays.



If the holiday schedule setting takes priority over the general setting.

Step 4 Click **Save**.

4.7.3 Setting Destination

This section explains the the storage method configurations for the recorded videos and snapshots.

4.7.3.1 Path

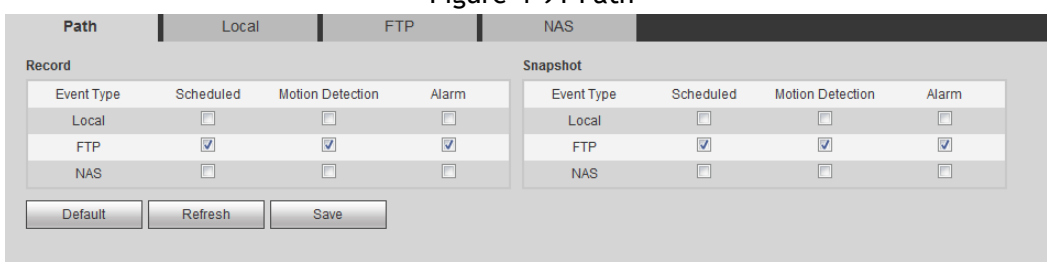
You can select different storage paths for the recorded videos and snapshots according to event type. You can select from SD card, FTP and NAS.



Local is displayed only on models that support SD card. **Step 1**

Select **Setting > Storage > Destination > Path**.

Figure 4-91 Path



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

Table 4-33 Description of path parameters

Parameter	Description
Event Type	Select from Scheduled , Motion Detection and Alarm .
Local	Save in the internal SD card.
FTP	Save in the FTP server.
NAS	Save in the NAS (network attached storage).

Step 3 Click **Save**.

Step 4 Configure other path parameters on **Destination**, **FTP** or **NAS** interface. For details, see "4.7.3 Setting Destination", "4.7.3.3 FTP" or "4.7.3.4 NAS".

4.7.3.2 Local

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



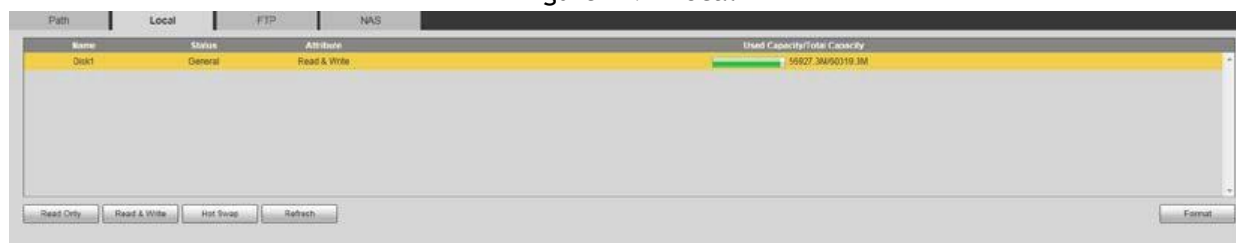
Functions may vary with different models. Select **Setting > Storage > Destination > Local**.

- Click **Read Only**, to set to read only.
- Click **Read & Write**, to set to read & write.
- Click **Hot Swap** to pull out the SD card.
- Click **Refresh** to format the SD card.
- Click **Format** to format the SD card.



When reading SD card on PC, if the SD card capacity is less than the nominal capacity, you will need to format the SD card to be a private file system. The private file system can greatly improve SD card multimedia file read/write performance.

Figure 4-92 Local



4.7.3.3 FTP

FTP can be enabled only if selected as a destination path. If the network fails, you can save all the files to the internal SD card for emergency.

Step 1 Select **Setting > Storage > Destination > FTP**.

Step 2 Select the **Enable** checkbox, and select the FTP type.



Select **FTP** or **SFTP** from the drop-down list. **SFTP** is recommended to enhance network security.

Step 3 Configure FTP parameters.

Figure 4-93 FTP

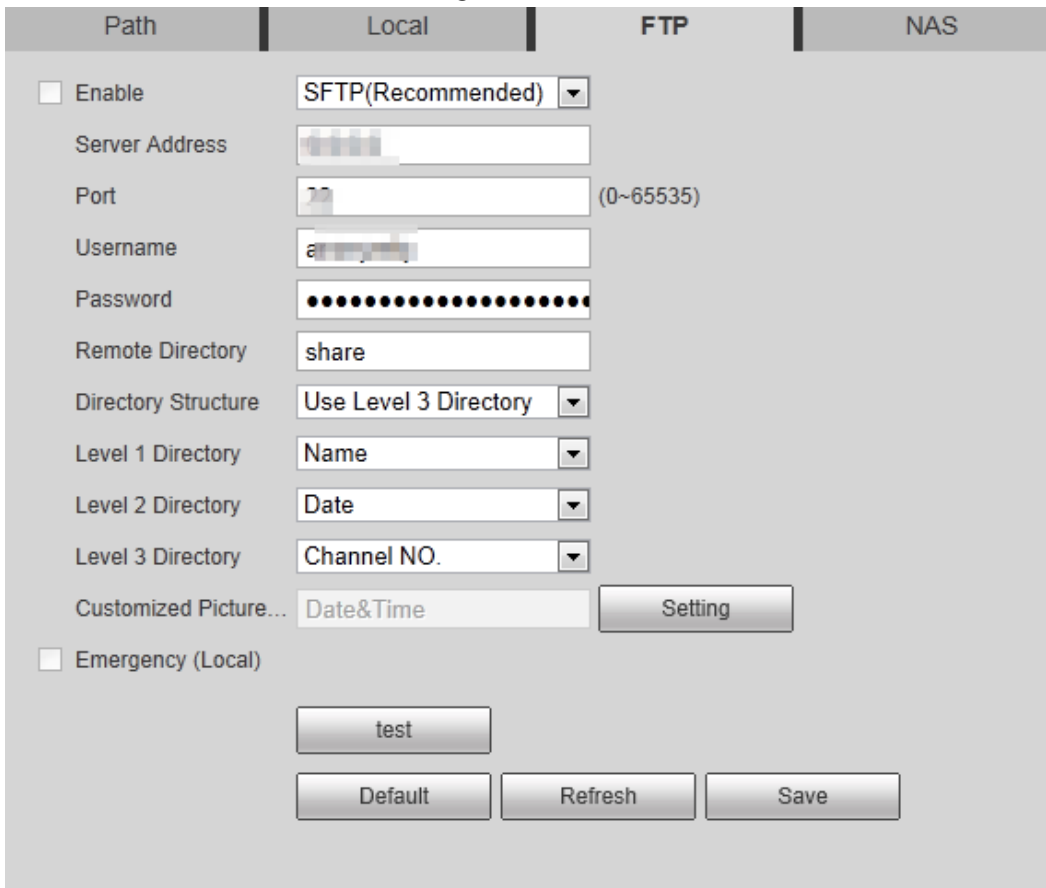
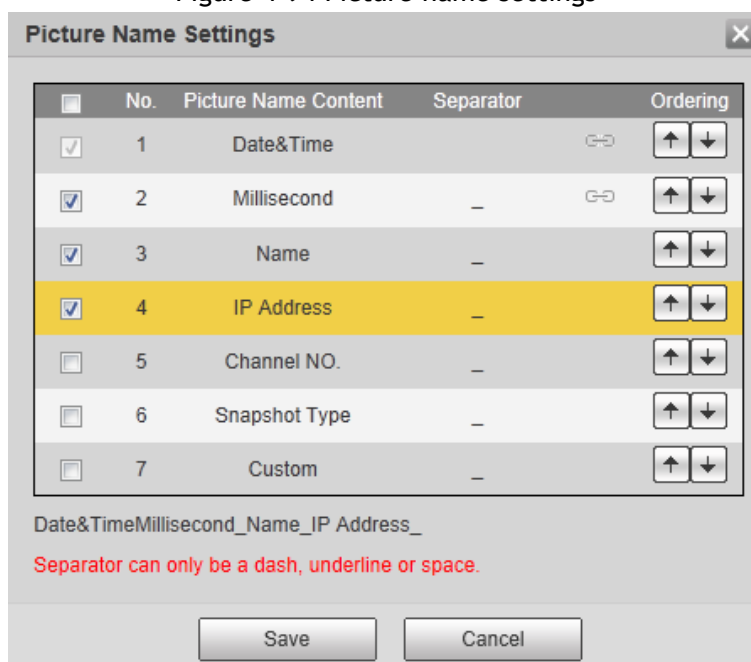



Figure 4-94 Picture name settings



No.	Picture Name Content	Separator	Ordering
<input checked="" type="checkbox"/>	1	Date&Time	↔ ↑ ↓
<input checked="" type="checkbox"/>	2	Millisecond	↔ ↑ ↓
<input checked="" type="checkbox"/>	3	Name	↑ ↓
<input checked="" type="checkbox"/>	4	IP Address	↑ ↓
<input type="checkbox"/>	5	Channel NO.	↑ ↓
<input type="checkbox"/>	6	Snapshot Type	↑ ↓
<input type="checkbox"/>	7	Custom	↑ ↓

Date&TimeMillisecond_Name_IP Address_
 Separator can only be a dash, underline or space.

Table 4-34 Description of FTP parameters

Parameter	Description
Server Address	The IP address of the FTP server.
Port	The port number of the FTP server.
Username	The user name to log in to the FTP server.
Password	The password to log in to the FTP server.
Remote Directory	The destination path in the FTP server, it is shared by default.
Directory Structure	Set the directory structure, which supports three levels, max.
Level 1 Directory	Set the directory name to customize the name. When you select Custom , enter the custom directory name, which supports numbers, English letters, underlines and dashes.
Level 2 Directory	
Level 3 Directory	
Customized Picture Name	<p>Click Setting to set picture name.</p> <ul style="list-style-type: none"> • Date&Time is required, and it is selected by default. • Select the other fields of the name. The corresponding instruction will be displayed. • Double-click the symbols under Separator to customize the separator. • Double-click Custom, to customize the files of the picture name. • Click the arrow under Ordering to adjust the ordering of the file.  <p>Date&Time and Millisecond are linked, click the arrow of any one of the two fields, and the two move together.</p> <ul style="list-style-type: none"> • The real-time value of Millisecond will be displayed for precise snapshot, and for schedule and normal event, the millisecond displays 0000.
Emergency (Local)	If the network is down, the files are saved to the an SD card.

Step 4 Click **Save**.

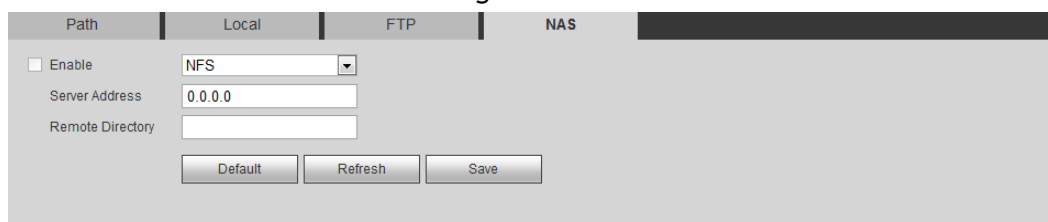
Step 5 Click **test** to test to check if the FTP functions correctly.

4.7.3.4 NAS

This function can be enabled only if NAS is selected as a destination path. Enable this function to save all the files to a Network Attached Storage device.

Step 1 Select **Setting > Storage > Destination > NAS**.

Figure 4-95 NAS



Step 2 Select the **Enable** checkbox to enable NAS function, and select NAS protocol type.

- **NFS** (Network File System): Enables computers in the same network to share files through TCP/IP.
- **SMB** (Server Message Block): Provides shared access for clients and the server.

Step 3 Configure NAS parameters.

Table 4-35 Description of NAS parameters

Parameter	Description
Server Address	The IP address of the NAS server.
Username	When selecting SMB protocol, you are required to enter user
Password	name and password. Enter them as needed.
Remote Directory	The destination path in the NAS server.

Step 4 Click **Save**.

4.8 System

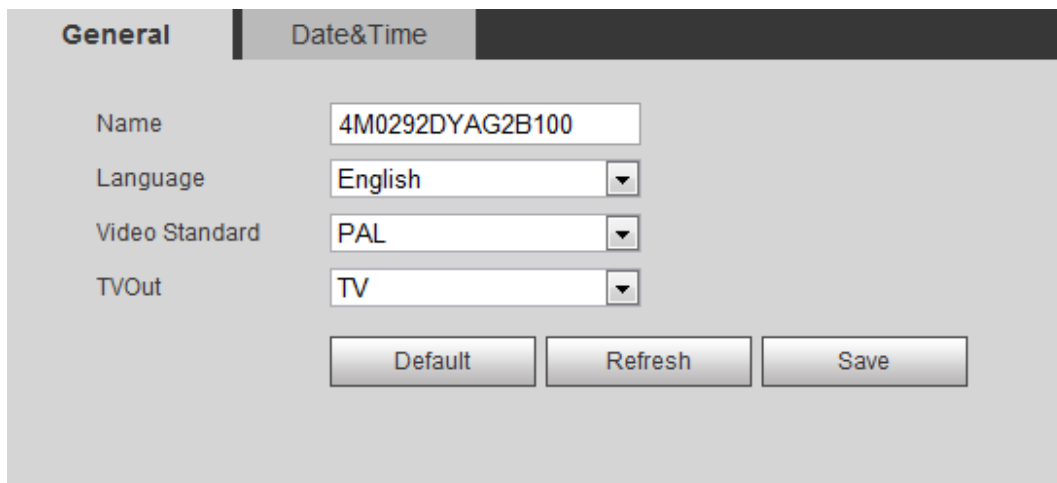
This section introduces system configurations, including general, date & time, account, safety, PTZ settings, default, import/export, remote, auto maintain and upgrade.

4.8.1 General

You can configure device name, language and video standard.



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

Figure 4-96 General



Step 2 Configure general parameters.

Table 4-36 Description of general parameters

Parameter	Description
Name	The name of the device.  Each device has its own unique name.
Language	Select system language.
Video Standard	Select video standard from PAL and NTSC .
TVOut	Select On or Off . This function is available on models with analog output.  <ul style="list-style-type: none"> If the TV out is On, smart plans will be disabled; if the smart plans are enabled, the TV out will be set as Off.

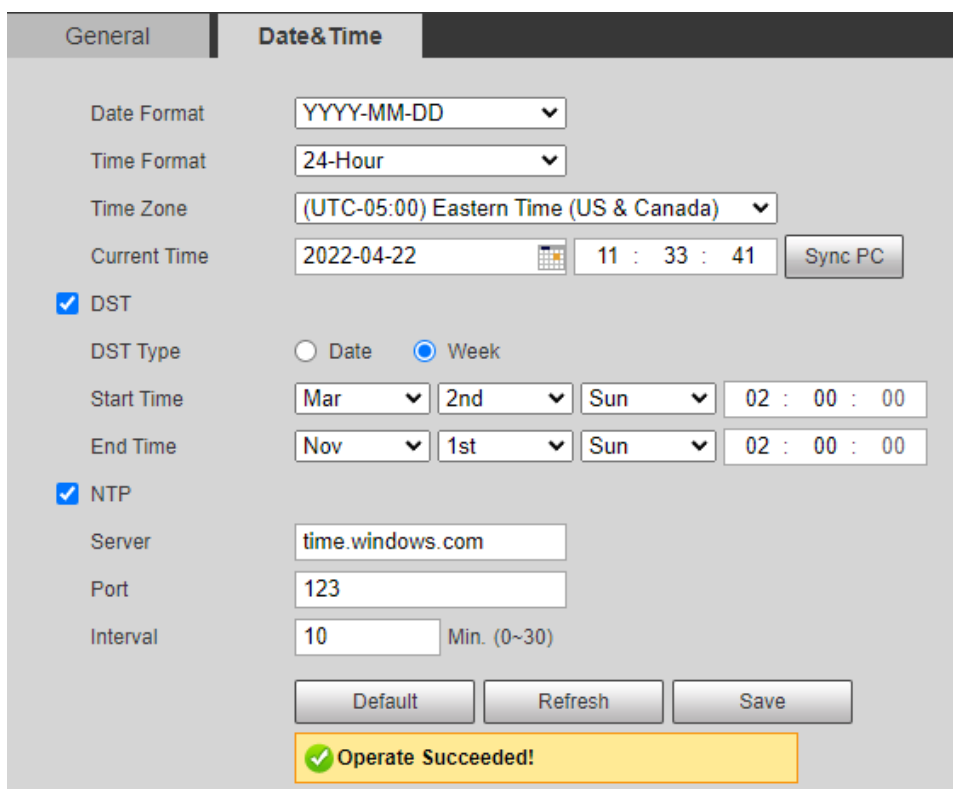
Step 3 Click **Save**.

4.8.2 Date & Time

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

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

Figure 4-97 Date and time



Step 2 Configure date and time parameters.

Table 4-37 Description of date and time parameters

Parameter	Description
Date Format	Configure the date format.
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.
Current Time	Configure system time. Click Sync PC , to change the IPC time to the PC time.
DST	Enable DST as needed. Select the checkbox, and configure start time and end time of DST with Date or Week .
NTP	Select the checkbox to enable NTP (network time protocol) IPC will then sync time with the internet server. You can also enter the IP address, time zone, port, and interval of a PC with an installed NTP server to use NTP.
NTP Server	
Time Zone	
Port	
Interval	
Positioning System Time Synchronization	Select Position System Time Synchronization and configure Interval to enable this function. After enabling this function, the device will synchronize the system time according to the interval you set.
Interval	

Step 3 Click **Save**.

4.8.3 Account

Manage all the users. You can add, delete, or modify users. Users include admin, added users and ONVIF users.

Managing users and groups are only available for administrator users.

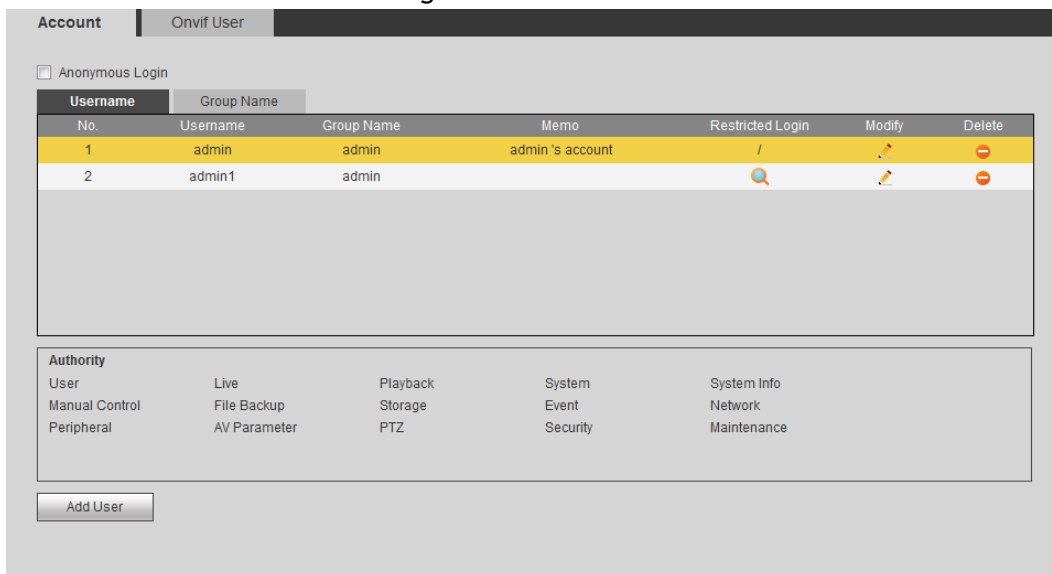
- The max length of the user or group name is 31 characters which consisted of number, letters, underline, dash, dot and @.
- The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding '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

4.8.3.1 Adding a User

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

Step 1 Select **Setting > System > Account > Account > Username**.

Figure 4-98 Username



Step 2 Click **Add User**.

Figure 4-99 Add user (operation permission)

Add User

Username **Must**

Password

The minimum pass phrase length is 8 characters

Confirm Password

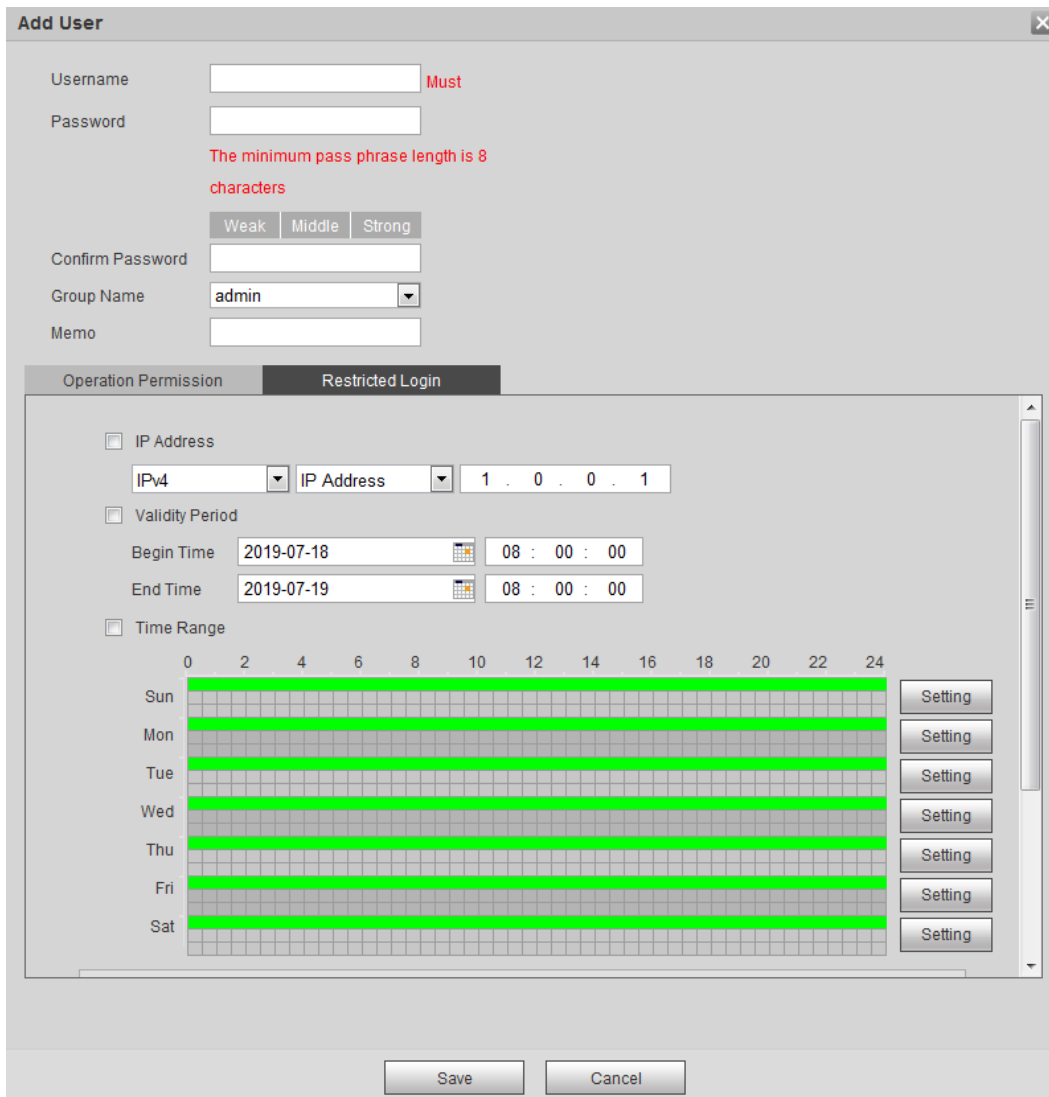
Group Name ▼

Memo

Operation Permission | Restricted Login


- All
- User
- Live
- Playback
- System
- System Info
- Manual Control
- File Backup
- Storage
- Event
- Network
- Peripheral
- AV Parameter
- PTZ
- Security
- Maintenance

Figure 4-100 Add user (restricted login)



Step 3 Configure user parameters.

Table 4-38 Description of user parameters (1)

Parameter	Description
Username	User's unique identification. You cannot use existed user name.
Password	Enter password and confirm it again.
Confirm 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 ' " ; : &).
Group Name	The group that users belong to. Each group has different authorities.
Memo	Describe the user.
Operation Permission	Select authorities as needed.  We recommend you giving fewer authorities to normal

	users than advance users.
--	---------------------------


Parameter	Description
Restricted Login	<p>Set the PC address that allows the defined user to log in to the camera and the validity period and time range. You can log in to web with the defined IP in the defined time range of validity period.</p> <ul style="list-style-type: none"> • IP address: You can log in to web through the PC with the set IP. • Validity period: You can log in to web in the set validity period. • Time range: You can log in to web in the set time range. <p>Set as following:</p> <ol style="list-style-type: none"> 1. Select IP Address: Select IP type and set IP address. <ul style="list-style-type: none"> ◇ 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. Select Validity Period: Set the begin time and end time. 3. Select Time Range: Set the time range that allow user to log in. For details, see "5.1.1.1 Setting Period".

Step 4 Click **Save**.

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

Related Operations

- Edit user information

Click  to change password, group, memo, operation authorities, and login authorities.

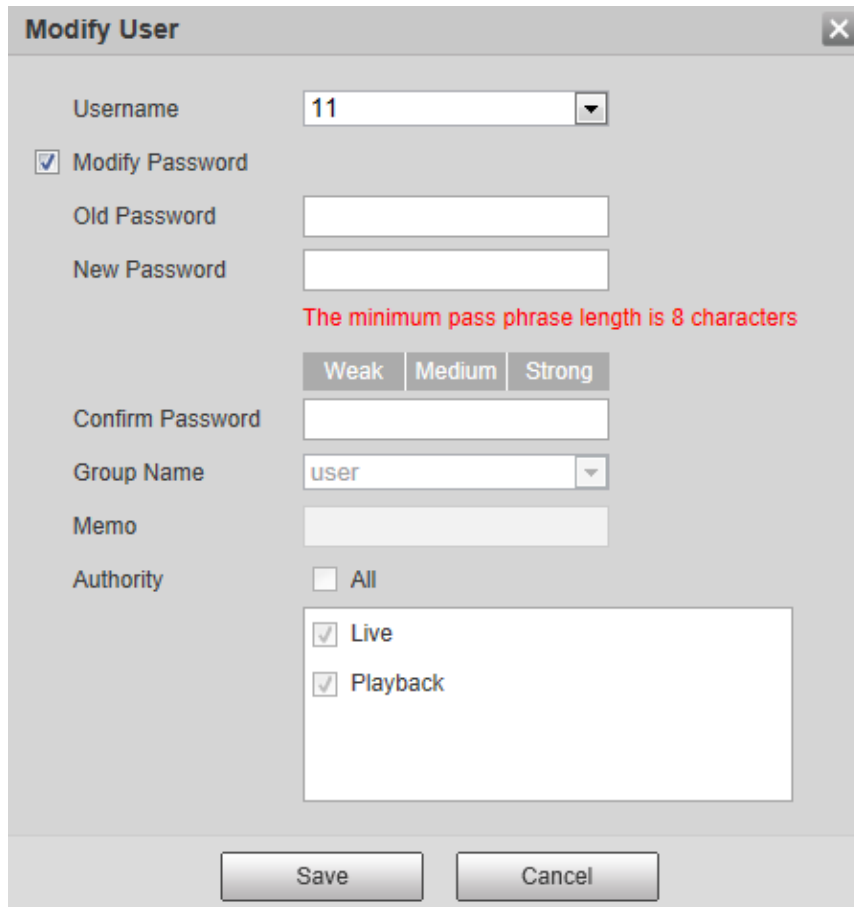


You can only change the password of the admin.

The methods of changing password vary with different accounts.

- ◇ Login with the admin account, you can change password through **Old Password** and **Admin Account**.
- ◇ Login with non-admin account (an added account with the permission of user management), you can change password through **Old Password**.
- ◇ **Old Password**: Change the password through entering the old password to be changed, and then the new password.

Figure 4-101 Change password through old password (login with non-admin account)



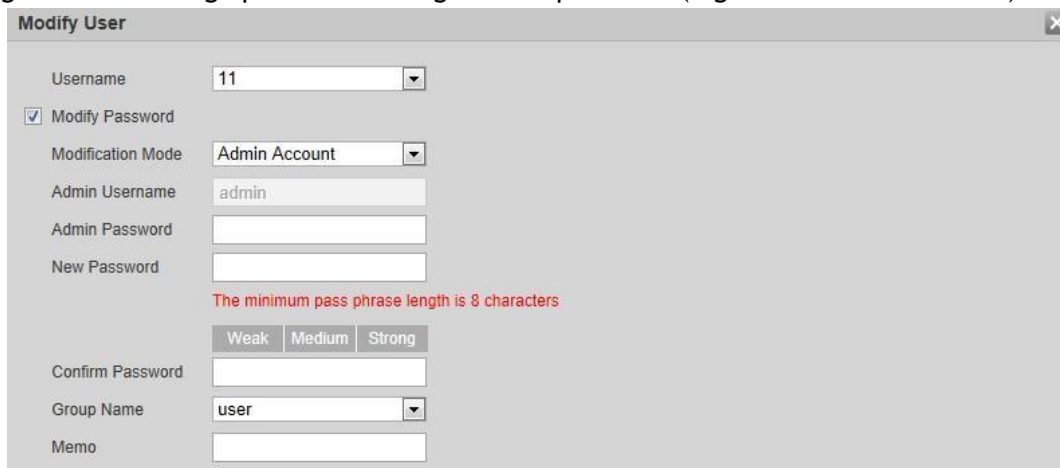
The 'Modify User' dialog box shows the following fields and options:

- Username:** 11
- Modify Password**
- Old Password:** [Empty text box]
- New Password:** [Empty text box]
- Strength:** Weak, Medium, Strong (Medium is selected)
- Confirm Password:** [Empty text box]
- Group Name:** user
- Memo:** [Empty text box]
- Authority:**
 - All
 - Live
 - Playback

A red message states: "The minimum pass phrase length is 8 characters". Buttons for "Save" and "Cancel" are at the bottom.

- ◇ **Admin Account:** Change the password through entering the admin password, and then the new password for the non-admin account to be changed.

Figure 4-102 Change password through admin password (login with admin account)




The 'Modify User' dialog box shows the following fields and options:

- Username:** 11
- Modify Password**
- Modification Mode:** Admin Account
- Admin Username:** admin
- Admin Password:** [Empty text box]
- New Password:** [Empty text box]
- Strength:** Weak, Medium, Strong (Medium is selected)
- Confirm Password:** [Empty text box]
- Group Name:** user
- Memo:** [Empty text box]

A red message states: "The minimum pass phrase length is 8 characters". Buttons for "Save" and "Cancel" are at the bottom.


- Delete users

Click  to delete the added users.



Admin account cannot be deleted.

