HD Intelligent Enforcement Camera

Web Operation Manual



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Foreword

General

This manual introduces the webpage operations of the HD intelligent enforcement camera (hereinafter referred to as "the Camera").

Safety Instructions

The following signal words might appear in the manual.

Signal Words	Meaning
DANGER	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
WARNING	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
CAUTION	Indicates a potential risk which, if not avoided, could result in property damage, data loss, reductions in performance, or unpredictable results.
NOTE	Provides additional information as a supplement to the text.
TIPS	Provides methods to help you solve a problem or save time.

Revision History

Version	Revision Content	Release Time
V1.0.5	Updated the general parameters of Camera.	August 2023
V1.0.4	Added parameters in ANPR Snapshot mode.	July 2022
V1.0.3	Updated the UI of the webpage.	June 2022
V1.0.2	Changed some images.	December 2021
V1.0.1	Updated model information and cybersecurity recommendations.	September 2021
V1.0.0	First release.	December 2021

Privacy Protection Notice

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

About the Manual

- The manual is for reference only. Slight differences might be found between the manual and the product.

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

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1 Webpage Introduction

After mounting the Camera, power on the Camera, connect it to the network, and configure its settings. Then, you can obtain the desired detection results.

The actual page might vary depending on the model you purchased and the version of software. The figures in this manual are only for reference, and might differ from the actual page.

1.1 First-time Login

The Camera is delivered in the uninitialized status. You need to initialize the Camera and modify its default password before it can be used.

Procedure

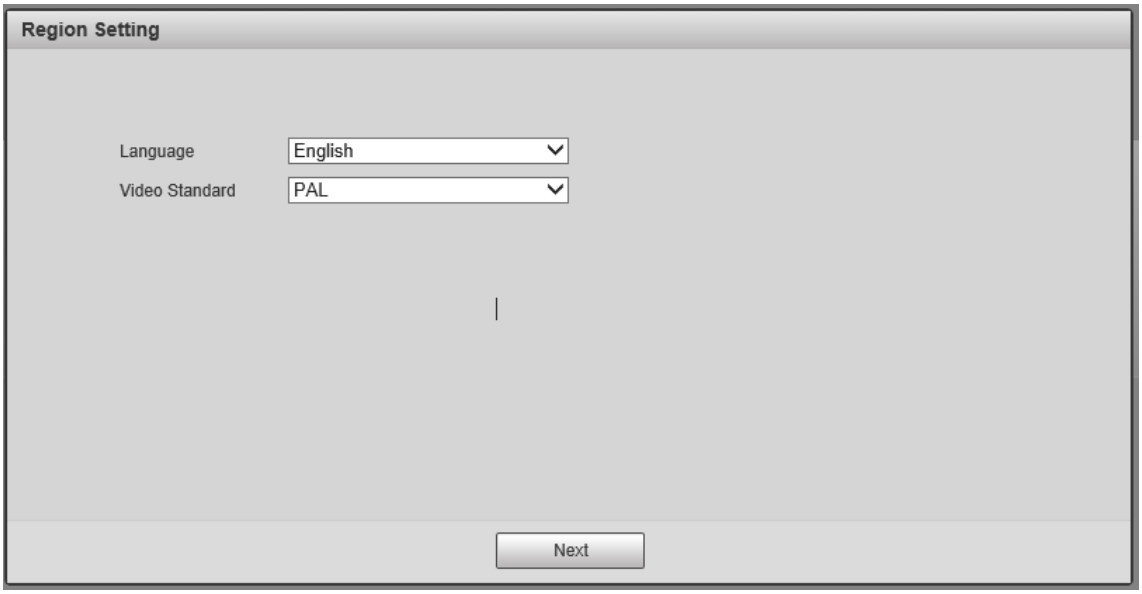
Step 1 Connect the Camera to the network.

1) Connect the Camera to PC over the Ethernet cable.
2) Keep the IP address of the PC and the camera on the same network segment.
   The network segment can be set to 192.168.1.X, but cannot be the same as the factory default IP of the Camera (192.168.1.108).
3) Execute ping ***.***. ***. *** (device IP) command on PC to check the network connection.

Step 2 Enter the IP address of the Camera (192.168.1.108) in the browser address bar, and press the Enter key to log in to the web page of the Camera.

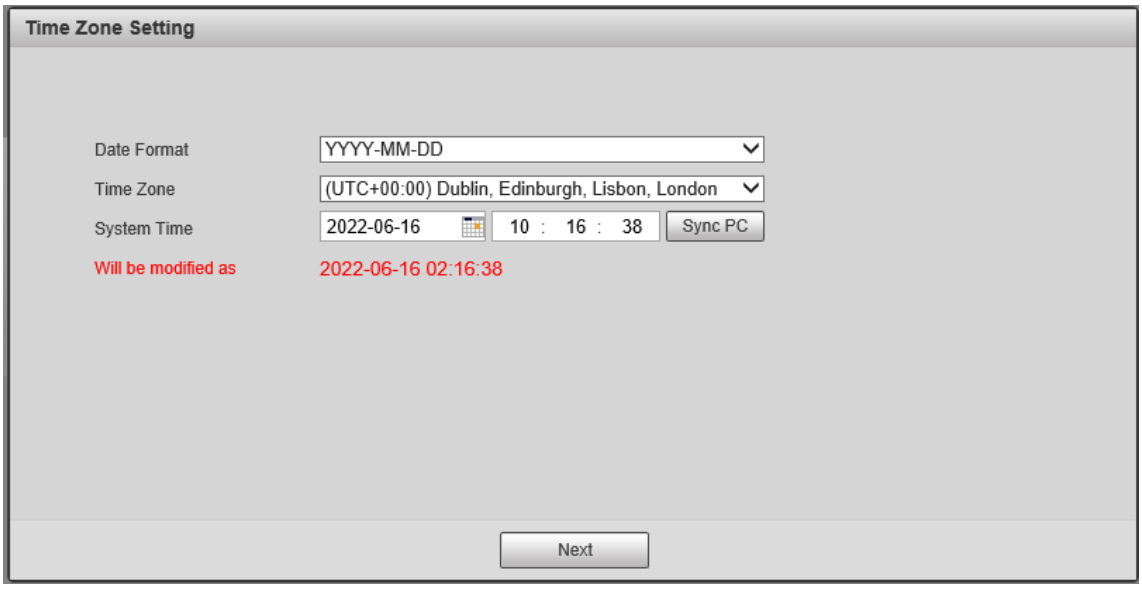
Step 3 In the **Region Setting** dialog box, set **Language** and **Video Standard**. Then, click **Next**.

Figure 1-1 Region setting



Step 4 In the **Time Zone Setting** dialog box, set date & time parameters. Then, click **Next**.

Figure 1-2 Time zone setting

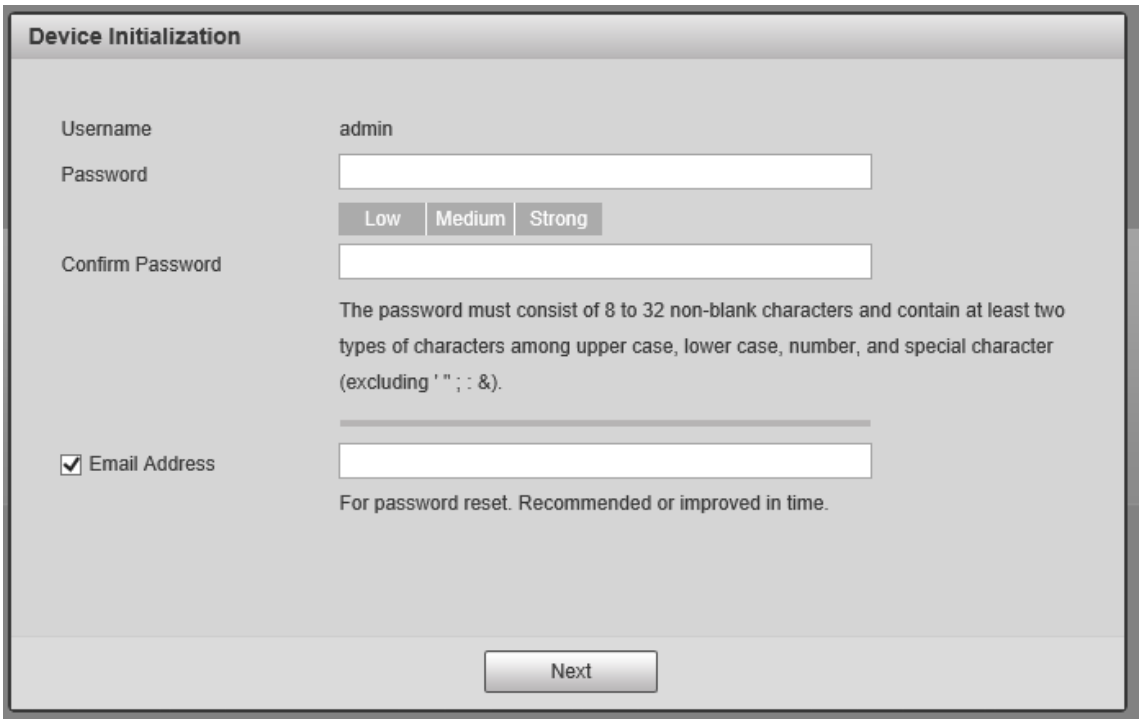


Step 5 In the **Device Initialization** dialog box, enter your new password.

Step 6 Select the **Email Address** checkbox, and then enter your email address. This helps you reset your password when your password is lost or forgotten.

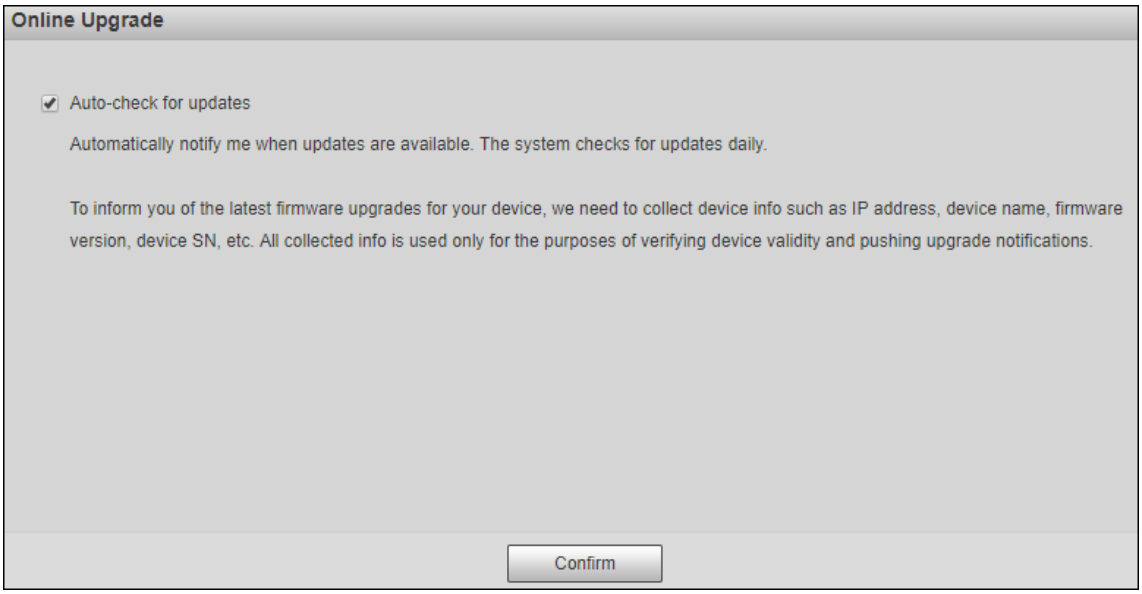
Step 7 Click **Next**.

Figure 1-3 Device initialization



Step 8 In the **Online Upgrade** dialog box, select **Auto-check for updates** and click **Confirm**.

Figure 1-4 Online upgrade



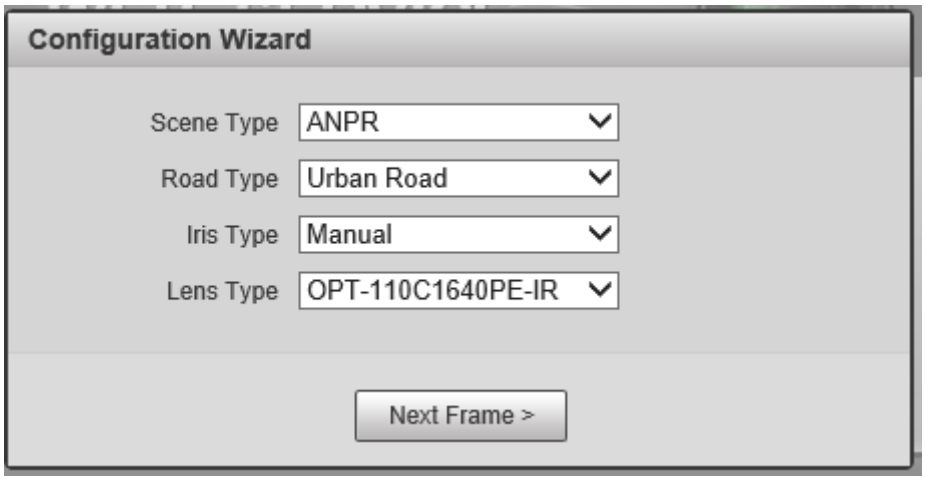
Step 9 On the **Login** page, enter the username (admin) and the password that you set, and then click **Login**.

Figure 1-5 Login page



Step 10 In the **Configuration Wizard** dialog box, configure the following parameters: **Scene Type**, **Road Type**, **Iris Type**, and **Lens Type**. Then, click **Next Frame**.

Figure 1-6 Configuration wizard (1)



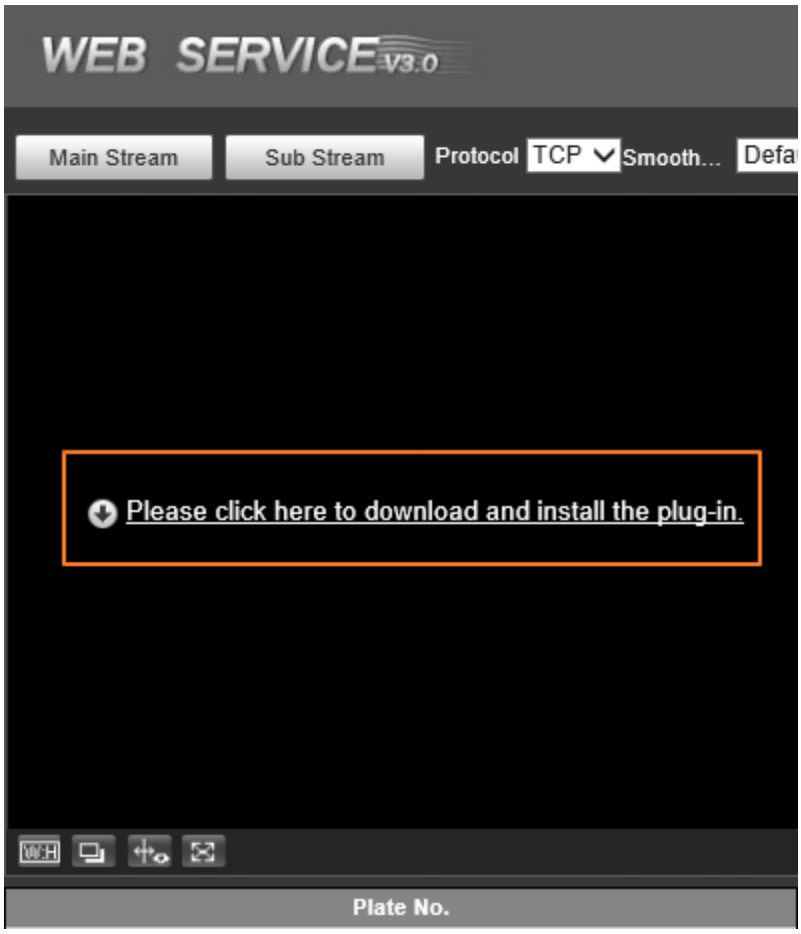
Step 11 Configure **IP Address**, **Subnet Mask**, and **Default Gateway**, and then click **Complete**.

Figure 1-7 Configuration wizard (2)



Step 12 For first-time login, click **Please click here to download and install the plug-in**, and then install the plug-in.

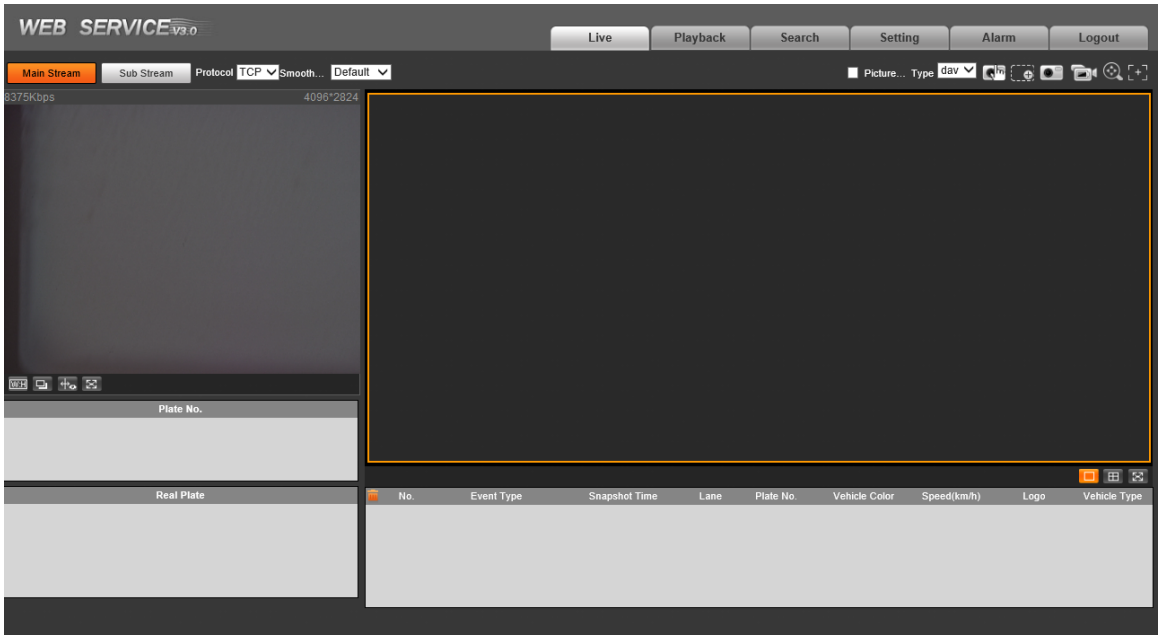
Figure 1-8 Install the plug-in



Before installing the plug-in, make sure that **ActiveX controls** (in Internet Explorer) from **Tools** > **Internet Options** > **Security** > **Custom Level** is enabled.

Step 13 After successfully installing the plug-in, the live view of the Camera is displayed.

Figure 1-9 Live page



If there is no operation for a long time, the system prompts **Authorized failed. Please log in again.**. In this case, you need to log in again.

1.2 Login

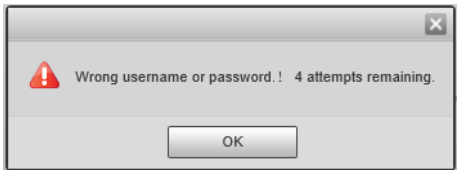
Procedure

Step 1 Enter the IP address of the Camera in the browser address bar, and press Enter.

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

- A box pops up when the username or password is incorrect.
- If you enter an invalid username or password five times, the account will be locked for five minutes.

Figure 1-10 Invalid username or password



1.3 Logout

Click **Logout** at the upper-right corner of the web page to log out.
You can enter the username and password to log in again.

1.4 Password Reset

You can reset your password through email when it is lost or forgotten. Make sure that your email is correctly entered during initialization (see "1.1 First-time Login"). Email address of admin user can be modified from **Setting** > **System** > **Account** > **Account** > **Username**.

Procedure

Step 1 Enter the IP address of the Camera in the browser address bar, and press Enter.

Step 2 On the login page, click **Forgot password?**.

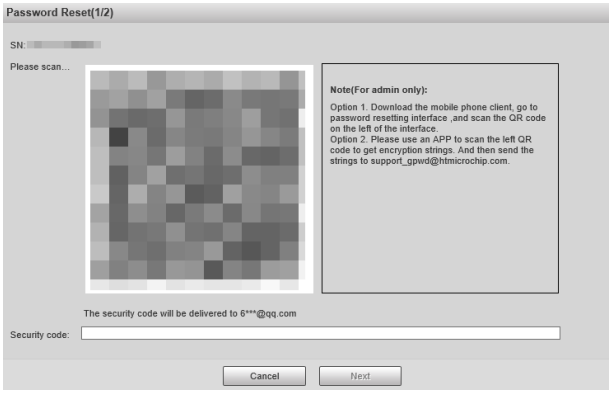
Step 3 In the pop-up dialog box, click **OK**.