- View the authorities

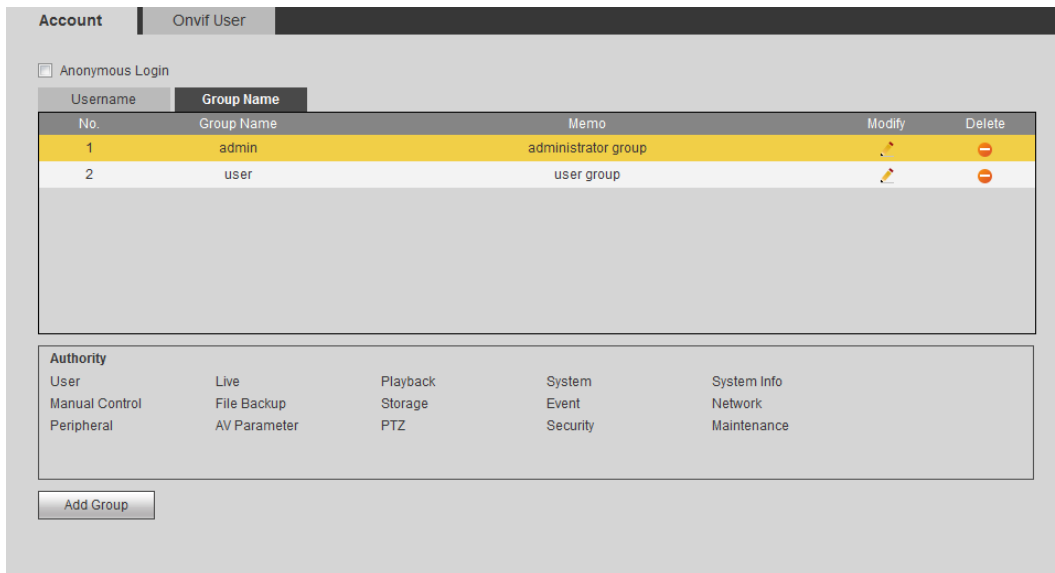
If the current account has with the permission of user management, click  to view the login authorities of other accounts. If not, you can only view the login authorities of the current account.

4.8.3.2 Adding User Group

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

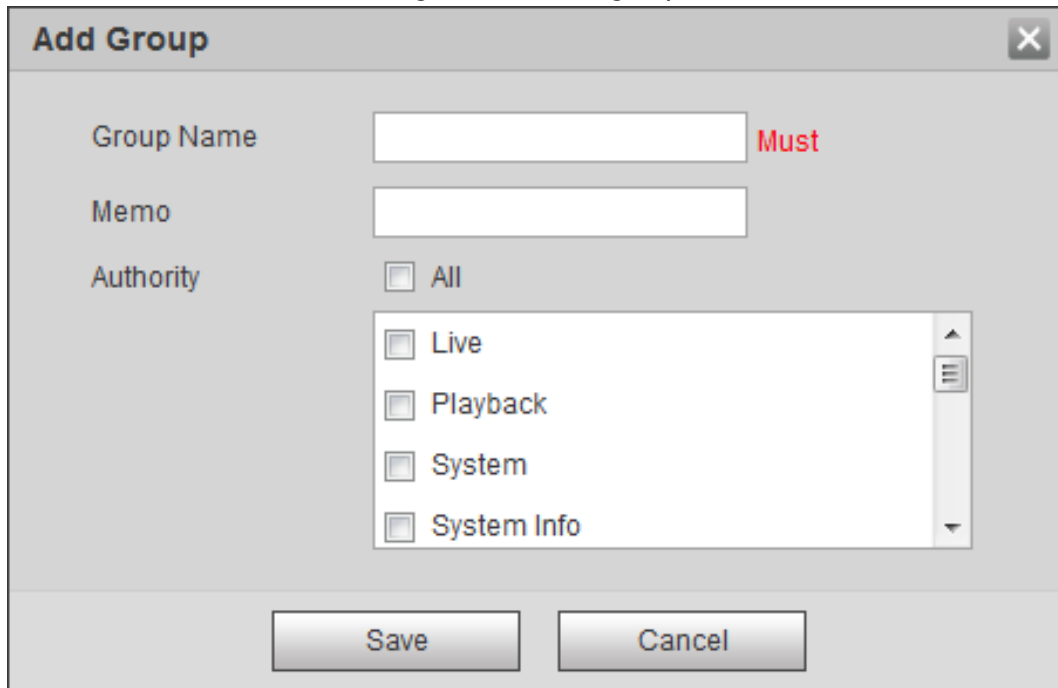
Step 1 Select **Setting > System > Account > Account > Group Name**.

Figure 4-103 Group name



Step 2 Click **Add Group**.

Figure 4-104 Add group



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

The default authorities of Admin group includes live, playback, storage, file backup, user, system, system info, manual control, maintenance, peripheral, PTZ, security, network, event and AV parameters; the default authorities of User group include live and playback.

Table 4-39 Description of user group parameters

Group Authority	Admin	User	Functions
User	YES	NA	Add, delete and check user/user group.
Live	YES	YES	Real-time stream view.
Playback	YES	YES	Playback view.
System	YES	NA	System time setting and more.
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.
AV Parameter	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 authorities.

- The function 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 4 Click **Save** to finish configuration.

The newly added group displays in the group name list.



- After adding group, click  to modify group memo or authorities; click  to delete the added group, admin group and user group cannot be deleted.
- Click  in the row of admin group or user group to modify group memo.

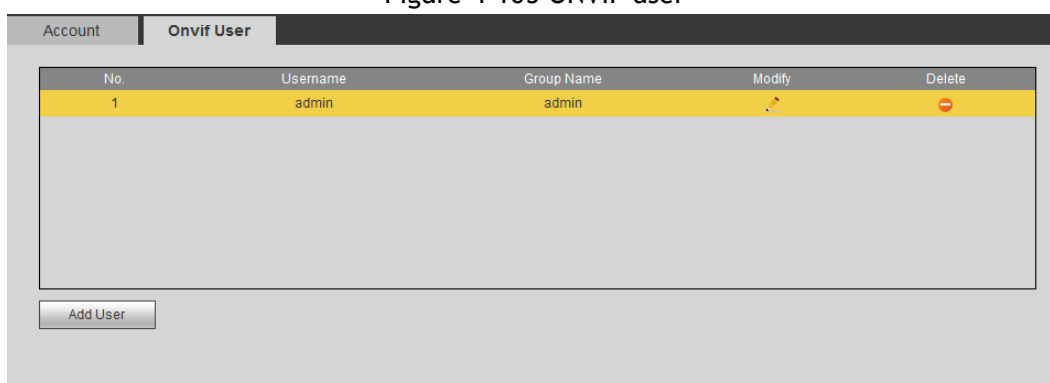
4.8.3.3 ONVIF User

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

Procedure

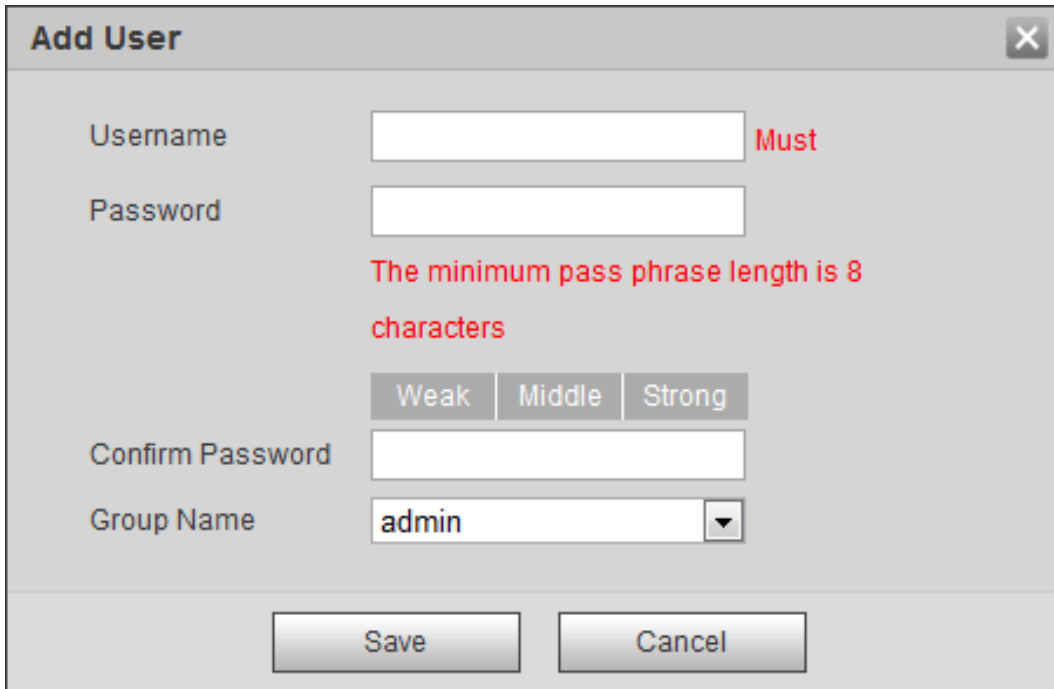
Step 1 Select **Setting > System > Account > ONVIF User**.

Figure 4-105 ONVIF user



Step 2 Click **Add User**.

Figure 4-106 Add user



Step 3 Configure user parameters.

Table 4-40 Description of user parameters


Parameter	Description
Username	User's unique identification. You cannot use existed user name.
Password	Enter password and confirm it again.
Confirm 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 ' " ; : &).
Group Name	The group that users belong to. Each group has different authorities.

Step 4 Click **Save**.

The newly added user displays in the user name list.

Related Operations

- Edit user information

Click  to change password, group, memo, operation authorities, and login authorities.



You can only change the password of the admin.

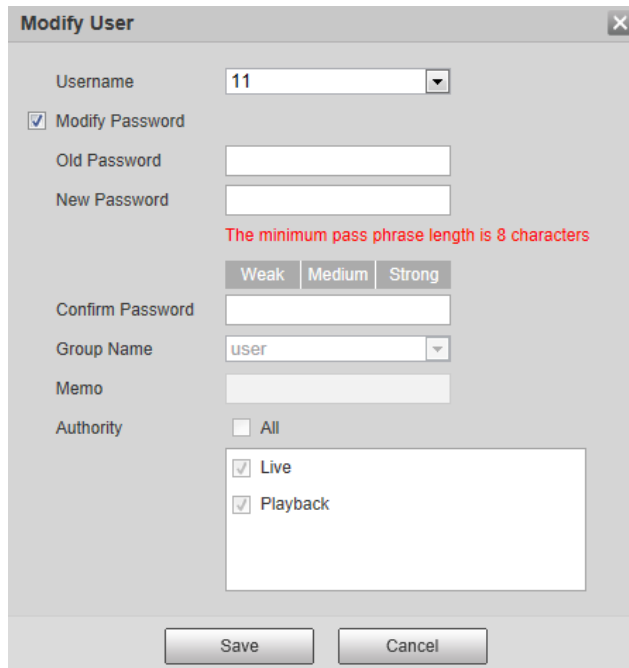
The methods of changing password vary with different accounts.

- ◇ Log in with admin account, you can change password through **Old Password** and **Admin Account**.

The password of admin account can be changed through **Old Password** only.

- ◇ Login with non-admin account (an added account with the permission of user management), you can change password through **Old Password**.
- ◇ **Old Password**: Change the password through entering the old password to be changed, and then the new password.

Figure 4-107 Change password through old password (login with non-admin account)

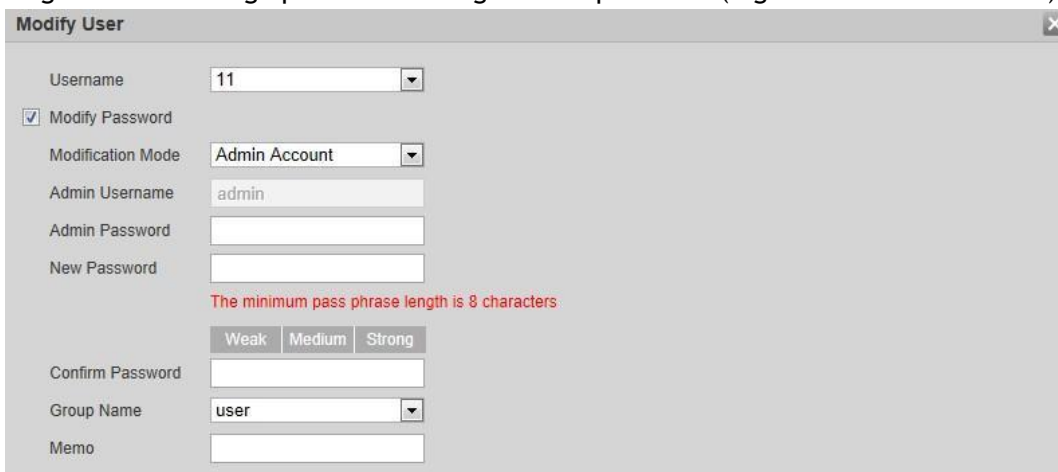


The 'Modify User' dialog box shows the following fields and options:

- Username: 11
- Modify Password
- Old Password: [text input]
- New Password: [text input]
- The minimum pass phrase length is 8 characters
- Weak Medium Strong (password strength indicators)
- Confirm Password: [text input]
- Group Name: user
- Memo: [text input]
- Authority:
 - All
 - Live
 - Playback
- Buttons: Save, Cancel

- ◇ **Admin Account:** Change the password through entering the admin password, and then the new password for the non-admin account to be changed.

Figure 4-108 Change password through admin password (login with admin account)



The 'Modify User' dialog box shows the following fields and options:

- Username: 11
- Modify Password
- Modification Mode: Admin Account
- Admin Username: admin
- Admin Password: [text input]
- New Password: [text input]
- The minimum pass phrase length is 8 characters
- Weak Medium Strong (password strength indicators)
- Confirm Password: [text input]
- Group Name: user
- Memo: [text input]


- Delete users

Click  to delete the added users.



Admin account cannot be deleted.

- View the authorities

If the current account has the permission of user management, click  to view the login authorities of other accounts. If not, you can only view the login authorities of the current account.

4.8.4 Security

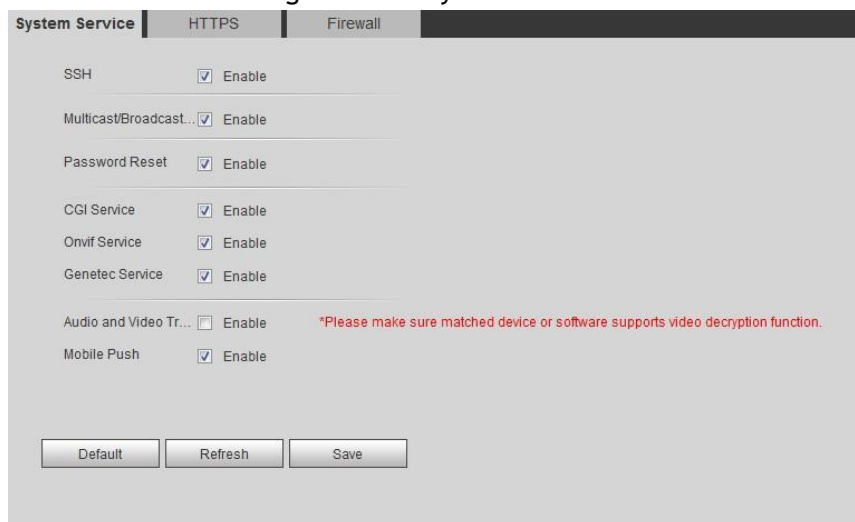
You can configure system service, HTTPS, and firewall.

4.8.4.1 System Service

This section allows configuration of different services such as CGI or ONVIF.

Step 1 Select **Setting > System > Safety > System Service**.


Figure 4-109 System service



Step 2 Enable the system service according as necessary.

Table 4-41 Description of system service parameters

Function	Description
SSH	Enables SSH authentication.
Multicast/Broadcast Search	When enabled, if multiple users are previewing the device video image simultaneously through network, they can scan to find your device with the multicast/broadcast protocol.
Password Reset	Manage system security with this function.

Function	Description
CGI Service	Enables the common gateway interface services.
Onvif Service	Enables the ONVIF protocol.
Genetec Service	Enables the appropriate services.
Audio and Video Transmission Encryption	Enable to encrypt audio/video transmission.  If enabled, this may affect live viewing through applications.

Mobile Push	When enabled, the system will send a snapshot that was taken when alarm is triggered to your phone, this is enabled by default.
-------------	---

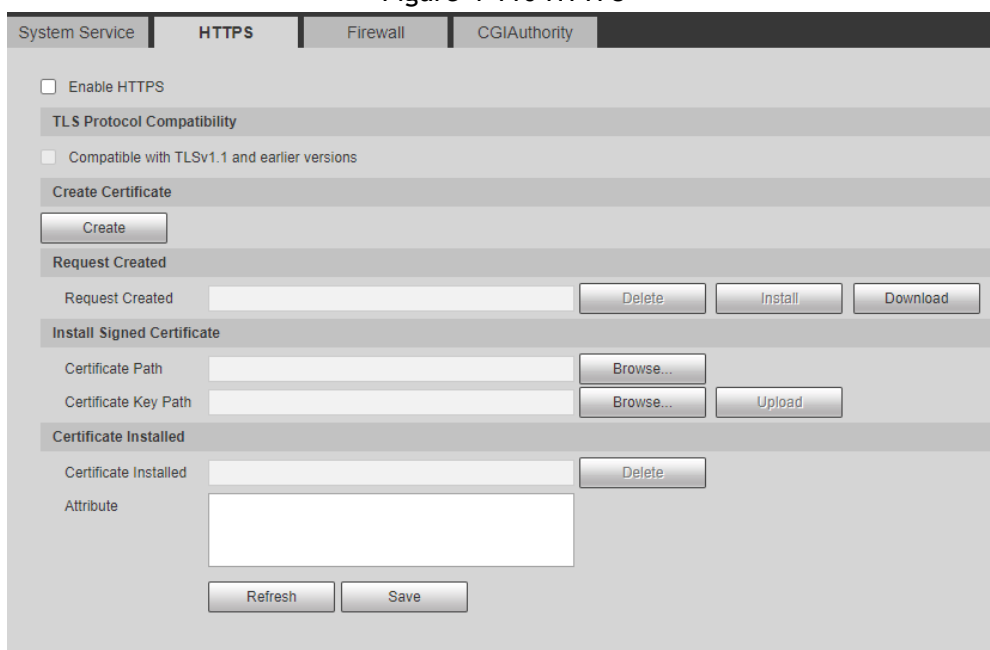
Step 3 Click **Save**.

4.8.4.2 HTTPS

This section allows you to create a certificate or upload an authenticated certificate, to log in via HTTPS with a web browser. The HTTPS can protect page authenticity on all types of websites, secure accounts, and keep user communications, identity, and web browsing private.

Step 1 Select **Setting > Network > HTTPS**.

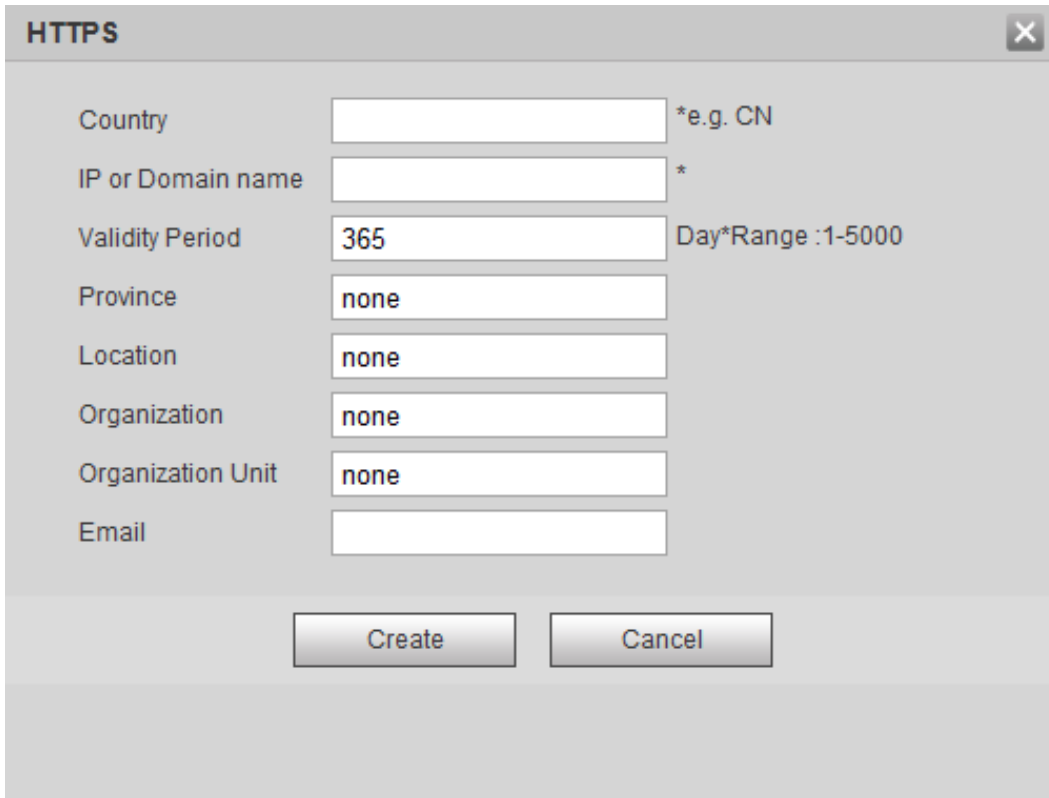
Figure 4-110 HTTPS



Step 2 Create a certificate or upload an authenticated certificate.

- For creating a certificate, click **Create**.

Figure 4-111 HTTPS dialog box



HTTPS

Country *e.g. CN

IP or Domain name *

Validity Period Day*Range :1-5000

Province

Location

Organization

Organization Unit

Email

- For uploading the authenticated certificate, click **Browse** to select the certificate and certificate key, click **Upload** to upload them, and then skip to **Step5**.

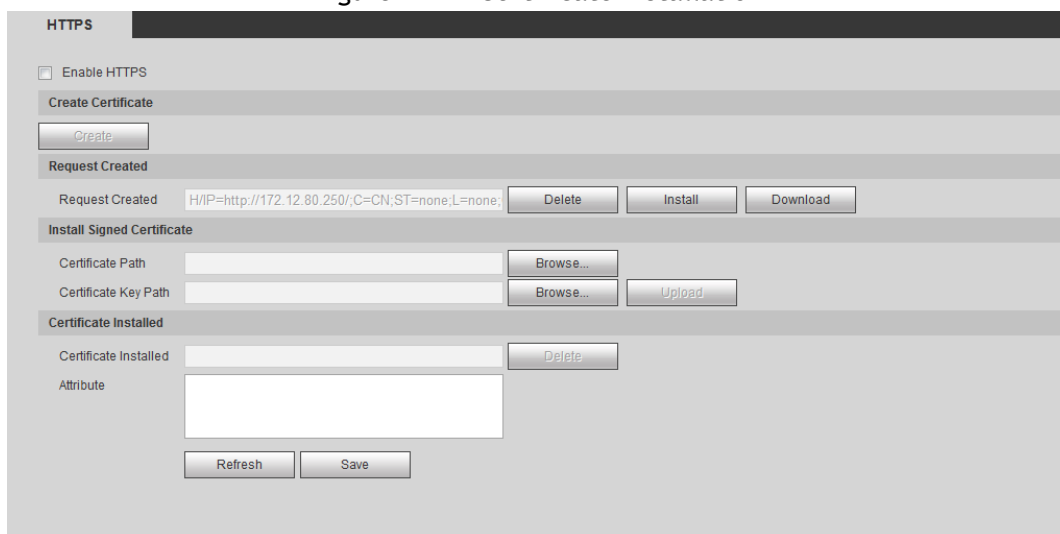
Step 3 Enter the required information and then click **Create**.



The entered **IP or Domain name** must be the same as the IP or domain name of the device.

Step 4 Click **Install**.

Figure 4-112 Certificate installation



HTTPS

Enable HTTPS

Create Certificate

Request Created

Request Created

Install Signed Certificate

Certificate Path

Certificate Key Path

Certificate Installed

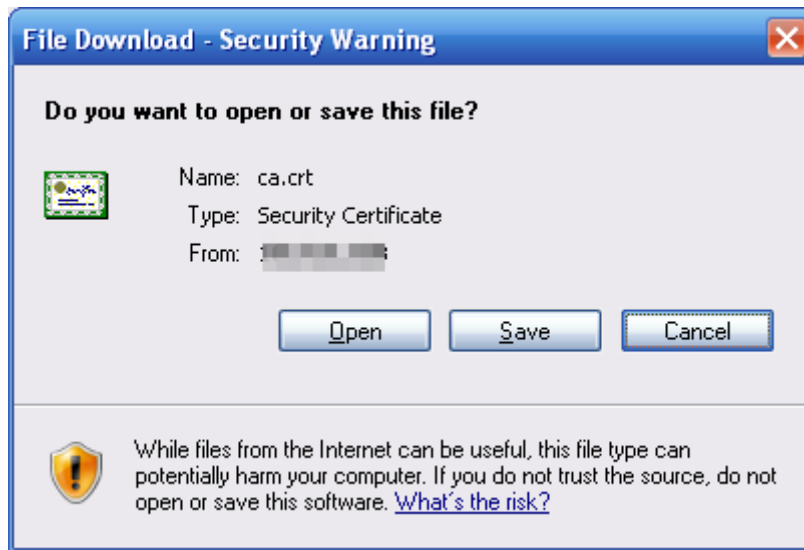
Certificate Installed

Attribute

Step 5 Click **Download** to download root certificate.

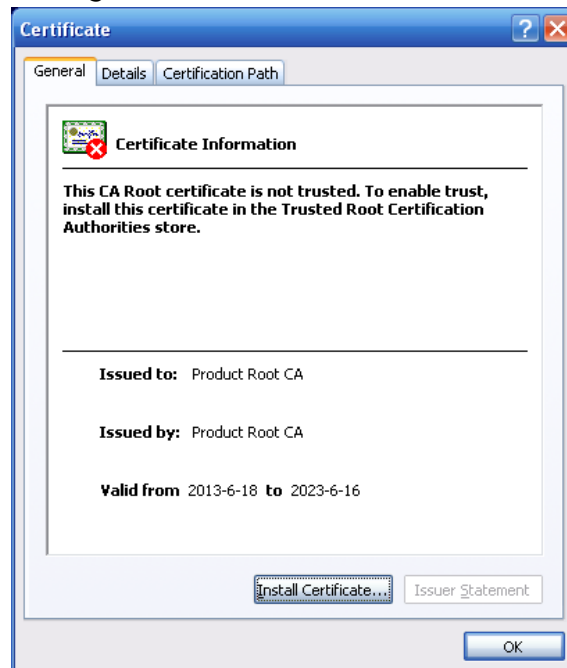
Step 6 Click **Download Root Certificate**.

Figure 4-113 File download



Step 7 Click **Open**.

Figure 4-114 Certificate information

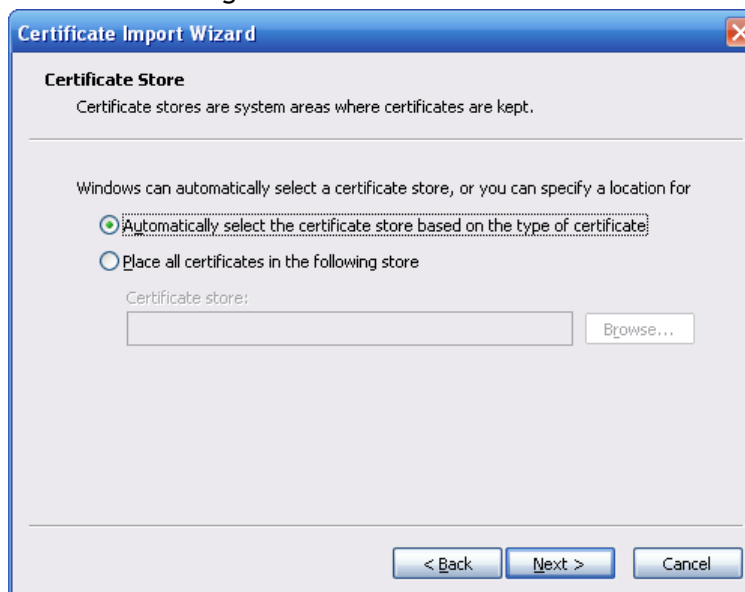


Step 8 Click **Install Certificate**.



Step 9 Click **Next**.

Figure 4-116 Certificate store



Step 10 Select the storage location and click **Next**.



Step 11 Click **Finish** and a dialog box showing **The import was successful** will pop up.

Figure 4-118 Import succeeds



4.8.4.3 Firewall

Configure **Network Access**, **PING prohibited** and **Prevent Semijoin** to enhance network and data security.

- **Network Access:** Set trusted list and restricted list to limit access.
 - ◇ **Allowlist:** Only the IP/MAC addresses in the allowlist are allowed camera access..
 - ◇ **Blocklist:** IP/MAC addresses in the blocklist cannot access the camera.
- **PING prohibited:** If enabled, the camera will not respond to a ping request.
- **Prevent Semijoin:** If enabled, the camera can provide service under a Semijoin attack.

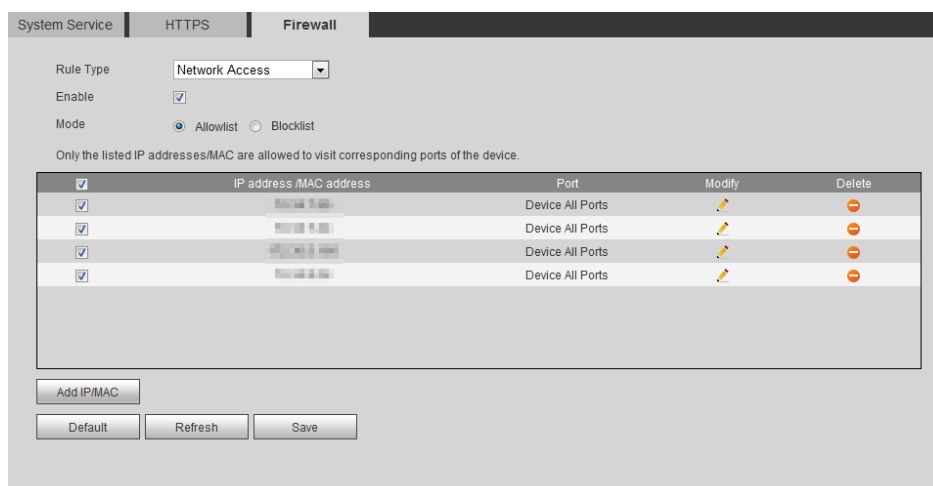


- You cannot set allowlist or blocklist for using the IPCs IP or MAC address.
- You cannot set allowlist or blocklist for port MAC addresses.
- If the IP addresses of the camera and your PC are in the same LAN, MAC verification will take effect.
- When you access the camera through internet, the camera verifies the MAC address according to the router MAC.

This section uses **Network Access** as an example.