Step 4 Scan the QR code according to the page prompt, and send the scanning result to the designated email to acquire security code.

Scan the actual QR code. Do not scan the QR code in this manual.

Step 5 Enter the security code that you received in the text box of **Security code**.

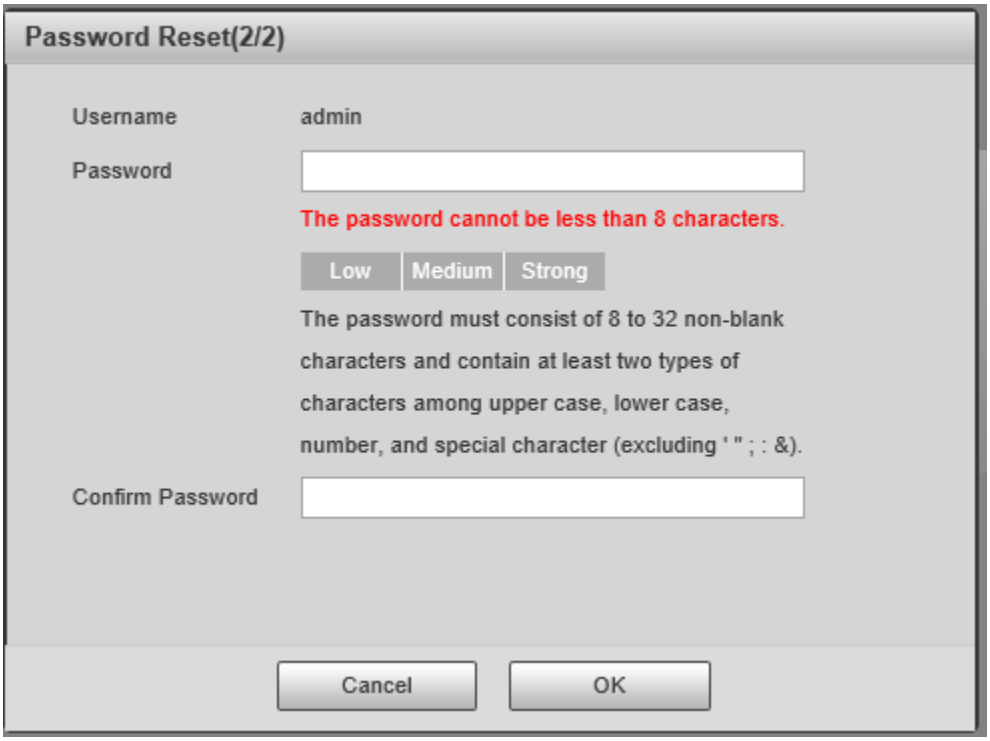
Figure 1-11 Reset password (1)



Step 6 Click **Next**.

Step 7 Set **Password**, and then enter your new password again in **Confirm Password**.

Figure 1-12 Reset password (2)



- The new password must consist of 8–32 characters, and contain at least two types from upper cases, lower cases, numbers and special characters (excluding ' " ; : and &).
- The new password must be the same as the **Confirm Password**. Follow the password security notice to set a high-security password.

Step 8 Click **OK**.

1.5 Webpage Functions

You can view real-time video captured by the Camera, set detection rules of number plate recognition and traffic violations, and play back video recordings and snapshots to trace back events (if any). This chapter introduces each function button on the **Live** page.

Figure 1-13 Webpage function bar



Table 1-1 Webpage functions

Button	Description
Live	Displays real-time videos and images. You can record video and capture images, and configure video play and image settings. For details, see "2 Live".
Playback	You can play back manual video recordings and videos related to traffic violations to trace back events (if any). For details, see "3 Playback".
Search	You can search for images, traffic flow information, and records on this page. For details, see "4 Search".
Setting	You can configure the way that the Camera works, the rules for detecting violations, and the internet protocol for camera network connection. You can also view version and system information of the Camera. For details, see "5 Settings".
Alarm	You can configure how the Camera responds when alarms occur. For details, see "6 Alarm".
Logout	Log out the webpage. For details, see "1.3 Logout".

2 Live

The **Live** page is displayed after you successfully log in to webpage. On this page, you can view the live video image and the captured number plate, take snapshots, view event details, and perform other operations.

Figure 2-1 Live page

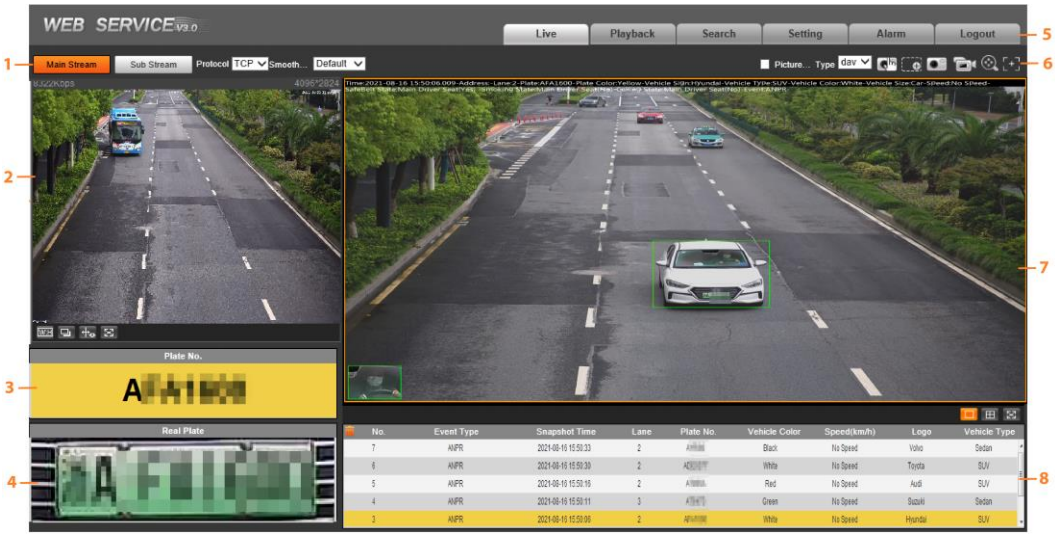


Table 2-1 Description of live page

No.	Description	No.	Description
1	Video stream	5	System functions
2	Live view	6	Functions of the live view
3	Logged plate number	7	Vehicle snapshot
4	Plate snapshot	8	Event list

2.1 Video Stream

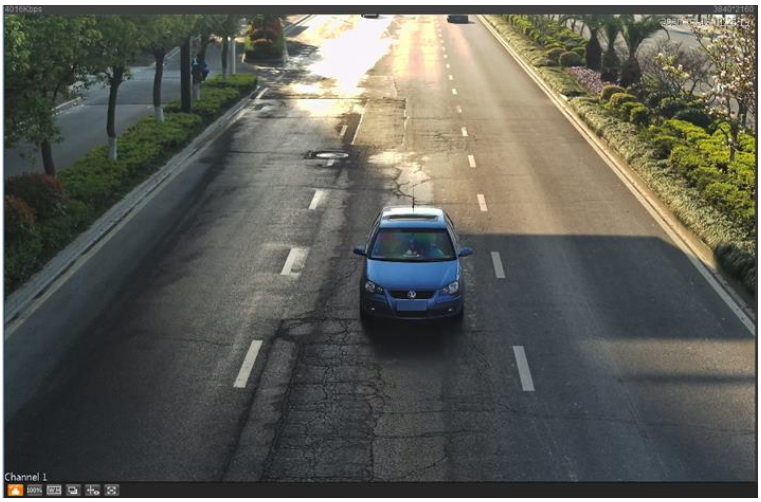
- **Main Stream**: Select it when you have stable network connectivity and sufficient bandwidth. It offers higher resolution and better image quality, ensuring that important details are captured accurately. You can configure main stream resolution within the supported range of the Camera.
- **Sub Stream**: Select it when you have limited bandwidth. It serves as a lower-resolution alternative to the main stream, which requires less bandwidth while still providing a smooth video play experience.
- **Protocol**: Video surveillance protocol. Currently, the system only supports **TCP**.
- **Smoothness Adjustment**: Fluency of viewing the live video. The fluency can be set to **High**, **Middle**, **Low**, or **Default** (recommended).

2.2 Live View

Displays the live video captured by the Camera. You can also click the icons to change the display mode of live view.

- : Adjust the image to original size or appropriate window.
- : Click it to switch to big window. Click it again to exit big window.

Figure 2-2 Big window



- : Click it to open image adjustment window on the right, and the button turns to . Click to close the image adjustment window.
- : Click it and then the image is displayed at 100%, and the button turns to . Click to switch back to the original size.
- : Click it to enable smart track detection. Number plate, vehicle bounding box, and other smart tracking information will be displayed in the video image.
- : Click it and the window is displayed in full screen; double-click or right-click to exit full screen.

Table 2-2 Image adjustment

Icon	Name	Description
	Brightness	Adjust the overall image brightness. Change the value when the image is too bright or too dark. The range is from 0 to 128 (64 by default).
	Contrast	Change the value when the image brightness is suitable, but contrast is not enough. The range is from 0 to 128 (64 by default).
	Hue	Adjust the image hue. For example, change red to blue. The default value is made by the light sensor and normally it does not have to be adjusted. The range is from 0 to 128 (64 by default).
	Saturation	Adjust the vividness of the colors, without influencing the overall brightness of the image. The range is from 0 to 128 (64 by default).
Reset	—	Click it to reset brightness, contrast, saturation, and hue to their default values.

In this image adjustment window, you can only adjust image brightness, contrast, hue, and saturation of local web. To adjust system brightness, contrast, hue and saturation, go to **Setting** > **Camera** > **Image** > **General**.

2.3 Plate Number Recognition

Displays the plate number recognized by the Camera in real-time when a vehicle passes.

2.4 Plate Snapshot

Displays the snapshot of a license plate when a vehicle passes.

2.5 System Functions

Click the icons to set system functions, which include playback, video recording and snapshot search, intelligent rules setting, alarm event setting, and system logout. For details, see the following chapters.

2.6 Functions on the Live Page

Set functions on the **Live** page, and then the system will display the desired information on the **Live** page.

Table 2-3 Function description of the Live page

Icon	Name	Description
	Picture Preview	Select the checkbox, and the Camera automatically receives vehicle snapshots and detects event information triggered by sources such as radar or video detection, and displays such snapshots and information at the lower part of the page. The snapshots are saved in the storage path defined by **Setting** > **Storage** > **Storage Path** > **Path**.
	Type	Select the format of video recordings (**dav** by default).
	Manual Snapshot	Click it, and the Camera takes a snapshot when a vehicle passes. The snapshot is saved in the storage path. • Enable **Picture Preview** first. • To change the storage path of snapshots, go to **Setting** > **Storage** > **Storage Path** > **Path**.

Icon	Name	Description
	Snapshot	Click it, and a snapshot is taken, even when there is no vehicle passing. The snapshot is saved in the path defined by **Setting** > **Storage** > **Storage Path** > **Path**.
	Digital Zoom	Click and drag to select any area in the video window, and then the area will be zoomed into. In any area of the video window, click  or right-click to exit.
	Video	Click it to start recording. Click  again to stop recording and the recorded video will be saved to the set path.  The Camera will keep recording until the webpage is closed or you log out if the recording is not manually stopped.
	Zoom & Focus	Click to set zoom and focus parameters.
	Aux Focus	Click it to start auto focus, local focus, and license plate check for the monitoring image.

2.7 Vehicle Snapshot

Select **Picture Preview**, and then snapshots will be displayed when vehicles pass.

2.8 Event List

Select **Picture Preview**, and the event information will be displayed, including number, event types, capture time, lanes, plates, vehicle color, speed, vehicle signs, and vehicle types.

3 Playback

Click the **Playback** tab, and then you can play back video recordings stored on the TF card of the Camera.

To set the record strategies, see "5.6.6 Record Control".

Figure 3-1 Playback

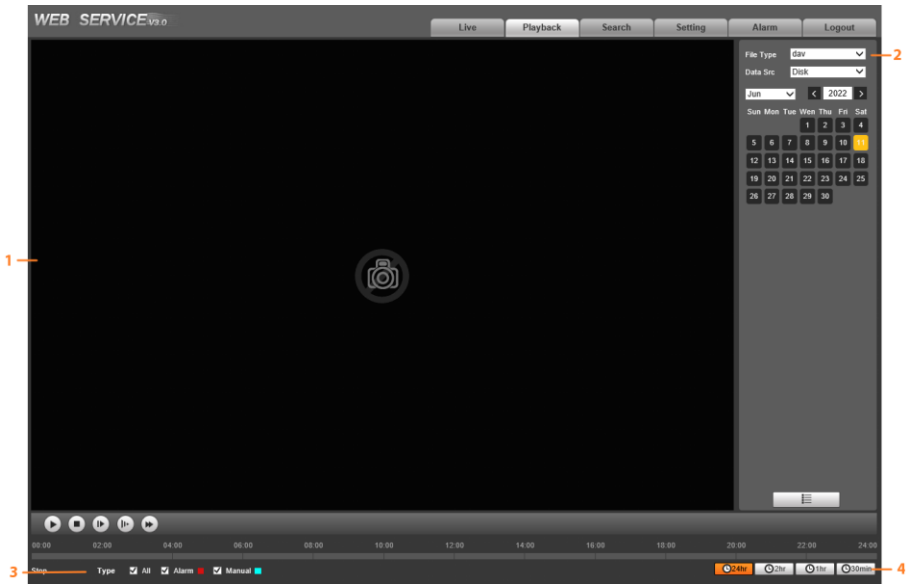


Table 3-1 Functions

No.	Description	No.	Description
1	Video playback	3	Record type
2	Playback file	4	Time format

3.1 Video Playback

When playing back video recordings, you can control the video playing status with the following icons.

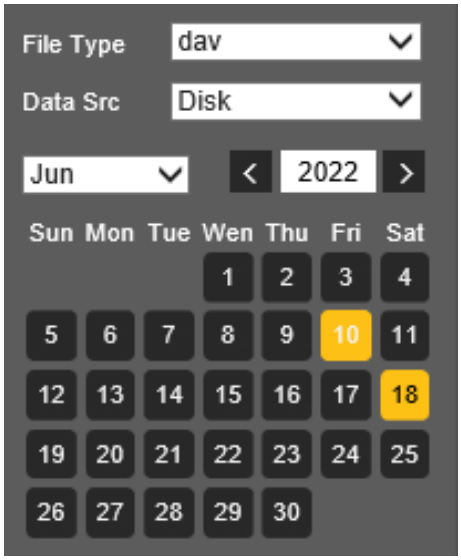
Table 3-2 Video playback description

Icon	Function	Description
	Play and pause	• : The video is paused or not being played. • : The video starts playing.
	Stop	Stop playing video.
	Next frame	Play by frame.
	Slow	Slow down the playback.
	Fast	Speed up the playback.

3.2 Viewing Recordings

You can view recordings by performing the following steps.

Figure 3-2 Playback file



Procedure

Step 1 Set **File Type** and data source (**Data Src**), and set record time.

The data source is **Disk** (here referred to as TF card) by default. No video will be played if there are no videos stored on the TF card.

Step 2 Click a day with blue shading, and a colored progress bar is displayed on the timeline.

Date with blue shading means there are recordings on this day.

- Point to this day, and the color turns to orange.
- Select this day, and the color turns to green.

Step 3 Click any time on the progress bar, and the system plays back videos starting from that time.

Figure 3-3 Timeline



Step 4 Click , and videos recorded on a selected day will be displayed in a list.

Figure 3-4 Playback file



Table 3-3 Playback file description

Parameter	Description
	Search for all the video files within the selected period.
	Click it to download files to your local computer.
	Click it to go back to the calendar page, where you can search for and play back videos of other periods.

Step 5 Double-click a file in the list, and the file will be played with information displayed such as the file size, start time, and end time.

3.3 Record Type

Select a record type, and then only files of the selected types will be displayed on timeline and in the file list.

Figure 3-5 Record type



3.4 Time Format

Displays time in different formats. You can click each time format to play back the videos in 24-hour mode, 2-hour mode, 1-hour mode, and 30-minute mode respectively.

Figure 3-6 Time format



4 Search

You can search for snapshots, vehicle flow, and video recordings on the **Search** page.

4.1 Image Search

4.1.1 Searching for SD Card Image

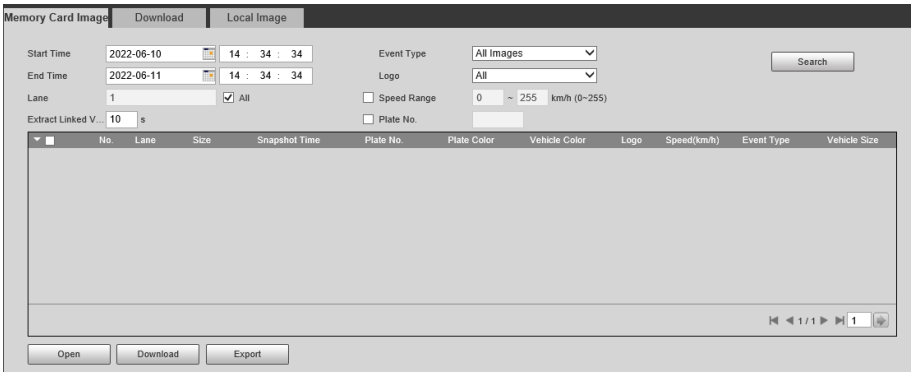
On the **Memory Card Image** page, you can search for and download the images stored in the TF card of the Camera.

Make sure that the TF card is inserted into the Camera. Otherwise, there might be no results.

Procedure

Step 1 Select **Search** > **Picture Query** > **Memory Card Image**.

Figure 4-1 Memory card image



Step 2 Configure the parameters, and then click **Search**.

Table 4-1 Parameter description

Parameter	Description
Start Time	Set the start time and the end time to define a period, and then you can search for images stored on the TF card within this period.
End Time	
Event Type	**All Images**: Search for all snapshots. **Event List**: Search for snapshots related to events, which include but are not limited to **ANPR**, **Cross Solid White Line**, and **Wrong-way Driving**.
Logo	Search for snapshots by the selected vehicle sign. You can select **All**, **Unknown**, or a specific vehicle sign.
Lane	Select the capture lane.

Parameter	Description
Speed Range	Select the **Speed Range** checkbox, and set the speed range to search for images of vehicles within the defined speed range.
Extract Linked Video Length	The length of a recorded video associated with the snapshot that you want to save.
Plate No.	Select the **Plate No.** checkbox, and then enter the plate number to search for images related to this plate.
	This icon is displayed next to the traffic violation snapshot when **Record Linkage** is enabled in **Advanced Parameter** (except **ANPR**) under **Setting** > **Event** > **ANPR Snapshot** > **Rule Config**.

Step 3 Select the images that you need, and click **Open** to view the images in photo viewer.

Step 4 Select the images that you want to download, and then click **Download**.

Step 5 Select the path to save the images, and the system starts downloading the images to your computer.

4.1.2 Downloading Attribute

You can configure the image information.

Procedure

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

Step 2 Set **Download Image by** to download snapshots based on their **Creation Time** or **Snapshot Time**.

Step 3 Select **Download Method**.

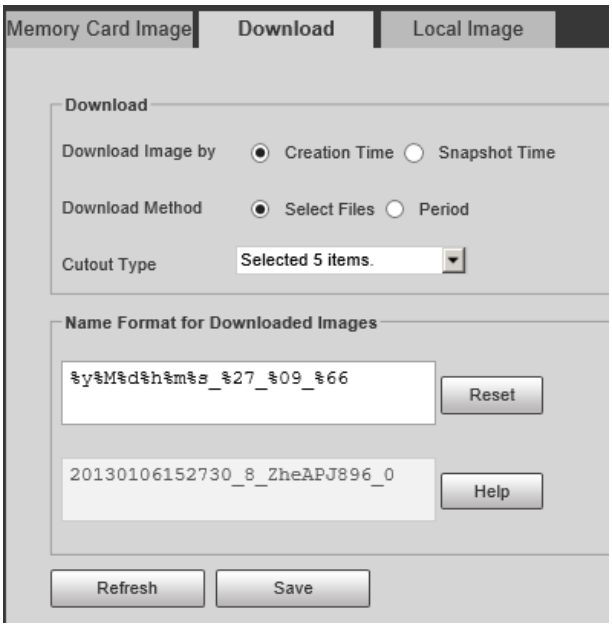
- **Select Files**: Download the selected snapshots.
- **Period**: Download all images captured during the set time period. You can set the time in the **Memory Card Image** tab.

Step 4 Select cutouts that you want to download from **All**, **Plate Cutout**, **B/W Plate Cutout**, **Front Seat Passenger's Face**, **Driver's Face**, and **Vehicle Body Cutout**.

Step 5 Name the snapshots. Click **Help** to view the image naming rule. Click **Refresh** to go back to default.

Step 6 Click **Save**.

Figure 4-2 Downloading attribute



4.1.3 PC Picture

You can view images saved on your computer and verify whether the image contains a watermark.

To view or set the save path of images on your computer, go to **Setting** > **Storage** > **Storage Path** > **Path**.

Procedure

Step 1 Select **Search** > **Picture** > **Local Image**.

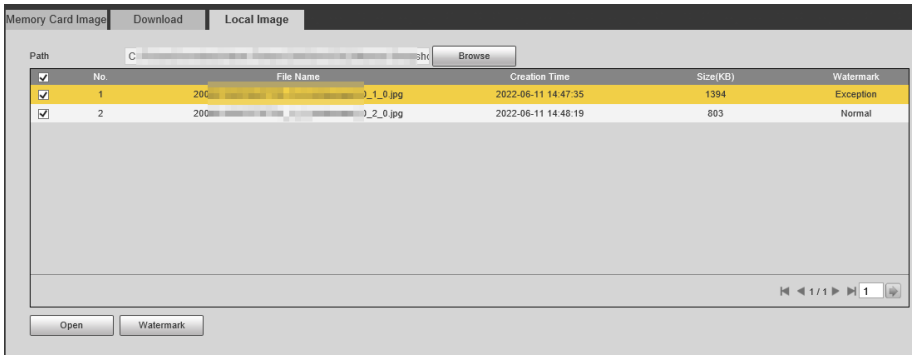
Step 2 Click **Browse** to select a picture.

Step 3 Click **Watermark**, and view result under **Watermark**.

- When the result is **Exception**, the image is tampered.
- When the result is **Normal**, the image is not tampered.

Click **Open** or double-click the picture if you need to preview the image.

Figure 4-3 Local images



4.2 Flow Query

You can search for traffic flow and pedestrian flow within the defined period.

- The function is available on select models, and might differ from the actual product.
- This section uses **Traffic Flow** as an example.

Procedure

Step 1 Select **Search** > **Flow Query** > **Traffic Flow** (select **Pedestrian Flow** if you want to search for pedestrian flow).

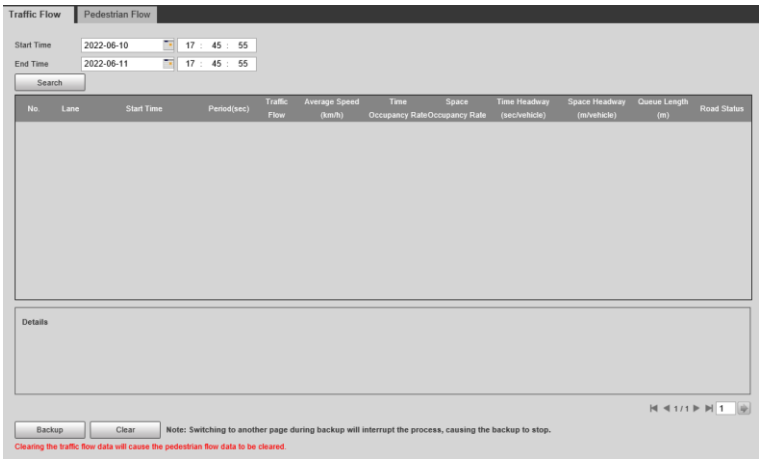
Step 2 Set **Start Time** and **End Time**.

Step 3 Click **Search**.

Step 4 Select search results, and click **Backup** to save the results to your computer.

Step 5 Click **Clear** to delete all results.

Figure 4-4 Traffic flow search



4.3 Recording Search

Search for the video recordings stored on your computer to trace back abnormal events (if any).

4.3.1 Recording

You can search for a recorded video on your computer and play back the video.

- Click on the **Live** page, and the Camera starts recording. The recorded video is saved on the path defined in **Setting** > **Storage** > **Storage** > **Path**.
- The function is available on select models, and might differ from the actual product.

Procedure

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

Step 2 Click **Select File** to select the recorded video on your computer, and then you can play

back the video.

Figure 4-5 Record

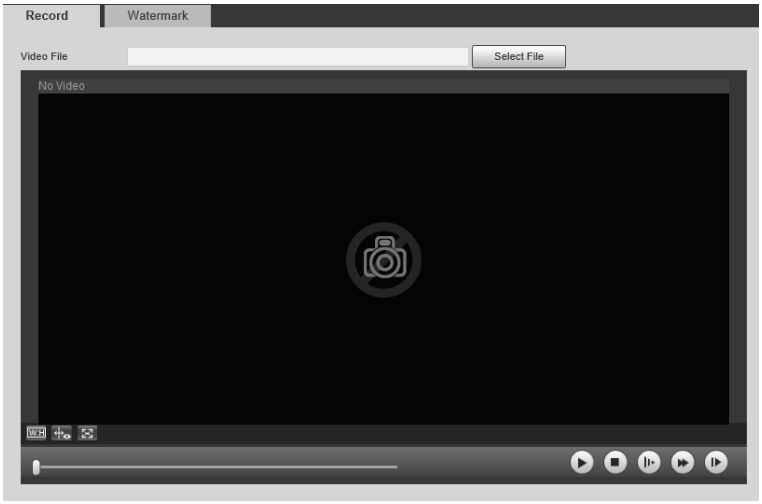


Table 4-2 Play parameters

Icon	Description
	Click it to select **Original** or **Adaptive** playback.
	Click it to enable smart track detection. Number plate, vehicle bounding box, and other smart tracking information will be displayed on the video image.
	Click it to enter full screen. Double-click the video image or press Esc to exit.
	Click it to play back the video. Click to pause the video.
	Click it to stop playing back the current video.
	Click it to slow down the video to play at× 1/2, × 1/4, or× 1/8. Click to restore to normal playing speed.
	Click it to speed up the video to play at× 2, × 4, or× 8. Click to restore to normal playing speed.
	Click it to play back the next frame.

4.3.2 Watermark

Prerequisites

Before verifying the watermark, you need to select **Watermark** and configure **Watermark String** from **Setting** > **Camera** > **Video** > **Video Stream** > **Main Stream**.

The watermark character is **DigitalCCTV** by default.

Procedure

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

Step 2 Click **Select File** to select a recording.

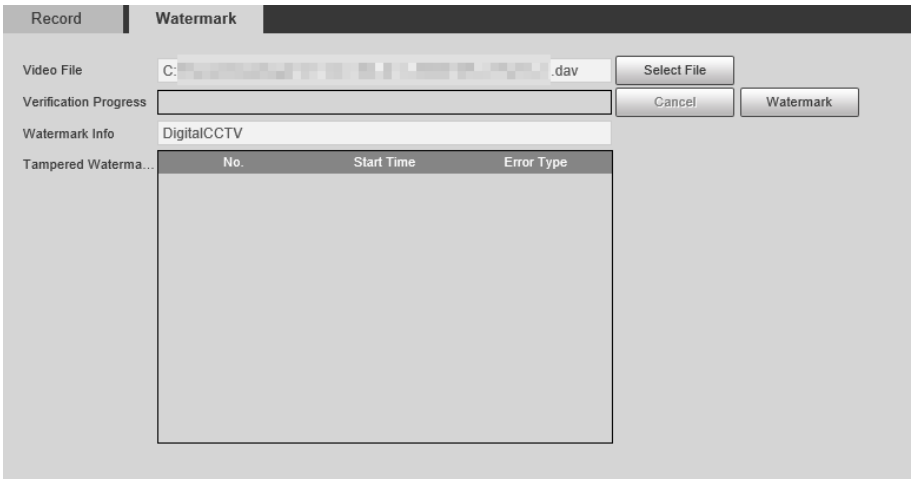
Step 3 Click **Watermark**. The system will display the verification progress and normal watermark information.

- If the video is verified to be authentic, the watermark you set is displayed next to

Watermark Info.

- If the video is tampered, you can check the details next to **Tampered Watermark**.

Figure 4-6 Watermark



5 Settings

You can configure camera attributes to make the Camera clearly display the monitoring image of the scenario, set the detection rules to make the Camera detect violations (such as running a red light, not yielding to pedestrians, and speeding), set the network parameters of the Camera, and view device and system information.

5.1 Camera

You can configure camera attributes such as brightness, contrast, shutter, metering zone, and focus.

5.1.1 Configuring Camera Attributes

After connecting the Camera to the network and viewing the live video on its webpage, you can adjust the image parameters of the Camera to obtain clear images.

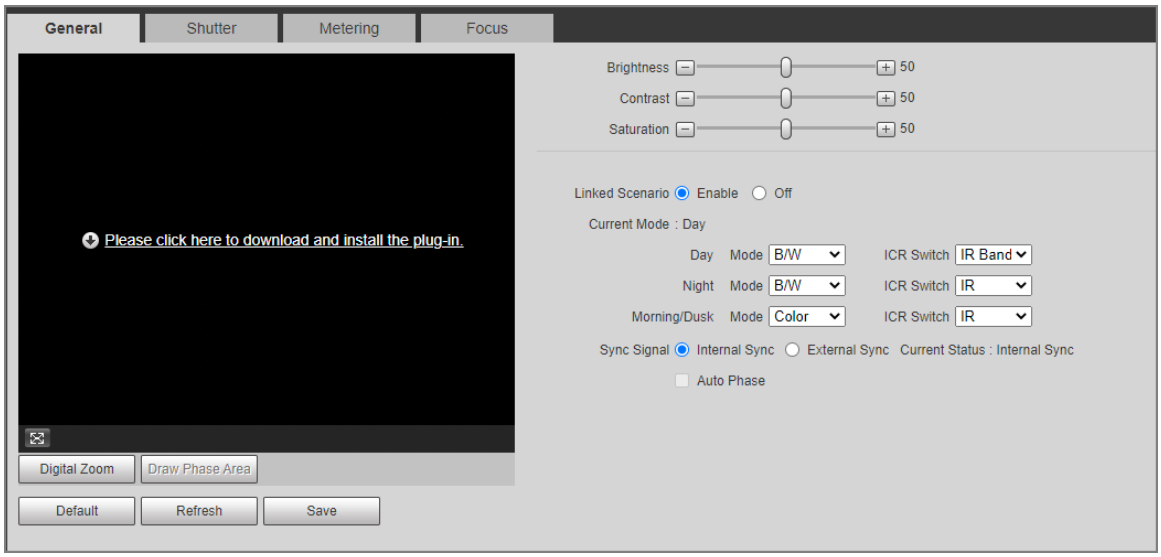
5.1.1.1 Configuring General Parameters

You can configure the brightness, contrast, saturation, mode, and other attributes of the Camera.

Procedure

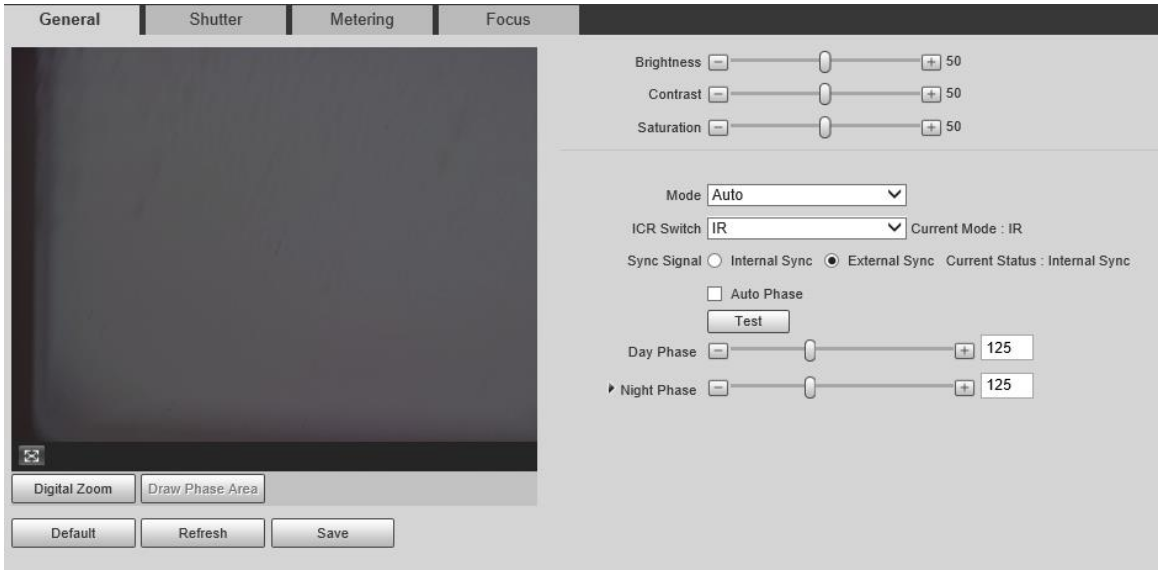
Step 1 Select **Setting** > **Camera** > **Image** > **General**.

Figure 5-1 General



This function is available for models ITC1652-AU5F-IRL8ZF1640-P and ITC952-AU5F-IRL8ZF1640-P.

Figure 5-2 General



Step 2 Configure the parameters.

Table 5-1 General parameters

Parameter	Description
Brightness	• Both the darker areas and the brighter areas will be changed together when adjusting the brightness. The image might become blurry when the value gets higher. The recommended range is 40–60, and the available range is 0–100. • It is 50 by default. The larger the value, the brighter the image.
Contrast	• The larger the value, the darker the dark area, and the more exposed the bright area. • The image might become blurry when the value gets lower. The recommended range is 40–60, and the available range is 0–100. • It is 50 by default. The larger the value, the stronger the contrast.
Saturation	• The saturation value does not change the overall image brightness. • The larger the value, the more saturated the image. • It is 50 by default. The recommended range is 40–60, and the available range is 0–100.
Linked Scenario	Associate with the scenarios. • **Enable**: Manually switch the mode and ICR of each scenario. ◇ **Current Mode** refers to the mode the camera currently operates in. It is automatically configured. ◇ Scenarios available: **Day**, **Night** and **Morning/Dusk**. • **Off**: Automatically set based on the actual scenes. The parameters you configure will be applied to all scenarios.

Parameter	Description
Mode	• **Color**: The image is always colored. • **B/W**: The image is always black and white. • **Auto**: When the brightness is higher than the threshold, the image automatically changes to color. When it is below the threshold, the image changes to black and white. **Auto** is only available when the linked scenario is not enabled.
ICR Switch	• **IR Bandpass**: Allows only the IR light and blocks the remaining spectrum. Applicable to scenarios with high brightness. • **IR**: Applicable to scenarios with low brightness. • **Auto**: Automatically configured according to the brightness. **Current Mode** shows the actual status of ICR. **Auto** is only available when the linked scenario is not enabled.
Ambient Brightness	Adjust the ambient brightness as needed. Only available when the linked scenario is not enabled.
Sync Signal	Includes **Internal Sync** (the external light is connected to the Camera) and **External Sync** (the external light is connected to another camera, and you want to sync the flash signals of the light with the Camera). **Current Status** shows the actual sync signal. When selecting **External Sync**, you can drag the slider to configure the **Day Phase** and **Night Phase**. 1. Select the **Auto Phase** checkbox. 2. Click **Setting** to configure the shutter value and phase value. The **Auto Phase** range can only be within the range of **Day Phase** and **Night Phase**. 3. Click **Test**, and then click **Draw Phase Area** to draw on the video image, and a yellow box will be displayed. 4. Click **test** again to test whether the flashing light is synchronized with the Camera. The system provides reference values of shutter and phase, and you can make minor adjustments. The test takes a while. When the test is successful, the system prompts **Successfully tested auto phase.**
Day Phase	Manually adjust the phase of synchronization signal in the daytime.
Night Phase	Manually adjust the phase of synchronization signal at night.

Step 3 Click **Save**.

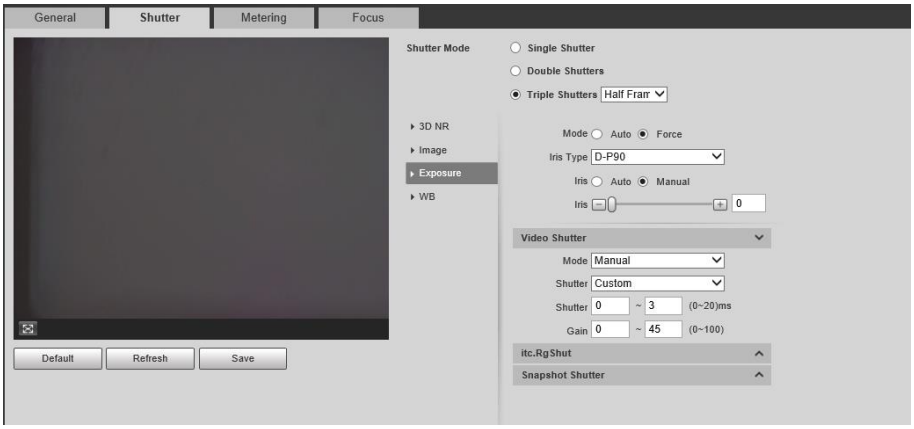
5.1.1.2 Configuring Shutter

You can configure shutter mode, exposure mode, and gain mode.

Procedure

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

Figure 5-3 Shutter



Step 2 Click **Video Shutter**, **Snapshot Shutter**, or **Recognition Shutter** to show the parameters related to the shutter. To configure the parameters, refer to the table below.

Recognition Shutter is only available in **Triple Shutters** mode.

Table 5-2 Shutter parameters

Module	Parameter	Description
Shutter Mode	Single Shutter	Video and snapshot share the same exposure mode.
	Double Shutters	• **Video Shutter** and **Snapshot Shutter** can be separately configured. • **Half Frame Rate**: Video and snapshot take half of the frame respectively. • **Full Frame Rate**: Snapshot takes 1 frame, and video takes the rest of the frames.
	Triple Shutters	**Video Shutter** and **Snapshot Shutter** can be separately configured, and a **Recognition Shutter** is added. **Triple Shutter** mode is available only when **General Mode** is selected as **Capture and Flash Linkage** from **Setting** > **Event** > **E Police** > **Other Config**.
3D NR	Video/Image 3D NR	When it is **Enable**, 3D NR is enabled to reduce noise of video/image.
	Video/Image Spatial 3D NR	Spatial video/snapshot denoising. The higher the value, the less the noise.
	Video/Image Temporal 3D NR	Temporal video/snapshot denoising. The higher the value, the fewer the flicker noise.

Module	Parameter	Description
Image	Scene	You can change the scene and adjust the sharpness of the corresponding scene. Scenes available: **Morning/Dusk**, **Day**, and **Night**.
	Sharpness	You can set the sharpness of the corresponding scene. The higher the value, the clearer the image. But there will be noise if the sharpness is too high.
	WDR	Select **Enable** to enable WDR (wide dynamic range), which helps provide clear video images in bright and dark light.
Exposure	Mode	• In **Auto** mode, only **Manual** iris type is available. • In **Force** mode, several iris types are available, and you also need to configure **Iris**, which includes: **Auto** and **Manual**. If **Manual** is selected, you can manually drag the slider to adjust the value.
	Iris Type	Displays the detected iris type.
	Mode	Select the way of adjusting exposure mode. You can select from **Manual** and **Auto**.
	Shutter	You can select the shutter value, or select **Custom**, and then set the shutter range. You need to configure shutter when **Mode** is set to **Manual**.
	Shutter	Set the time range of shutter. You need to configure shutter when **Shutter** is set to **Custom**.
	Gain	Set the value range of gain. You need to configure gain scope when **Mode** is set to **Manual**.
WB	Mode	Set scene mode to adjust the image to its best status.

Step 3 Click **Save**.

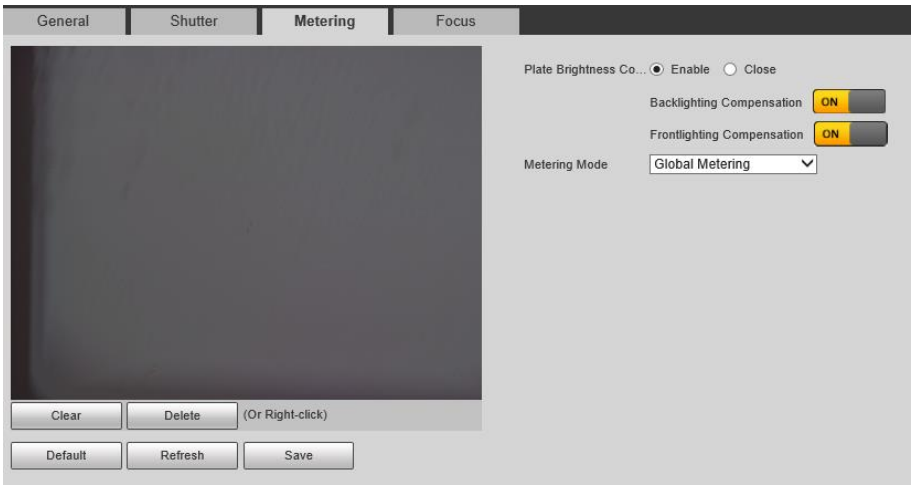
5.1.1.3 Configuring Metering Zone

This section provides guidance on setting the measure mode of metering zone.