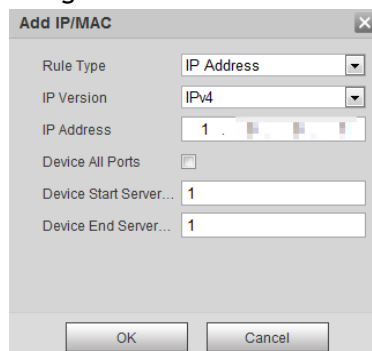
Step 1 Select **Setting > System > Safety > Firewall**.

Figure 4-119 Firewall



- Step 2** Select **Network Access** from **Rule Type** list, and then select the **Enable** checkbox.
- Enable **PING prohibited** and **Prevent Semijoin**, and click **Save**. You do not need to configure parameters.
 - Enable **Network Access**, and configure allowlist and blocklist.
 - ◇ Select the mode: **Allowlist** and **Blocklist**.
 - ◇ Click **Add IP/MAC**.

Figure 4-120 Add IP/MAC



Step 3 Configure parameters.

Table 4-42 Description of adding IP/MAC parameters

Parameter	Description
Rule Type	Select IP address, IP segment, MAC address or all IP addresses. <ul style="list-style-type: none"> • IP address: Select the IP version and enter the IP address of the host to be added. • IP segment: Select IP version and enter the start address and end address of the segment to be added. • MAC address: Enter MAC address of the host to be added. • All IP addresses: Set all IP addresses in allowlist or restricted list.
Device All Ports	Set access ports. You can select all ports or the ports in defined areas. <ul style="list-style-type: none"> • Device all ports: Set all IP port in allowlist or Blocklist. When selecting BlockList in Mode, and All IP Address in Rule Type,
Device Start Server Port	

Device End Server Port	<p>you cannot select the Device All Ports checkbox.</p> <ul style="list-style-type: none"> • Device start server port and Device end server port: Set Device start server port and device end server port, and the range is 1-65535.
------------------------	--

Step 4 Click **OK**, and the **Firewall** interface is displayed.

Step 5 Click **Save**.

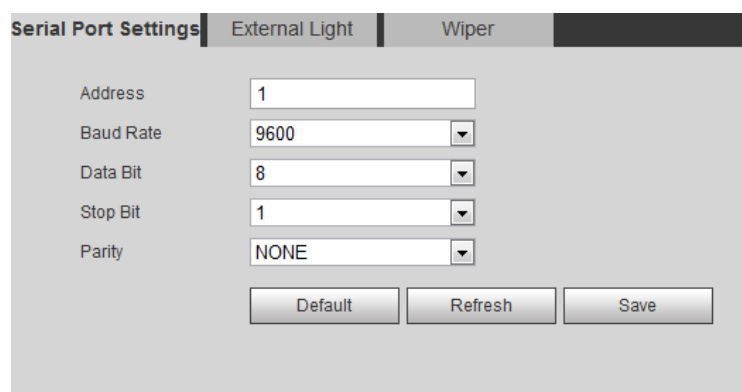
4.8.5 Peripheral

4.8.5.1 Serial Port Settings

This section configures the serial port if using an IPC PTZ with RS485 serial cable to another device for control.

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

Figure 4-121 Serial port settings



Step 2 Configure serial port settings parameters.

Table 4-43 Description of serial port settings parameters

Parameter	Description
Address	The corresponding device address. 1 by default.
Baud Rate	Select the baud rate for the camera. 9600 by default.
Date Bit	8 by default.
Stop Bit	1 by default.
Parity	None by default.

Step 3 Click **Save**.

4.8.5.2 External Light

For models with an external lighting equipment attached via serial cable.

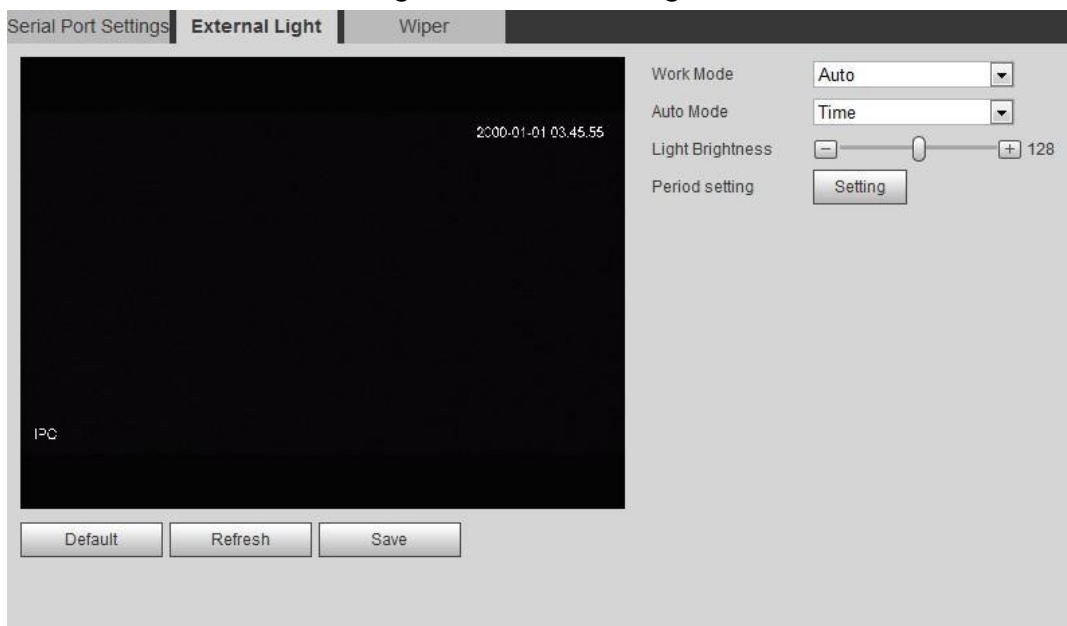
Prerequisites

- Connect an external lighting device using the RS-485 port.
- You have configured serial port parameters. For details, see "4.8.5.1 Serial Port Settings".

Procedure

Step 1 Select **Setting > System > Peripheral > External Light**.

Figure 4-122 External light



Step 2 Configure external light work mode.

Table 4-44 Description of external light parameters

Parameter	Description
Work Mode	<ul style="list-style-type: none"> • Off: Turn off the external light. • Manual: Manually sets the light brightness. • Auto: The camera turns on or turns off the light automatically according to the built-in photoresister.

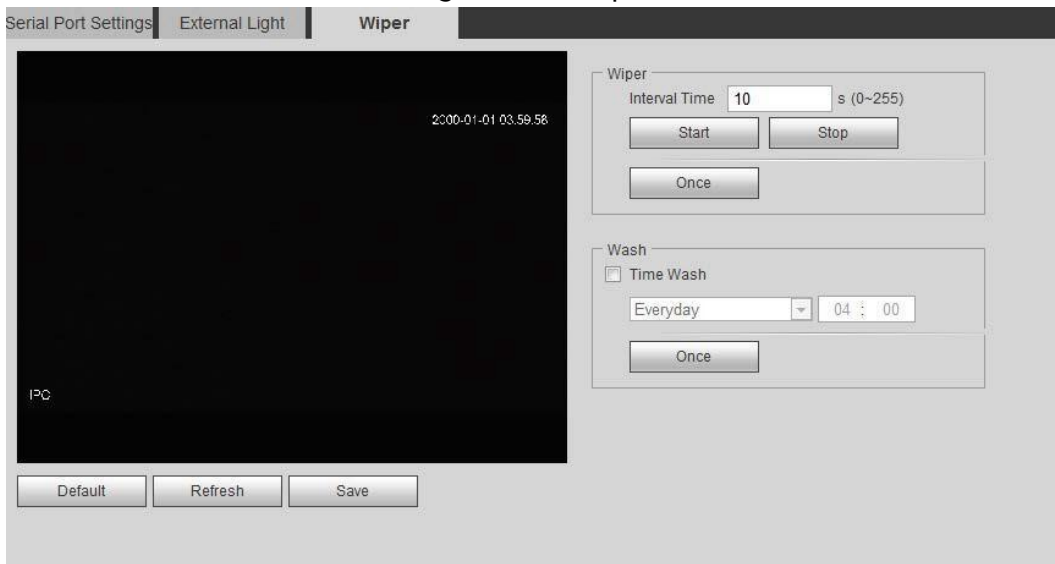
Auto Mode	<ul style="list-style-type: none"> • Time: When selecting Time in Auto Mode, click Setting to set the arming period. During the arming period, the external light is on. For details of arming period setting, see "5.1.1.1 Setting Period". • Photoresistor: When you select Photoresistor in Auto Mode, the camera turns on or turns off the light automatically according to the built-in photoresistor.
Light Brightness	Set the brightness of the external light.

Step 3 Click **Save**.

4.8.5.3 Wiper

Step 1 Select **Setting > System > Peripheral > Peripheral > Wiper**.

Figure 4-123 Wiper



Step 2 Configure wiper work mode.

Table 4-45 Description of wiper parameters

Parameter	Description
Interval Time	The interval time between stop mode and start mode. For example, if set to 10 s, and the wiper will work every 10 s.
Start	Set the work status of the wiper.
Stop	<ul style="list-style-type: none"> • Start: Click Start, and the wiper cycles at the set interval time.
Once	<ul style="list-style-type: none"> • Stop: Click Stop, and the wiper stops working. • Once: Click Once, and the wiper cycles once.

Step 3 Click **Save**.

5 Event

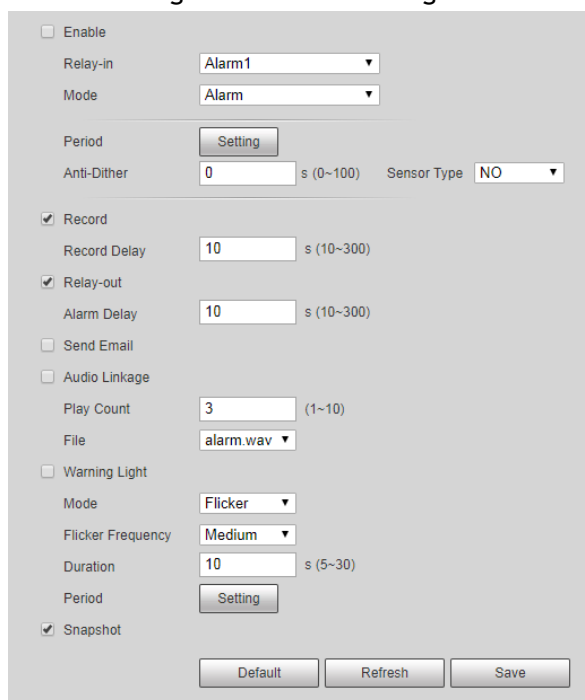
This section explains intelligent event settings, including smart track, panoramic calibration, video detection, audio detection, smart plan, IVS, face detection, face recognition, people counting, heat map, video Metadata, alarm, and abnormality.

5.1 Setting Alarm Linkage

5.1.1 Alarm Linkage

When an event is triggered, the IPC will trigger an alarm event such as record, send e-mail, or take a snapshot. Interfaces may vary with different events depending on the IPC model.

Figure 5-1 Alarm linkage



The screenshot shows a configuration window for Alarm Linkage. It includes several sections with checkboxes and input fields:

- Enable
- Relay-in: Alarm1 (dropdown)
- Mode: Alarm (dropdown)
- Period: Setting (button)
- Anti-Dither: 0 s (0~100)
- Sensor Type: NO (dropdown)
- Record
 - Record Delay: 10 s (10~300)
- Relay-out
 - Alarm Delay: 10 s (10~300)
- Send Email
- Audio Linkage
 - Play Count: 3 (1~10)
 - File: alarm.wav (dropdown)
- Warning Light
 - Mode: Flicker (dropdown)
 - Flicker Frequency: Medium (dropdown)
 - Duration: 10 s (5~30)
 - Period: Setting (button)
- Snapshot

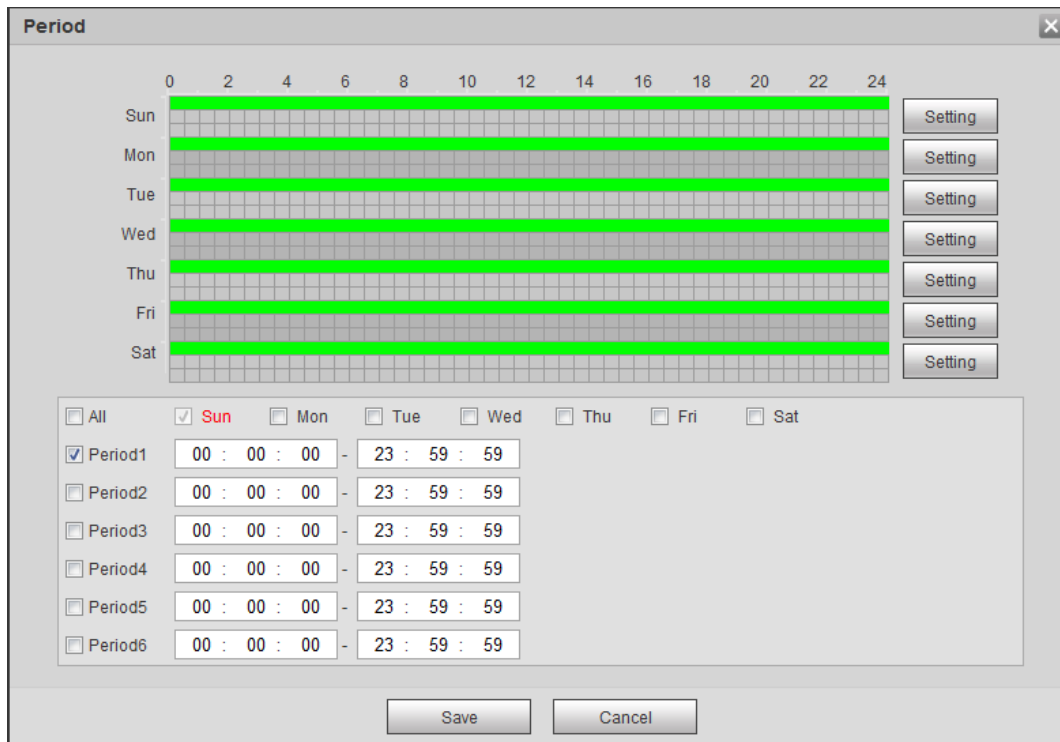
At the bottom, there are three buttons: Default, Refresh, and Save.

5.1.1.1 Setting Period

This section configures the date and time schedule in which the event is active.

Step 1 Click **Setting** next to **Period**.

Figure 5-2 Period



Step 2 Set arming periods. Alarms will be triggered in the time period in green on the timeline.

- Method 1: Click and drag the left mouse button on the timeline.
- Method 2: Manually enter a time period.
 1. Click **Setting** next to a day.
 2. Select a time period to be enabled.
 3. Enter start time and end time of a time period.



◇ Select **All** or checkboxes of some days to set the time period of multiple days at a time.

◇ You can set 6 time periods per day.

Step 3 Click **Save**.

5.1.1.2 Record Linkage

This section configures camera recording when an alarm event occurs. After the event, it will stop recording after an extended time period according to the **Record Delay** setting.

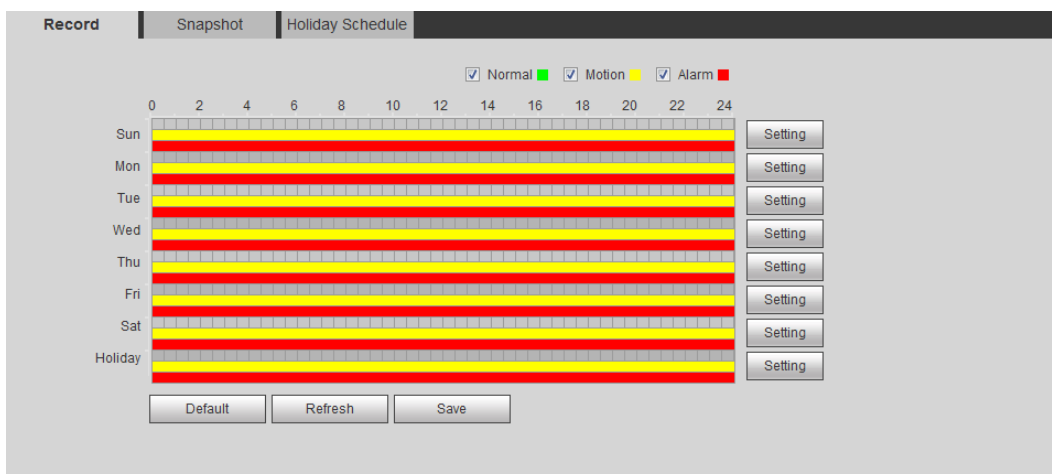
To use the record linkage function, set record plan for motion detection alarm and enable auto recording in record control.

5.1.1.2.1 Setting Record Plan

When the corresponding event type (**Normal**, **Motion**, and **Alarm**) is enabled, the camera will start recording.

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

Figure 5-3 Record

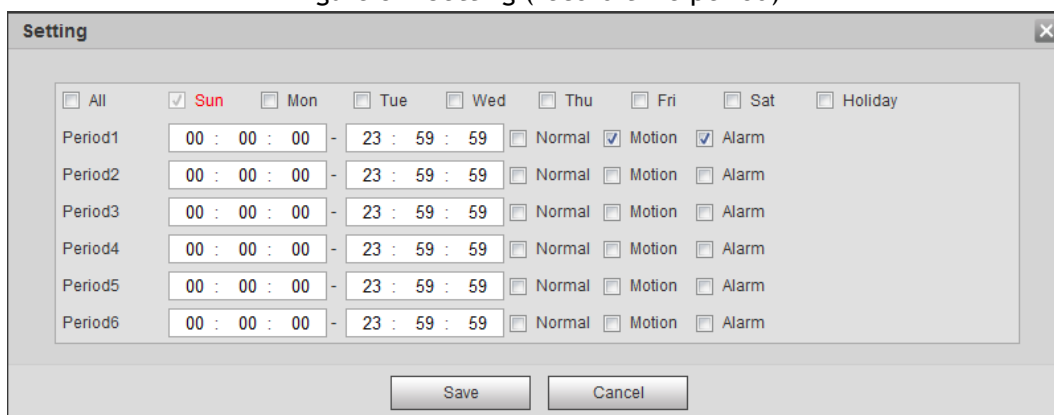


Step 2 Set the record plan.

Green represents normal record plan (such as constant recording); yellow represents motion record plan (such as recording triggered by intelligent events); red represents alarm record plan (such as recording triggered by alarm-input).

- Method one: Select a record type, such as **Normal**, then click and drag the left mouse button to set the time period for normal record on the timeline.
- Method two: Manually enter a time period.
 1. Click **Setting** next to a day.

Figure 5-4 Setting (record time period)



2. Select a day, and the alarm type next to a period, and then set the period.



- ◇ Select **All** or checkboxes of some days to set the time period of multiple days at one time.
- ◇ You can set 6 time periods per day.

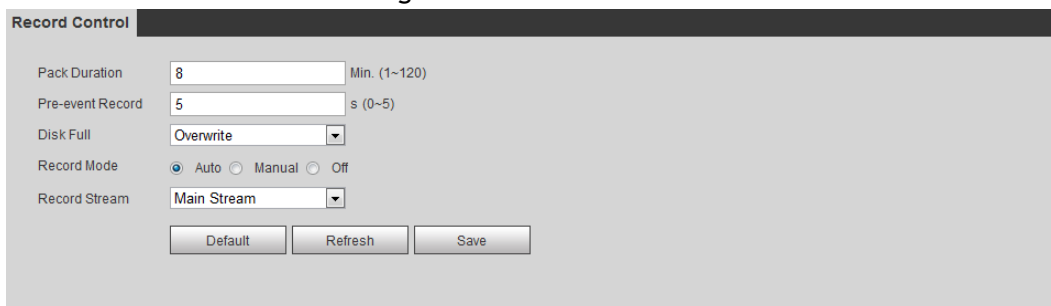
Step 3 Click **Save**.

Setting Record Control

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

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

Figure 5-5 Record control



Step 2 Set parameters.

Table 5-1 Description of record control parameters

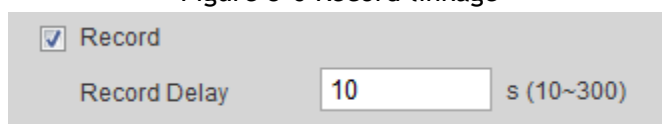
Parameter	Description
Pack Duration	Constant recording files are limited to the pack duration value. For example, if set to 5, each video file with constant recording is 5 minutes each.
Pre-event Record	The time to record the video in advance of a triggered alarm event. For example, if the pre-event record is set to be 5 s, the system saves the recorded video of 5 s before the alarm is triggered.
Disk Full	Recording strategy when the disk is full. <ul style="list-style-type: none"> • Stop: Stop recording when the disk is full. • Overwrite: Cyclically overwrite the earliest video when the disk is full.
Record Mode	When you select Manual , the system starts recording; when you select Auto , the system starts recording in the configured time period of record plan.
Record Stream	Select record stream, including Main Stream and Sub Stream .

Step 3 Click **Save**.

5.1.1.2.2 Setting Record Linkage

If you want the camera to record when an event (such as motion detect is triggered), check in the Record box. The **Record Delay** value is how much time the camera will record after the event has ended.

Figure 5-6 Record linkage



5.1.1.3 Snapshot Linkage

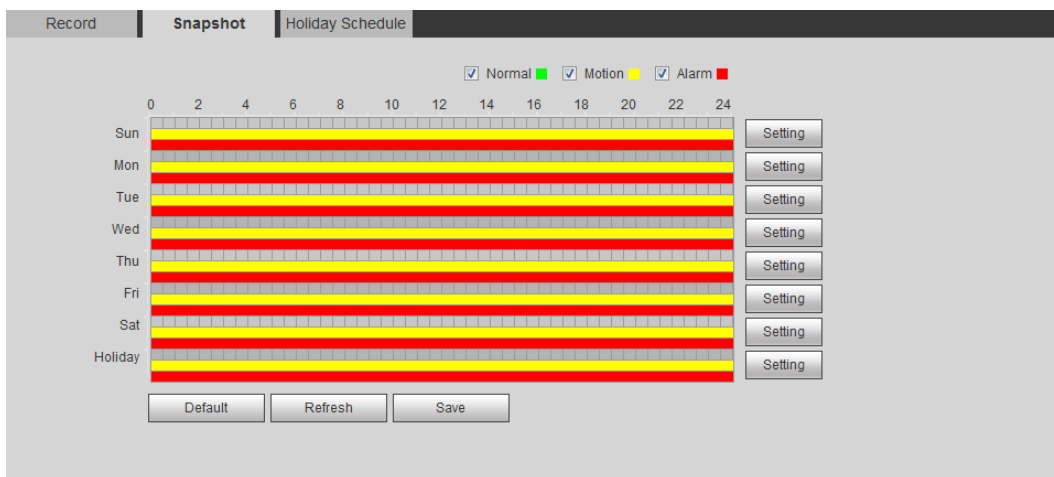
After snapshot linkage is configured, the IPC can automatically alarm and take snapshots when an event is triggered. For querying and setting snapshot storage location, see "4.5.2.5 Path".

5.1.1.3.1 Setting Snapshot Plan

The snapshot plan determines when the snapshots will be active.

Step 1 Select **Setting** > **Storage** > **Schedule** > **Snapshot**.

Figure 5-7 Snapshot

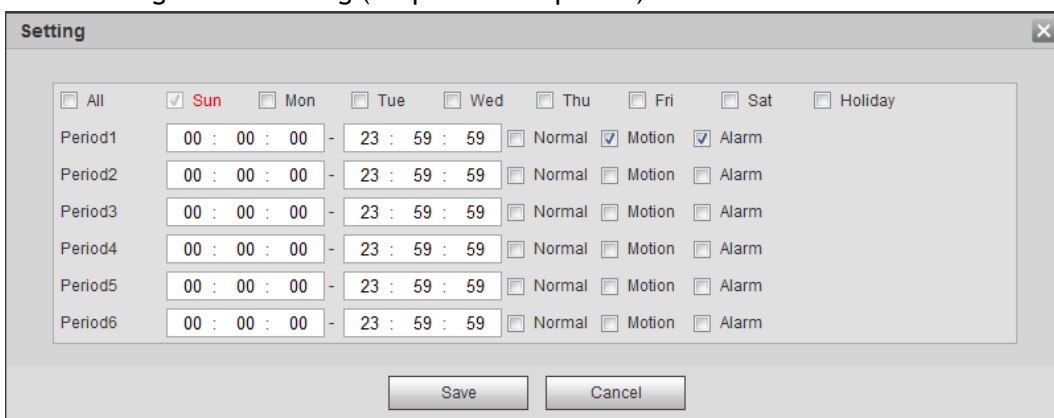


Step 2 Select snapshot type and set time period.

Green represents normal snapshot plan (such as timing snapshot); yellow represents motion snapshot plan (such as snapshot triggered by intelligent events); red represents alarm snapshot plan (such as snapshot triggered by alarm-in).

- Method one: Select snapshot type, such as **Normal**, and click and drag the left mouse button to set time period for normal snapshot on the timeline.
- Method two: Manually enter a specific time period.
 1. Click **Setting** next to a day.

Figure 5-8 Setting (snapshot time period)



2. Select a day, and the alarm type next to a period. Then set the period.



◇ Select **All** or checkboxes of some days to set the time period of multiple days at one time.

◇ You can set 6 time periods per day.

Step 3 Click **Save**.

5.1.1.3.2 Setting Snapshot Linkage

When enabled, the IPC will take a snapshot when the event is triggered.

Figure 5-9 Snapshot linkage



5.1.1.4 Relay-out Linkage

When enabled, the IPC will trigger the alarm relay-out device when the event is triggered. The **Alarm Delay** value determines the amount of time the alarm out will continue to trigger after the event has ended.

Figure 5-10 Relay-out linkage



5.1.1.5 Email Linkage

When enabled, the IPC will send an email to users when the event is triggered..

This will only function if the SMTP section has been configured. For details, see "4.6.5 SMTP (Email)".

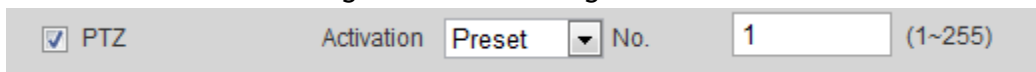
Figure 5-11 Email linkage



5.1.1.6 PTZ Linkage

When enabled, the PTZ will link an operation when the event is triggered.. For example, the PTZ will rotate to to a specified preset.

Figure 5-12 PTZ linkage



5.1.1.7 Warning Light Linkage

When enabled, the IPC will automatically enable a warning light (If it comes equipped with one). Set **Mode**, **Flicker Frequency**, **Duration**, and **Period**.

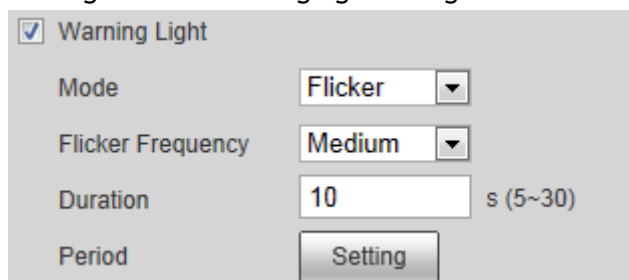
- **Mode**: The display mode of the warning light when an alarm is triggered. It includes **Normally on** and **Flicker**. When setting **Flicker** as the mode, you need to set the flicker frequency.



For Active Deterrence cameras with red and blue alarm light, only **Flicker** is supported in **Mode**.

- **Duration:** After setting warning light duration, the warning light is turned off after an extended time of period after an alarm. It is 5 seconds-30 seconds.
- **Period:** The schedule when the light will be active. When an event is triggered during the configured period, the system turns on the warning light. For the configuration, see "5.1.1.1 Setting Period".

Figure 5-13 Warning light linkage



The screenshot shows a configuration panel for 'Warning Light'. It includes a checked checkbox for 'Warning Light', a 'Mode' dropdown menu set to 'Flicker', a 'Flicker Frequency' dropdown menu set to 'Medium', a 'Duration' input field with '10' and a range indicator 's (5~30)', and a 'Period' section with a 'Setting' button.

5.1.1.8 Audio Linkage

When enabled, the IPC will broadcasts alarm audio file when an alarm event occurs. Select **Setting > Camera > Audio > Alarm Audio** to set alarm audio file.

Figure 5-14 Audio linkage



The screenshot shows a configuration panel for 'Audio Linkage'. It includes an unchecked checkbox for 'Audio Linkage' and a 'Play Duration' dropdown menu set to '10' with a unit indicator 's'.

5.1.2 Subscribing Alarm

5.1.2.1 About Alarm Types

For alarm types and preparations of alarm events, see Table 5-2.


Table 5-2 Description of alarm types

Alarm Type	Description	Prerequisites
Motion Detection	An event is triggered when moving object is detected.	Motion detection is enabled. For details, see "5.4.1 Setting Motion Detection".
Disk Full	An event is triggered when the free space of SD card is less than the configured value.	The SD card is installed and the no space function is enabled. For details, see "5.19.1 Setting SD Card".
Disk Error	An event is triggered when there is failure or malfunction in the SD card.	SD card failure detection is enabled. For details, see "5.19.1 Setting SD Card".
Video Tampering	An event is triggered when the camera lens is covered or the video images becomes unfocused.	Video tampering is enabled. For details, see "5.4.2 Setting Video Tampering".

External Alarm	An event is triggered when there the alarm input has been triggered.	The device has alarm input port and external alarm function is enabled. For details, see "5.18 Setting Relay-in".
Illegal Access	An event is triggered when the number of consecutive login password error has reached the threshold.	Illegal access detection is enabled. For details, see "5.19.3 Setting Illegal Access".
Audio Detection	An event is triggered when there is an audio connection issue detected.	Abnormal audio detection is enabled. For details, see "5.6 Setting Audio Detection".
IVS	An event is triggered when intelligent rule is triggered.	Enable IVS, crowd map, face detection or people counting, and other intelligent functions.
Scene Changing	An event is triggered when the device monitoring scene changes.	Scene changing detection is enabled. For details, see "5.4.3 Setting Scene Changing".
Voltage Detection	An event is triggered when the device detects abnormal voltage input.	Voltage detection is enabled. For details, see "5.19.4 Setting Voltage Detection".
Security Exception	An event is triggered when the device detects malicious network attack.	Voltage detection is enabled. For details, see "5.19.5 Setting Security Exception".