Procedure

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

Figure 5-4 Metering



Step 2 Configure the parameters.

Table 5-3 Metering parameters

Parameter	Description
Plate Brightness Compensation	When selecting **Enable**, you can turn **ON** backlight and frontlight according to scene requirements to improve the backlight and frontlight image brightness.
Backlight Compensation	
Frontlight Compensation	
Metering Mode	• **Global Metering**: Measure the brightness of the whole image area and intelligently adjust the overall image brightness. • **Partial Metering**: Measure the brightness of sensitive areas and intelligently adjust the overall image brightness. If the measured area becomes bright, then the whole area becomes dark, and vice versa. Drag the mouse to select the measured area and a yellow box displays over the video image. Drag the box to a proper location, and then click **Save** to complete configuration.

Step 3 Click **Save**.

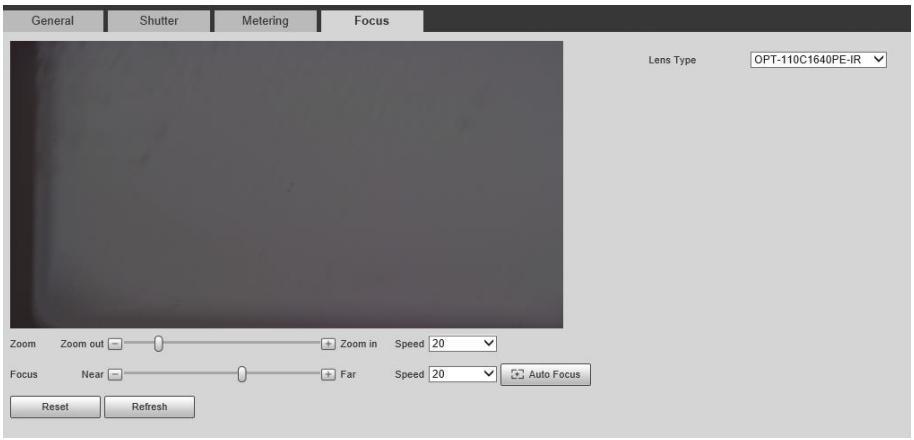
5.1.1.4 Configuring Focus

Adjust the focus of the Camera.

Procedure

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

Figure 5-5 Focus



Step 2 Configure the parameters.

Table 5-4 Focus parameters

Parameter	Description
Lens Type	The type of the Camera lens. Select **Manual Vari-Focal** to restart the Camera when the lens is not standard.
Zoom	Drag the slider to zoom in or out the video image at the selected speed.
Focus	Drag the slider to adjust the camera focus at the selected speed.
Speed	Set the speed of adjusting the value of zoom in/out and focus.
Auto Focus	Automatically adjusts the camera focus to get clear images.

Step 3 Click **Refresh**.

5.1.2 Video

After connecting the Camera to the network and viewing the live video on its webpage, you can configure encoding parameters when necessary to obtain clear and smooth video image.

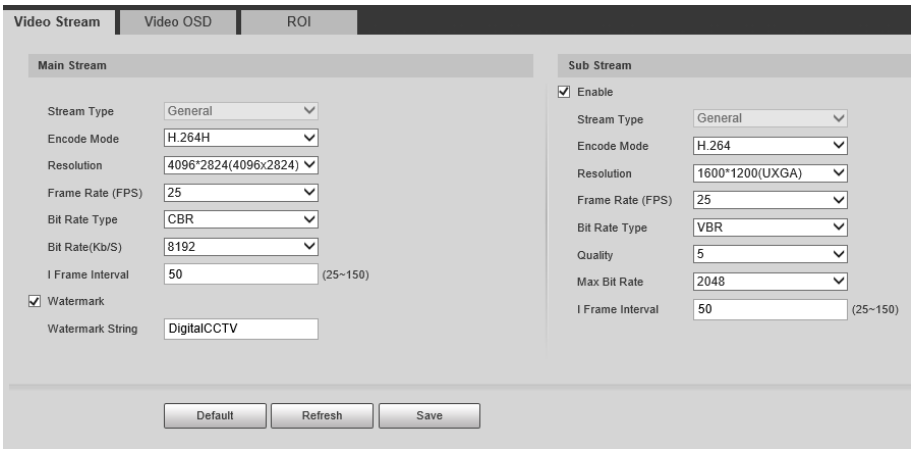
5.1.2.1 Configuring Video Parameters

Configure the parameters of video streams.

Procedure

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

Figure 5-6 Video stream



Step 2 Configure the parameters.

Table 5-5 Video stream parameters

Parameter	Description
Encode Mode	Modes of H.264, H.264H, MJPEG, and H.265 can be selected.
Resolution	The higher the value, the clearer the overall image. For each resolution, the recommended bit stream value is different. The resolution of sub stream cannot be greater than that of main stream.
Frame Rate (FPS)	The higher the value, the smoother the video image. The frame rate might vary due to different resolutions.
Bit Rate Type	You can select from **VBR** (variable bitrate) and **CBR** (constant bitrate). • **VBR**: The bit rate varies based on the complexity of the content being recorded. If the recording contains a lot of dynamic and complex scenes, using VBR might offer better compression and efficiency while maintaining the desired quality. • **CBR**: Maintains a specific bitrate during encoding. CBR is recommended when the network has limited bandwidth, for instance, at 320 Kbps. This ensures a consistent level of video quality throughout the recording, but it can result in larger file sizes compared to VBR.
Quality	6 quality levels are available. The higher the value, the better the quality. You need to configure the image quality when **VBR** is set to **Bit Rate Type**.

Parameter	Description
Bit Rate(Kb/S)	Higher bit rate signifies greater image or video quality, but also occupies more storage space. You need to configure the bit rate when **CBR** is set to **Bit Rate Type**.
Max. Bit Rate	It is the upper limit of stream in VBR. In CBR, the value is fixed.
I Frame Interval	The number of P-frame between two I-frames. The number varies according to the bit rate. The range is 25–150. We recommend configuring the value to be twice the amount of the bit rate.
Watermark	You can verify the watermark to check whether the video has been tampered. Select the **Watermark** checkbox to enable watermark verification. The watermark character is **DigitalCCTV** by default. Watermark character consists of up to 85 characters with numbers, letters and underlines.
Enable	Enable sub stream when your network bandwidth is insufficient or other conditions that influence the video smoothness in main stream.

Step 3 Click **Save**.

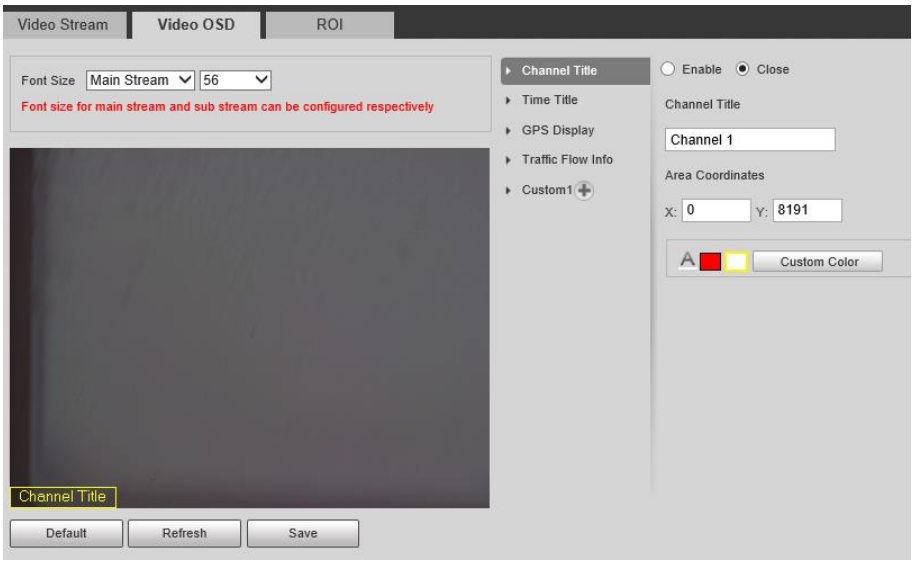
5.1.2.2 Configuring Video OSD

Configure the OSD information of videos.

Procedure

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

Figure 5-7 Video OSD



Step 2 Configure parameters.

Table 5-6 Video OSD parameters

Parameter	Description
Font Size	Set the font size of **Main Stream** or **Sub Stream1**.
Channel Title	Enable the function and set the channel title, coordinates and font color (can be customized) of channel information OSD.
Time Title	Enable the function and set the coordinates and font color (can be customized) of time information OSD. You can select **Week Display** to display week information on the video image.
GPS Display	Enable the function and set the coordinates and font color (can be customized) of channel information OSD.
Traffic Flow Info	Enable the function and set the coordinates and font color (can be customized) of flow information OSD.
Queue Info	Enable the function and set the font color (can be customized) of queue information OSD.
Custom	Enable the function and set the coordinates, custom title and font color (can be customized) of custom information OSD. You can add up to 8 custom titles.

Step 3 Click **Save**.

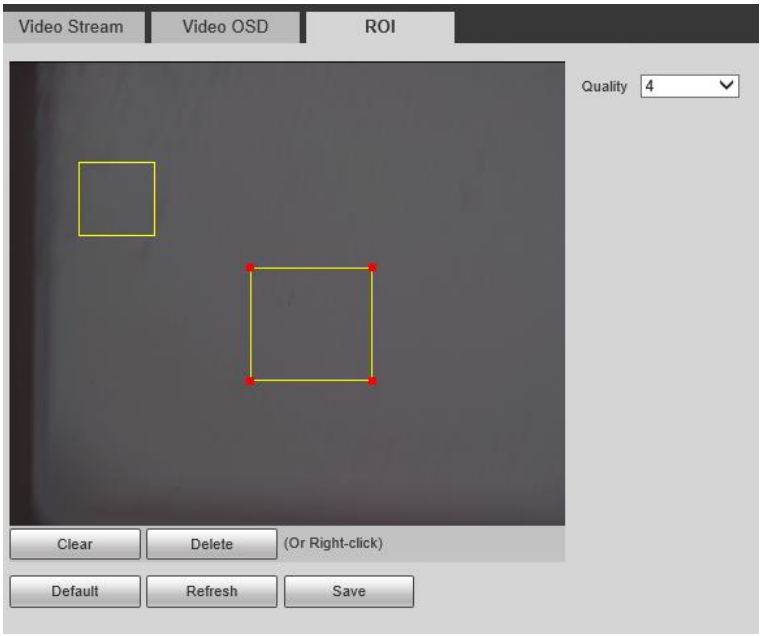
5.1.2.3 Interest Area

Set the region of interest in the video image, and then the selected image will be displayed with the configured quality.

Procedure

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

Figure 5-8 ROI



Step 2 Drag anywhere in the video image to draw the region of interest. You can draw more than

one region when necessary.

You can click **Clear** to delete all the regions of interest, or click **Delete** or right-click on the video image to delete the most recently drawn area.

Step 3 Set the image quality of the regions of interest. 6 quality levels are available. The higher the value, the better the quality.

Step 4 Click **Save**.

5.2 Network

You can configure network parameters such as IP address, subnet mask, and default gateway.

5.2.1 Configuring TCP/IP

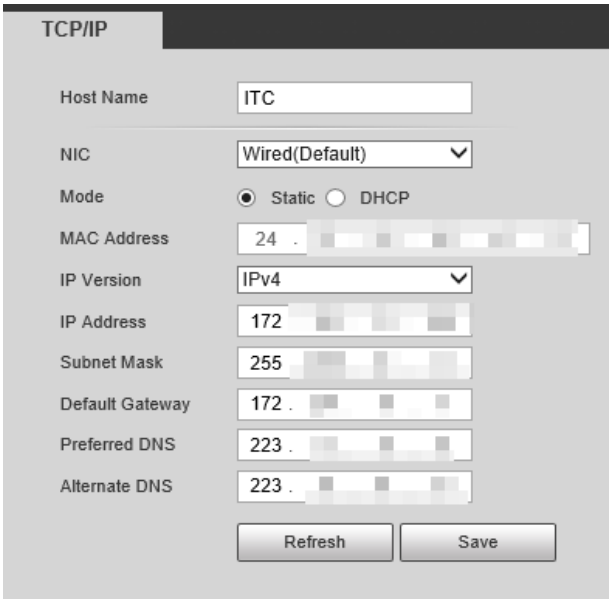
You can configure host name, IP address, and more.

Some models are designed with two network ports. Do not configure the ports to be on the same network segment; otherwise, the network might fail.

Procedure

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

Figure 5-9 TCP/IP



Step 2 Configure the parameters.

Table 5-7 TCP/IP parameters

Parameter	Description
Host Name	Configure the host name (not exceeding 15 characters).
NIC	Supports wired network only.

Parameter	Description
Mode	• **DHCP**: The Camera automatically assigns IP addresses. In this case, the **IP Address**, **Subnet Mask**, and **Default Gateway** cannot be configured. • **Static**: The **IP Address**, **Subnet Mask**, and **Default Gateway** need to be manually configured.
MAC Address	Displays host MAC address.
IP Version	IPv4 and IPv6 are available. Both IP versions can be accessed.
IP Address	The IP address of the Camera.
Subnet Mask	The subnet mask that masks the IP address of the Camera.
Default Gateway	The default gateway corresponding to IP address of the Camera.
Preferred DNS	The IP address of preferred DNS.
Alternate DNS	The IP address of alternate DNS.

Step 3 Click **Save**.

5.2.2 Port

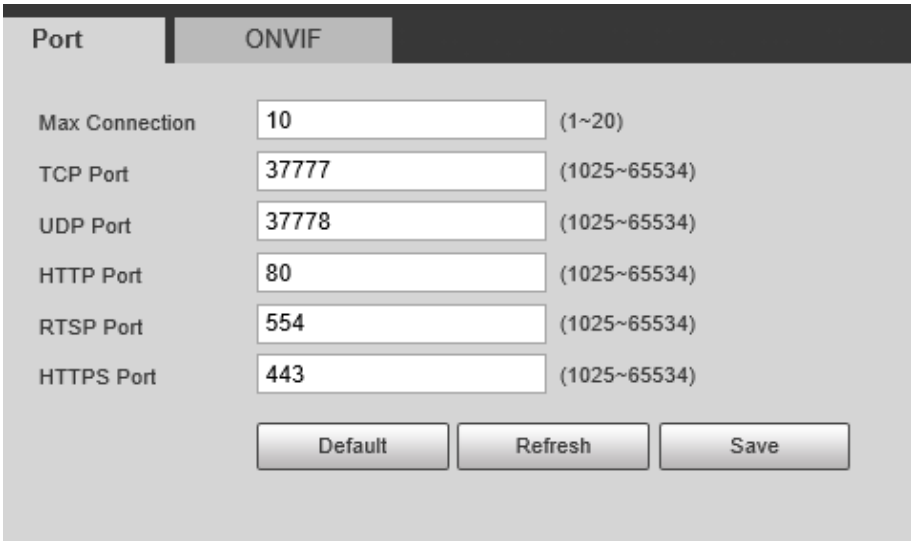
5.2.2.1 Configuring Port

You can set the port information. Then, you can access the Camera through different protocols or configuration tools.

Procedure

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

Figure 5-10 Port



Step 2 Configure the port number of the Camera for each protocol.

Table 5-8 Port parameters

Parameter	Description
Max Connection	The maximum number of clients (such as web client and platform client) that is allowed to access the Camera simultaneously. It is 10 by default.
TCP Port	TCP protocol communication port. It is 37777 by default.
UDP Port	User data packet protocol port. It is 37778 by default.
HTTP Port	HTTP communication port. It is 80 by default.
RTSP Port	Media streaming control port. It is 554 by default.
HTTPS Port	HTTPS communication port. It is 443 by default.

Step 3 Click **Save**.

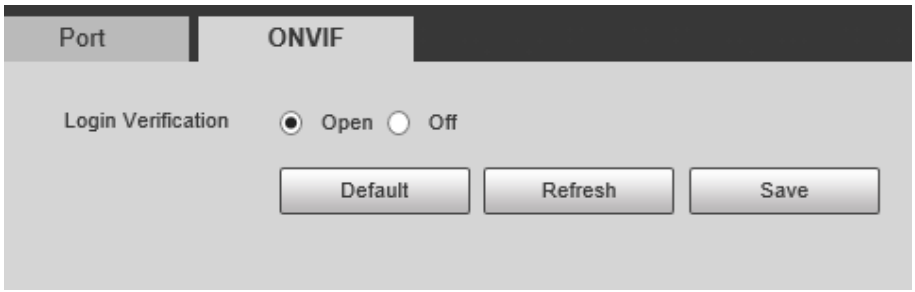
5.2.2.2 Configuring ONVIF

Open Network Video Interface Forum (ONVIF) is an open industry forum with the goal of providing and promoting standardized pages for interoperability of physical IP-based security products, such as IP camera, and network recorder, and more.

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

Verification of username and password will be required for logging in to ONVIF when ONVIF authentication is turned on. If it is turned off, then no verification is required.

Figure 5-11 ONVIF



5.2.3 Configuring Auto Registration

When the Camera is connected to the network, it will automatically report its location to the server specified by the user. This helps client software to access the Camera through the server for viewing and monitoring the live video.

Procedure

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

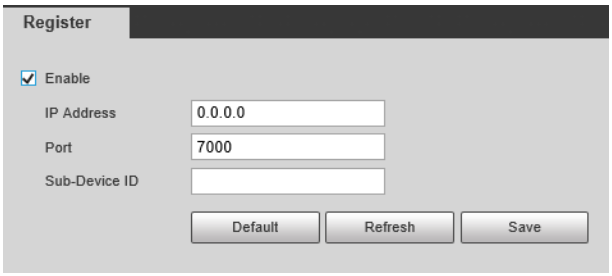
Step 2 Select the **Enable** checkbox to enable auto registration function.

Step 3 Enter the IP address of server that needs to be registered, and also the port for auto registration.

Step 4 Enter the **Sub-Device ID**, meaning the device ID assigned by the server for auto registration. Make sure that there are no repeated device IPs.

Step 5 Click **Save**.

Figure 5-12 Register

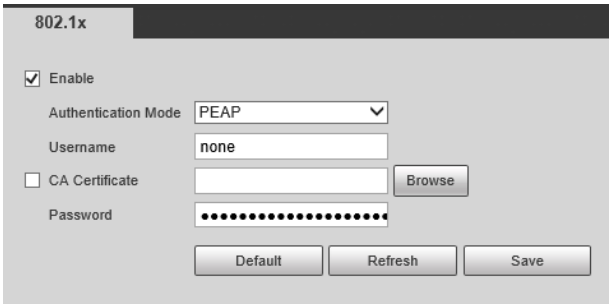


5.2.4 Configuring 802.1x

Procedure

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

Figure 5-13 802.1x



Step 2 Select **Enable** to enable 802.1x, and then configure parameters.

Table 5-9 802.1x parameters

Module	Parameter	Description
Common Parameter	Authentication Mode	• **PEAP**: Ordinarily uses TLS only to authenticate the server to the client, and only the sever is required to have a public key certificate. • **EAP-TLS**: Provides mutual authentication of client to server, and server to client. Both the client, and the server must be assigned a digital certificate signed by a CA (Certificate Authority) that they both trust.
	CA Certificate	Click **Browse** to import a CA certificate and then select the **CA Certificate** to verify whether the certificate is valid.
PEAP	Username	For PEAP method, user authentication is performed by using password-based credentials (username, and password).
	Password	
EAP-TLS	Client Certificate	Click **Browse** to import a client certificate and a private key for authentication.
	Private Key	

Step 3 Click **Save**.

5.3 Remote Device

Remote device (such as enforcement camera or IP camera) information will be displayed on the **Add Camera** page if any of such devices is in use. You can enable the remote device to work with the Camera to capture events. Currently, only events of crossing the stop line and running a red light can be captured by combining the Camera and remote device.

This function is available only in **E-Police** mode.

Procedure

Step 1 Select **Setting** > **Add Camera** > **Remote Config**.

Step 2 Set the delay time for sub camera in **Snapshot Delay Time for Sub Camera**.

Step 3 Select a remote device, and then click .

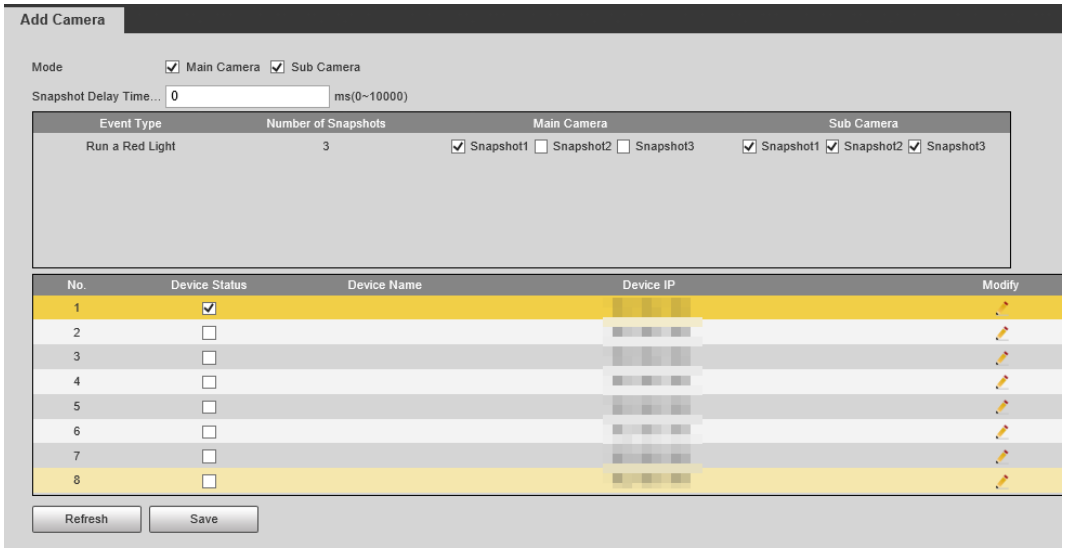
Step 4 Select **On** to enable using the remote device, and modify other device information such as name, IP address, login username, and password.

Step 5 Select **Linkage Snapshot** to enable snapshot by the Camera.

If a storage device is used, the snapshots captured by the Camera and the remote device will be composited, and saved to the storage device. If no, the snapshots will be saved to the storage path defined on the webpage of each device.

Step 6 Click **Save**.

Figure 5-14 Add camera



5.4 Event

You can configure how the Camera responds when alarms or abnormal events occur.

5.4.1 Intelligent Scheme

5.4.1.1 Switching between E-police and ANPR

You can switch the working mode of the Camera between E-police and ANPR.

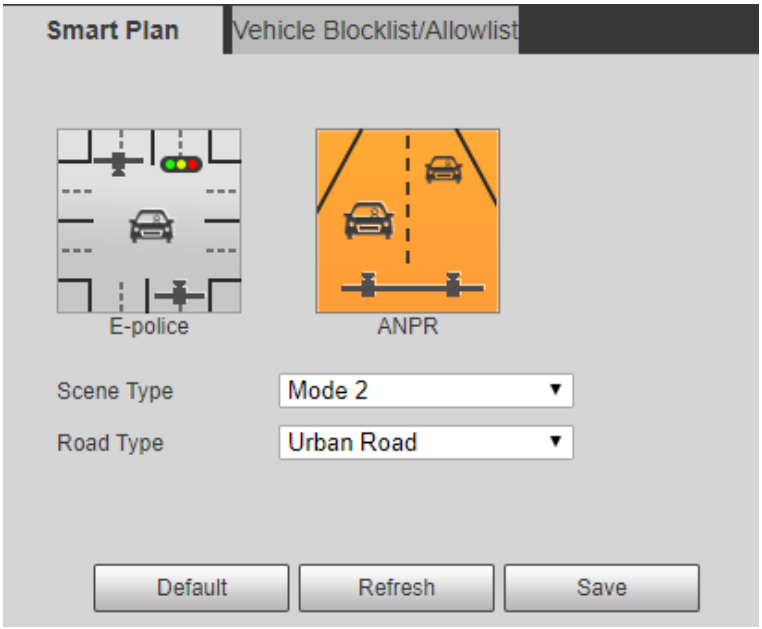
- **ANPR** is applicable to road sections without signal lights to detect violations such as speeding, driving slow, not wearing seat belt, calling while driving, and more. See "5.4.3 Configuring ANPR Snapshot".
- **E-Police** is ideal for intersections with signal lights to detect violations such as running a red light, and more. See "5.4.2 Configuring Electronic Police".

Procedure

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

Step 2 Select **E-police** or **ANPR**.

Figure 5-15 Select a working mode



Step 3 For ANPR, set **Scene Type** and **Road Type**

- **Scene Type**
  - **General**: For capturing vehicles.
  - **No Flashing Light**: For scenes not using illuminators.
  - **Mode1**: The illuminator is automatically set to a lower level of brightness.
  - **Mode2**: The illuminator is automatically set to a moderate level of brightness.
  - **Mode3**: (Default) The illuminator is automatically set to the highest level of brightness.
- **Road Type**
  - **Urban Road**: Used on urban roads.
  - **Expressway**: Used on expressways.

Step 4 Click **Save**.

5.4.1.2 Configuring Blocklist and Allowlist

An alarm is triggered when a vehicle is detected in the blocklist. A vehicle in the allowlist will not be captured.

5.4.1.2.1 Fuzzy Matching

You can enable fuzzy matching for allowlist. In this way, if the fuzzy matching result shows that the number plate of a vehicle is in the allowlist, the vehicle will not be captured and there will be no alarm.

Procedure

Step 1 Select **Setting** > **Event** > **Smart Plan** > **Vehicle Blocklist/Allowlist** > **Allowlist Settings**.

Step 2 Select **Enable** to enable the allowlist.

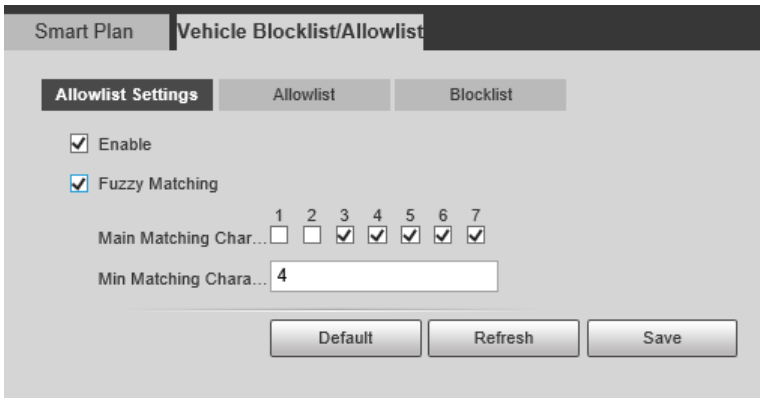
Step 3 Select **Fuzzy Matching** to enable fuzzy matching.

Step 4 Configure matching rule.

- **Main Matching Characters**: The specific digit(s) that should be exactly matched.
- **Min Matching Characters**: The minimum number of digits that should be exactly matched.

For example, if you select 1, 2 and 4 for **Main Matching Characters** and enter 2 for **Min Matching Characters**, the system will successfully recognize a vehicle when any two among digit 1, 2, and 4 are exactly matched.

Figure 5-16 Set fuzzy matching



Step 5 Click **Save**.

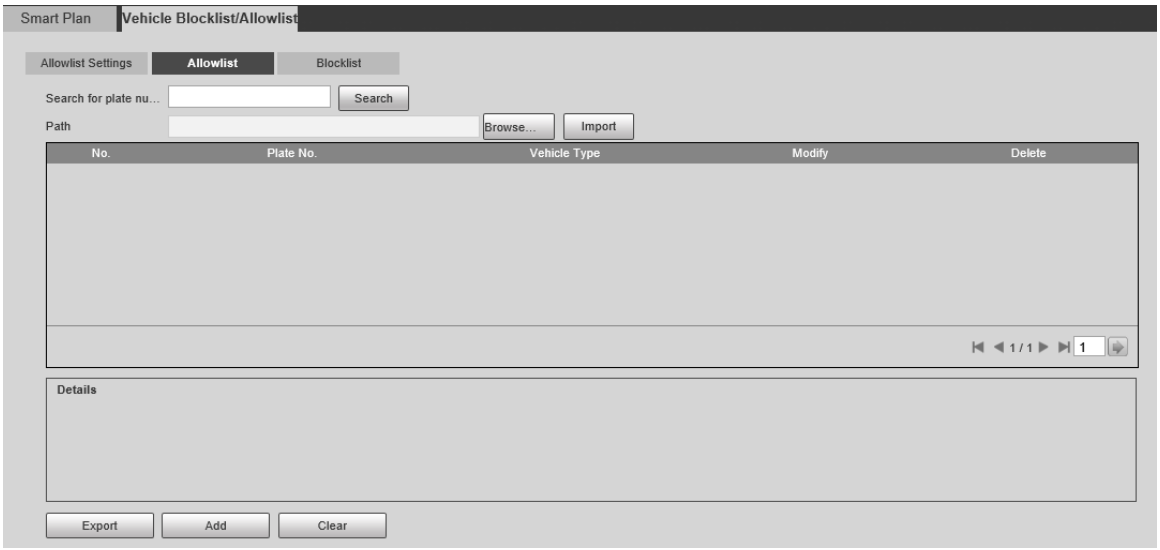
5.4.1.2.2 Allowlist Search

You can search to see whether a plate number is included in the allowlist, or you can import or export plate numbers in the allowlist.

Procedure

Step 1 Select **Setting** > **Event** > **Smart Plan** > **Vehicle Blocklist/Allowlist** > **Allowlist**.

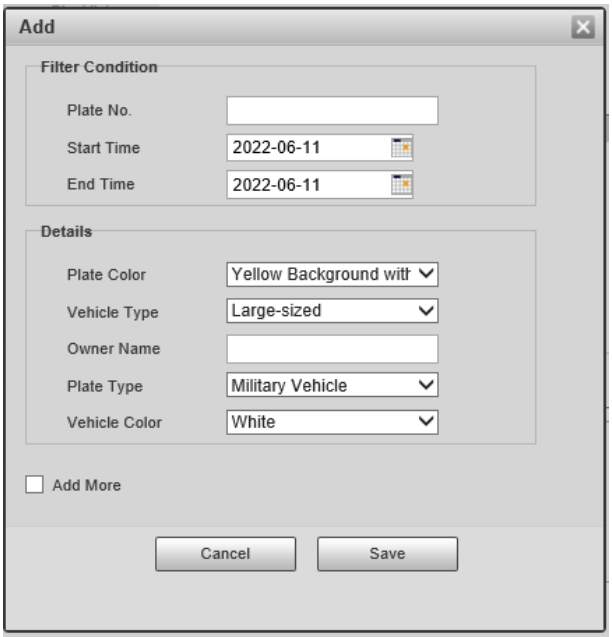
Figure 5-17 Allowlist



Step 2 Add a number plate.

1) Click **Add**.

Figure 5-18 Add



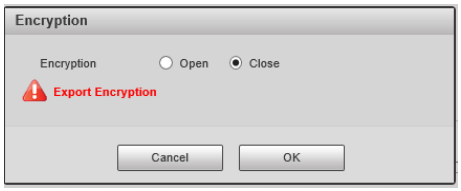
2) Enter the entire plate number.
3) Set the start time and end time to add the plate number in the allowlist. The plate number will be outside of the allowlist beyond this time period.
4) Select the plate color, vehicle type, plate type and vehicle color. Enter the owner of vehicle.
5) Click **Save**.
6) To save and add more, select **Add More** before clicking **Save**.

Related Operations

- Search for a plate number: Enter the plate number (or part of it) that you want to search for, and then click **Search** to check whether it is in the allowlist.
- Modify plate information: Click **Modify** to modify detailed information of the corresponding plate number. Click **Save** to save the settings.

- Delete a plate number: Click **Delete** to delete the corresponding plate number.
- Delete plate number in batches: Click **Clear**, and then click **OK** in the pop-up box to delete all the information in the allowlist.
- Import allowlist plates in batches: Click **Browse**, and then select the path to import the file to. Click **Import** to import the allowlist information to the system.
- Export allowlist plates in batches: Click **Export**, and then select the path to save the file to. Click **Export** to export the allowlist information to the system.
- You can encrypt the file when importing and exporting the allowlist, depending on your actual needs.

Figure 5-19 Encrypt configuration

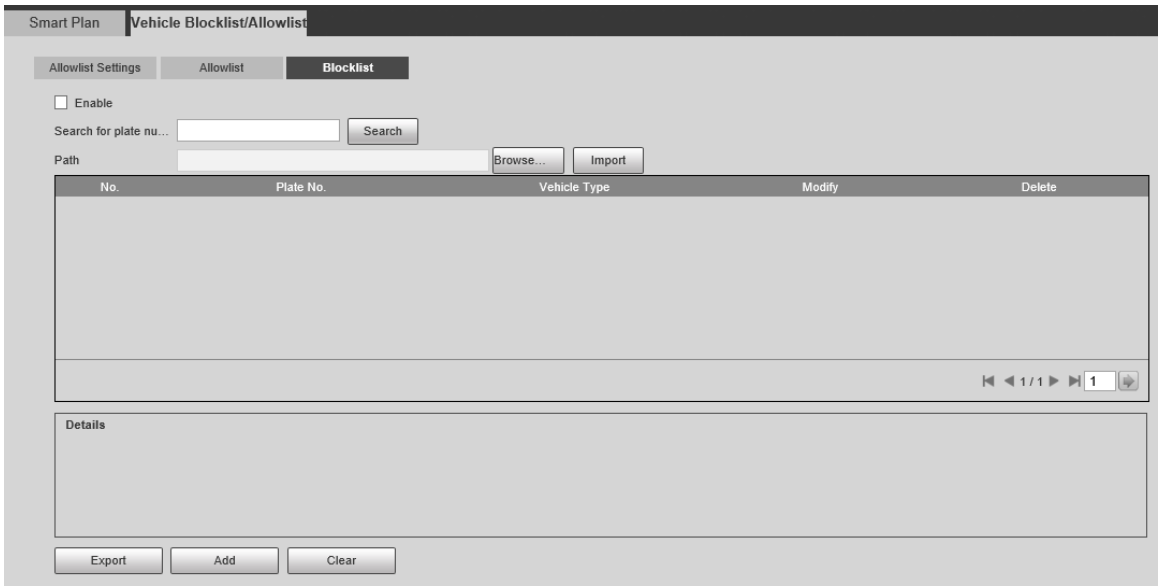


5.4.1.2.3 Blocklist Search

An alarm will be triggered when a vehicle in the blocklist is detected.

Select **Setting** > **Event** > **Smart Plan** > **Vehicle Blocklist/Allowlist** > **Blocklist**, and then select **Enable** to enable the blocklist function.

Figure 5-20 Blocklist search



The search, import, and export of blocklist are similar to that of allowlist. For details, see "5.4.1.2.2 Allowlist Search".

5.4.2 Configuring Electronic Police

Configure e-police parameters.

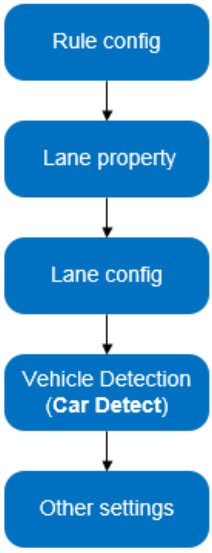
Make sure that you have set **Smart Plan** to **E-Police**. For details, see "5.4.1.1 Switching between E-police and ANPR".

5.4.2.1 Configuring Violation Capture

Configure the video detection parameters for detecting traffic violations.

Follow this order to configure violation capture: Rule config > lane property > lane config > vehicle detection (Car Detect) > other settings. This is described separately in the configuration order below.

Figure 5-21 Configuration order for violation capture



5.4.2.1.1 Rule Configuration

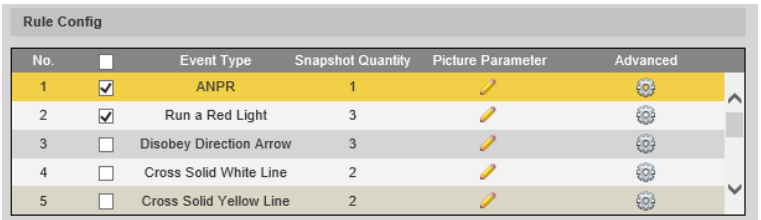
You can select the traffic violation types and configure the corresponding parameters of the images of the captured vehicle.

Procedure

Step 1 Select **Setting** > **Event** > **E Police** > **Violation Snapshot**.

Step 2 In the **Rule Config** section, click , and then configure picture parameters.

Figure 5-22 Rule configuration (1)



The parameter table describes the parameters involved in all event types, and might differ from the actual page.

Figure 5-23 Configure picture parameters (1)

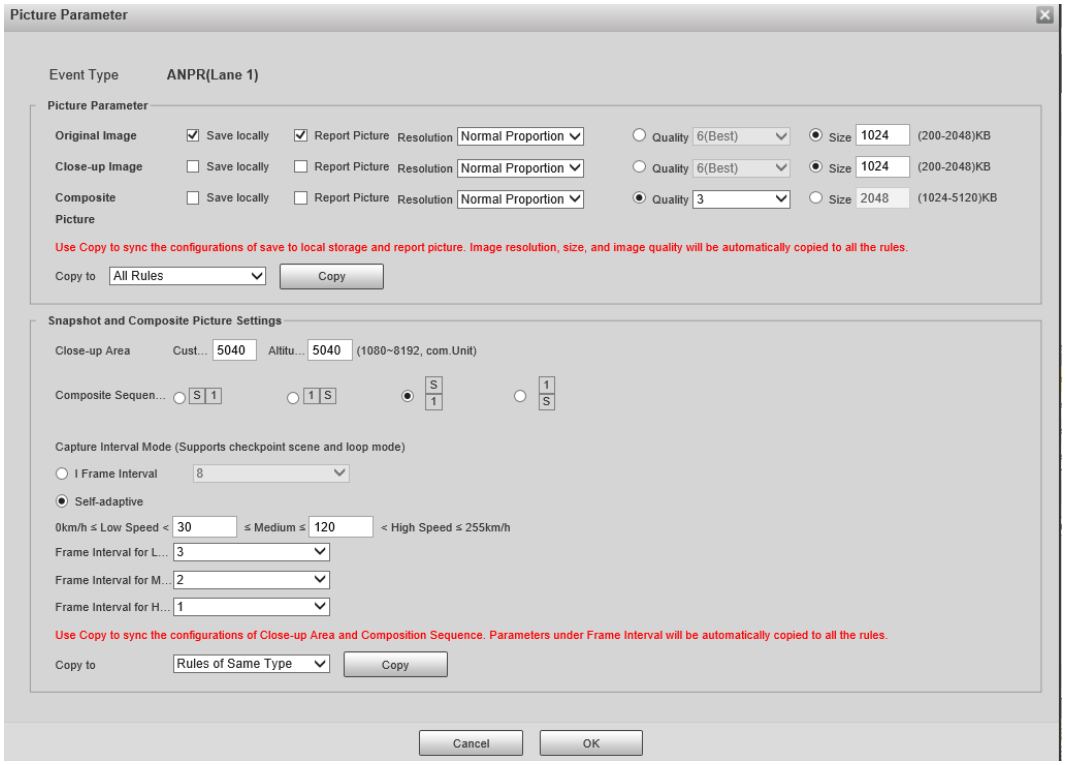


Table 5-10 Picture parameters (1)

Category	Name	Description
Picture Parameter	Original Image	The original picture of the vehicle that is violating traffic rules.
	Composite Picture	The compound picture of several sequential images of the vehicle violating the traffic rules.
	Close-up Image	The close-up of the offending vehicle.
	Save Locally	Save the vehicle picture locally when an offending vehicle is captured.
	Report Picture	Upload the vehicle picture to the upper-level device or platform when a vehicle is captured.
	Resolution	Select picture resolution.
	Quality	Select the level of picture quality.
	Size	Limit the size of the picture.
	Copy to	Copy the current picture configuration to the same-type rules or all the rules. After selecting an option from **Copy to**, click **Copy**.
Snapshot and Picture	Feature Region	Centering on the vehicle, enter the height and width of the close-up of the vehicle.

Category	Name	Description
Synthesis Setting	Compound order of one pictures	• **S**: Close-up. • **1**: Original images.

Step 3 Click **OK**.

Step 4 Click , and then configure advanced parameters.

The parameter table describes the parameters involved in all event types, and might differ from the actual page.