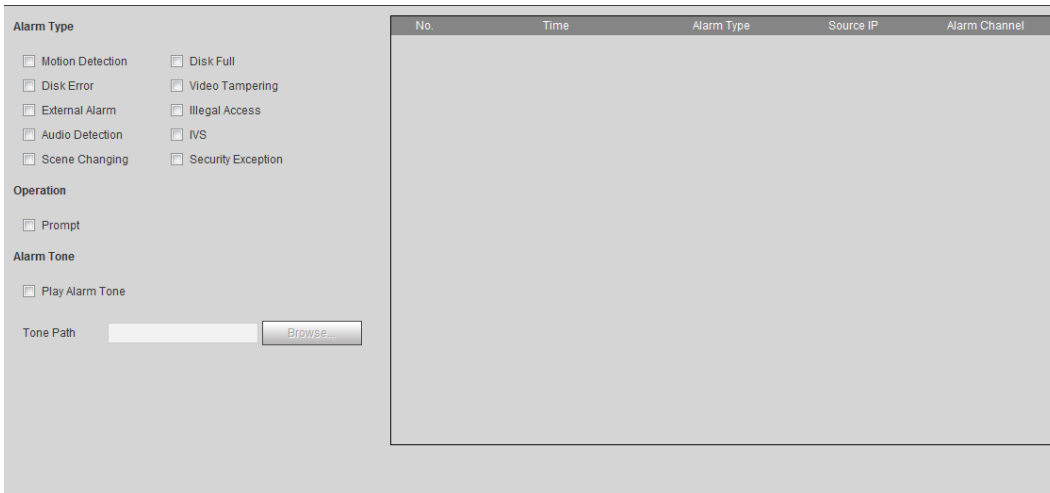
5.1.2.2 Subscribing Alarm Information

When a subscribed alarm event is triggered, the camera will output detailed alarm information on the right side of the interface.


 Functions of different devices may vary.

Step 1 Click the **Alarm** tab.

Figure 5-15 Alarm (subscription)



Step 2 Select **Alarm Type** as needed.

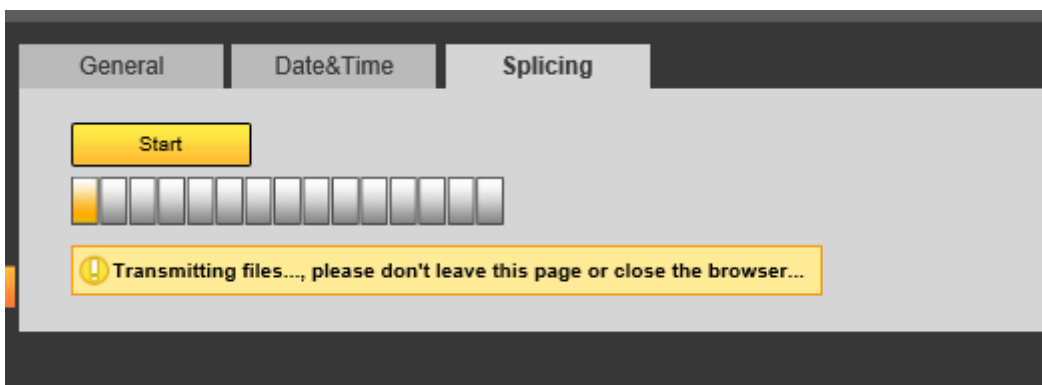
- Select **Prompt**. This will allow the subscribed events to be displayed when triggered.
 - ◇ If a subscribed alarm event is triggered and the **Alarm** interface is not displayed, the  is displayed on the **Alarm** tab and the alarm information is recorded automatically. Click the **Alarm** tab, and the icon will disappear.
 - ◇ When the subscribed alarm event is triggered and the **Alarm** interface is displayed, the corresponding alarm information is displayed in the alarm list at the right side of the **Alarm** interface.
- Select **Play Alarm Tone**, and select the tone path.
The system would play the selected audio file when the selected alarm is triggered.

Setting Panoramic Splicing

For panoramic cameras, Panoramic splicing must be performed to ensure a more seamless single image using multiple lenses. This should be performed only when the camera is installed in its final location.

Step 1 Select **Setting > General > Splicing**.

Figure 5-20 Panoramic Splicing



Step 2 Click **Start** to start the splicing process. The Camera will reboot when finished.

Setting Video Detection

The camera will trigger an event if there are considerable pixellation changes on the video such as moving objects or if the camera has been tampered and moved from its original position.

Setting Motion Detection

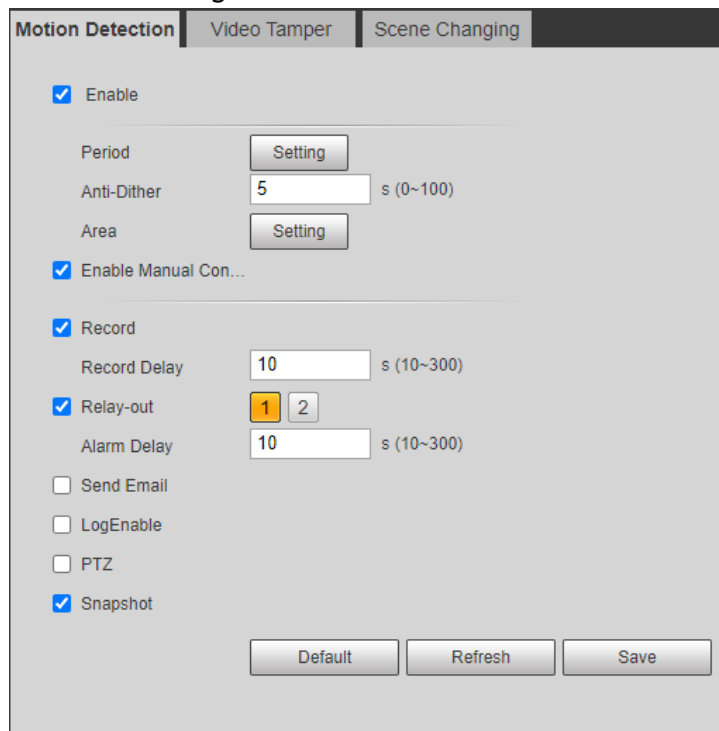
The camera will trigger an event if there is a pixellation change due to movement.



- If motion detection and Intelligent Motion detection is enabled simultaneously, with configured linked events, the linked events will take effect as following:
 - ◇ 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 Intelligent Motion Detection is triggered, all the configured linkages take effect.
- If you only enable motion detection, all the configured linkages take effect when motion detection is triggered.

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

Figure 5-22 Motion detection

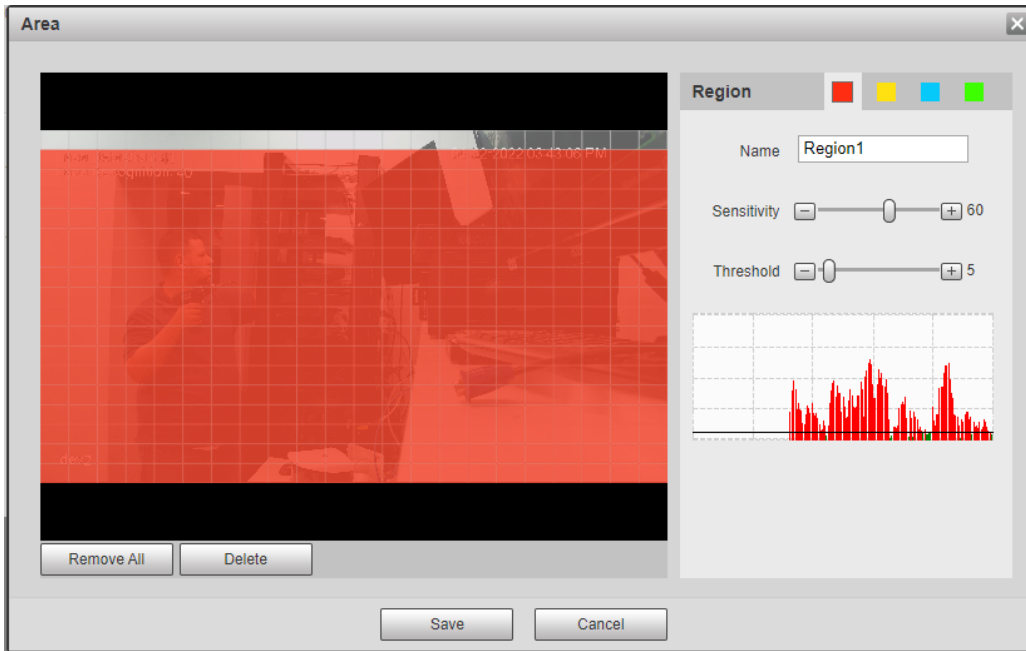


Step 2 Select the **Enable** checkbox to enable motion detection.


Step 3 Set an Region for motion detection.

- 1) Click **Setup** next to **Area**.

Figure 5-23 Area



2) Select a color and set the region name. Select the desired area for Motion Detection in the image and set **Sensitivity** and **Threshold**. If an area is transparent, motion will not trigger in that area.

- Select a color on  to set different detection parameters for each region.
- **Sensitivity:** Sensitive degree of outside changes. Motion events will trigger more frequently with a higher sensitivity.
- **Threshold:** Effective area threshold for Motion Detection. The smaller the threshold value, the more likely it is to trigger.
- The whole video image is the active area for Motion Detection by default.
- The red line in the waveform indicates that the Motion Detection is triggered, and the green indicates motion detection is not triggered. Adjust sensitivity and threshold according to the waveform.

3) Click **Save**.

Step 4 Set arming period and alarm linkage action. For details, see "5.1.1 Alarm Linkage".
Anti-dither: After an event triggers, it will wait for the set amount of time before it is able to trigger again.

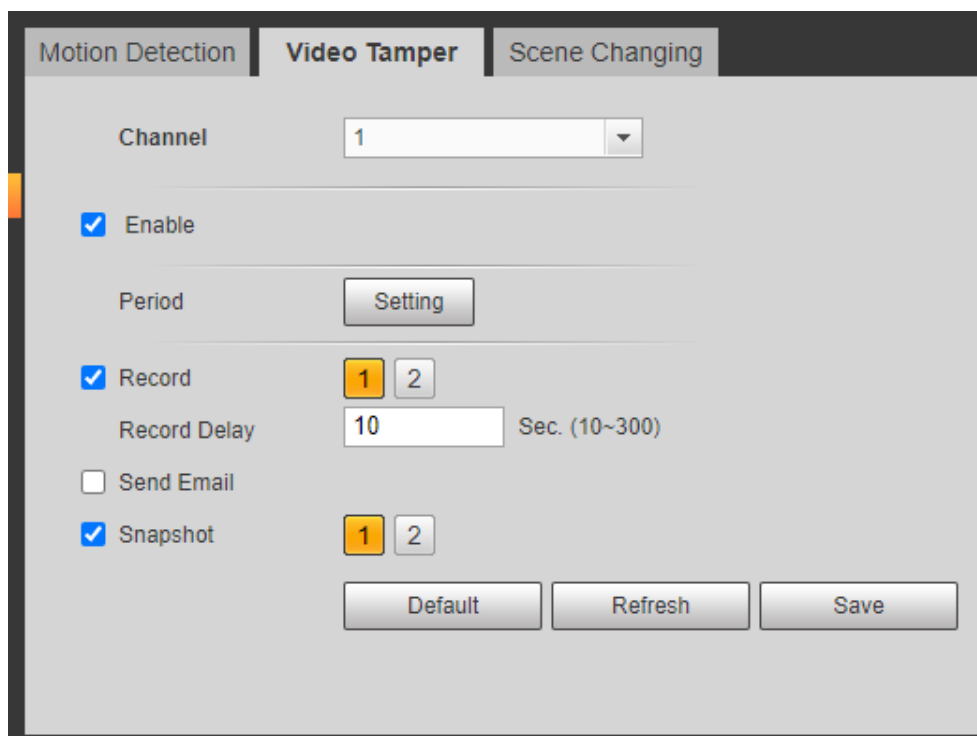
Step 5 Click **Save**.

Setting Video Tampering

The IPC will trigger an event if the lens is covered or the video output is mono-color screen caused by lighting or other environmental factors.

Step 1 Select **Setting > Event > Video Detection > Video Tamper**.

Figure 5-24 Video tampering



Step 2 Set arming periods and alarm linkage action such as E-mail or Snapshot. For details, see "5.1.1 Alarm Linkage".

Step 4 Click **Save**.

Setting Scene Changing

The IPC will trigger an event when the video image changes from the current scene to another one, such as an unauthorized movement of the camera position.

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

Figure 5-25 Scene changing

Motion Detection | Video Tampering | **Scene Changing**

Enable

Working Period

Record

Record Delay Second (10~300)

Relay-out

Alarm Delay Second (10~300)

Send Email

Snapshot

Step 2 Set arming periods and alarm linkage action. For details, see "5.1.1 Alarm Linkage".

Step 3 Click **Save**.

Setting Intelligent Motion Detection

The IPC will trigger an event if a human, non-motorized vehicle, or motor vehicle appear on the image. Enabling Intelligent Motion detection can avoid the false alarms triggered by the environment changes. This function is enabled by default.

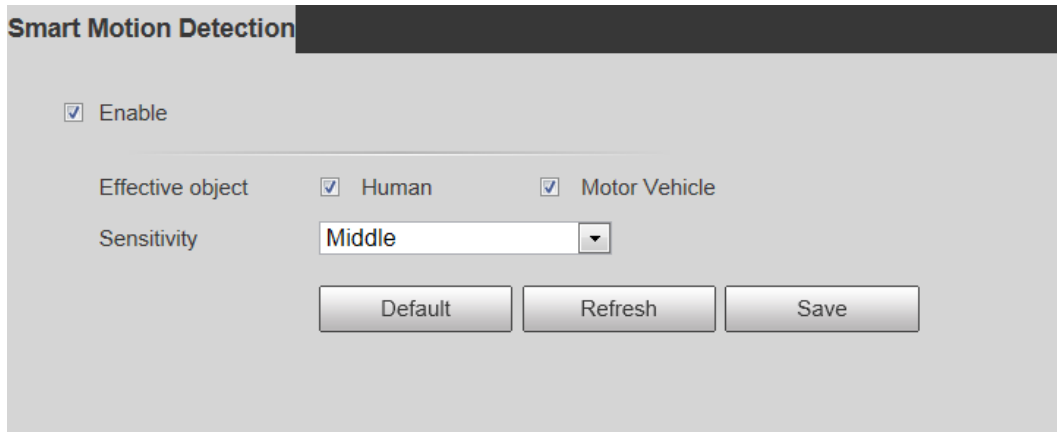
Prerequisites

- Select **Setting > Event > Video Detection > Motion Detection** to enable the motion detection function.
- You have set **Period** and **Area** in **Motion Detection**, with the sensitivity value larger than 0, and the threshold value smaller than 100.

Procedure

Step 1 Select **Setting > Event > Intelligent Motion Detection**.

Figure 5-26 Intelligent Motion detection



Step 2 Select the **Enable** checkbox to enable the Intelligent Motion detection function.

Step 3 Set effective object and sensitivity.

- **Effective object:** Includes **Human** and **Motor vehicle**. When you select **Human**, the camera will detect human and non-motorized vehicle.
- **Sensitivity:** Includes **Low**, **Middle**, and **High**. The higher the sensitivity is, the easier the alarm will be triggered.

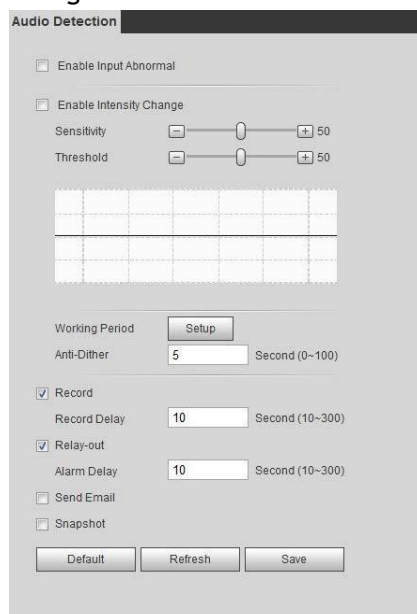
Step 4 Click **OK**.

Setting Audio Detection

The IPC can trigger an event if a tone change, or rapid changes in sound intensity is detected.

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

Figure 5-27 Audio detection



Step 2 Set parameters.

- **Input abnormal:** An event will be triggered when the IPC detects abnormal sound input.
- **Intensity change:** Select the **Enable Intensity Change** checkbox and then set **Sensitivity**

and **Threshold**. When the IPC detects that the sound intensity exceeds the set threshold, an event is triggered.

- ◇ It is easier to trigger the alarm with higher sensitivity or smaller threshold. Set a high threshold for noisy environment.
- ◇ The red line in the waveform indicates audio detection is triggered, and the green indicates no audio detection. Adjust sensitivity and threshold according to the waveform results.

Step 3 Set arming periods and alarm linkage action.

Step 4 Click **Save**.

Setting Smart Plan











Smart plan includes face detection, heat map, IVS, people counting, face detection, video metadata, 3D Analysis and schedule. The intelligent function can be enabled only after the corresponding smart plan is enabled in this section.

Basic Smart Plan

Step 1 Select **Setting > Event > Smart Plan**.

The **Smart Plan** interface and icons. See the table below.

Table 5-5 Description of smart plan icon

Icon	Description	Icon	Description	Icon	Description
	Face detection		Crowd map		Heat map
	3D Analysis		IVS		Face recognition
	People counting		Video metadata	—	—
	ANPR		Vehicle density	—	—

Step 2 Select the desired smart functions as necessary.

Different cameras support different ways to enable smart functions. See below for the differing methods.

- Select an icon to enable the corresponding smart plan.

Click an icon to enable it, and the selected smart function will be highlighted. Click it again to cancel the selection.

If the icon  on the interface, click it to enable the smart function switch.

- Enable smart plan through **Add Plan**.
Select a preset point (if using a PTZ) from the **Add Plan** the interface. The smart plan for the point is displayed.
 1. Click the corresponding icon to enable a smart function.
The selected smart function is highlighted. Click it again to cancel the selection.

Step 3 Click **Save**.

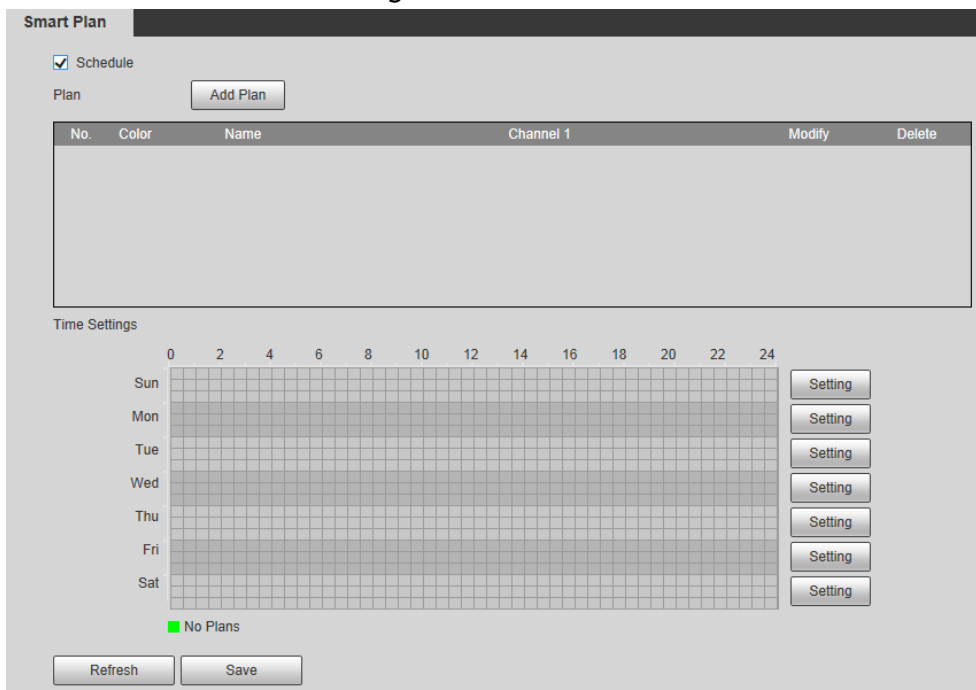
Schedule

This section configures the time period when the Smart Plans will be active.

Step 1 Select **Setting > Event > Smart Plan**.

Step 2 Enable **Schedule**.

Figure 5-28 Schedule



The screenshot shows the 'Smart Plan' configuration window. At the top, there is a 'Schedule' checkbox which is checked. Below it is a 'Plan' section with an 'Add Plan' button. A table with the following columns is present: 'No.', 'Color', 'Name', 'Channel 1', 'Modify', and 'Delete'. The table is currently empty. Below the table is a 'Time Settings' section featuring a grid for days of the week (Sun, Mon, Tue, Wed, Thu, Fri, Sat) and hours (0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24). A legend below the grid shows a green square next to the text 'No Plans'. To the right of the grid are seven 'Setting' buttons, one for each day of the week. At the bottom of the window are 'Refresh' and 'Save' buttons.

Step 3 Click **Add Plan**.



1. Rename the plan as needed.
2. Select smart plan. Other plans which are incompatible with the one that you selected will turn gray.
3. Click **Save**.
4. (Optional) Follow [Step 1](#) to [Step 3](#) to add more plans. You can add 10 plans at most, depending on the IPC model.
 - Click  to modify the plan added.
 - Click  to delete the plan.

Figure 5-29 Add plan (1)

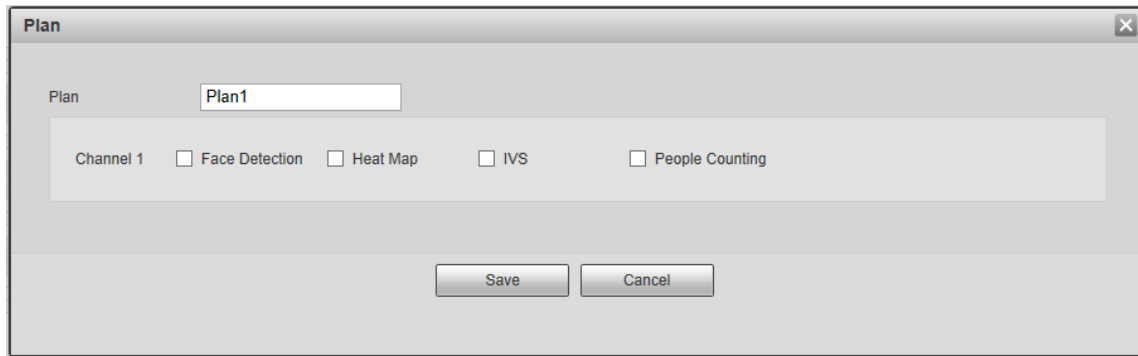
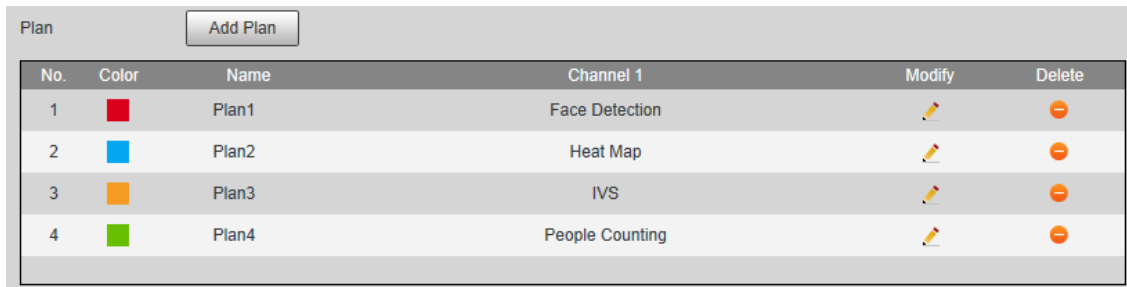


Figure 5-30 Add plan (2)



No.	Color	Name	Channel 1	Modify	Delete
1	Red	Plan1	Face Detection		
2	Blue	Plan2	Heat Map		
3	Orange	Plan3	IVS		
4	Green	Plan4	People Counting		

Step 4 Configure the time settings.

1. Click **Settings**.
2. Configure the period. In the **Smart Plan** list, select the type as needed.
3. Click **Save**.
4. (Optional) Repeat step 1-4 to add more plans for different time periods.
 - You can set up to 6 different plans for one day.
 - One period can only add a single smart plan.

Figure 5-31 Time settings (1)

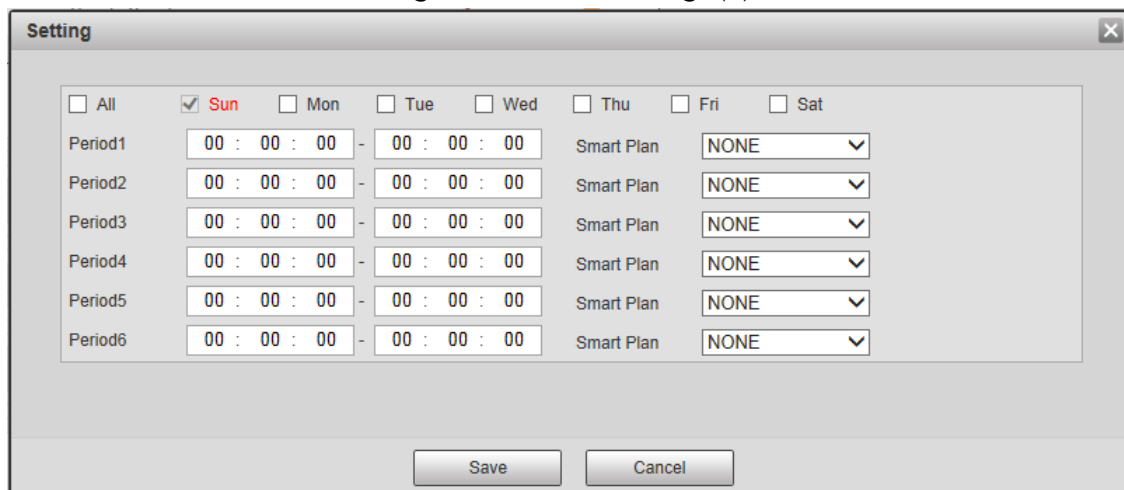
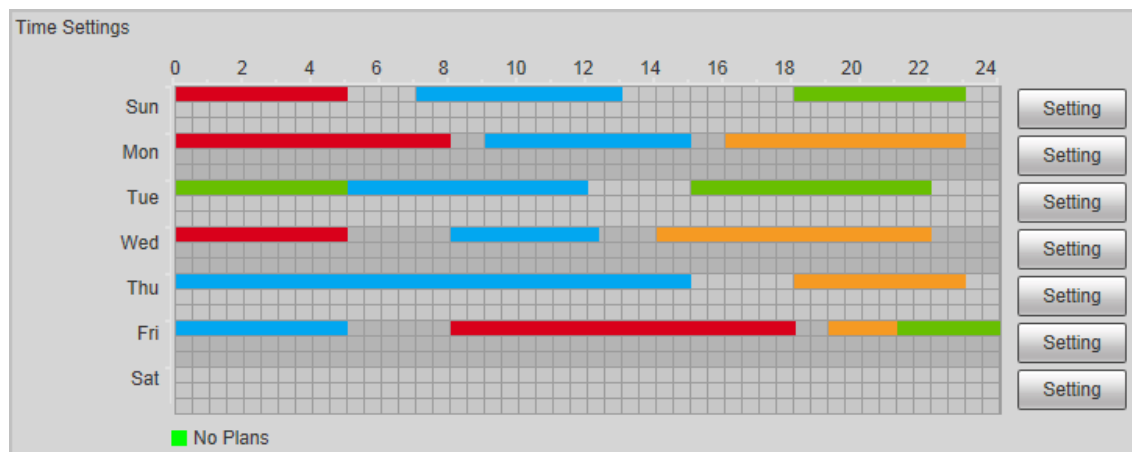


Figure 5-32 Time settings (2)



Step 5 Click **Save**.



Schedule function is only available on single-channel cameras.

Setting IVS

Below are steps you can take to ensure your IVS rule setup is optimized:

- Reduce the complexity of the target area as much as possible.
- If IVS rules are setup on a channel, make sure motion detect/ Intelligent motion detect is disabled on that channel, as having both IVS rules and motion detect enabled on the same channel have been known to cause issues.
- Avoid target areas such with glass, reflective surfaces, water surfaces, heavily wooded locations as well as Insects flying close to the camera lens as these can generate false positive alerts.
- Target areas with a dense amount of target objects is not recommended.
- Target areas should avoid heavy backlit, direct light and locations with frequent illumination changes (shadows, etc).
- Disable Intellistreaming if enabled. Intellistreaming disables features such as IVS rules.
- The recommended target size should be less than 10% of the overall image.
- The minimum recommended target size is 50×50 pixels.
- The target object should be continuously present within the frame for at least two seconds.
- The target object and the background brightness difference should not be less than 10 greyscale.

Rule Configuration

Set rules for IVS, including tripwire, intrusion, abandoned object, moving object, fast moving, parking detection, crowd gathering, and loitering detection.

- Select **Setting** > **Event** > **Smart Plan**, and enable **IVS**.
- Select **Setting** > **Event** > **IVS**

Table 5-7 Description of IVS functions

Rule	Description	Applicable Scene
Tripwire	When the target crosses the virtual tripwire from the defined motion direction, the IPC will trigger an event.	Scenes with sparse targets and no occlusion among targets.
Intrusion	When the target enters, leaves, or appears in the detection area, IPC will trigger an event	
Abandoned object	When an (non-human) object is left abandoned in the detection area over a set time, IPC will trigger an event.	<p>Scenes with sparse targets and without obvious and frequent light change. A simple scene in the detection area is recommended.</p> <ul style="list-style-type: none"> ● Missed alarms may increase in scenes with dense targets, frequent occlusion, and people staying. ● In scenes with complex foreground and background, false alerts may be triggered for abandoned or missing object.

Missing object	When an object is removed from the detection area over a defined time, the IPC will trigger an event.	<p>Scenes with sparse targets and without obvious and frequent light change. A simple scene in the detection area is recommended</p> <ul style="list-style-type: none"> • Missed alarms may increase in the scenes with dense targets, frequent occlusion, and people staying. • In scenes with a complex foreground and background, false alerts may be triggered for abandoned or missing object.
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Rule	Description	Applicable Scene
Fast moving	When an object's speed is greater than the configured speed, the IPC will trigger an event.	<p>Scene with sparse targets and less occlusion. The camera should be installed right above the monitoring area.</p> <p>The light direction should be vertical to the motion direction.</p>
Parking detection	When a target vehicle stays at an area over the configured time, the IPC will trigger an event.	Road monitoring and traffic management.
Crowd gathering	When a crowd gathers or the crowd density is greater than the configured value, the IPC will trigger an event.	Scenes with medium or long distances, such as outdoor plazas, government entrance, station entrance and exit. It is not suitable with short viewing angles.
Loitering detection	When a target loiters over the minimum alarm time, the IPC will trigger an event. After alarm is triggered, if the target stays in the area within the time interval of alarm, then alarm will be triggered again.	Scenes such as park and hall.

Configure IVS rules. This section uses tripwire as an example.