Figure 5-24 Advanced parameters (1)

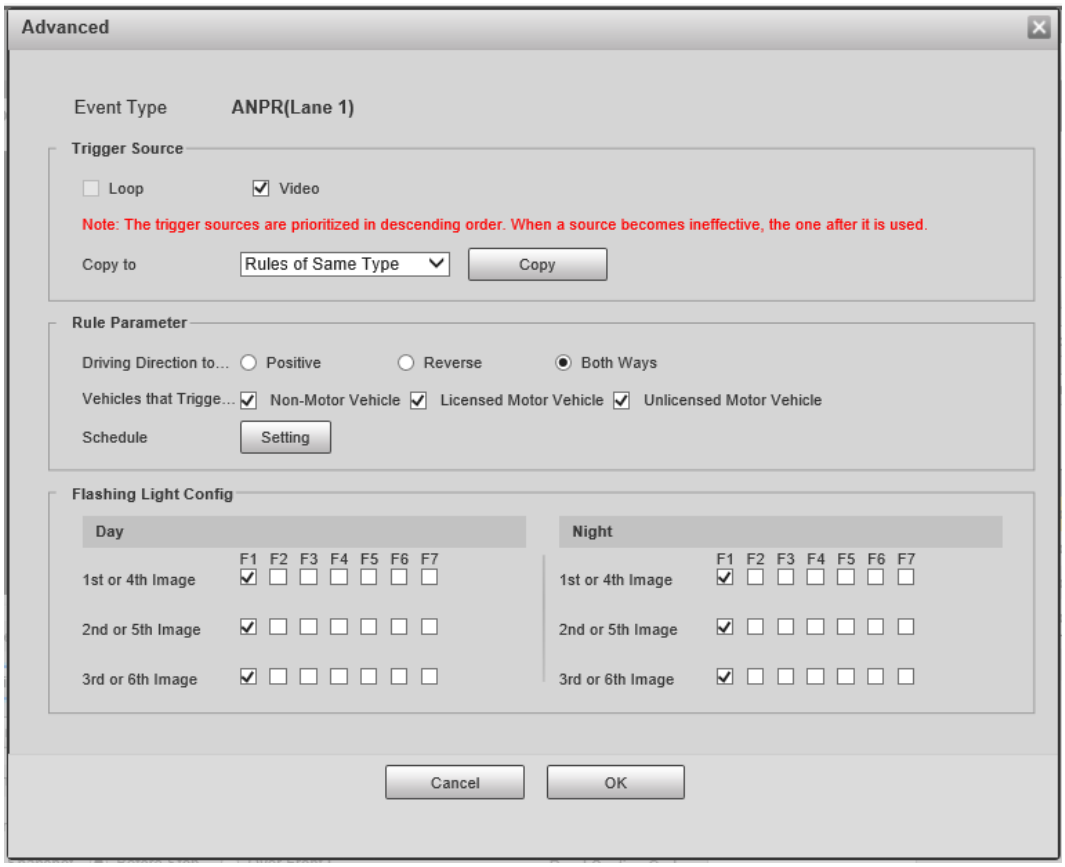


Table 5-11 Advanced parameters (1)

Category	Name	Description
Trigger Source	Loop	Unavailable
	Video	The system analyzes the live video to detect traffic violations. Once a violation is detected, the system automatically captures images of the offending vehicle.
	Copy to	Copy the current picture configuration to the same-type rules or all the rules. After selecting an option from **Copy to**, click **Copy**.
Rule Parameter	Driving Direction to Trigger Snapshot	Vehicle driving direction to the camera.

Category	Name	Description
	Schedule	The period during which the alarm is valid. To set a time, you can click Setting, and then drag your cursor over the time table or select days, and enter hours in the entry fields.
	Vehicles that trigger snapshots	The vehicle types to capture.
Flashing Light Config	Day	Select which flashing light flashes when snapshots are taken during daytime or night. A snapshot can be associated with up to 5 flashing lights. For example, select **F1** from the **1st or 4th Image** section, meaning flashing light F1 flashes when taking the 1st and 4th snapshots.
	Night	

Step 5 Click **Save**.

5.4.2.1.2 Lane Property

Procedure

Step 1 Select **Setting** > **Event** > **E Police** > **Violation Snapshot**.

Step 2 In the **Lane Property** section, configure lane properties.

Figure 5-25 Lane property (1)

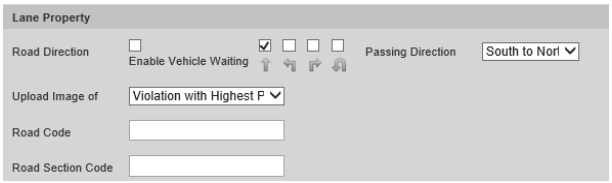


Table 5-12 Lane property parameters (1)

Parameter	Description
Road Direction	The direction of the lane.
Passing Direction	The geographical direction of the lane.
Upload Image of	• **All Violations**: Captures and reports all violations of vehicles on the lane. • **Violation with Highest Priority**: When the vehicle triggers multiple violations, the Camera reports only the event with the highest priority.
Road Code	The code of the roadway and route.
Route Section Code	

Step 3 Click **Save**.

5.4.2.1.3 Lane Parameters

Configure lane information and events that you want the Camera to detect.

Procedure

Step 1 Select **Setting** > **Event** > **E Police** > **Violation Snapshot**.

Step 2 In the **Lane Config** section, configure lane parameters.

Figure 5-26 Lane configuration (1)

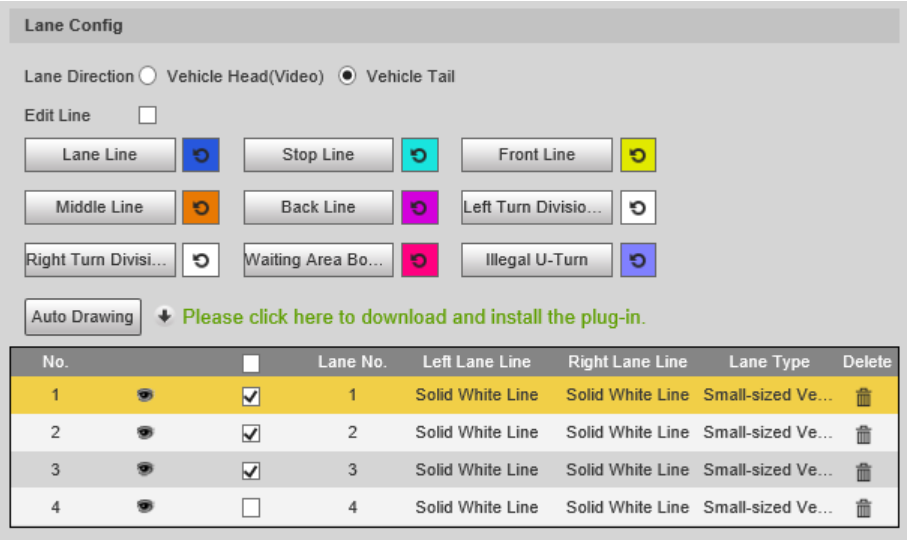


Table 5-13 Lane parameters (1)

Parameter	Description
Lane Direction	The arrow direction of the lane line needs to be the same as that of the travelling vehicle. • **Vehicle Tail**: Lane line arrow points upward. • **Vehicle Head (Video)**: Lane line arrow points downward.
Edit Line	Select the checkbox to enable the function, and then you can adjust the lane lines by dragging the corners on the image.

Step 3 Click a line type, and then draw the lane lines on the image.

To clear the lane lines or regions that you have drawn, click .

Table 5-14 Lane lines (1)

Parameter	Description
Lane Line	Each lane needs to have two lane lines, shown as blue lines with arrows. The arrow indicates the direction in which the vehicles travel. The drawn lines should go along the actual lane line.
Stop Line	The actual stop line on the road.
Front Line	The line which triggers the first capture of the vehicle running the red light and traveling on the wrong lane.
Middle Line	The line which triggers the second capture of the vehicle running the red light and traveling on the wrong lane.

Parameter	Description
Back Line	Used to judge whether a vehicle is going straight. It triggers the third capture of the vehicle running the red light (straight going) and traveling on the wrong lane.
Left Turn Division	Used to judge whether a vehicle is turning left. It triggers the third capture of the vehicle running the red light and traveling on the wrong lane.
Right Turn Division	Used to judge whether a vehicle is turning right. It triggers the third capture of the vehicle running the red light and traveling on the wrong lane.
Waiting Area Boundaries	The end line of the waiting area. Going beyond it will be regarded as running the red light.
Illegal U-Turn	Used to judge whether a vehicle is making a U-turn when not allowed.
Auto Drawing	Install the plug-in before using the **Auto Drawing** function. Click **Auto Drawing**, and then the system automatically draws lane lines. You can adjust the auto lines as needed.

Step 4 Click to select and show a lane on the video image, and then the configurations of this lane will be enabled.

Step 5 Click **Save**.

5.4.2.1.4 Car Detect

Procedure

Step 1 Select **Setting** > **Event** > **E Police** > **Violation Snapshot**.

Step 2 In the **Vehicle Detection** section, click the line or region type, and then draw on the video image.

- To draw a line, click the line type and then drag your mouse cursor on the image.
- To draw a region, click the region type, and then draw the lines by dragging your cursor on the image and make them form a closed region.

To clear the lines that you have drawn, click .

Figure 5-27 Line or region types (1)

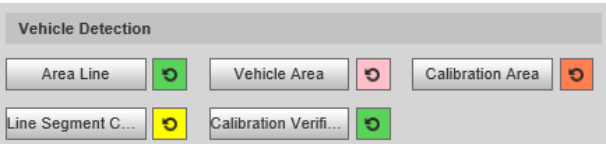


Table 5-15 Vehicle detection parameters (1)

Parameter	Description
Area Line	The region of detection.
Vehicle Area	The region for detecting vehicle volume.
Calibration Area	The region for analyzing vehicle traffic.

Parameter	Description
Line Segment Calibration	Used to verify the accuracy of calibration results. Click **Line Segment Calibration** to draw the calibration segment in the calibration area, enter the actual length of the calibration segment in the pop-up page, and then click **Calibration Validation**.
Calibration Validation	Used to verify the accuracy of calibration results.

Step 3 Click **Save**.

5.4.2.1.5 Other Settings

Procedure

Step 1 Select **Setting** > **Event** > **E Police** > **Violation Snapshot**.

Step 2 In the **Other Config** section, configure parameters.

Figure 5-28 Other settings (1)

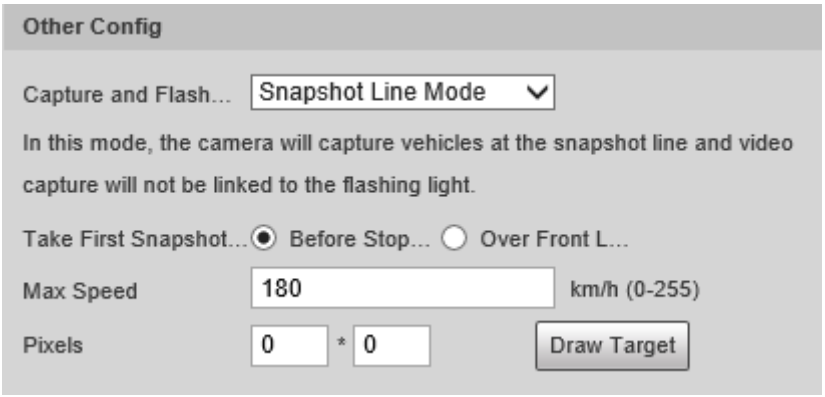


Table 5-16 Other settings (1)

Parameter	Description
Capture and Flash Linkage	• **General Mode**: Recommended for the ANPR snapshot mode. • **Snapshot Line Mode**: Recommended for the e-police mode.
Take First Snapshot for Running a Red Light	• **Before Stop Line**: The first snapshot of running a red light is taken before the stop line. • **Over Front Line**: The first snapshot of running a red light is taken over the front line.
Max Speed	When the travelling speed exceeds this value, the system automatically changes the vehicle speed to a random value in the normal range.
Pixels	Click **Draw Target**, and then draw a rectangular area on the image to show the pixel size of that area.

Step 3 Click **Save**.

5.4.2.2 Configuring Intelligent Analysis

Configure the intelligent functions of the Camera.

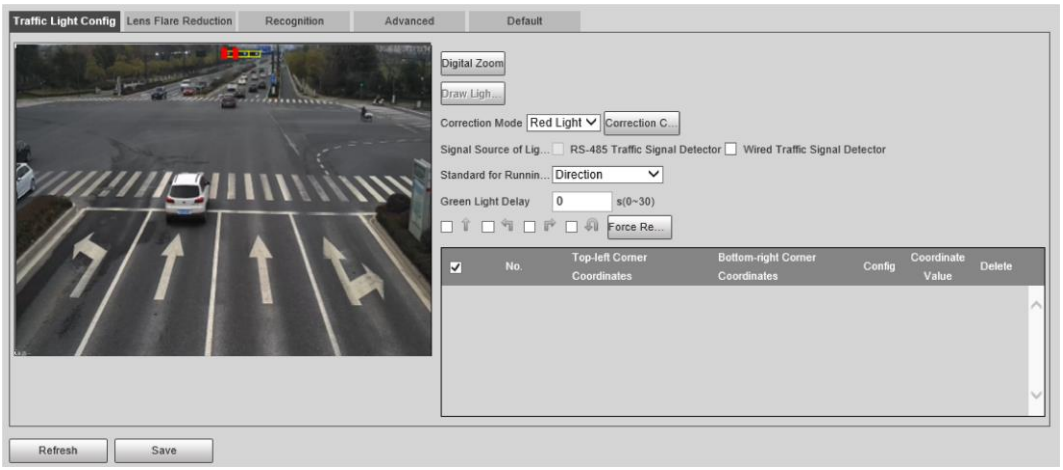
5.4.2.2.1 Traffic Light Configuration

Adjust the image color according to the color of the traffic light to avoid abnormalities in the snapshots captured at traffic lights.

Procedure

Step 1 Select **Setting** > **Event** > **E Police** > **Intelligent Analysis** > **Traffic Light Config**.

Figure 5-29 Traffic light config



Step 2 Click **Digital Zoom**, use your mouse to draw a frame around the traffic lights on the image, and then the traffic lights are zoomed into.

Step 3 Click **Draw Light Group Area**, use your mouse to draw the traffic lights frame.

Step 4 Configure parameters.

Table 5-17 Traffic light parameters

Parameter	Description
Correction Mode	• **Red Light Correction**: Correct the image color according to the red light signal. • **Force Correction**: Correct the image color directly.
Correction Config	Click **Correction Config** to configure correction parameters. 1. Select **Image Correction** or **Video Correction** to determine whether you need to correct images or videos. 2. Configure the level of correction for day and night. 3. Click **OK**.
Signal Source of Light Group	• **RS-485 Traffic Signal Detector**: Synchronize external traffic light signals such as signal detectors and traffic light detectors to the current traffic lights. • **Wired Traffic Signal Detector**: Synchronize the traffic light scheme of the traffic signal controller to the current traffic lights.
Standard for Running-Red-Light	Capture running a red light depending on the lane direction or travelling direction. At present, three ways are supported: Lane direction, travelling direction, and lane/travelling direction.
Green Light Delay	Do not capture the illegal act of running a red light within seconds after the red light turns on.
Force Red Light	Force the traffic light of the corresponding direction to red.

Step 5 Click **Save**.

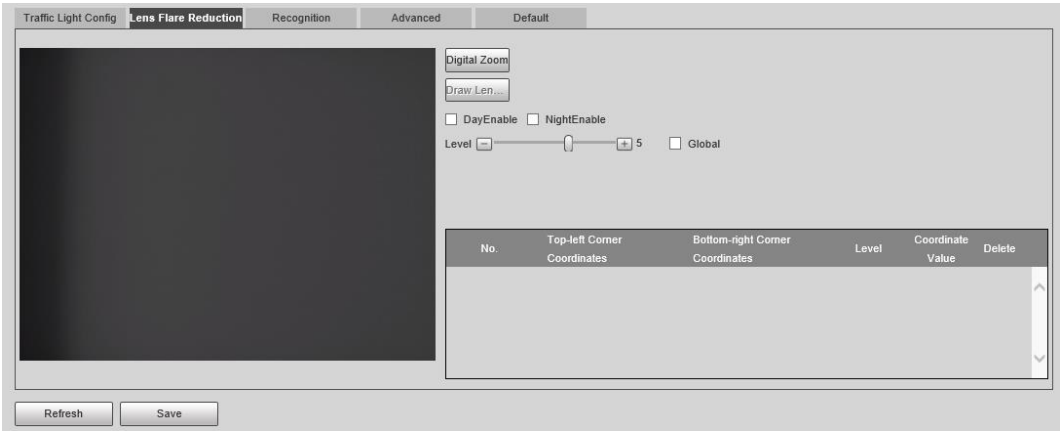
5.4.2.2.2 Lens Flare Reduction

To reduce the influence of other light sources and improve the recognition rate, you can reduce the halo.

Procedure

Step 1 Select **Setting** > **Event** > **E Police** > **Intelligent Analysis** > **Lens Flare Reduction**.

Figure 5-30 Lens flare reduction



Step 2 Click **Digital Zoom**, and then select the region for lens flare reduction on the image.

Step 3 Click **Draw Lens Flare Area**, click and drag to select the light source with halo on the image.

Step 4 Configure parameters.

Table 5-18 Parameters of lens flare reduction

Parameter	Description
DayEnable	Enable lens flare reduction for daytime.
NightEnable	Enable lens flare reduction for nighttime.
Global	Apply the same halation control level to all the selected regions.
Level	The level of halation control. The smaller the value, the more obvious the effect.

Step 5 Click **Save**.

5.4.2.2.3 Recognition

Procedure

Step 1 Select **Setting** > **Event** > **E Police** > **Intelligent Analysis** > **Recognition**.

Figure 5-31 Recognition (1)



Step 2 Configure parameters.

Table 5-19 Recognition parameters (1)

Parameter	Description
Motor Vehicle	Identifies motor vehicle sign and vehicle type. Select the options that you need to recognize.
Non-Motor Vehicle	Identifies non-motor vehicle attributes such as type, helmet, and rider number.
License Plate Enhancement	Enhances number plate image effect.
Track Overlay	Enables **Track Overlay**, click on the left side of the **Live** page, and then you can see each vehicle is covered by a green frame, which means each vehicle is traced.

Step 3 Click **Save**.

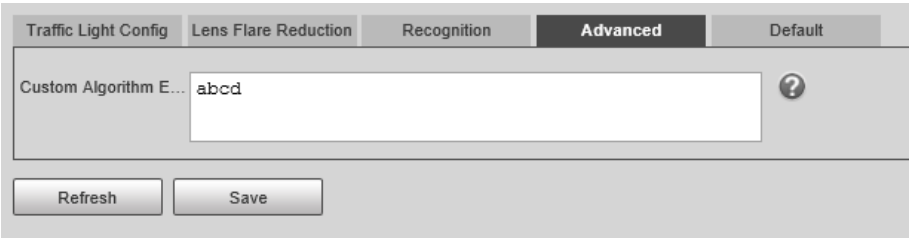
5.4.2.2.4 Advanced

Using custom algorithms can enhance the Camera's intelligent features by tailoring them to specific needs.

Procedure

Step 1 Select **Setting** > **Event** > **E Police** > **Intelligent Analysis** > **Advanced**.

Figure 5-32 Custom algorithm (1)



Step 2 Configure a custom algorithm.

Step 3 Click **Save**.

5.4.2.2.5 Default

Procedure

Step 1 Select **Setting** > **Event** > **E Police** > **Intelligent Analysis** > **Default**.

Step 2 Click **Default** to restore settings including lane property, violation capture, and intelligent business to default.

5.4.3 Configuring ANPR Snapshot

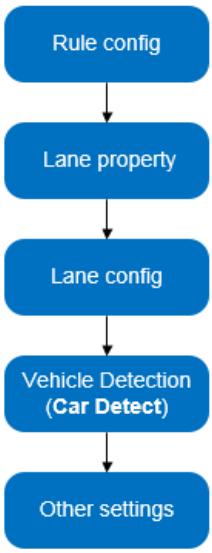
Configure ANPR parameters.

Make sure that you have set **Smart Plan** to **ANPR**. For details, see "5.4.1.1 Switching between E-police and ANPR".

5.4.3.1 Configuring Illegal Capture

Configure the video detection parameters for detecting traffic violations.
Follow this order to configure violation capture: Rule config > lane property > lane config > vehicle detection (Car Detect) > other settings. This is described separately in the configuration order below.

Figure 5-33 Configuration order for violation capture (2)



5.4.3.1.1 Rule Configuration

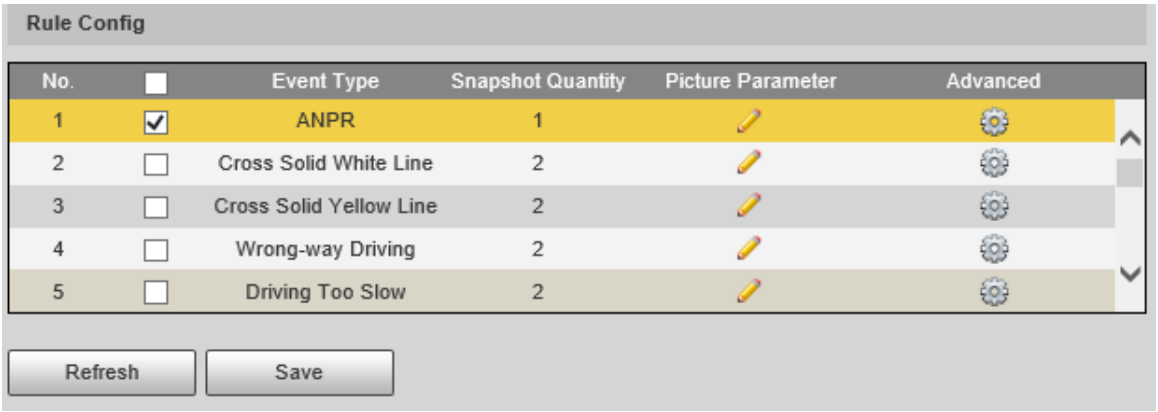
You can select the traffic violation types and configure the corresponding parameters of the images of the offending vehicle.