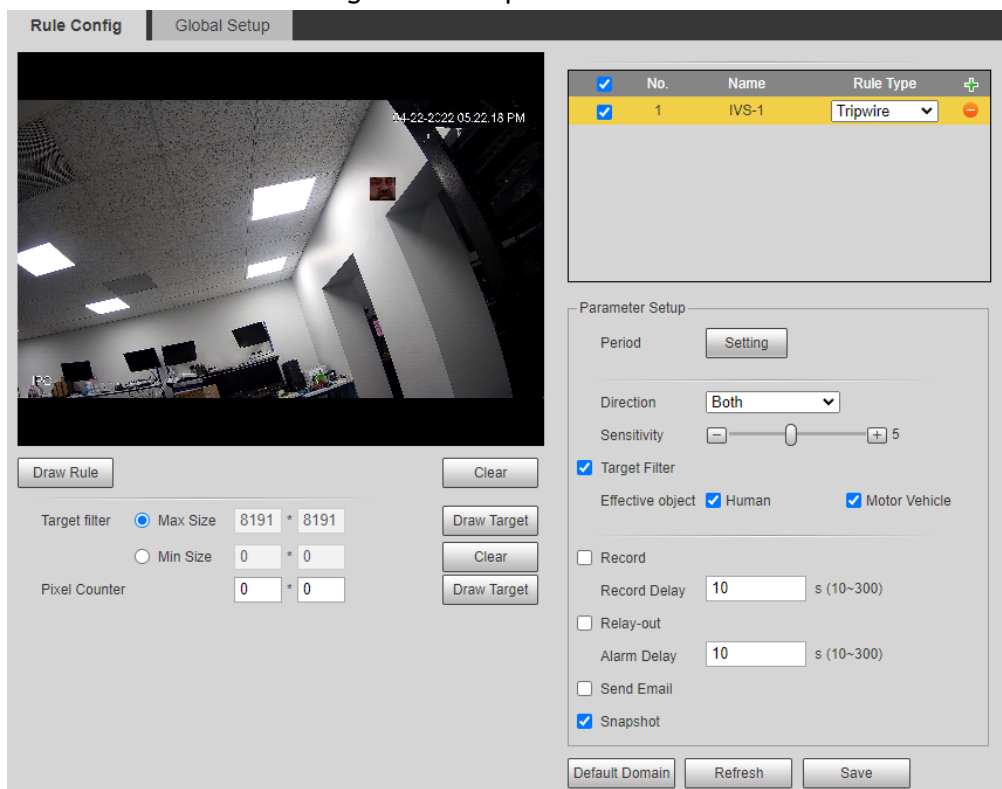


Navigate to the **Rule Config** interface of the PTZ camera. The PTZ lock function is automatically enabled. The locking time is 180 seconds. You can only manually control the PTZ during the locking time. Click **Unlock** at lower left corner of the **Rule Config** interface to manually unlock the PTZ, and click **Lock** again to relock the PTZ.

Step 1 Select **Setting > Event > IVS > Rule Config**.

Step 2 Click **+** on the **Rule Config** interface, double-click the name to modify the rule name, and then select **Tripwire** from the **Rule Type** drop-down list.

Figure 5-34 Tripwire



Step 3 Click **Draw Rule** to draw rule line in the image. Right-click to finish drawing. For requirements of drawing rules, see Table 5-7. After drawing rules, drag corners of the detection area to adjust the area range.

Table 5-8 Description of IVS analysis


Rule	Description
Tripwire	Draw a detection line.
Intrusion	Draw a detection area. <ul style="list-style-type: none"> When abandoned object is utilized, an event will be triggered if a pedestrian or vehicle loiters. Set the target size to filter pedestrian and vehicles accordingly. When crowd gathering is utilized, false alarms may be triggered by low height installation, a large percentage of single person obscuring the image, continuous shaking of the camera, shaking of leaves and tree shade, frequent opening or closing of retractable door, or dense traffic or people flow.
Abandoned object	
Missing object	
Fast moving	
Parking detection	
Crowd gathering	
Loitering detection	


Step 4 (Optional) Click **Draw Target** at the right side of **Target Filter**, and then draw the target in the image.

- When the rule of crowd gathering is configured, you do not need to set target filter, but an area will need to be created. Click **Draw Target** to draw the minimum gathering area in the scene. The event will trigger when the number of people in the detection area exceeds the minimum area and the duration.
- Click **Clear** to delete all drawn detection lines.
- Click **Draw Target** next to **Pixel Counter**, and then click and hold the left mouse button to draw a rectangle. The **Pixel Counter** will display the drawn pixel count. Used for estimating pixels on a target.

Step 5 Set rule parameters for IVS.

Table 5-9 Description of IVS parameters

Parameter	Description
Direction	Set the direction of rule detection. <ul style="list-style-type: none"> When setting cross fence detection and tripwire, select A->B, B->A, or A<->B. When setting intrusion, select Enters, Exits, or Enter&Exit.
Action	When setting intrusion action, select Appears or Cross .
Object tracking	Select Object Tracking to enable this function. When alarm is triggered by a moving object, select 1P+3 or 1P+5 as the object tracking display mode in the Live interface. Then the tracking scene follows the moving object until the object is out of the camera range. For details, see "4.2.4 Window Adjustment Bar".  This function is available on some select models.
Track linkage	Select AlarmTrack and set the PTZ tracking time. When an event is triggered, the camera automatically tracks the person or object that triggers the alarm. Tracking time is the duration that the camera automatically tracks the object.

Parameter	Description
Track Time	<p>The time in which the PTZ will track an object.</p>  <p>Before enabling this function, you need to enable or disable the Alarm Track function under Smart Track as necessary.</p> <ul style="list-style-type: none"> • When the Channel is set as 1, disable Alarm Track under Smart Track. • When the Channel is set as 2 or 3, enable Alarm Track under Smart Track.
AI Recognition	<p>Select AI Recognition to enable this function.</p> <ul style="list-style-type: none"> • If you select Person as the alarm target, an event will be triggered when the system detects a human triggered the rule. • If you select Vehicle as the alarm target, an event will be triggered when the system detects that a vehicle has triggered the rule.
Duration	<ul style="list-style-type: none"> • For abandoned object, the duration is the amount of time an object is abandoned before an event is triggered. • For missing object, the duration is is the amount of time after an object is missing before an event is triggered. • For parking detection, crowd gathering, or loitering detection, the duration is the amount of time after an object appears in the area before an event is triggered..
Sensitivity	<ul style="list-style-type: none"> • For fast moving, sensitivity is related to the speed of an object before an event is triggered. Lower sensitivity requires faster moving speed to trigger the event. • For crowd gathering, sensitivity is related to the event triggering time. It is easier to trigger the alarm with higher sensitivity.

Step 6 Set arming periods and alarm linkage action. For details, see "5.1.1 Alarm Linkage".

Step 7 Click **Save**.

To view alarm information on the **Alarm** tab, you need to subscribe to the appropriate alarm event.

For details, see "5.1.2 Subscribing Alarm".

Setting Crowd Map

You can view crowd distribution on the map in real time for crowd monitoring, to prevent accidents such as stampedes.

Global Configuration

Set the calibration parameters of panoramic cameras.

Calibration Purpose

Determine corresponding relationship between 2D image captured by the camera and 3D actual object according to one horizontal ruler and three vertical rulers calibrated by the user and the corresponding actual distance.

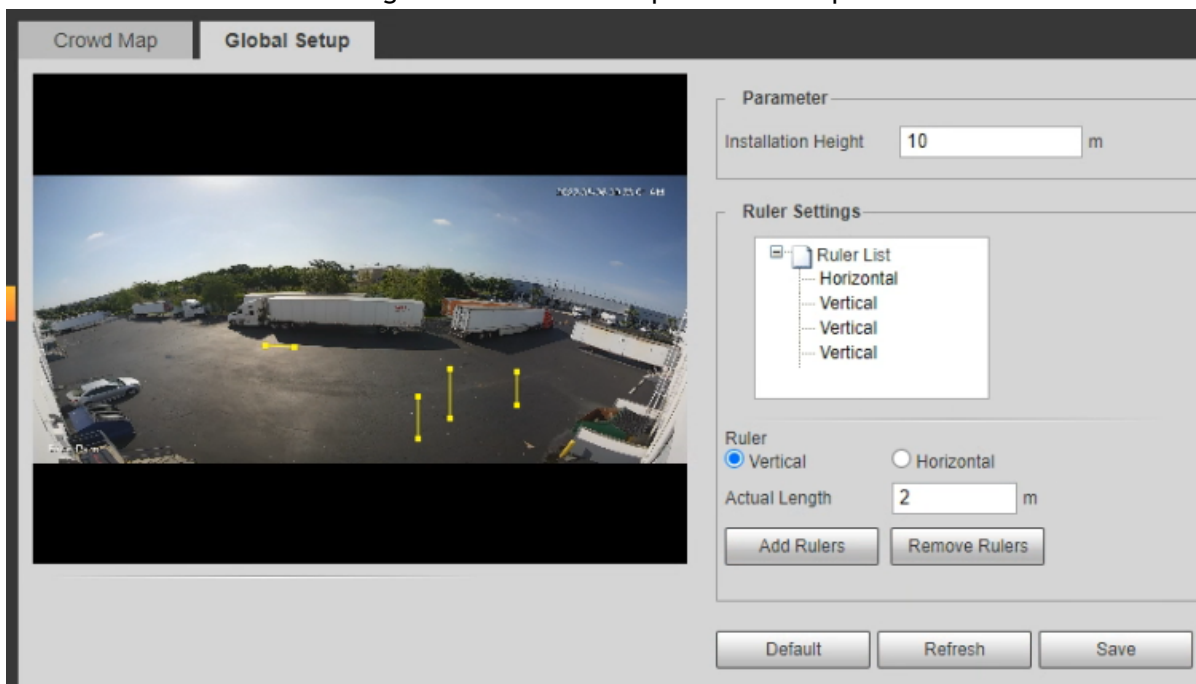
Notes

When drawing calibration ruler, keep the ruler length consistent with the actual length of the object.

Procedure

1. Select **Setting > Event > Crowd Map > Global Setup**

Figure 5-35 Global setup of crowd map



2. Set calibration area and ruler.
 - a. Click **Add Calibration Area** and draw a calibration area in the image.
 - b. Select a calibration type and enter the actual length, and then click **Add Rulers**.
 - c. Draw one horizontal ruler and three vertical rulers in the calibration area.
3. Click **Save**.

Rule Configuration

When the number of people or the crowd density in the detection area exceeds the configured threshold, the system performs event and alarm linkages.

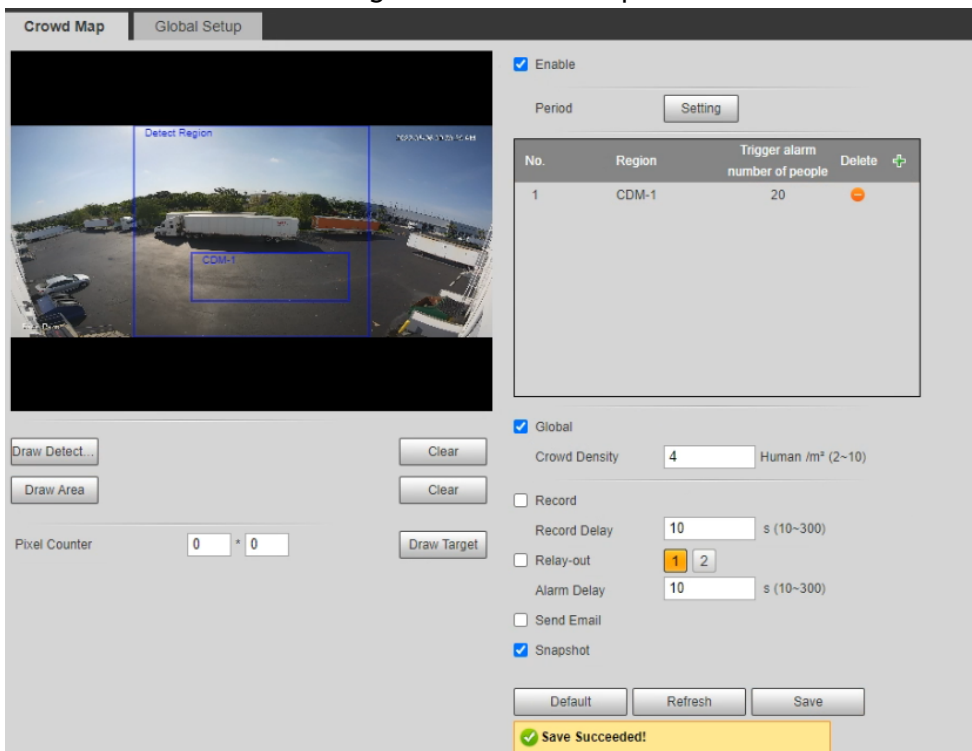
Prerequisites

- Select **Setting > Event > Smart Plan**, and enable **Crowd Map**.
- Select **Setting > Event > Crowd Map > Global Setup** to configure the crowd map.

Procedure

Step 1 Select **Setting > Event > Crowd Map > Crowd Map**.


Figure 5-36 Crowd map



Step 2 Select the **Enable** checkbox to enable the crowd map function.

Step 3 Click **Draw Detection Area** to draw global area for detecting crowd distribution in the image.

After drawing a global area, you can draw multiple local statistical areas in the global area as necessary.

1) Click , and then click **Draw Area** to draw local statistical area in global detection area.

You can draw up to eight statistical areas.


2) Double-click the area name and the alarm people amount to set the area name of local statistical area and the threshold of the alarm people amount.

When the number of people in the statistical area exceeds the alarm people amount, the

system will create an event. The default alarm people amount is 20.

Step 4 Set parameters.

Table 5-10 Description of crowd map parameters

Parameter	Description
Global	Select the Global checkbox and set the crowd density threshold. The system detects crowd distribution in the global area. When the crowd density exceeds the configured threshold, the system performs alarm linkages.
Crowd Density	
Smart track	<p>When an event is triggered by the panoramic camera, the PTZ camera automatically turns to the position where event is triggered. The tracking time is "idle time + five seconds." For the details of idle time configuration, see "5.2.2 Enabling Alarm Track"</p> <p>Linkage rules:</p> <ul style="list-style-type: none"> • Detect global alarm only: Priority is to the crowd with highest density. • Detect local alarm only: Priority is to the local area that triggers event first. • Detect global alarm + one local alarm: Priority is to the local area, and then the crowd with highest density when there is no alarm in local area. • Detect global alarm + multiple local alarms: Priority is the local area that triggers event first, and then the crowd with highest density when there is no event in local area. <p> Before enabling this function, you need to configure Smart Track. For details, see "5.2 Setting Smart Track".</p>
Pixel Counter	Click Draw Target next to Pixel Counter, and then click and hold the left mouse button to draw a rectangle. The Pixel Counter will display the drawn pixel count. Used for estimating pixels on a target.

Result

Step 5 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage"

Step 6 Click **Save**.


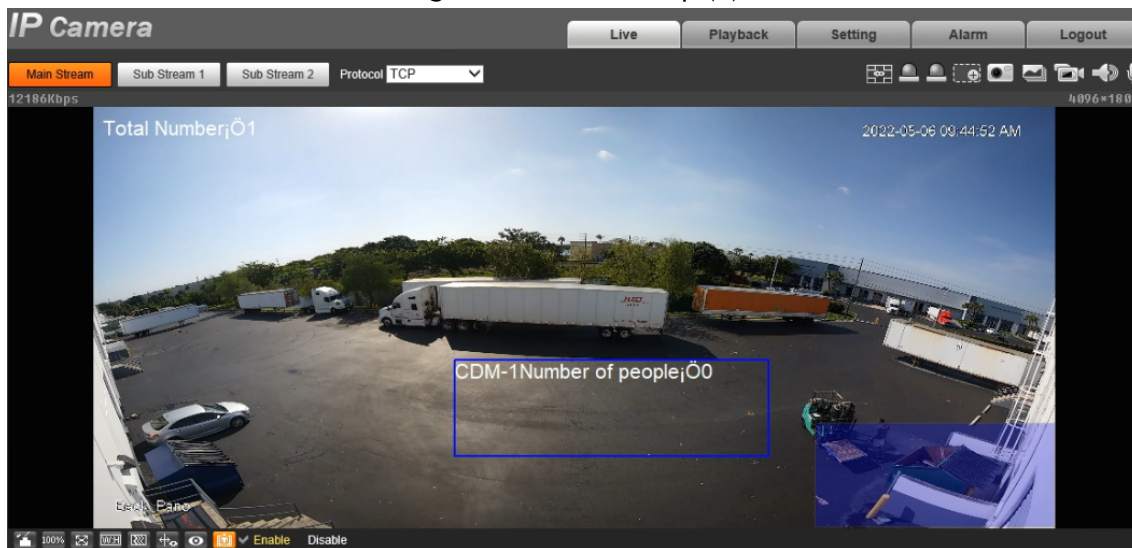
Click  on the **Live** interface to view the crowd map.

Figure 5-37 Crowd map (1)



Double-click the rendering area at the lower-right corner in the image to view crowd distribution in the area.

Figure 5-38 Crowd map (2)



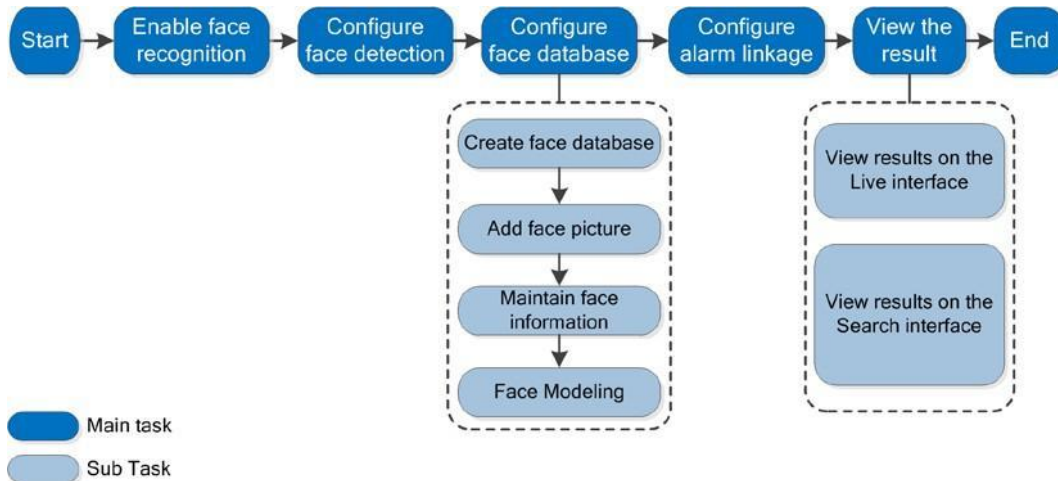
Setting Face Recognition

When a face is detected or recognized in the detection area, the system can perform event linkage and and be searched in its database.

- **Face Detection:** When a face is detected in the area, the system performs event linkage, such as recording and sending emails.
- **Face Recognition:** When a face is detected in the area, the system compares the captured face image with the information in the face database, and links an event according to the comparison result.

For the process of setting face recognition, see Figure 5-39.

Figure 5-39 Face recognition flowchart



Setting Face Detection

When a face is recognized in the detection area, the system performs event linkage.

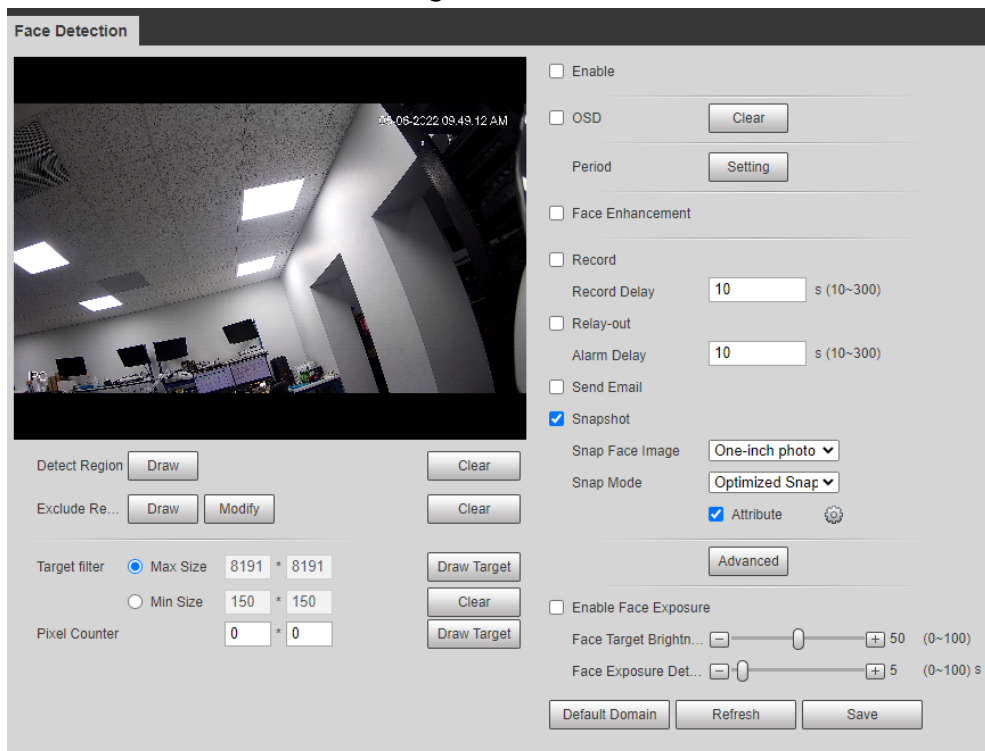
Prerequisites

Select **Setting > Event > Smart Plan**, and then enable **Face Recognition**.

Procedure

Step 1 Select **Setting > Face Recognition > Face Detection**.

Figure 5-40 Face detection



Step 2 Select the **Enable** checkbox to enable the face detection function.

Step 3 (Optional) Click **Draw** next to **Detect Region** to draw a face detection area in the image.

Step 4 (Optional) Click **Draw** next to **Exclude Region** to draw a non-face detection area in the



Detect Region.

Step 5 (Optional) Select **Max Size** or **Min Size**, click **Draw Target** at the right side of **Target filter**, and then draw the target in the image.

Step 6 Set parameters.

Table 5-11 Description of face detection parameters

Parameter	Description
OSD	Toggles statistics in OSD. The number people with face detected and recognized will be displayed on the Live interface Click Reset to reset the statistics.
Face Enhancement	Optimizes faces in low bit rate streams.
Non-living Filtering	Filters objects that may have a face but are not recognized as a living being. (such as posters with faces on them)
Snap Face Image	Set a range for snapping face image, including face picture, one-inch picture, and custom. When selecting Custom , click Setting , configure the parameters on the prompt interface, and then click OK . <ul style="list-style-type: none"> ● Customized width: Set snapshot width; enter a value for the face width. It ranges from 1-5. ● Customized face height: Sets face height in snapshot; enter a value for the height. It ranges from 1-2. ● Customized body height: Set body height: in snapshot; enter a value for the body height. It ranges from 0-4. If the value is 0, only the face image will be cut out.

Parameter	Description
Snap Mode	<ul style="list-style-type: none"> ● Optimized Snapshot: Captures the clearest picture within the configured time after the camera detects a face. ● Recognition Priority: Repeatedly compares the captured face to the faces in the armed face database, captures the most similar face image then creates an event. It is recommended to use this mode in access control applications.  Click Advanced to set the optimized time.
Attribute	Select the Attribute checkbox, then click  to set the face attributes to display when a face is detected.

Advanced	<ul style="list-style-type: none"> • Snapshot Angle Filter: Set snapshot angle to be filtered during the face detection. • Snapshot Sensitivity: Set snapshot sensitivity during face detection. It is easier to detect faces with higher sensitivity. • Optimized Time: Set a time period to capture the clearest picture after the camera detects a face.
Enable Face Exposure	When a face is detected, the camera can enhance the brightness of the face to make the face image clearer.
Face Target Brightness	Sets the face target brightness. The default value is 50.
Face Exposure Detection Interval	Prevents image flickering caused by constant adjustment of face exposure. The default value is five seconds.
Pixel Counter	Click Draw Target next to Pixel Counter, and then click and hold the left mouse button to draw a rectangle. The Pixel Counter will display the drawn pixel count. Used for estimating pixels on a target.

Step 7 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 8 Click **Save**.

Setting Face Database

Face Recognition cameras typically come with the Face Database function. The faces in the database can be used to compare with the faces detected. Face database configuration includes creating face database, adding face picture, and face modeling.

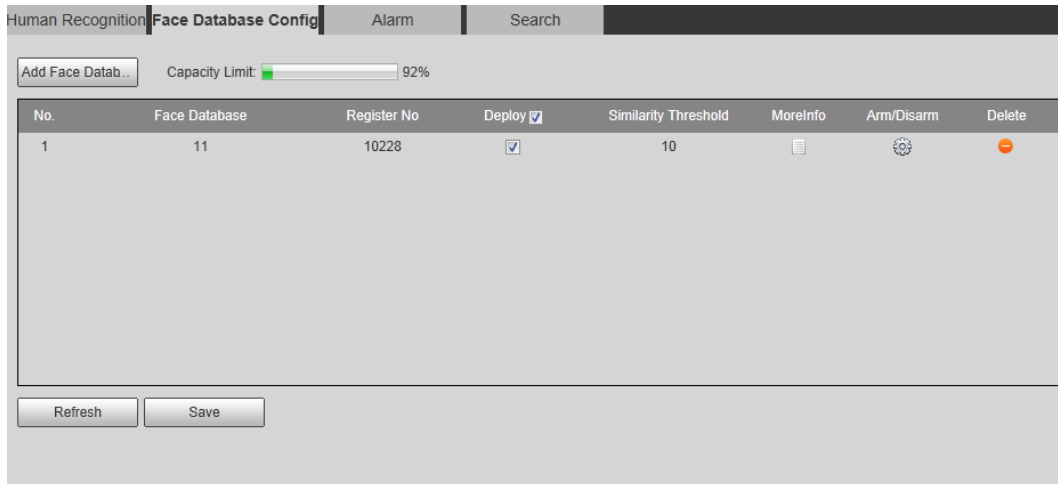
5.10.2.1 Creating Face Database

Face database includes face images, data and other information. It also provides comparison data for the captured face pictures.

Step 1 Select **Setting > Event > Face Recognition > Face Database Config**.

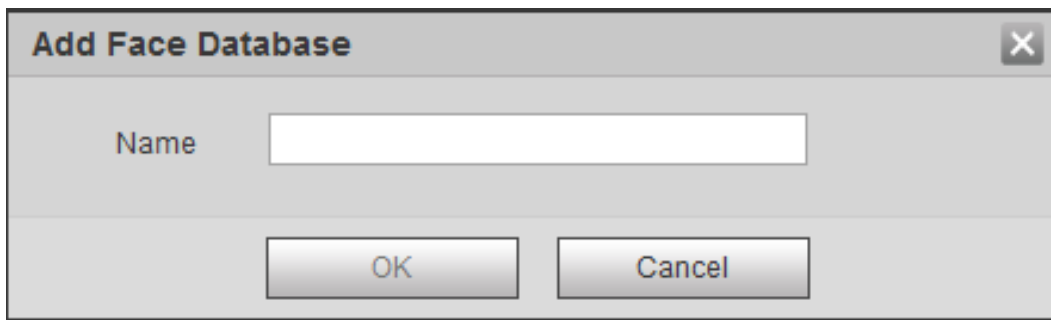
Capacity Limit: Shows the usage of the memory.

Figure 5-41 Face database configuration



Step 2 Click **Add Face Database**.

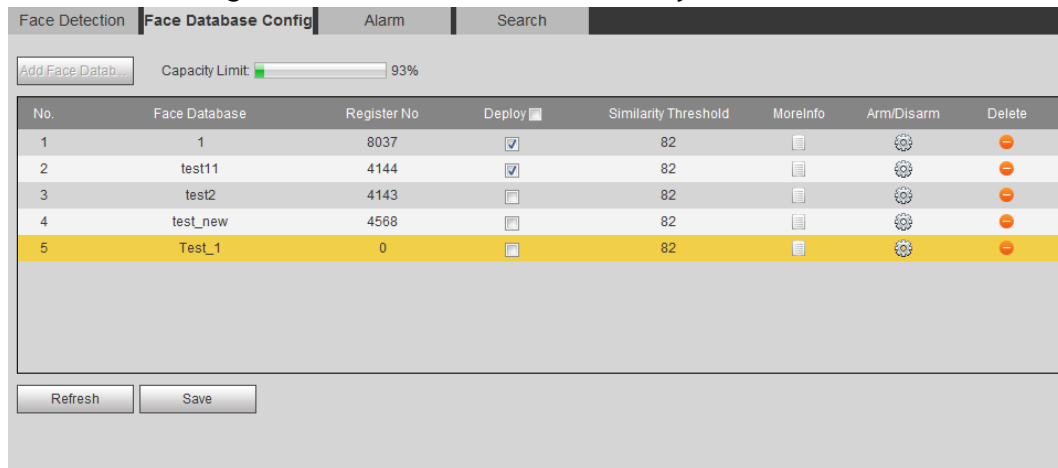
Figure 5-42 Add face database



Step 3 Set the name of the face database.

Step 4 Click **OK**.

Figure 5-43 Face database successfully added



Step 5 Set parameters.

Table 5-12 Description of face database parameters

Parameter	Description
Deploy	Enables the face database. The captured face images will be compared to the armed face database.
Similarity Threshold	The detected face matches the face database only when the similarity between the detected face and the face feature in face database reaches the configured similarity threshold. After successful match, the comparison result is displayed on the Live interface.
MoreInfo	Click MoreInfo to manage face database. You can search face images by setting search conditions, register personnel, and modify personnel information.
Arm/Disarm	Set the alarm time period. Alarm event will be triggered only within the defined time. See "5.1.1.1 Setting Period".
Delete	Delete the selected face database.

5.10.2.2 Adding Face Picture

Add face picture to the created face database. Single adding and batch importing are supported. Requirements on face pictures:

- The face picture size limit is 50Kb-150Kb in JPEG format with a resolution less than 1080p.
- Face size is 30%-60% of the entire image. There should be no less than 100 pixels between the ears.
- Taken in full-face view directly facing the camera without makeup and glasses. Eyebrow, mouth and other face features must be visible.

5.10.2.2.1 Single Adding

This will cover how to add one face image at a time.

Step 1 Select **Setting > Event > Face Recognition > Face Database Config**.