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Violation Snapshot**.

Step 2 In the **Rule Config** section, click , and then configure picture parameters.

Figure 5-34 Rule config (2)



The parameter table describes the parameters involved in all event types, and might differ from the actual page.

Figure 5-35 Configure picture parameters (2)

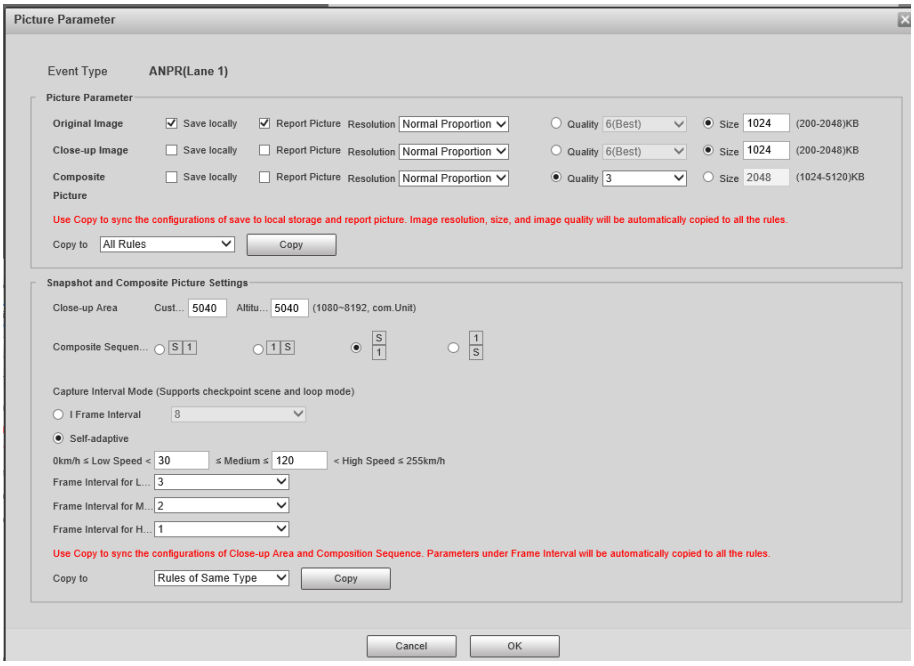


Table 5-20 Picture parameter (2)

Category	Name	Description
Picture Parameter	Original Image	The original picture of the vehicle that is violating traffic rules.
	Composite Image	The compound picture of several sequential images of the vehicle violating the traffic rules.
	Close-up Image	The close-up of the offending vehicle.
	Save Locally	Save the vehicle picture locally when an offending vehicle is captured.
	Report Picture	Upload the vehicle picture to the upper-level device or platform when a vehicle is captured.
	Resolution	Select picture resolution.

Category	Name	Description
	Quality	Select the level of picture quality.
	Size	Limit the size the picture.
	Copy to	Copy the current picture configuration to the same-type rules or all the rules. After selecting an option from **Copy to**, click **Copy**.
Snapshot and Composite Picture Settings	Close-up Area	Centering on the vehicle, enter the height and width of the close-up of the vehicle.
	Compound Sequence of One Picture	Select the layout of the compound picture. The picture consists of N original images of the vehicle offending the traffic rule and one close-up of the vehicle. • **S**: Close-up. • **1**: Original images.

Step 3 Click **OK**.

Step 4 Click , and then configure advanced parameters.

The parameter table describes the parameters involved in all event types, and might differ from the actual page.

Figure 5-36 Advanced parameters (2)

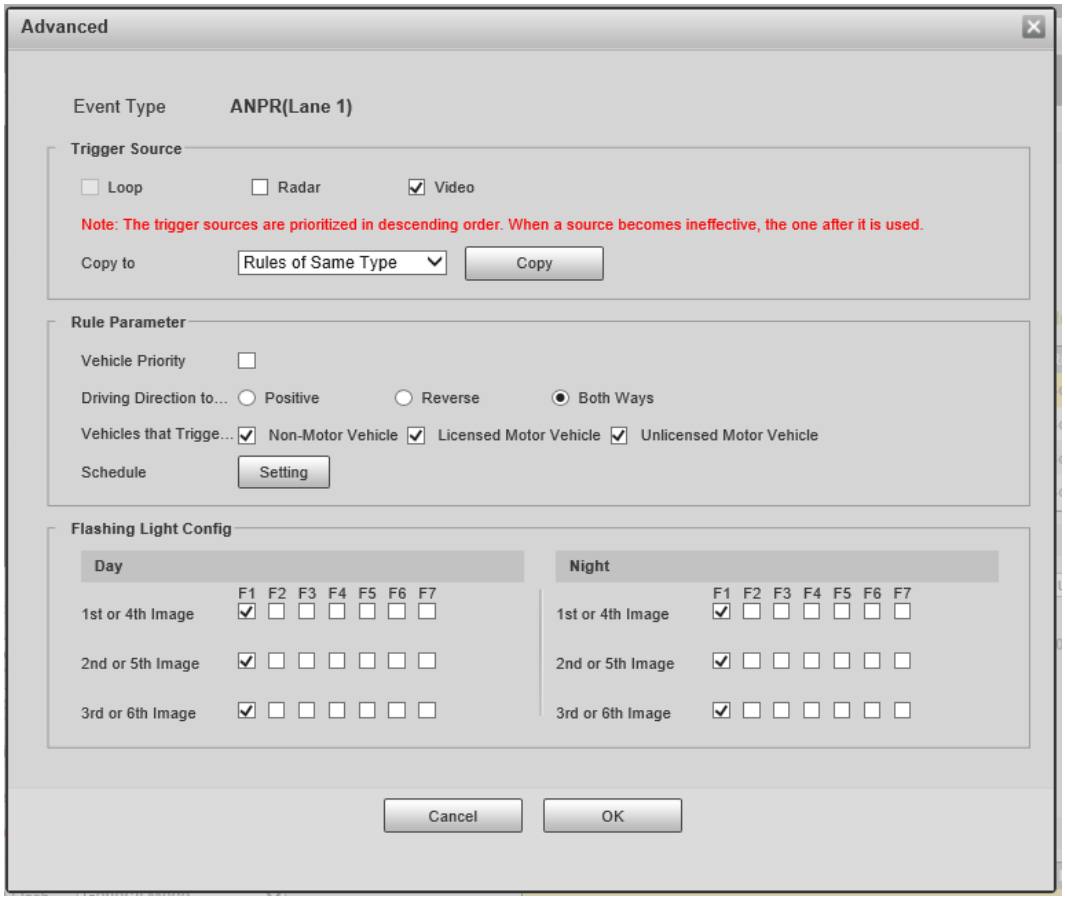


Table 5-21 Advanced parameters (2)

Category	Name	Description
Trigger Source (The way to trigger vehicle capture)	Loop	Unavailable
	Radar	The system captures offending vehicles upon the radar detecting a violation.
	Video	The system analyzes the real time video to detect traffic violations. Once a violation is detected, the system automatically captures images of the offending vehicle.
	Copy to	Copy the current picture configuration to the same-type rules or all the rules. After selecting an option from **Copy to**, click **Copy**.
Rule Parameter	Driving Direction to Trigger Snapshot	The vehicle driving direction to the camera
	Schedule	The period during which the alarm is valid. To set a time, you can click **Setting**, and then drag your cursor over the time table or select days, and enter hours in the entry fields.
	Vehicles that Trigger Snapshots	The vehicle types to take a snapshot.
Flashing Light Config	Day	Select which flashing light flashes when snapshots are taken during daytime or night. A snapshot can be associated with up to 5 flashing lights. For example, select **F1** from the **1st or 4th Image** section, meaning flashing light F1 flashes when taking the 1st and 4th snapshots.
	Night	

Step 5 Click **OK**.

5.4.3.1.2 Lane Property

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Violation Snapshot**.

Step 2 In the **Lane Property** section, configure lane properties.

Figure 5-37 Lane properties (2)

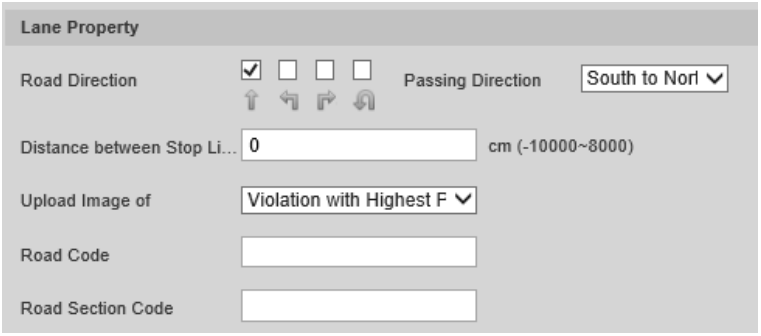


Table 5-22 Lane properties (2)

Parameter	Description
Road Direction	The direction of the lane.
Passing Direction	The geographical direction of the lane.
Distance Between Stop Lane and Image Bottom	The distance between the bottom of the video image and the stop line (where the traffic post is).
Road Code	The code of the roadway and route.
Road Section Code	

Step 3 Click **Save**.

5.4.3.1.3 Lane Parameters

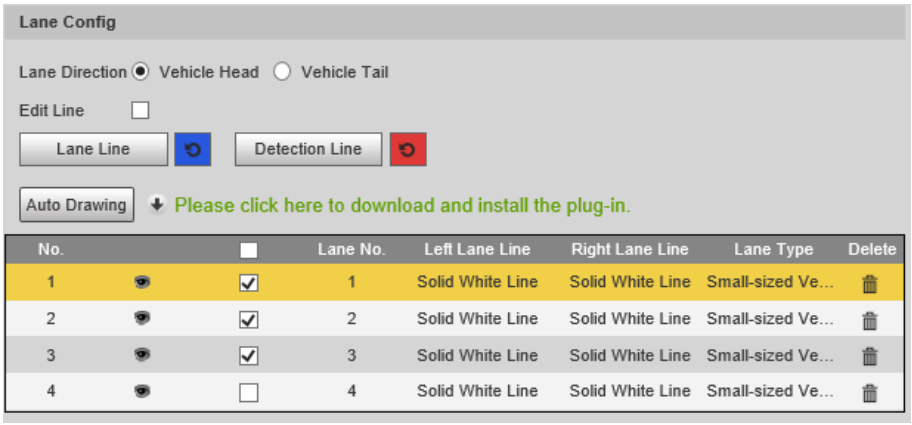
Configure lane information and events that you desire the Camera to detect.

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Violation Snapshot**

Step 2 In the **Lane Config** section, configure lane parameters.

Figure 5-38 Lane config (2)



Click to select a lane and then all configurations on the **Violation Snapshot** are for this lane.

Table 5-23 Lane config parameters (2)

Parameter	Description
Lane Direction	The arrow direction of the lane line needs to be the same as that of the travelling vehicle. • **Vehicle Tail**: Lane line arrow is upward. • **Vehicle Head**: Lane line arrow is downward.
Edit Line	Select the checkbox to enable the function, and then you can adjust the lane lines by dragging the corners on the image.

Step 3 Configure lane parameters.

Step 4 Click a line type, and then draw the lane lines on the image.

To clear the lane lines or regions that you have drawn, click .

Table 5-24 Lane line parameters (2)

Parameter	Description
Lane Line	Each lane needs to have two lane lines, shown as blue lines with arrows indicating the direction in which the vehicles travel. The drawn lines should go along the actual lane line.
Detection Line	The line that will trigger vehicle capture if reached. The detect line is red.
Auto Drawing	Install the plug-in before using the **Auto Drawing** function. Click **Auto Drawing**, and then the system automatically draws lane lines. You can adjust the auto lines as needed.

Step 5 Click to select and show a lane on the video image.

Step 6 Click **Save**.

5.4.3.1.4 Car Detect

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Violation Snapshot**.

Step 2 In the **Vehicle Detection** section, click the line or region type, and then draw on the video image.

- To draw a line, click the line type and then drag your mouse cursor on the image.
- To draw a region, click the region type, and then draw the lines by dragging your cursor on the image and make them form a closed region.

To clear the lines that you have drawn, click .

Figure 5-39 Line or region types (2)



Table 5-25 Vehicle detection parameters (2)

Parameter	Description
Area Line	The region of detection.
Vehicle Area	The region for detecting vehicle volume.
Calibration Area	The region for analyzing vehicle traffic.

Parameter	Description
Line Segment Calibration	Used to verify the accuracy of calibration results. Click **Line Segment Calibration** to draw the calibration segment in the calibration area, enter the actual length of the calibration segment in the pop-up page, and then click **Calibration Verification**.
Calibration Verification	Used to verify the accuracy of calibration results.

Step 3 Click **Save**.

5.4.3.1.5 Other Settings

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Violation Snapshot**.

Step 2 In the **Other Config** section, configure parameters.

Figure 5-40 Other config (2)

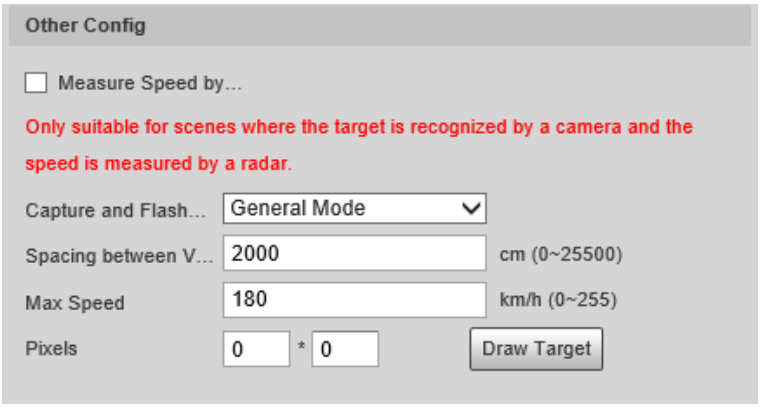


Table 5-26 Other config (2)

Parameter	Description
Measure Speed by Radar	Uses a radar to measure vehicle speed.
Capture and Flash Linkage	• **General Mode**: Recommended for the ANPR snap mode. • **Snapshot Line Mode**: Recommended for the e-police mode.
Spacing between Vehicles	Set the distance between vehicles when waiting in a line.
Max Speed	When the travelling speed exceeds this value, the system automatically changes the vehicle speed to a random value in the normal range.
Pixels	Click **Draw Target**, and then draw a rectangular area on the image to show the pixel size of that area.

Step 3 Click **Save**.

5.4.3.2 Configuring Intelligent Analysis

5.4.3.2.1 Recognition

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Intelligent Analysis** > **Recognition**.

Step 2 Configure parameters.

Figure 5-41 Recognition (2)

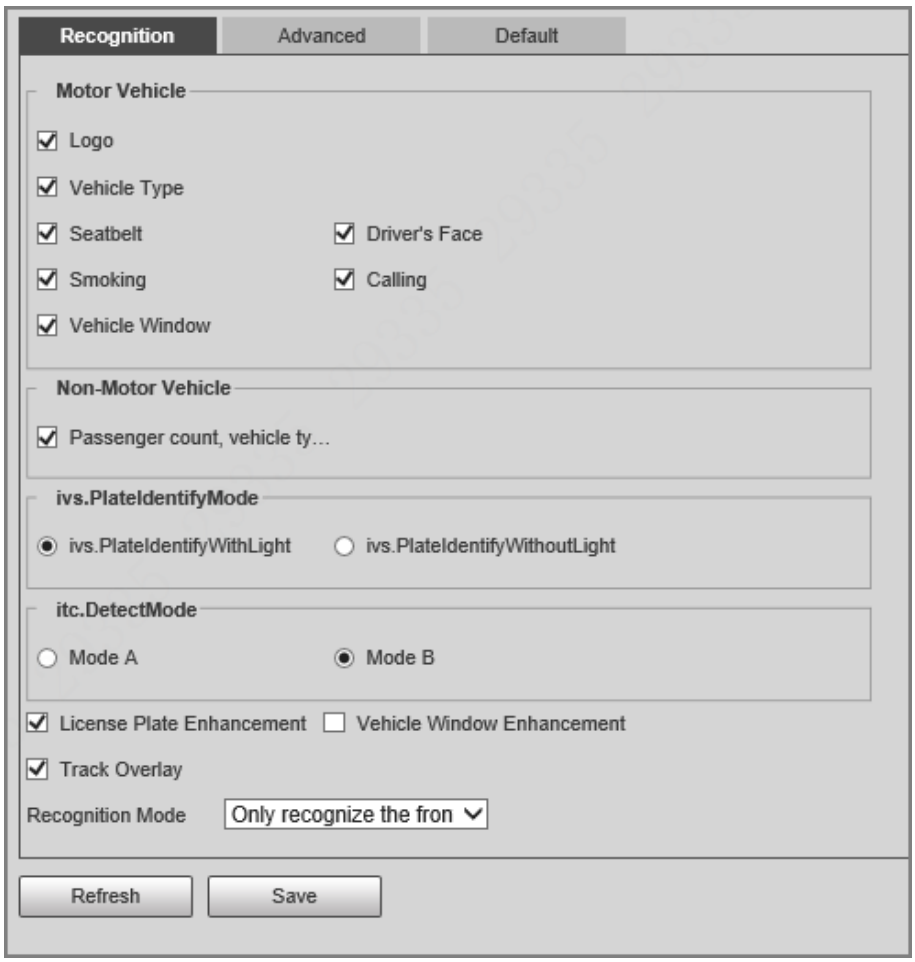


Table 5-27 Recognition parameters (2)

Parameter	Description
Motor Vehicle	Identify motor vehicle characteristics, driver characteristics, and window objects
Non-Motor Vehicle	Identify non-motor vehicle attributes such as type, helmet, and rider number.
ivs.PlateIdentifyMode	• **ivs.PlateIdentifyWithLight**: The system identifies license plates only once. • **ivs.PlateIdentifyWithoutLight**: The system identifies license plates twice.

Parameter	Description
itc.DetectMode	• **Mode A**: detection in normal mode. • **Mode B**: detection with the highest sensitivity.
License Plate Enhancement	Enhance number plate image effect.
Vehicle Window Enhancement	Enhance vehicle window image effect.
Track Overlay	Enable **Track Overlay**, click on the left side of the **Live** page, and then you can see each vehicle is covered by a green frame, which means each vehicle is traced.
Recognition Mode	• **Only recognize the front plate**: Recognize and snap the number plate on the vehicle head. • **Only recognize the rear plate**: Recognize and snap the number plate on the vehicle rear. • **Front plate priority**: Head plate has the priority. • **Rear plate priority**: Rear plate has the priority.

Step 3 Click **Save**.

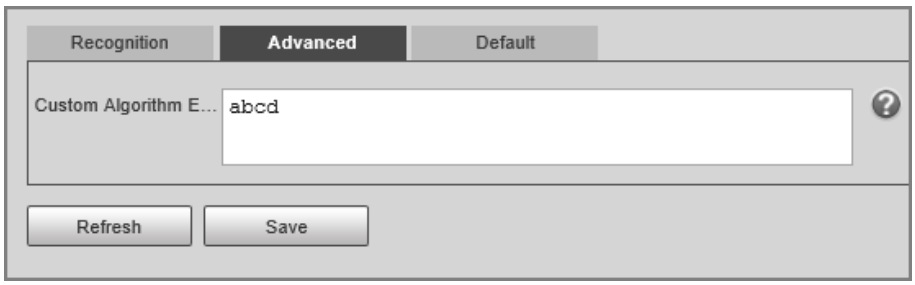
5.4.3.2.2 Advanced

Using custom algorithms can enhance the Camera's intelligent features by tailoring them to specific needs.

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Intelligent Analysis** > **Advanced**.

Figure 5-42 Custom algorithm (2)



Step 2 Configure a custom algorithm.

Step 3 Click **Save**.

5.4.3.2.3 Default

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Intelligent Analysis** > **Default**.

Step 2 Click **Default** to restore settings including lane property, violation capture and intelligent business to default.