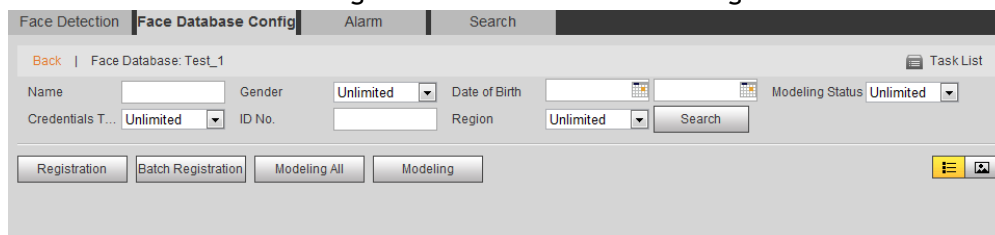
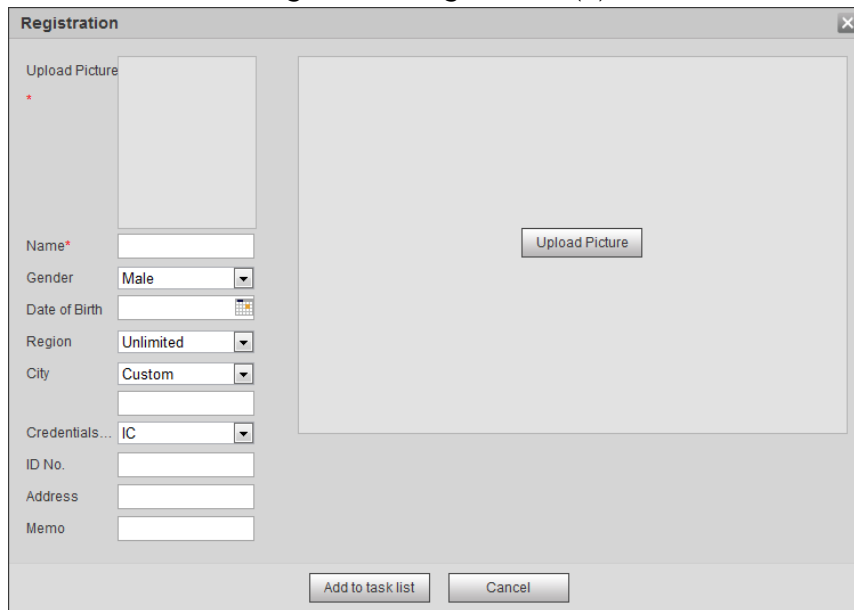
Step 2 Click  next to the face database to be set.

Figure 5-44 Face database configuration



Step 3 Click **Registration**.

Figure 5-45 Registration (1)



The screenshot shows a 'Registration' window with the following fields and controls:

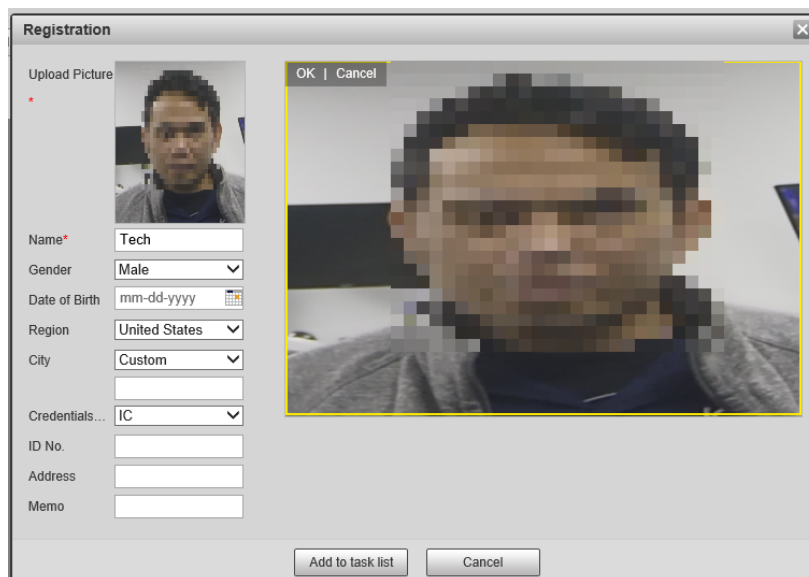
- Upload Picture:** A large empty rectangular area with a small 'Upload Picture' button centered within it.
- Name*:** A text input field.
- Gender:** A dropdown menu with 'Male' selected.
- Date of Birth:** A date picker field.
- Region:** A dropdown menu with 'Unlimited' selected.
- City:** A dropdown menu with 'Custom' selected.
- Credentials...:** A dropdown menu with 'IC' selected.
- ID No.:** A text input field.
- Address:** A text input field.
- Memo:** A text input field.
- Buttons:** 'Add to task list' and 'Cancel' buttons at the bottom.

Step 4 Click **Upload Picture**, select a face picture to be uploaded, and then click **Open**.



You can manually select the area for a face. After uploading picture, box select a face and click **OK**. When there are multiple faces in a photo, select the target face and click **OK** to save face picture.

Figure 5-46 Registration (Example image is blurred in purpose. Actual image will be clear.)



The screenshot shows the 'Registration' window with a face image uploaded. The fields are filled with the following information:

- Upload Picture:** A small thumbnail of the uploaded face image.
- Name*:** 'Tech'
- Gender:** 'Male'
- Date of Birth:** 'mm-dd-yyyy'
- Region:** 'United States'
- City:** 'Custom'
- Credentials...:** 'IC'
- ID No.:** (empty)
- Address:** (empty)
- Memo:** (empty)
- Buttons:** 'Add to task list' and 'Cancel' buttons at the bottom.

A larger, blurred version of the face image is shown in a separate window with 'OK | Cancel' buttons, indicating the manual selection process.

Step 5 Enter the information about face picture as necessary.

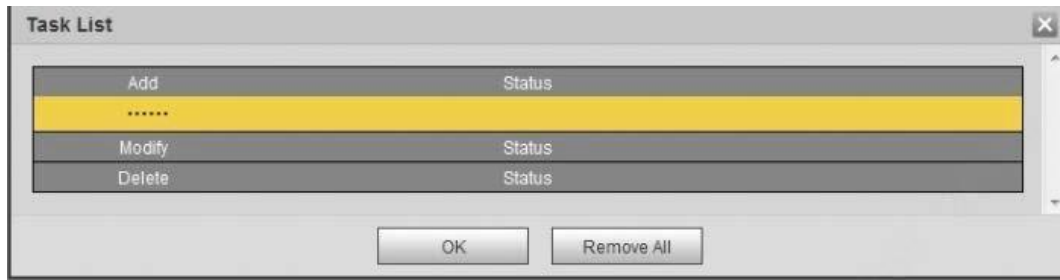
Step 6 Click **Add to task list**.

Step 7 Click **Task List1**, and then click **OK**.

The **Task List** interface is displayed. See Figure 5-47. Click **Remove All** to remove all tasks by

one click.

Figure 5-47 Task list (manually add)



If adding user fails, the error code will be displayed on the interface. For details, see Table 5-13. For face modeling operation, see "5.10.2.4 Face Modeling".

Table 5-13 Description of error code

Parameter	Error	Description
0x1134000C	Picture importing error	The picture is too large, and the max is 150Kb.
0x1134000E		Quality or resolution of the image is too large.
0x11340019		Lack of storage in database to save image.

Parameter	Error	Description
1	Picture modeling error	The picture format is not correct. Import the picture in JPG format.
2		No face in the picture or the face is not clear. Change the image.
3		Multiple faces in the picture. Change the picture.
4		Failed to decode the picture. Change the picture.
5		The picture is not suitable to be imported to the face database. Change the picture.
6		The database error. Restart the camera and model the faces again.
7		Failed to get the picture. Import the picture again.
8		System error. Restart the camera and model faces again.

5.10.2.2.2 Batch Importing

This function allows for importing face pictures in batches. Select this method if you need to add a large number of face pictures to the database.

Before importing pictures in batches, it is recommended to name the face image files in the following format:

"Name#SGender#BDateofBirth#NRegion#TCredentialsType#MIDNo.jpg"

(for example, "John#S1#B1990-01-01#T1#M0000). For naming rules, see Table 5-14.



- The max. size of a single face picture is 150Kb, and the resolution is less than 1080p.
- When naming image files, only the Name is required. The others are optional.

Table 5-14 Description of naming rules for batch import parameters

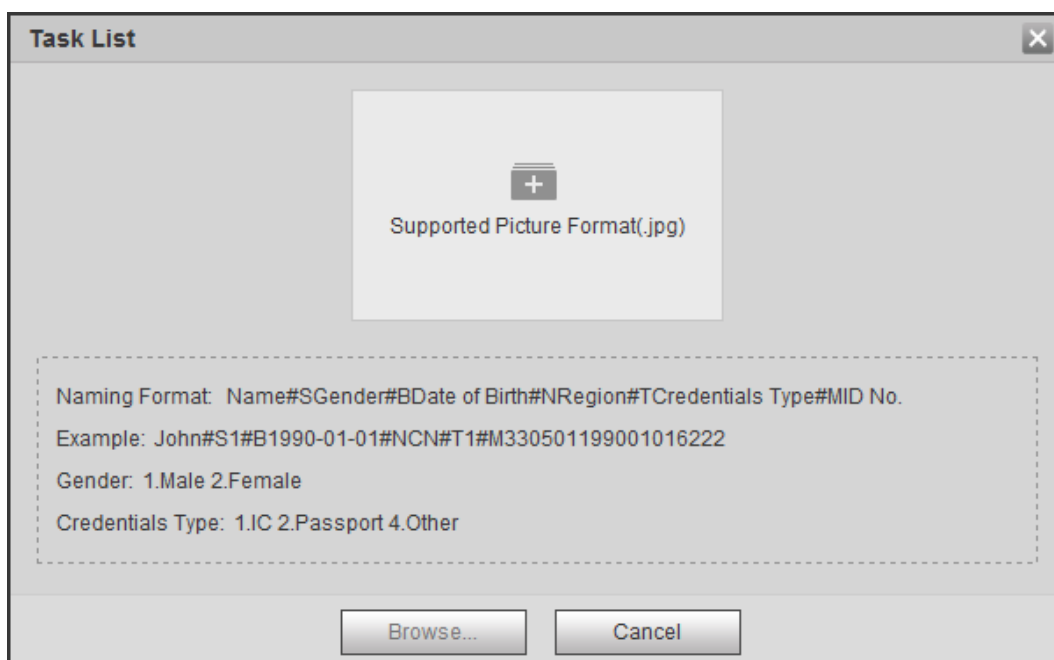
Parameter	Description
Name	Enter a name.
Gender	Enter a figure. "1" is male and "2" is female.
Date of Birth	Enter a figure. Format: yyyy-mm-dd, such as 2017-11-23.
Credentials Type	Enter a figure. "1" is ID card and "2" passport.
ID number	Enter ID No.

Step 1 Select **Setting > Event > Face Recognition > Face Database Config.**

Step 2 Click  next to the face database that you want to set.

Step 3 Click **Batch Registration.**

Figure 5-48 Batch add



Step 4 Click  to select file path.

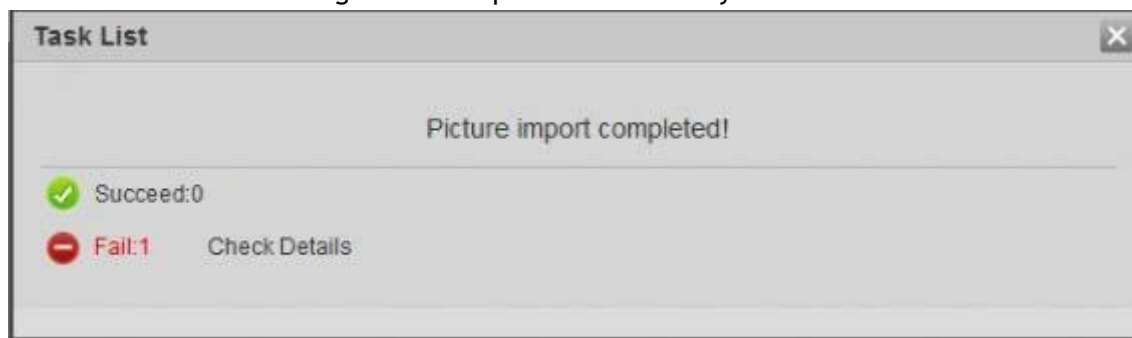
Figure 5-49 Batch import



Step 5 Click **Browse**.

The interface shows import process. After finishing the import, the interface is displayed as in Figure 5-50.

Figure 5-50 Imported successfully



5.10.2.3 Managing Face Picture

Add face pictures to face database, and then manage and maintain face pictures to ensure correct information.

5.10.2.3.1 Modifying Face Information

Step 1 Go to the **Face Database Config** interface, set filtering condition as needed, and click **Search**.

The search result will be displayed.



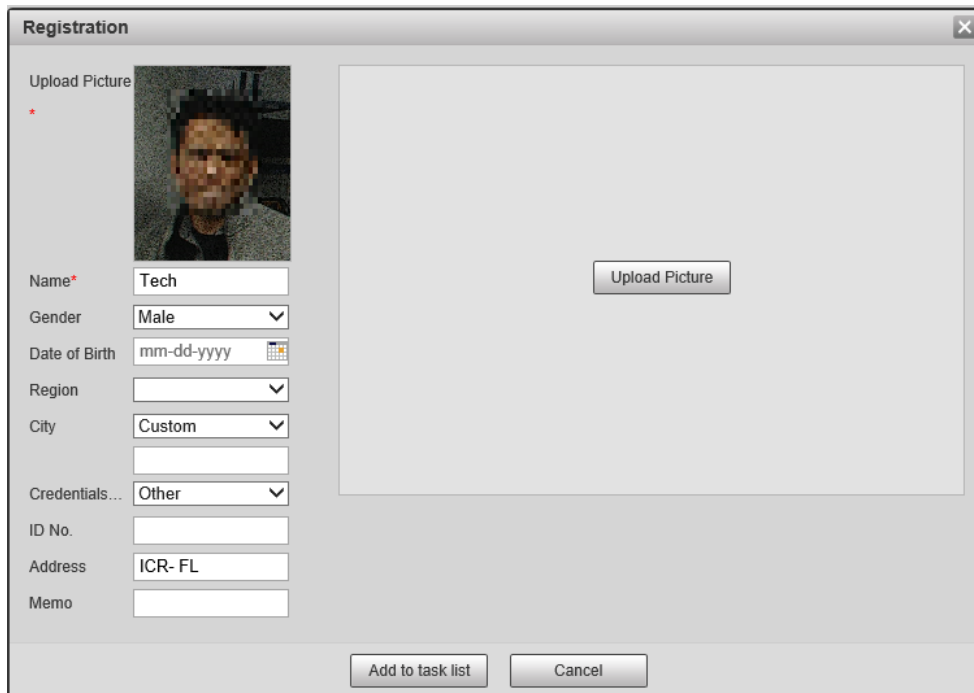
Step 2 Select the row where the face picture or the personnel information is located, and then click  or .

Figure 5-51 Face information modification



The image shows a 'Registration' window with the following fields and controls:



- Upload Picture:** A small thumbnail of a person's face and a larger 'Upload Picture' button.
- Name*:** Text input field containing 'Tech'.
- Gender:** Dropdown menu with 'Male' selected.
- Date of Birth:** Text input field with 'mm-dd-yyyy' placeholder and a calendar icon.
- Region:** Dropdown menu.
- City:** Dropdown menu with 'Custom' selected.
- Credentials...:** Dropdown menu with 'Other' selected.
- ID No.:** Text input field.
- Address:** Text input field containing 'ICR- FL'.
- Memo:** Text input field.
- Buttons:** 'Add to task list' and 'Cancel' at the bottom.

Step 3 Modify face information as necessary. Click **Add to task list**.

Step 4 Click **Task List1**, and then click **OK**.

5.10.2.3.2 Deleting Face Picture

Navigate to the **Face Database Config** interface, and delete a face picture in the database.

- Single delete: Select the row where the face picture or the personnel information is located, and click  or  to delete the face picture.
- Batch delete: Select at the upper right corner of the face picture or of the row where the personnel information is located. Select the information, click **Add to Deletion List**, **Task List1**, and then click **OK** to delete the selected face picture.
- Delete all: When viewing face pictures in a list, click of the row where the serial number is located; when viewing by thumbnail, select **All** to select all face pictures. Click **Add to Deletion List**, **Task List1**, and then click **OK** to delete all face pictures.

5.10.2.4 Face Modeling

Face modeling extracts face picture information and imports the information to a database to establish relevant face feature models. Through this function, the face recognition and other intelligent detections can be function.



- A high amount of selected images to model will take longer to process.
- During modeling, some intelligent detection functions (such as face recognition) are not available temporarily, but will be available after modeling.

Step 1 Select **Setting > Event > Face Recognition > Face Database Config**.

The **Face Database Config** interface is displayed.


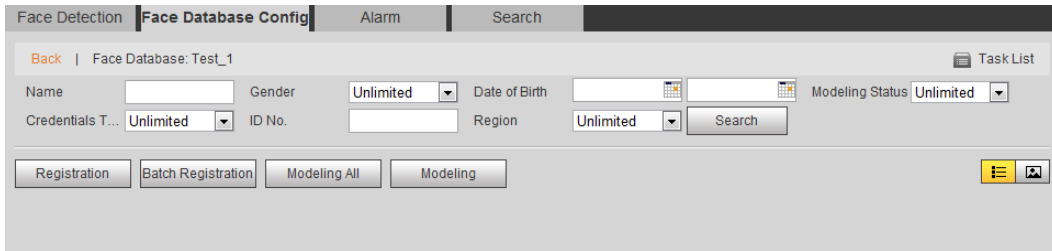
Step 2 Click  next to the face database to be set.

Figure 5-52 Face database configuration



Step 3 Start modeling.

- Selective modeling.

If there are many face pictures in the face database, you can set search criteria to select the pictures that need to be modeled.

1. Set the search criteria, and click **Search**.
2. Select the face pictures to be modeled.
3. Click **Modeling**.

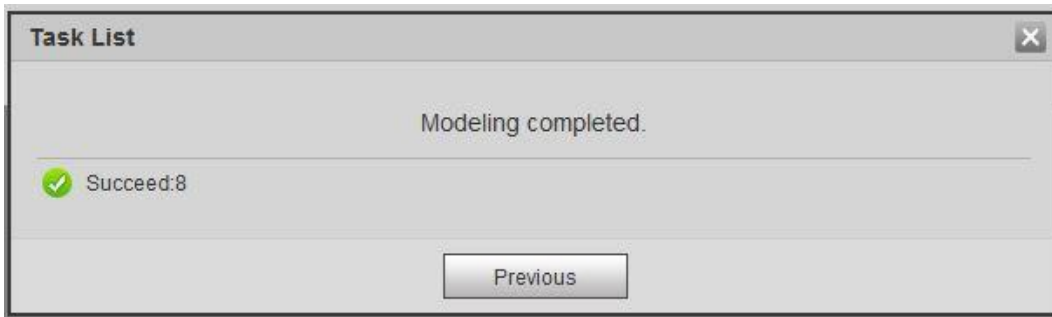
- All modeling.

Click **Modeling All** to complete modeling of all face pictures in the face database.

Step 4 View the modeling result.

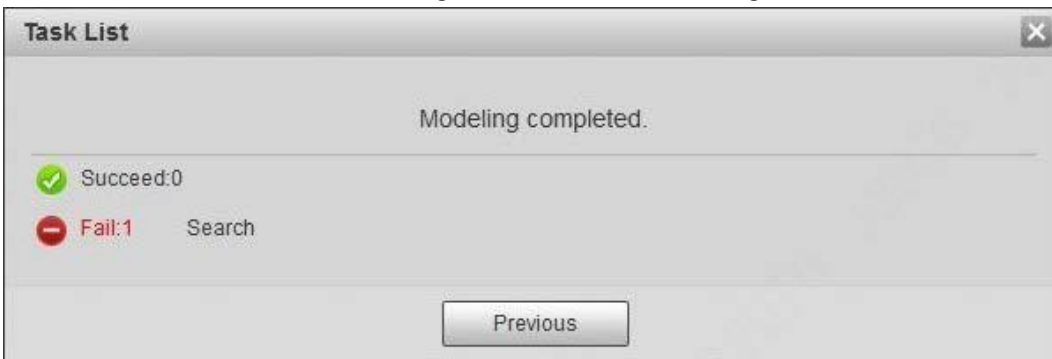
- Successful modeling.

Figure 5-53 Successful modeling



- Failed modeling.

Figure 5-54 Failed modeling



Click **Search**, and the face details are displayed. Click to view the face picture in list format. See Figure 5-55. Click to view the face picture in thumbnail format. See Figure 5-56.

- ◇ When the modeling status is **Valid** in the list or is displayed on the left corner of the thumbnail, it means the modeling succeeded.
- ◇ When the modeling status is **Invalid** in the list or is not displayed on the left corner of the thumbnail, it means the modeling failed. Point to the modeling status in the list or the pictures without to view the details of the failure. Change the pictures according to the details.

Figure 5-55 Modeling status (list)

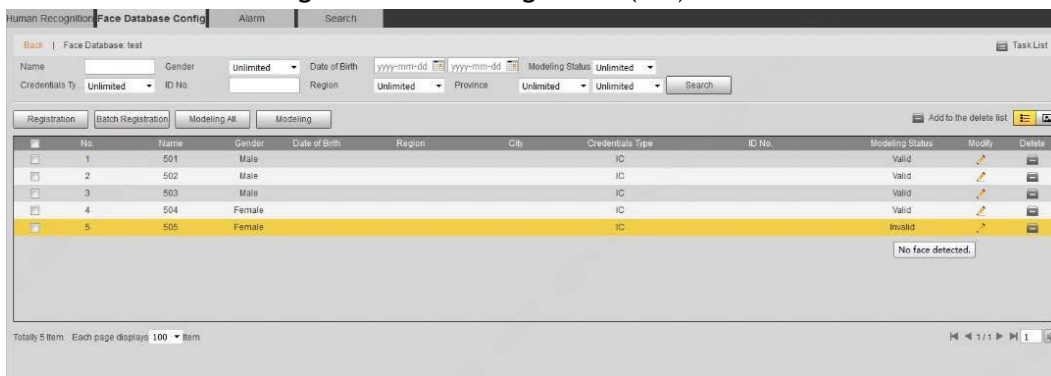
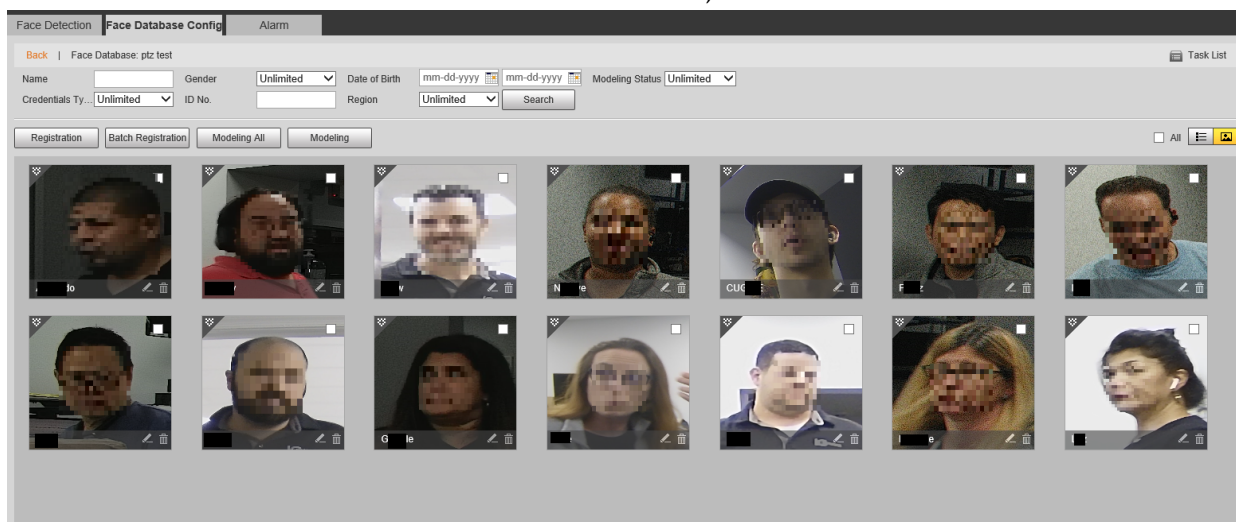


Figure 5-56 Modeling status (thumbnail)* (Example image is blurred in purpose. Actual image will be clear.)



5.10.3 Setting Face Recognition Alarm Linkage

When face recognition succeeded or failed, the device links alarm out.

Step 1 Select **Setting > Event > Face Recognition > Alarm**.

Figure 5-57 Alarm (face recognition)

The screenshot shows a web interface with four tabs: "Face Detection", "Face Database Config", "Alarm", and "Search". The "Alarm" tab is active. The interface contains the following fields and controls:

- Face Database:** A dropdown menu with the text "Please add face databa" and a downward arrow.
- Relay-out:** A checkbox followed by a dropdown menu showing "Alarm Channel1".
- Alarm Rule:** Two checkboxes: "Face Recognition Succeeded" and "Face Recognition Failed".
- Alarm Delay:** A text input field containing "1" followed by "s (1~300)".
- Buttons:** "Refresh" and "Save" buttons at the bottom.

Step 2 Select a face database and an alarm rule.

- Face recognition succeeded: When the detected face matches that in the face database, the device links alarm out.
- Face recognition failed: When the detected face fails to match that in the face database, the device links alarm out.

Step 3 Set alarm linkage actions. For details, see "5.1.1 Alarm Linkage"

Step 4 Click **Save**.

Setting Face Detection

When a face is detected in the detection area, the IPC can perform an alarm linkage.

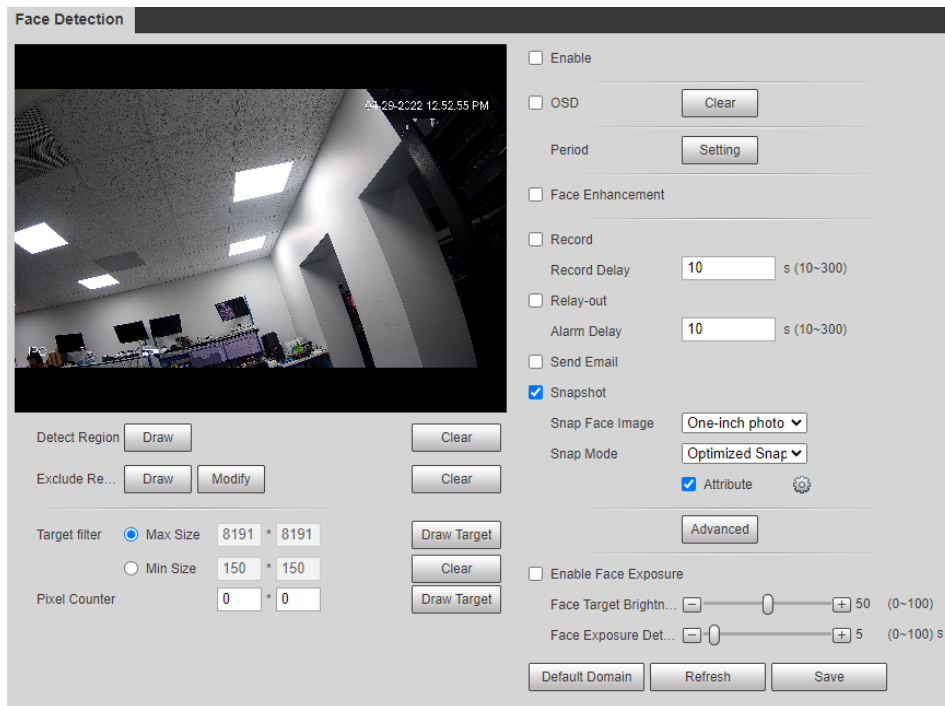
Prerequisites

Select **Setting > Event > Smart Plan**, and then enable **Face Detection**.

Procedure

Step 1 Select **Setting > Event > Face Detection**.



Figure 5-62 Face detection



- Step 2** Select the **Enable** checkbox to enable the face detection function.
- Step 3** (Optional) Click **Draw** next to **Detect Region** to draw a face detection area in the image.
- Step 4** (Optional) Click **Draw** next to **Exclude Region**, and then draw an area that will exclude face detection in the image.
- Step 5** (Optional) Select **Max Size** or **Min Size**, click **Draw Target** at the right side of **Target filter**, and then draw the target in the image.
- Step 6** Set parameters.

Table 5-15 Description of face detection parameters

Parameter	Description
OSD	Toggles statistics in OSD. The number people with face detected and recognized will be displayed on the Live interface. Click Reset to reset the statistics.
Face Enhancement	Optimizes faces in low bit rate streams.
Target Box Overlay	Select the Non-living Filtering checkbox to add a target box to the face in the captured picture to highlight the face. The captured face picture is saved in an SD card. Click the Snap Face Image tab to view the captured picture.
Non-living Filtering	Filters objects that may have a face but are not recognized as a living being. (such as posters with faces on them)
	Set a range for snapping face image, including face picture, one-inch picture, and custom. When selecting Custom , click Setting , configure the parameters on the prompt interface, and then click OK . <ul style="list-style-type: none"> • Customized width: Set snapshot width; enter a value for the face width. It ranges from 1-5.

Snap Face Image	<ul style="list-style-type: none"> • Customized face height: Sets face height in snapshot; enter a value for the height. It ranges from 1-2. • Customized body height: Set body height: in snapshot; enter a value for the body height. It ranges from 0-4. If the value is 0, only the face image will be cut out.
Snap Mode	<ul style="list-style-type: none"> • Optimized Snapshot: Captures the clearest picture within the configured time after the camera detects a face. • Recognition Priority: Repeatedly compares the captured face to the faces in the armed face database, captures the most similar face image then creates an event. It is recommended to use this mode in access control applications.  <p>Click Advanced to set the optimized time.</p>
Attribute	Select the Attribute checkbox, then click  to set the face attributes to display when a face is detected.

Parameter	Description
Advanced	<ul style="list-style-type: none"> • Snapshot Angle Filter: Set snapshot angle to be filtered during face detection. • Snapshot Sensitivity: Set snapshot sensitivity during face detection. It is easier to detect faces with higher sensitivity. • Optimized Time: Set a time period to capture the clearest picture after the camera detects a face.
Enable Face Exposure	When a face is detected, the camera can enhance the brightness of the face to make the face image clearer.
Face Target Brightness	Sets the face target brightness. The default value is 50.
Face Exposure Detection Interval	Prevents image flickering caused by constant adjustment of face exposure. The default value is five seconds.
Pixel Counter	Click Draw Target next to Pixel Counter, and then click and hold the left mouse button to draw a rectangle. The Pixel Counter will display the drawn pixel count. Used for estimating pixels on a target.

Step 7 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 8 Click **Save**.

To view alarm information on the **Alarm** tab, subscribe relevant alarm event. For details, see "5.1.2 Subscribing Alarm".

Setting People Counting

Configures the People counting function (including enter, leave and strand number in the area), calibration configuration, queuing number, and view the people counting data report.

People Counting

This function counts the people entering and leaving the detection area. When the number of counted people exceeds the configured value, the system will create an event.

Prerequisites

Select **Setting > Event > Smart Plan**, and then enable **People Counting**.

Procedure

Step 1 Select **Setting > Event > People Counting**.

Figure 5-64 People counting

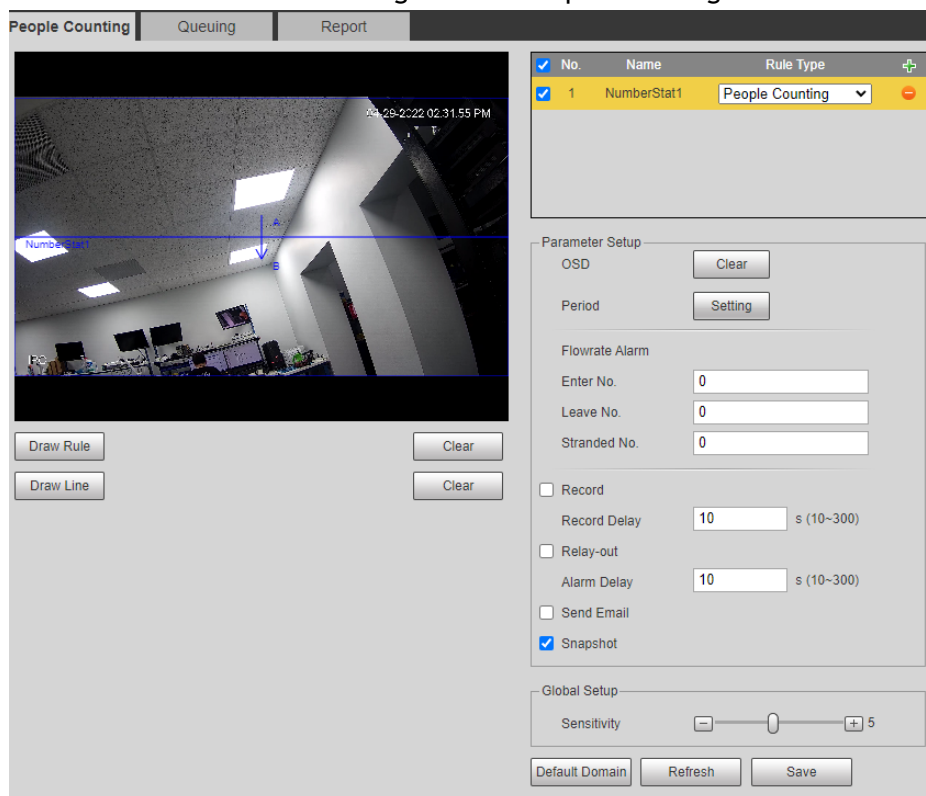
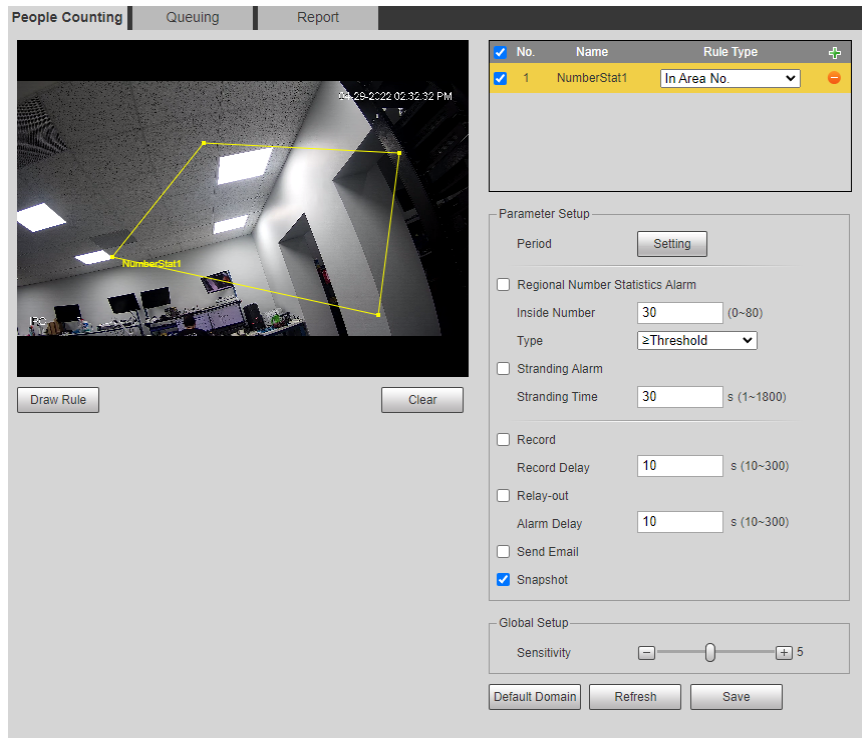



Figure 5-65 In area No.



Step 2 Click  to add the people counting function.

Step 3 Double-click the name to modify the rule name. Select **People Counting** or **In Area No.**

- **People Counting:** The IPC counts the people entering and leaving the detection area. When the number of counted number of people who enter, leave, or stay in the area exceeds the configured value, the system will create an event.
- **In Area No.:** The IPC counts the number of people and their duration in the detection area. When the number of counted people in the detection area or the stay duration exceeds the configured value, the system will create an event. This function is available on some select models.

Step 4 Click **Draw Area** to draw a detection area in the image.

- If selecting **People Counting**, draw the movement directional lines. When targets enter or leave along the direction line, they will be counted.
- For the models that support multiple counting rules, different detection areas can be overlapped.

Step 5 Set parameters.

Table 5-16 Description of people counting parameters

Parameter	Description
OSD	Select the OSD checkbox or select the Enter No. or Leave No. checkbox under OSD to display the people counting data in the image. Click Clear to clear the count.
Flip	Set the viewing angle of the image as Inclined or Vertical .

Flowrate Alarm	Set Enter No. , Leave No. , and Stranded No. The alarm is triggered when the configured value is reached.
Regional People Number Statistics Alarm	Set the number of people in the people counting region. When the people count reaches the threshold or the stay duration exceeds the configured value, the alarm is triggered. When you set inside number to be 0, and select the type to be ≥ Threshold , the system will not perform the alarm linkage.
Inside Number	
Type	
Stranding Alarm	If enabled, set the stranding time. When the stay duration of the people within the area exceeds the configured value, an event will be created.
Stranding Time	
Sensitivity	Set the alarm-triggered sensitivity. The higher the sensitivity, the easier the alarm will be triggered.
Max Height	Set the maximum height of the people in the detection area. The unit is in centimeters, and the range is 0-300.
Min Height	Set the minimum height of the people in the detection area. The unit is in centimeters, and the range is 0-200.

Result

Step 6 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 7 Click **Save**.

To view alarm information on the **Alarm** tab, subscribe relevant alarm event. For details, see "5.1.2 Subscribing Alarm".

Queuing

This function counts people queued in the detection area. When the queue number exceeds the configured number or the queue time exceeds the configured time, the system will create an event.

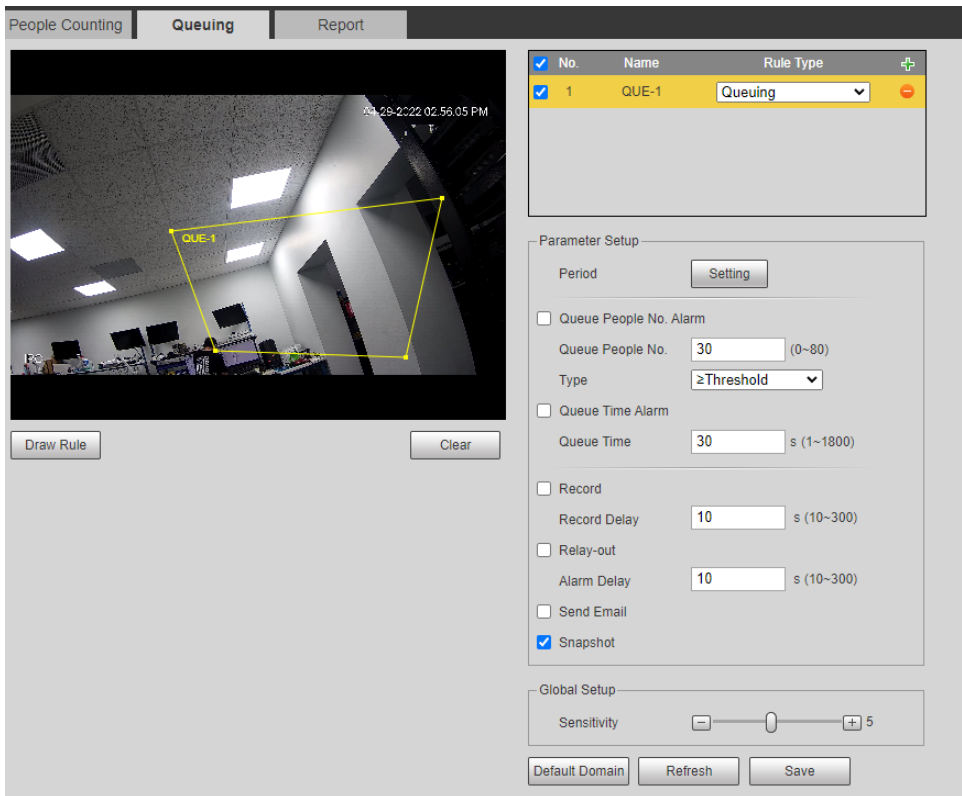
Prerequisites


You will first need to configure **People Counting**.

Procedure

Step 1 Select **Setting > Event > Queuing**.

Figure 5-68 Queuing



Step 2 Click  to add the queuing function.



You can add a maximum of 4 rules.

Step 3 Double-click the name to modify the rule name. Click **Draw Rule** to draw a detection area in the image, and right-click to complete the drawing.

Step 4 Set parameters.

Table 5-17 Description of people queuing

Parameter	Description
Queue People No. Alarm	Sets the queue people number for triggering the event and counting type. When the queue people number reaches the configured value, an event will be created.
Queue People No.	
Type	
Queue Time Alarm	Set the queue time. When the queue time reaches the configured value, an event will be created.
Queue Time	
Sensitivity	Set the alarm-triggered sensitivity. The higher the sensitivity is, the easier the alarm will be triggered.
Max Height	Set the maximum height of the people in the detection area. The unit is cm, and the range is 0-300.
Min Height	Set the minimum height of the people in the detection area. The unit is cm, and the range is 0-200.

Result

Step 5 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 6 Click **Save**.

To view alarm information on the **Alarm** tab, subscribe relevant alarm event. For details, see "5.1.2 Subscribing Alarm".

You can view the queuing result on the **Live** interface.

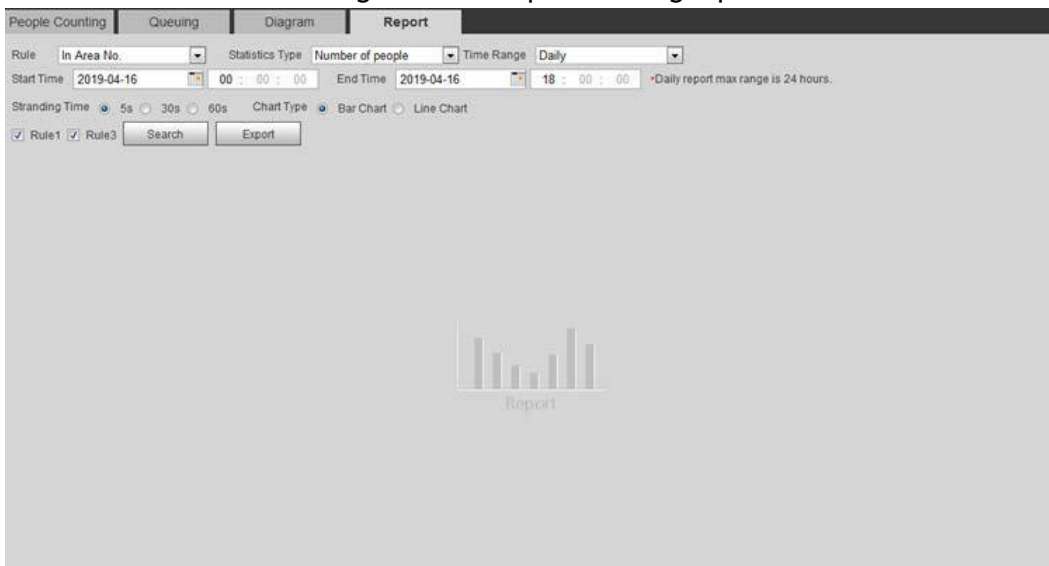
The queuing number and the stranding time of each target are displayed on the interface.

Viewing People Counting Report

Generate people counting data in report form.

Step 1 Select **Setting > Event > People Counting > People Counting Report**.

Figure 5-72 People counting report



Step 2 Set search conditions.

Table 5-19 Description of people counting report parameters

Parameter	Description
Rule	Select the rule of the report from In Area No and Queuing .
Statistics Type	<p>The statistical type of people counting report.</p> <ul style="list-style-type: none"> • Number of people: the system generates the report of the number of people that exceeds the configured number of people. • Average stranding time: The system generates the report of the average stranding time that exceeds the average stranding time.

Time Range	Select the period for the report. <ul style="list-style-type: none"> When selecting People Counting, you can view daily report, monthly report and annual report. When selecting In Area No., you can view daily report and monthly report.
Begin Time	The begin time and the end time of people counting.
End Time	
People Counting Direction	In and out directions of people counting report. You can select Entrance or Leave . Select Display Data , to display statistical quantity on the report.
Stranding Time	The maximum time a crowd stays on an area. Select 5 s, 30 s, or 60 s.
Queue Time	The maximum queuing time, select 1 minute, 5 minutes, or 10 minutes.
Report Type (Bar Chart/Line Chart)	Includes bar chart and line chart.
Rule 1, Rule 2...	Select the checkbox to search the report of the corresponding rule.

Step 3 Click **Search** to complete the report.

Click **Export** to export the report in .bmp or .csv format.

Setting Heat Map

Create statistics on the cumulative density of object movements and view the heat map report.

Heat Map

Detect the distribution of dynamically moving objects in the target area within a certain period and displays the distribution on a heat map. Color varies from blue to red. The lowest heating value is in blue, and the highest heating value is in red. When mirroring occurs on the camera or the viewing angle changes, original data on the heat map will be cleared.

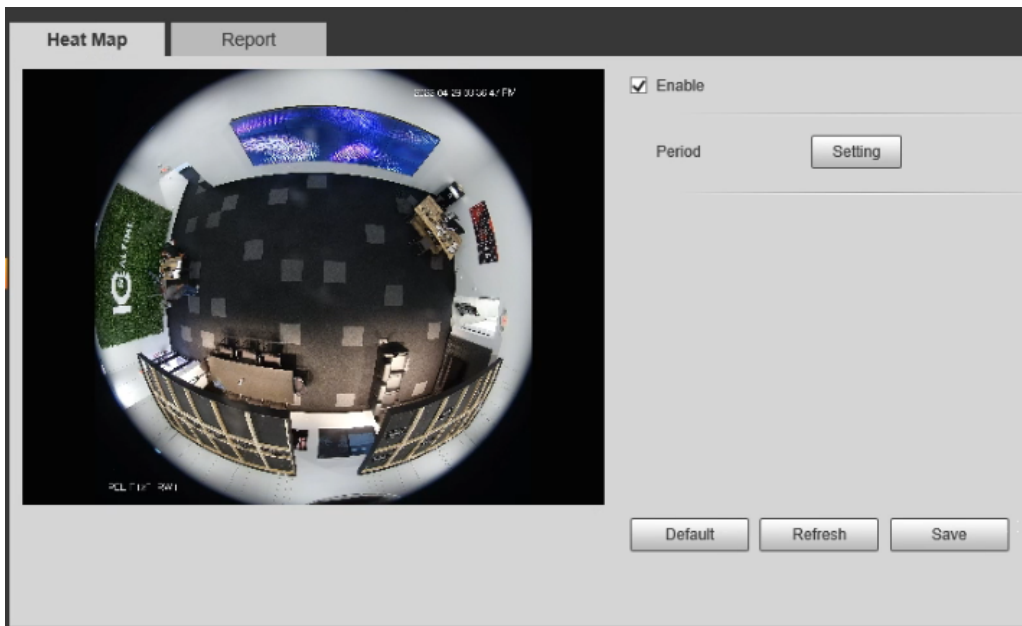
Prerequisites

Select **Setting > Setting > Event > Smart Plan**, and then enable **Heat Map**.

Procedure

Step 1 Select **Setting > Event > Heat Map > Heat Map**.

Figure 5-73 Heat map



Step 2 Select the **Enable** checkbox to enable the heat map function.

Step 3 Set the arming period. For details, see "5.1.1.1 Setting Period".

Step 4 Click **Save**.

Viewing Heat Map Report

The system can export heat map data as a report.

Step 1 Select **Setting > Event > Heat Map > Report**.

Figure 5-74 Heat map report



Step 2 Set the start time and end time.

Only some devices support heat map sequence numbers.

Step 3 Click **Search** to complete the report.

Click **Export** to export the statistical report.

Setting Video Metadata

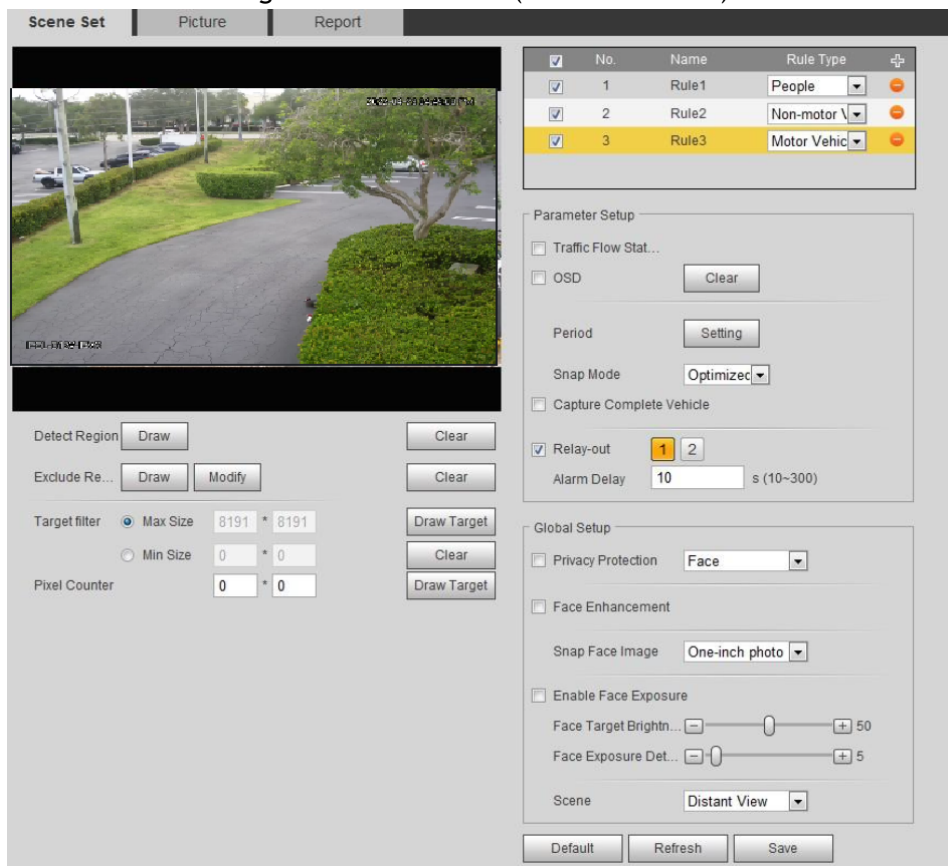
This function extracts metadata information from people, non-motor vehicles (such as motorcycles and scooters) and motor vehicles in the captured video, and displays the relevant attributes on the live interface.


Scene Configuration

Set the detection scenes and rules, including rules for people, non-motor vehicles, and motor vehicles. Select **Setting > Event > Smart Plan**, and then enable **Video Metadata**. This section will use People Detection rules as an example.

Step 1 Select **Setting > Event > Video Metadata > Scene Set**.

Figure 5-88 Scene set (video metadata)




Step 2 Click , and double-click the name to modify the rule name, and select **People** in **Rule Type** list.

Step 3 Click **Draw** to draw a detect region and an exclude region in the image.

Step 4 Click **Draw Target** next to **Target Filter** to draw the maximum size and minimum size for the detection target in the image.

Step 5 Set parameters.

Table 5-24 Description of scene set parameters (video metadata)

Parameter	Description
People Flow Statistics	Counts the number of people in the detection area.
Traffic Flow Stat	Counts the number of motor vehicles in the detection area.
Capture whole vehicle	Select the Capture Whole Vehicle checkbox to capture whole vehicle. The snapshot is saved in the preset path for monitoring snapshots. For details, see "4.5.2.5 Path".
Non-motor Vehicle Flow Statistics	Counts the number of non-motor vehicles in the detection area.
OSD	Select the OSD checkbox, and the numbers of motor vehicles, non-motor vehicles and people in the detection area are displayed.  Click Reset to recount.
Pixel Counter	Click Draw Target next to Pixel Counter, and then click and hold the left mouse button to draw a rectangle. The Pixel Counter will display the drawn pixel count. Used for estimating pixels on a target.
Privacy Protection	Select Face or Human body from the drop-down list to blur faces or human bodies in the image.
Face Enhancement	Optimizes the faces when using a low bit rate stream.
Snap Face Image	Set a range for snapping a face image, including a face picture and a one-inch picture.
Enable Face Exposure	Makes faces clearer by adjusting the lens aperture and shutter.
Face Target Brightness	Set the face target brightness. It is 50 by default.
Face Exposure Detection Interval	Set the face exposure detection interval to prevent image flickering caused by constant adjustment of face exposure. It is 5 seconds by default.
Scene	Set scene as Distant View or Close View .

Result

Step 6 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 7 Click **Save**.

- Click  on the live interface to view the detection results of video metadata.

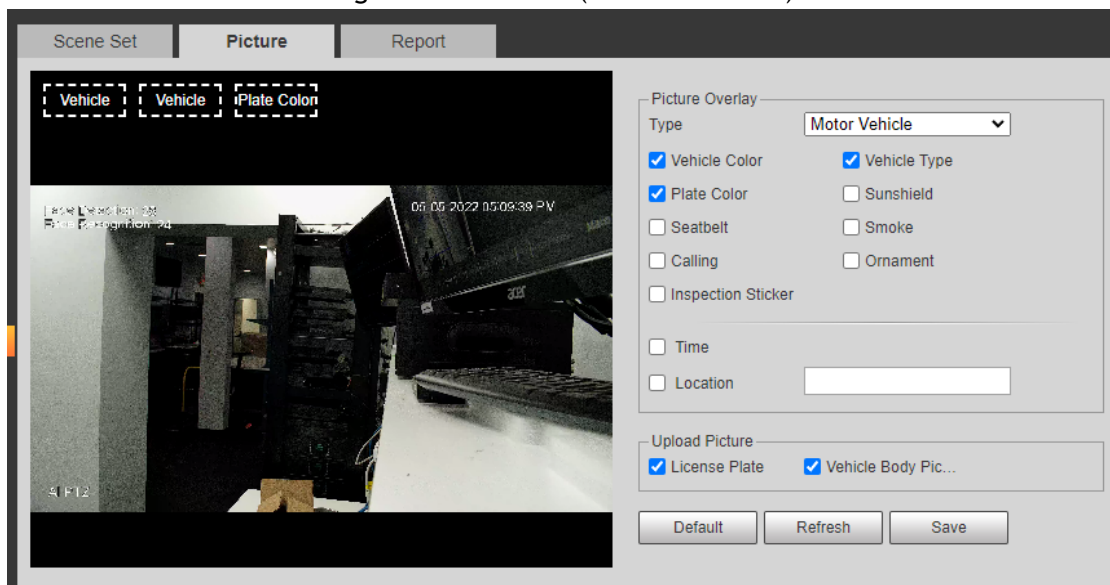
- The plate no. and attributes of motor vehicle are displayed at the right side, and pictures of people and non-motor vehicles and their attributes at the bottom.
- Click the picture in the display area, and the detailed information is displayed.

Setting Picture Information

Set overlay of motor vehicle, non-motor vehicle and people and the box position. This section takes the configuration of motor vehicle overlay as an example.

Step 1 Select **Setting > Event > Video Metadata > Picture**.

Figure 5-90 Picture (video metadata)



Step 2 Select **Motor Vehicle** from the **Type** drop-down list.

Select **Non-motor Vehicle** or **People**, and set non-motor vehicle and people overlay.

Step 3 Set overlay information and box position, such as plate no., time, car color, car type, and car logo.

Step 4 Click **Save**.

Viewing Video Metadata Report

Generate data of video metadata recognition in report form. **Step 1**

Select **Setting > Event > Video Metadata > Report**.

The **Report** interface is displayed.

Step 2 Select the report type, start time, end time, and other parameters.

Step 3 Click **Search** to complete the report.

The statistical results are displayed. Click **Export** to export the statistical report.

Figure 5-91 Video metadata report



Setting Relay-in

When an alarm is triggered at the alarm-in port, the system performs alarm linkage.



Functions may vary with different models.

Relay-in (1)

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

Figure 5-92 Alarm linkage

Alarm

Enable

Relay-in:

Period:

Anti-Dither: s (0~100) Sensor Type:

Record

Record Delay: s (10~300)

Relay-out

Relay-out:

Alarm Delay: s (10~300)

Send Email

Snapshot

Step 2 Select the **Enable** checkbox to enable the alarm linkage function.

Step 3 Select a relay-in port and a sensor type.

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

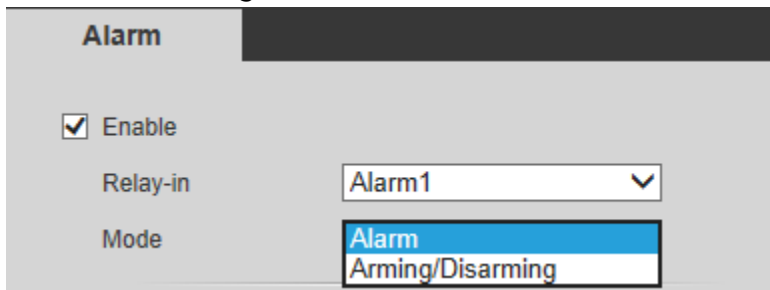
Step 4 Set arming periods and alarm linkage action. For details, see "5.1.1 Alarm Linkage".

Step 5 Click **Save**.

Relay-in (2)

You can select the mode from **Alarm** and **Arming/Disarming**.

Figure 5-93 Select the mode



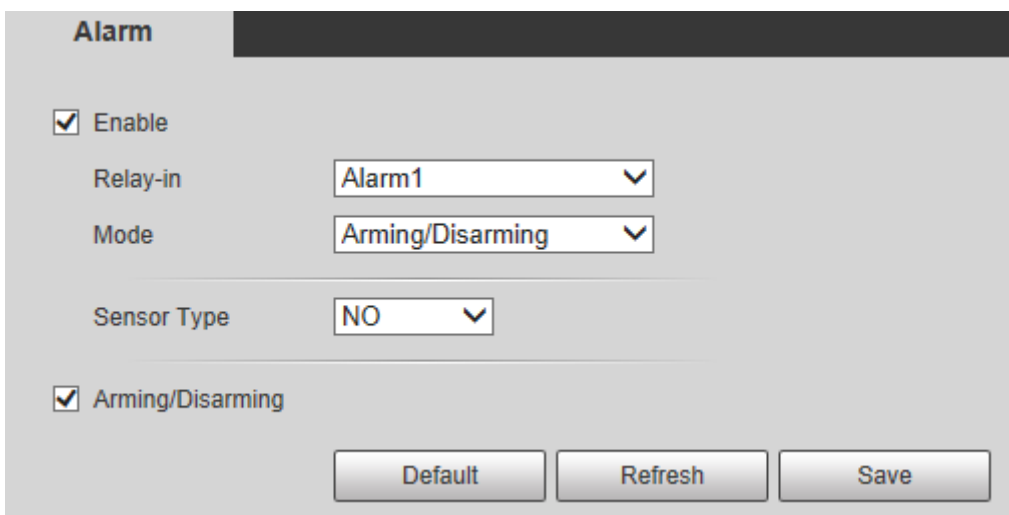
The screenshot shows a configuration window titled "Alarm". It has a checked "Enable" checkbox. The "Relay-in" dropdown is set to "Alarm1". The "Mode" dropdown is open, showing two options: "Alarm" (highlighted in blue) and "Arming/Disarming".

- When selecting **Alarm**, the function is same as Relay-in (1). For details, see "5.18.1 Relay-in (1)".
- When selecting **Arming/Disarming**, you can enable arming or disarming mode through one press on an external alarm system.

Step 1 Select **Enable** checkbox to enable the alarm function. **Step 2** Select a relay-in port, for details, see "5.18.1 Relay-in (1)".

Step 3 In the **Mode** list, select **Arming/Disarming**.

Figure 5-94 Arming/Disarming



The screenshot shows the "Alarm" configuration window. The "Enable" checkbox is checked. The "Relay-in" dropdown is set to "Alarm1". The "Mode" dropdown is set to "Arming/Disarming". The "Sensor Type" dropdown is set to "NO". The "Arming/Disarming" checkbox is checked. At the bottom, there are three buttons: "Default", "Refresh", and "Save".



The arming/disarming checkbox is selected by default. Do not cancel the selection; otherwise the configuration is invalid.

Step 4 Select the sensor type from **NO** and **NC**.. **Step 5**

Click **Save**.

Setting Abnormality

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



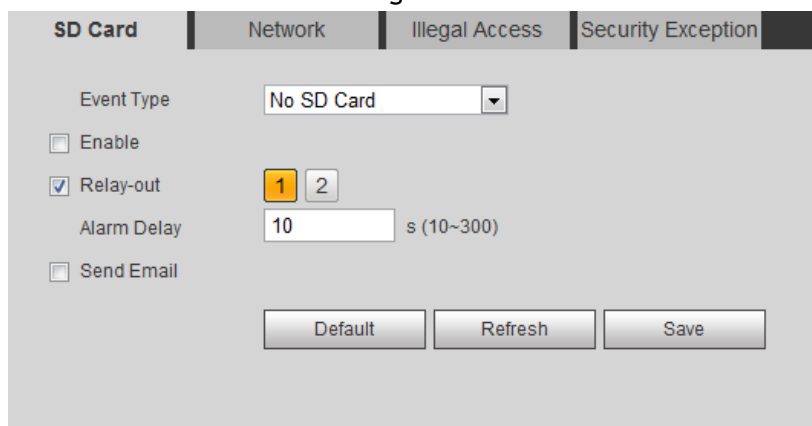
Only the device with SD card has the abnormality functions, including **No SD Card**, **SD Card Error**, and **Capacity Warning**.

Setting SD Card

In case of SD card abnormality, the system performs alarm linkage. The event types include **No SD Card**, **Capacity Warning**, and **SD Card Error**. The introduction is for reference only, and may differ from the actual interface.

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

Figure 5-95 SD card



The screenshot shows the 'SD Card' settings page. At the top, there are four tabs: 'SD Card', 'Network', 'Illegal Access', and 'Security Exception'. The 'SD Card' tab is selected. Below the tabs, there is a form with the following fields and controls:

- Event Type:** A dropdown menu with 'No SD Card' selected.
- Enable:** A checkbox that is currently unchecked.
- Relay-out:** A checked checkbox.
- Alarm Delay:** A numeric input field with '10' entered, followed by 's (10~300)'. There are also two small numeric input fields with '1' and '2' respectively.
- Send Email:** A checkbox that is currently unchecked.
- At the bottom, there are three buttons: 'Default', 'Refresh', and 'Save'.

Step 2 Select the event type from the **Event Type** drop-down list, and then select the **Enable** checkbox to enable the SD card detection function.

When setting **Capacity Warning** as **Event Type**, set **Capacity Limit**. 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 "5.1.1 Alarm Linkage".

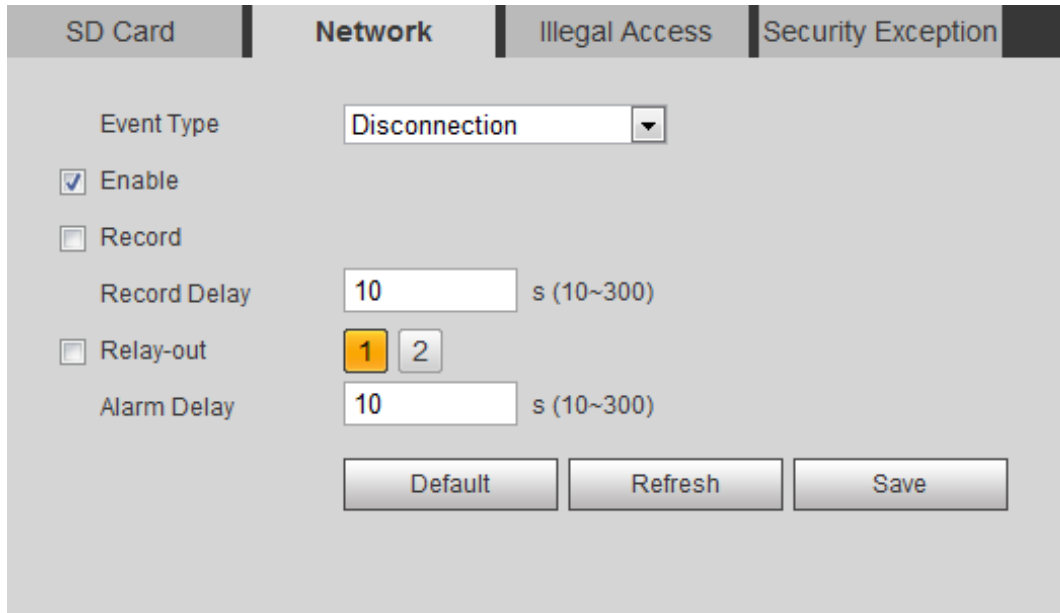
Step 4 Click **Save**.

Setting Network

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

Step 1 Select **Setting > Event > Abnormality > Network**.

Figure 5-96 Network



Step 2 Select the event type from the **Event Type** drop-down list, and then select the **Enable** checkbox to enable the network detection function.

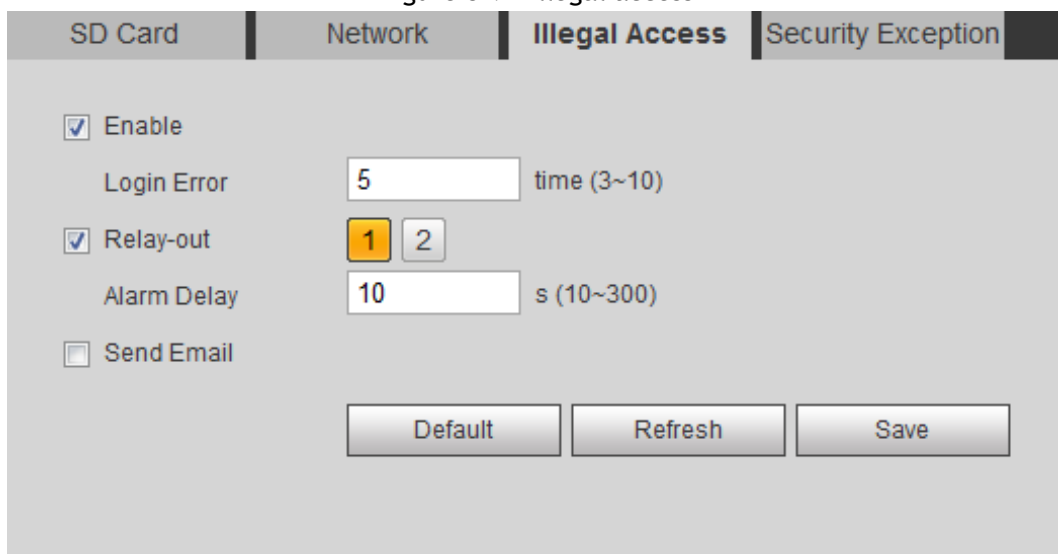
Step 3 Set alarm linkage actions. For details, see "5.1.1 Alarm Linkage". **Step 4** Click **Save**.

Setting Illegal Access

When you enter a wrong login password more than the set times, the system performs alarm linkage.

Step 1 Select **Setting > Event > Abnormality > Illegal Access**.

Figure 5-97 Illegal access



Step 2 Select the **Enable** checkbox to enable the illegal access detection function.

Step 3 Set **Login Error**.

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

Step 4 Set alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

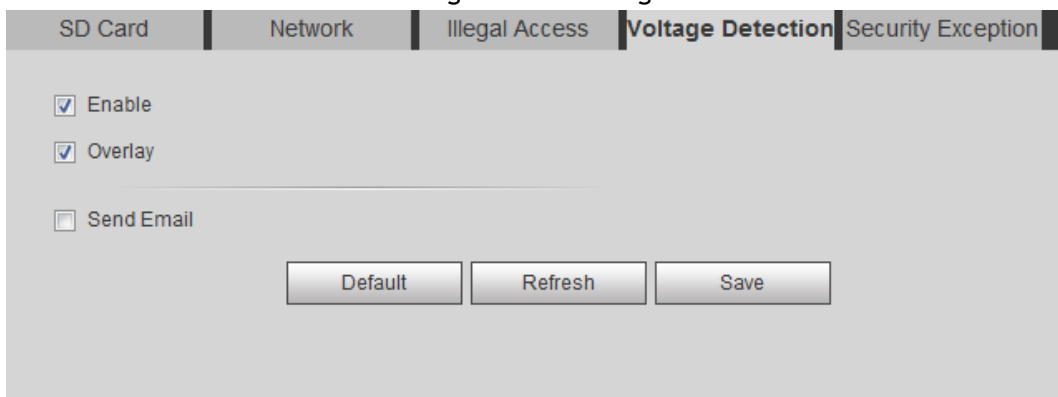
Step 5 Click **Save**.

Setting Voltage Detection


This function performs alarm linkage when the camera detects if the input voltage is higher than or lower than the rated value of the device.

Step 1 Select **Setting > Event > Abnormality > Voltage Detection**.

Figure 5-98 Voltage detection



Step 2 Select the **Enable** checkbox to enable the voltage detection function.

Select **Overlay**, and the alarm icon is displayed by overlapping when the alarm is triggered. 

 indicates undervoltage and  indicates overvoltage.

Step 3 Set alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 4 Click **Save**.

Setting Security Exception

When a hostile attack is detected, the system performs alarm linkage.

Step 1 Select **Setting > Event > Abnormality > Security Exception**.

Step 2 Select the **Enable** checkbox.

Figure 5-99 Security exception



Step 3 Select the event to be monitored as needed.

Table 5-25 Security exception description

Parameter	Description
Trusted environment detected program	Monitors the programs that run in the trusted environment to detect whether there are programs running without trusted signature. Select to prevent the programs with trojan and virus.
Account login exceeds the set time range	This function detects if an account tries to log in during a period that does not allow the user to log in. Configure Restricted Login in Setting > System > Account > Account > Username , including the IP address, validity period, and time range.
Session ID Brute Force Attack	Select to enable protection against brute force attacks (multiple login attempts)
Brute force attack of web path	Generates a web server directory and sends a request through enumeration. When a false URL reaches the configured threshold in the defined period, an alarm will be triggered. Select to prevent attacks via web.

<p>Session connection exceeds limit</p>	<p>Monitors if the number of users (web, platform or mobile phone client) exceeds the max number of users that can connect to the device simultaneously.</p> <p>Configure the Max Connection in Setting > Network > Port.</p>
---	---

Step 4 Set alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

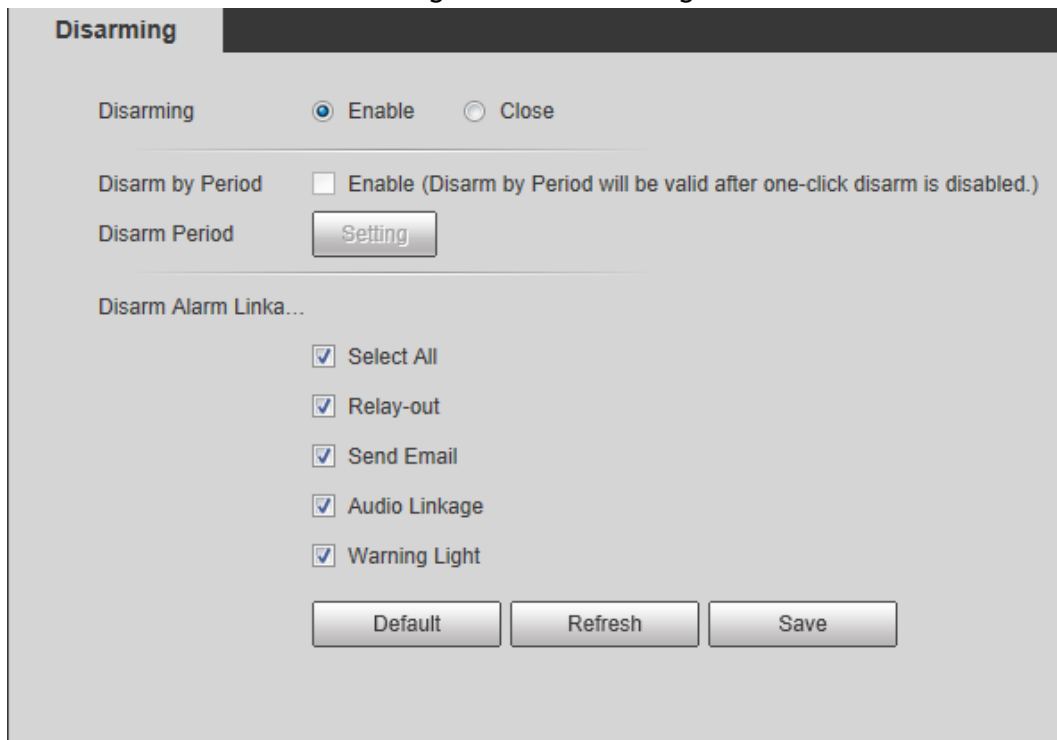
Step 5 Click **Save**.

Setting Disarming

Linkage actions can be disabled through the smart phone app (the system will not perform any linkage action, but alarm records will still be generated).

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

Figure 5-100 Disarming



Step 2 Select the **Enable** checkbox to disarm.

Step 3 (Optional) Select the **Enable** checkbox next to **Disarm by Period** to enable the Disarm by Period function to disarm by period. For setting disarm period, see "5.1.1.1 Setting Period".



This function is only valid when **Disarming** is disabled.

Step 4 Select alarm linkage actions as needed.

Step 5 Click **Save**.

6 Maintenance

6.1 Requirements

To ensure the camera system operates reliably, take the following maintenance steps:

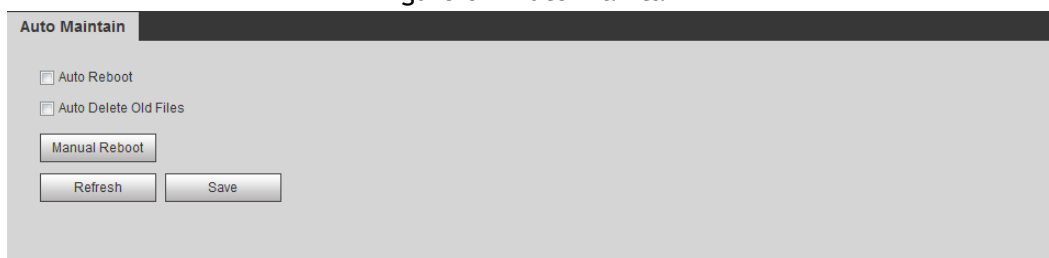
- Check the surveillance images regularly (to spot if a camera has been moved or is not operating).
- Clear regularly user and user group information that is not being used.
- Modify the password regularly, such as every three months. For details, see "4.8.3 Account".
- View system logs and analyze them, and check for any abnormalities.
- Back up the system configuration regularly.
- Restart the device and delete the old files regularly.
- Upgrade firmware as necessary. Check regularly if any firmware updates are available.

6.2 Auto Maintain

This section allows you to restart the system manually, set the time of auto reboot and configuring the auto deletion of old files.

Step 1 Select **Setting > System > Auto Maintain**.

Figure 6-1 Auto maintain



Step 2 Configure auto maintain parameters.

- If the **Auto Reboot** checkbox is selected, set the reboot time. The camera will automatically restart on the set time every week.
- If the **Auto Delete Old Files** checkbox is selected, set the time. The camera automatically deletes old files as the set time. The time range is 1 to 31 days.



When you enable and confirm the **Auto Delete Old Files** function, The **The deleted files cannot be restored, are you sure?** prompt will be displayed. Operate at your discretion.

- Click **Manual Reboot**, and then click **OK** on the displayed interface to reboot the camera.

Step 3 Click **OK**.

6.3 Resetting Password

When first setting up the camera, you will have an option to setup answers for security questions in case you lose or forget your camera password.

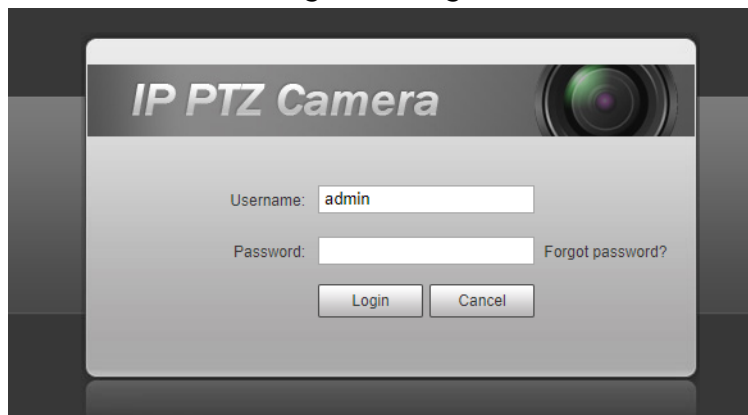
Prerequisites

You have enabled password reset service by setting up security questions when first initializing the camera.

Procedure

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

Figure 6-2 Login



Step 2 Click **Forgot password?**

Figure 6-3 Prompt



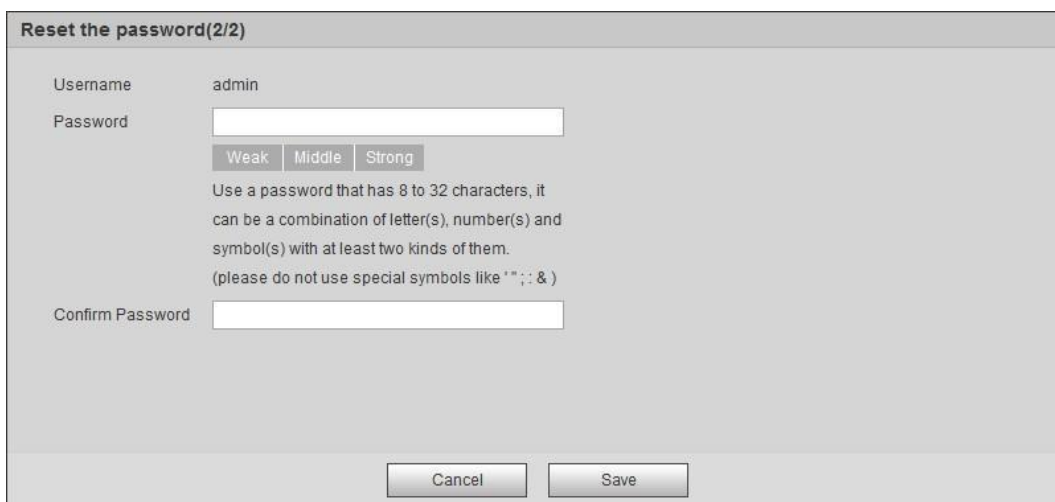
Step 3 Answer the security questions, then click **Save**.

Step 4 Reset 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 ' " ; : &).

Step 5 Click **Save**.

Figure 6-5 Reset the password (2)



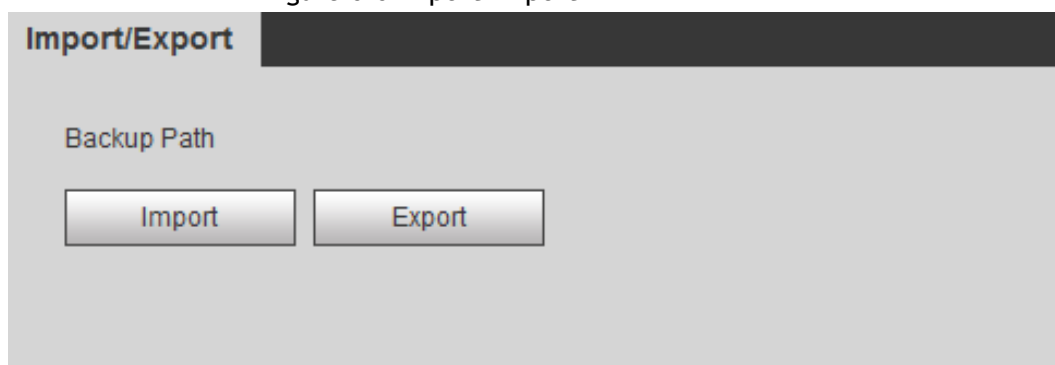
6.4 Backup and Default

6.4.1 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 **Setting > System > Import/Export**.

Figure 6-6 Import/Export



Step 2 Click **Import** or **Export**.

- **Import**: Select local configuration file, and click **Open** to import the local system configuration file to the system.
- **Export**: Select the storage path, and click **Save** to export the system configuration file to local storage.

Step 3 Click **Save** to finish configuration.

6.4.2 Default

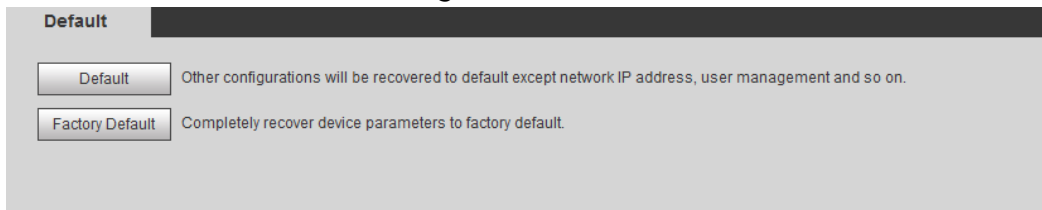
Restore the device to default configuration or factory settings.



This function will restore the device to default configuration or factory setting. Select **Setting > System > Default**.

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

Figure 6-7 Default



6.5 Upgrade

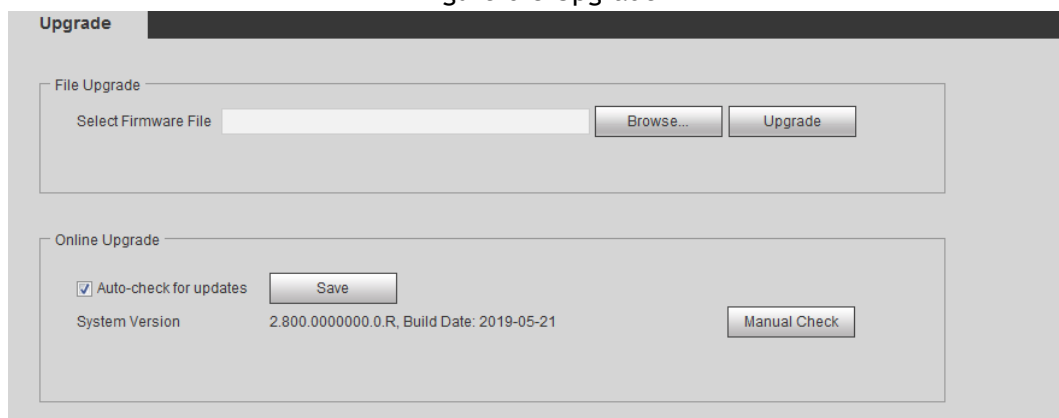
Upgrading to the latest firmware can help with security improvements, compatibility with newer equipment and improve stability.



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

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

Figure 6-8 Upgrade



Step 2 Select upgrading method according to as necessary.

- File Upgrade
 1. Click **Browse**, and then upload upgrade file.
 2. The upgrade file should be a .bin file.
 3. Click **Upgrade**. The upgrade starts.

6.6 Information

This section allows you to view the information, including version, log and online user, and back up or clear log.

6.6.1 Version

You can view device information such as hardware, system version, and web version. Select **Setting > Information > Version** to view the version information.

6.6.2 Log

You can view and backup logs.

Step 1 Select **Setting > Information > Log**.

Figure 6-9 Log

The screenshot shows the 'Log' interface with the following elements:

- Buttons: 'Log' and 'Remote Log' (selected).
- Search filters: 'Start Time' (2019-07-17 19:25:40), 'End Time' (2019-07-18 19:25:40), and 'Type' (All).
- Table with columns: No., Log Time, Username, Log Type.
- 'Detailed Information' section with fields: Time, Username, Type, Content.
- 'Backup' button.
- Navigation controls: '1 / 1' and arrows.

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.

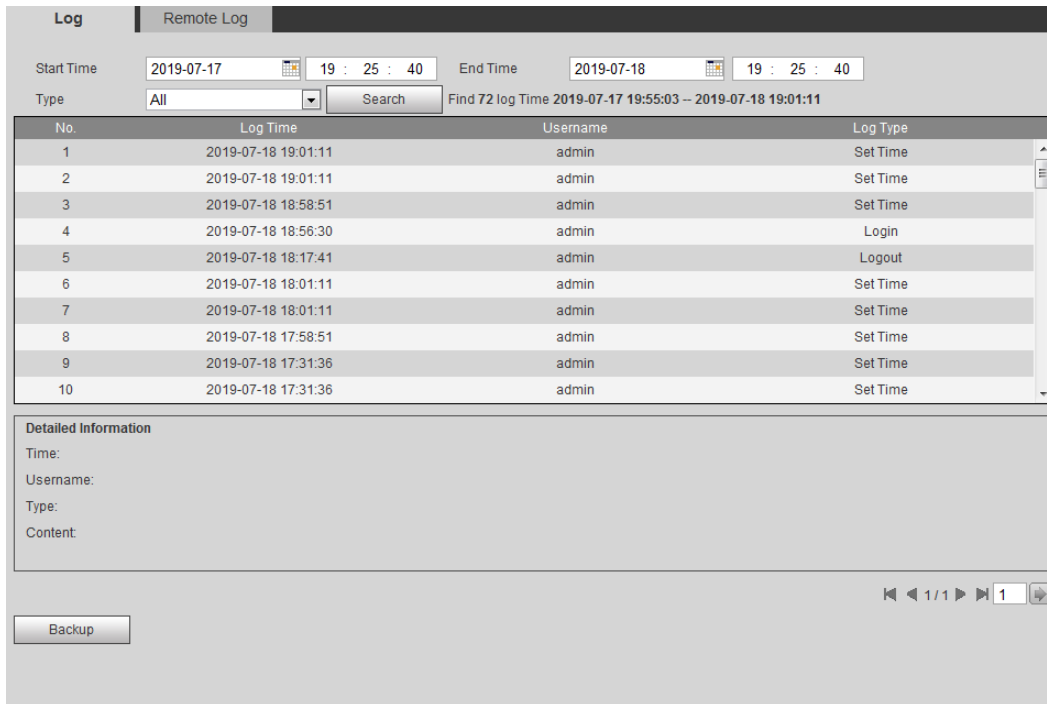
The log type includes All, System, Setting, Data, Event, Record, Account, and Safety.

- **System:** Includes program start, abnormal close, close, program reboot, device closedown, device reboot, system reboot, and system upgrade.
- **Setting:** Includes saving configuration and deleting configuration file.
- **Data:** Includes configuring disk type, clearing data, hot swap, FTP state, and record mode.
- **Event** (records events such as video detection, smart plan, alarm and abnormality): includes event start and event end.
- **Record:** Includes file access, file access error, and file search.
- **Account:** Includes login, logout, adding user, deleting user, modifying user, adding group, deleting group, and modifying group.
- **Safety:** Includes password resetting and IP filter.

Step 3 Click **Search**.

- Click a specific log to can view the detailed information in **Detailed Information** area.
- Click **Backup** to back up all found logs to local PC.

Figure 6-10 Log (details)



The screenshot shows the 'Log' interface with the 'Remote Log' tab selected. At the top, there are filters for Start Time (2019-07-17 19:25:40) and End Time (2019-07-18 19:25:40), and a Type dropdown set to 'All'. A search bar contains the text 'Find 72 log Time 2019-07-17 19:55:03 -- 2019-07-18 19:01:11'. Below this is a table with 10 rows of log entries:

No.	Log Time	Username	Log Type
1	2019-07-18 19:01:11	admin	Set Time
2	2019-07-18 19:01:11	admin	Set Time
3	2019-07-18 18:58:51	admin	Set Time
4	2019-07-18 18:56:30	admin	Login
5	2019-07-18 18:17:41	admin	Logout
6	2019-07-18 18:01:11	admin	Set Time
7	2019-07-18 18:01:11	admin	Set Time
8	2019-07-18 17:58:51	admin	Set Time
9	2019-07-18 17:31:36	admin	Set Time
10	2019-07-18 17:31:36	admin	Set Time

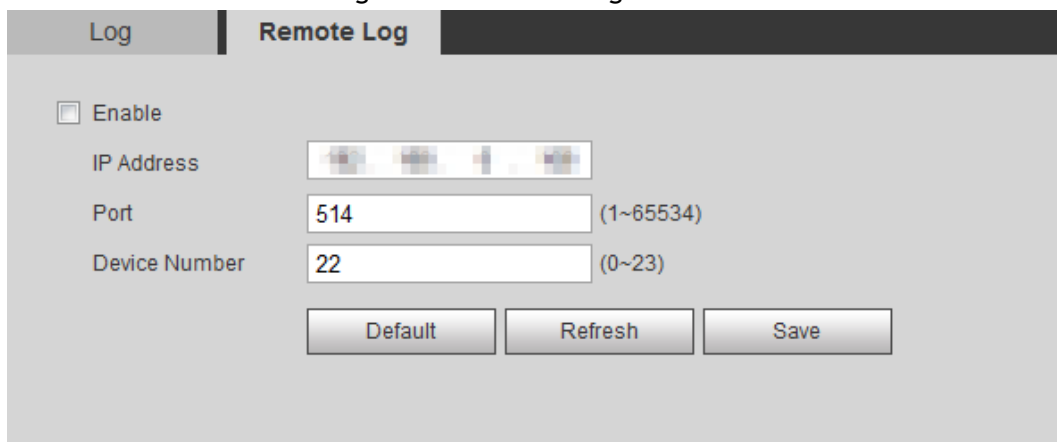
Below the table is a 'Detailed Information' section with fields for Time, Username, Type, and Content. At the bottom left is a 'Backup' button, and at the bottom right are navigation controls showing '1 / 1'.

6.6.3 Remote Log

Configure the remote log to acquire the log by accessing a set address.

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

Figure 6-11 Remote log



The screenshot shows the 'Remote Log' configuration interface. It features a tabbed interface with 'Log' and 'Remote Log' tabs. The 'Remote Log' tab is active and contains the following settings:

- Enable
- IP Address: [IP Address field]
- Port: 514 (1~65534)
- Device Number: 22 (0~23)

At the bottom, there are three buttons: 'Default', 'Refresh', and 'Save'.

Step 2 Select the **Enable** checkbox to enable remote log function.

Step 3 Set address, port and device number.

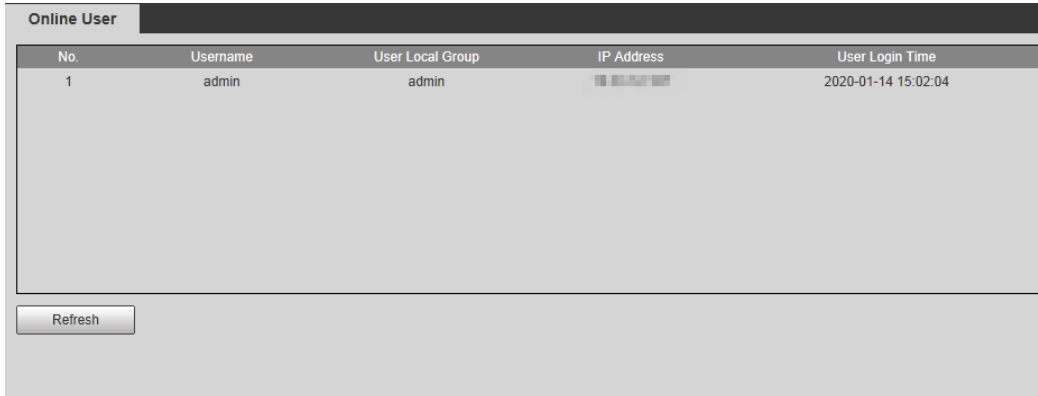
Step 4 Click **Save**.

6.6.4 Online User

View all the current users logging in to web.

Select **Setting > Information > Online User**.

Figure 6-12 Online user



No.	Username	User Local Group	IP Address	User Login Time
1	admin	admin	[redacted]	2020-01-14 15:02:04

Refresh

Appendix 1 Cybersecurity Recommendations

Cybersecurity is 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 on how to create a more secured security system.

Mandatory actions to be taken for basic equipment network security:

1. Use complex, 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 regularly

- According to standard procedures in the Tech industry, we recommend to keep your equipment (such as NVR, DVR, IP camera, etc.) firmware up-to-date to ensure the system is equipped with the latest security patches and fixes. Visit the IC realtime website or contact technical support 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 equipment network security:

1. Physical Protection

We suggest that you perform physical protection to equipment, especially storage devices. For example, place the equipment in a special computer room and cabinet, and implement access control permission and key management to prevent unauthorized personnel from carrying out physical contacts such as damaging hardware, unauthorized connection of removable equipment (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 breached.

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

This camera supports a password reset function. Please set up related information for password reset in time, including the password protection questions. If the information changes, please modify it accordingly. When setting password protection questions, it is suggested not to use answers that can be easily guessed.

4. **Enable Account Lock**

The account lock feature is enabled by default, and we recommend you to keep it enabled 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 changing the 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 equipment, thus reducing the risk of ARP spoofing.

8. **Assign Accounts and Privileges Reasonably**

According to business and management requirements, add only the required 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 and affect mobile app streaming.

11. Secure Auditing

- Check online users: we suggest that you check online users regularly to check for unauthorized users.
- Check equipment log: By viewing the logs, you can identify 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 equipment, the stored log is limited. If you need to save the log for a long duration, it is recommended that you enable the network log function to ensure that the critical logs are synchronized to a network log server for tracing.

13. Construct a Safe Network Environment

In order to better ensure the safety of equipment 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 the IC Realtime official website security emergency response center for security announcements and the latest security recommendations.