5.4.4 Configuring OSD

5.4.4.1 Configuring Original Picture OSD

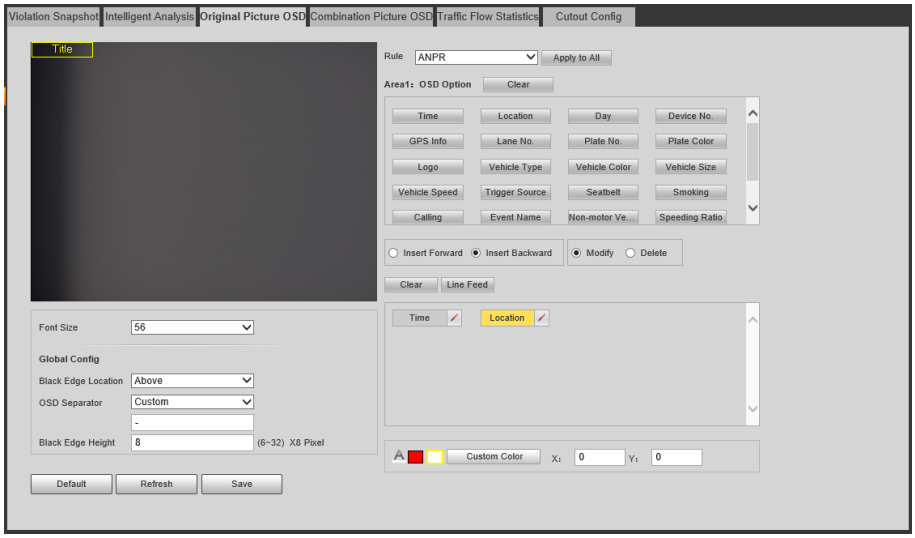
Configure OSD content, style and position for captured image.

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Original Picture OSD**.

Step 2 Configure OSD black edge position, black region height, OSD separator, and front size.

Figure 5-43 Original picture OSD



Step 3 Select a rule type.

Step 4 Configure OSD parameters.

Table 5-28 OSD parameters

Parameter	Description
Insert Forward	Select an OSD option, select **Insert Forward**, and then select another OSD option. The new OSD option will be inserted before the original one.
Insert Backward	Select an OSD option, select **Insert Backward**, and then select another OSD option. The new OSD option will be inserted after the original one.
Modify	Select **Modify**, and then is displayed next to all the selected OSD options. To edit an OSD option, click the corresponding .
Delete	Select **Delete**, and then is displayed next to all the selected OSD options. To delete an option, click the corresponding
Clear	Delete all the selected OSD options.
Line Feed	To start a new line after a certain OSD option, click the OSD option, and then click **Line Feed**.

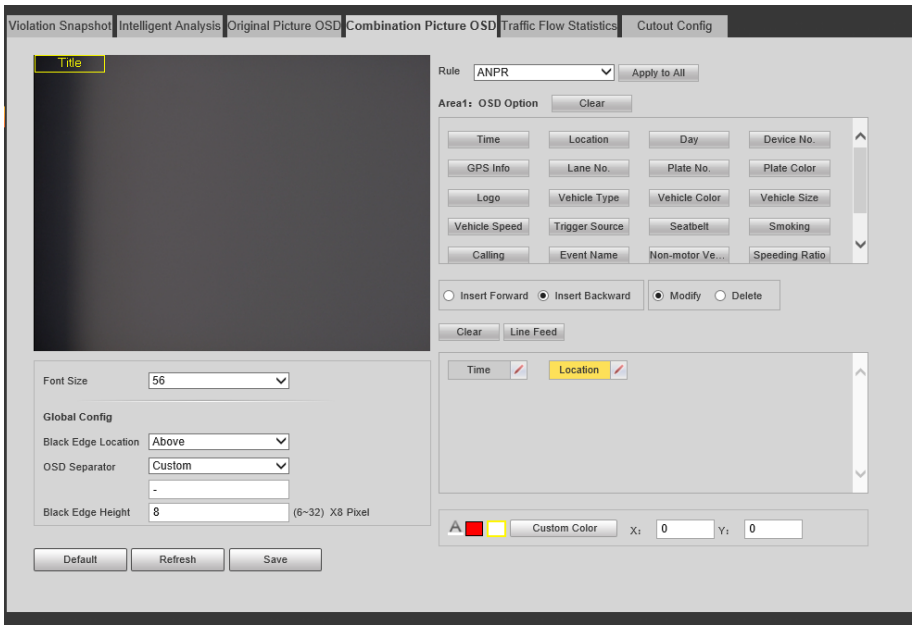
Step 5 Click **Save**.

5.4.4.2 Configuring Combination Picture OSD

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Combination Picture OSD**.

Figure 5-44 Combination picture OSD



Step 2 Configure parameters. For details, see Table 5-28.

Step 3 Click **Save**.

5.4.5 Configuring Traffic Flow Analysis

5.4.5.1 Traffic Data

You can configure the lane and the period of traffic flow statistics, and then the flow data will be displayed in the **Traffic Flow** and **Pedestrian Flow** tabs.

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Traffic Flow Statistics** > **Flow Data**.

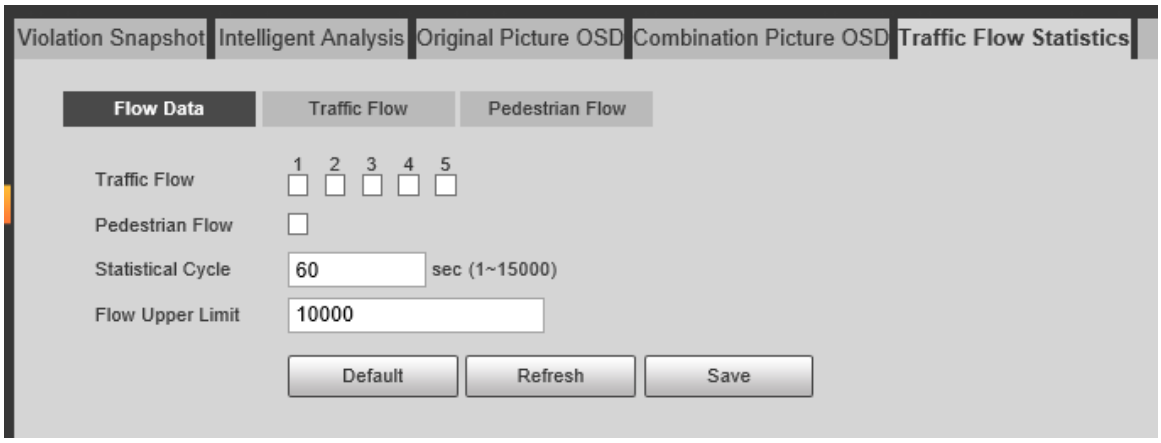
Step 2 Select the **Pedestrian Flow** checkbox to enable statistics of pedestrian flow as needed.

Step 3 Set the **Statistical Cycle** and **Flow Upper Limit** of making statistics.

Step 4 Select the lane that you want to make flow statistics.

Step 5 Click **Save**.

Figure 5-45 Traffic flow statistics



5.4.5.2 Traffic Flow Data

After enabling traffic flow statistics, you can view the traffic flow data of the defined lane within the defined period by clicking the **Traffic Flow** tab. The flow data will automatically update when a period ends.

- Click to clear the flow information.
- Click **Export** to export the flow information to local computer.

5.4.5.3 Pedestrian Flow Data

After enabling pedestrian flow statistics, you can view the pedestrian flow data of the defined lane within the defined period by clicking the **Pedestrian Flow** tab. The flow data will automatically update when a period ends.

- Click to clear the flow information.
- Click **Export** to export the flow information to local computer.

5.4.6 Cutout

5.4.6.1 Snapshot Cutout

The Camera can recognize and crop snapshots, and save the cutouts.

The page and function might vary in **ANPR** and **E-Police**, and might differ from the actual page and function.

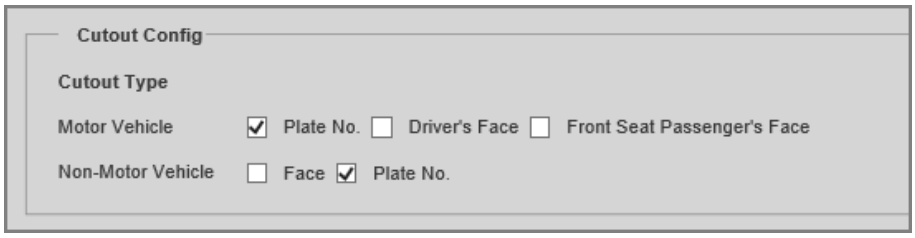
Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Cutout Config**.

Step 2 Select the cutout type.

Step 3 Click **Save**.

Figure 5-46 Snapshot cutout (ANPR mode)



5.4.6.2 Face Overlap

Configure whether to enable overlapping face picture on the snapshots. If overlap is enabled, you can configure the overlap position and size of driver face and front-seat passenger face.

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Cutout Config** > **Face Overlay**.

Step 2 For motor vehicles, select **Driver** and/or **Front Seat Passenger** (front-seat passenger) to enable face overlay of the driver and the front-seat passenger.

Face Overlay for motor vehicles is only available in **ANPR** mode.

Step 3 For non-motor vehicles, select **Enable** to enable face overlay of the driver.

Step 4 Configure the overlay position and size of driver face and front-seat passenger face.

Step 5 Click **Save**.

5.4.6.3 Target Box

Configure whether to overlay track box on the driver of non-motor vehicles.

Procedure

Step 1 Select **Setting** > **Event** > **ANPR Snapshot** > **Cutout Config** > **Target Box**.

Step 2 Select **ANPR** or **Other** as needed.

Step 3 Select a target type.

Step 4 Select **Enable** to enable the overlaying track box.

Step 5 For non-motor vehicle, select overlaying track box on the **All** body or only **Face** of the non-motor vehicle driver.

Step 6 Click **Save**.

5.4.7 Device Location

You can view the device position information, such as its longitude and latitude.

Select **Setting** > **Event** > **Device Location**.

5.4.8 Alarm Settings

You can configure how the Camera responds when alarms occur.

5.4.8.1 Alarm

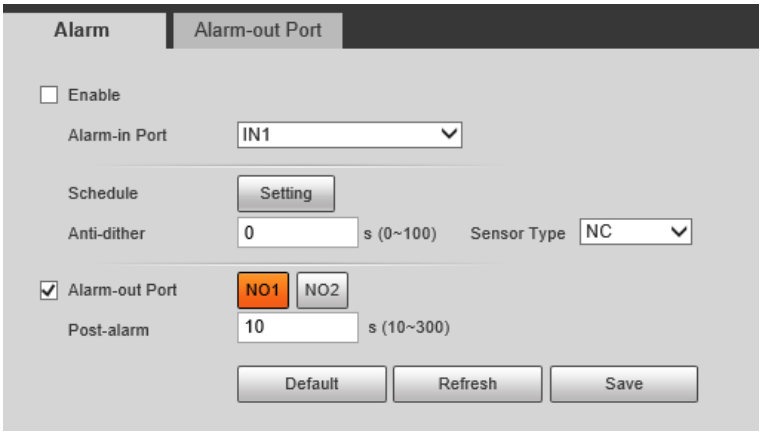
You can connect the alarm output device to corresponding I/O port.

Procedure

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

Step 2 Select the **Enable** checkbox to enable alarm input.

Figure 5-47 Alarm

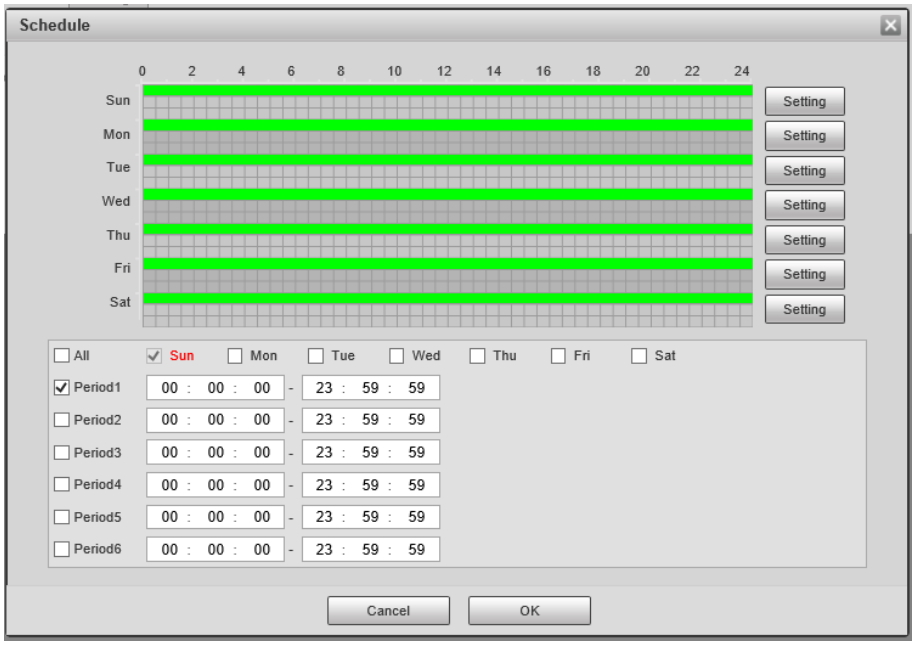


Step 3 Configure the parameters.

Table 5-29 Alarm parameters

Parameter	Description
Alarm-in Port	Currently, only 4 channels support alarm input.
Schedule	Configure the time of arming and disarming. Click **Setting** and configure the day and period of arming. Click **OK** to save the period settings.
Anti-dither	The system records only one alarm event within the defined time, and the time range is 0 s–100 s.
Sensor Type	**NO** (normally open) and **NC** (normally closed) are available.
Alarm-out Port	Select the alarm output port.
Post-alarm	The alarm linkage keeps running for the defined time after alarm ends. The time range is 10 s–300 s.

Figure 5-48 Schedule setting



Step 4 Click **Save**.

5.4.8.2 Alarm-out Port

You can simulate to trigger alarm output signal.

Procedure

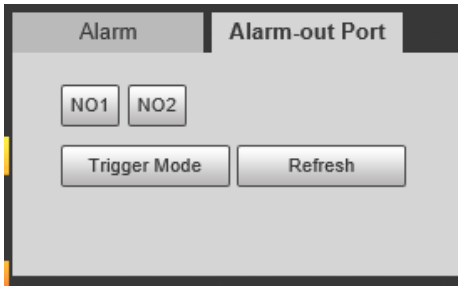
Step 1 Select **Setting** > **Event** > **Alarm** > **Alarm-out Port**.

Step 2 Click **NO1** or **NO2** to configure one-channel alarm output.

Step 3 Click **Trigger Mode** to trigger alarm output.

Step 4 Click **Refresh** to view the status of alarm output.

Figure 5-49 Alarm-out port



5.4.9 Exception

An alarm will be triggered when an abnormal event occurs. The event types include:

- **SD Card Exception**: Alarm will be triggered when there is **No SD card**, **SD card error**, or **Memory insufficient**.
- **Network Exception**: Alarm will be triggered when there is **Offline** (the Camera is offline) or **IP Conflict**.
- **Invalid Access**: Alarm will be triggered when unauthorized access is detected by the system.

- **Security Exception**: Alarm will be triggered when security problem occurs.
- **Traffic Light Fault**: Alarm will be triggered when the Camera detects traffic light fault.

- You can set the alarm tone by selecting **Alarm** at the upper-right side of the Camera's webpage.
- **Traffic Light Fault** is only available in **E-Police** mode.

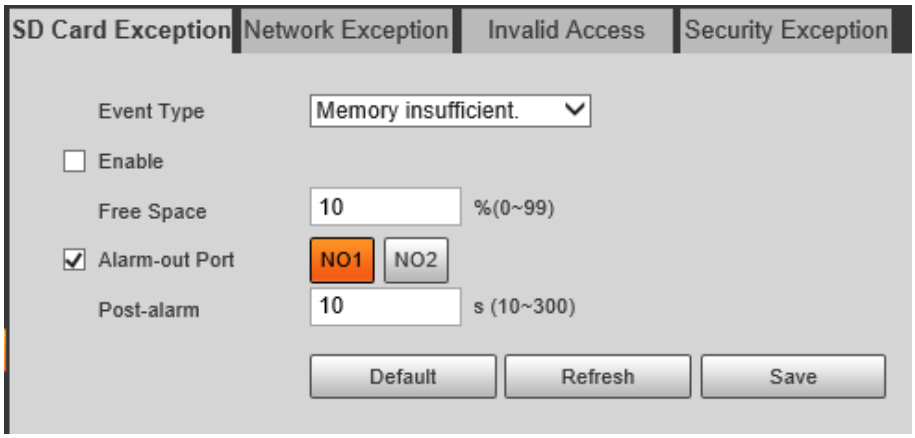
Procedure

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

The following figure uses **SD Card Exception** as an example. For other events, refer to the actual page.

Step 2 Configure the parameters.

Figure 5-50 SD card event



Refer to the actual page to view the parameters that you need to configure for each abnormality.

Table 5-30 Parameters of abnormal events

Parameter	Description
Enable	Select it to enable alarm of abnormal events. Select **Alarm** for **Traffic Light Fault** event in **E-Police** mode.
Alarm-out Port	Select it to enable the corresponding alarm output of event, and select the corresponding port.
Post-alarm	The alarm linkage keeps running for the defined time after alarm ends. The time range is 10 s–300 s.
Max Time to Not Switch	Configure the maximum time that traffic light remains unchanged. This parameter is required only for **Traffic Light Fault** in **E-Police** mode.
Login Attempt	Configure the number of login errors allowed. The range is 3–10 times.

Step 3 Click **Save**.

5.5 Peripheral

5.5.1 Device Status

Select **Setting** > **Peripheral** > **Peripheral** > **Device Status**, and then you can view the information related to the external device.

5.5.2 Serial Port Settings

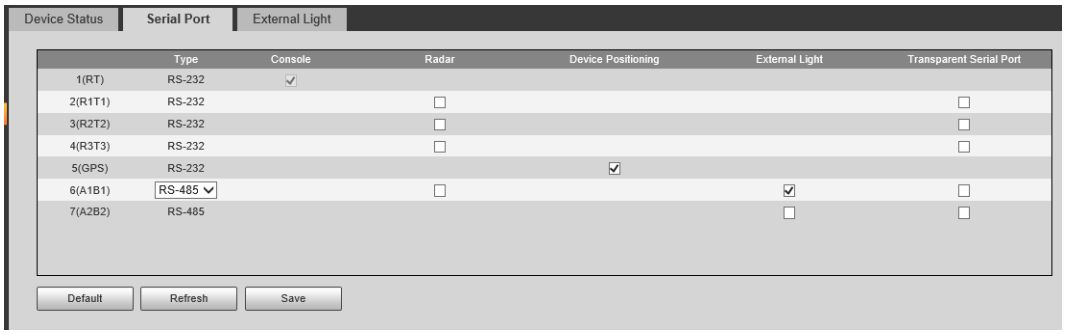
This section displays all serial ports of the Camera, and integrates all devices which can be connected so you can configure them on one page. At present, the Camera supports configuring radar, positioning method, external light and transparency serial.

Procedure

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

Step 2 Configure external devices.

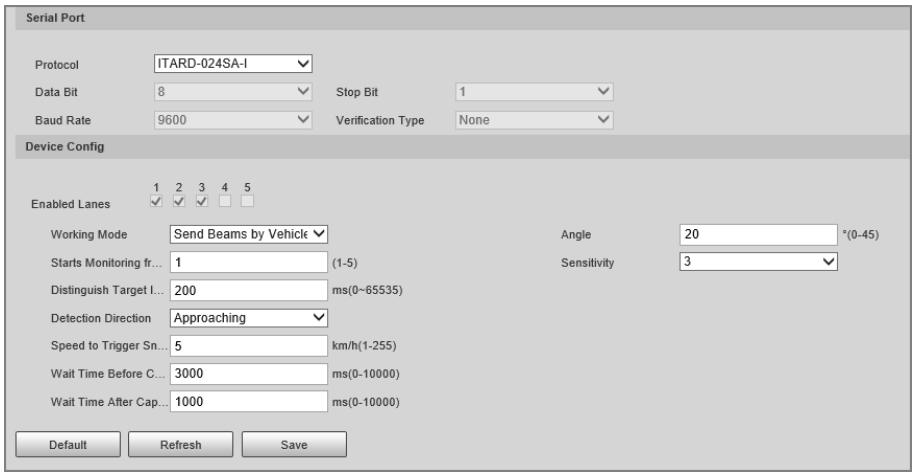
Figure 5-51 Serial port settings



- One serial port can only enable one external device.
- RS-485 and RS-232 ports are supported.
  - RS-232 port can enable radar for single lane, and RS-485 enables radar for multiple lanes.
  - You cannot enable single lane and multiple lanes at the same time.
- Only one external device can be enabled for one port at the same time.
- Radar

1) Select **Radar**.

Figure 5-52 Radar configuration (single lane)



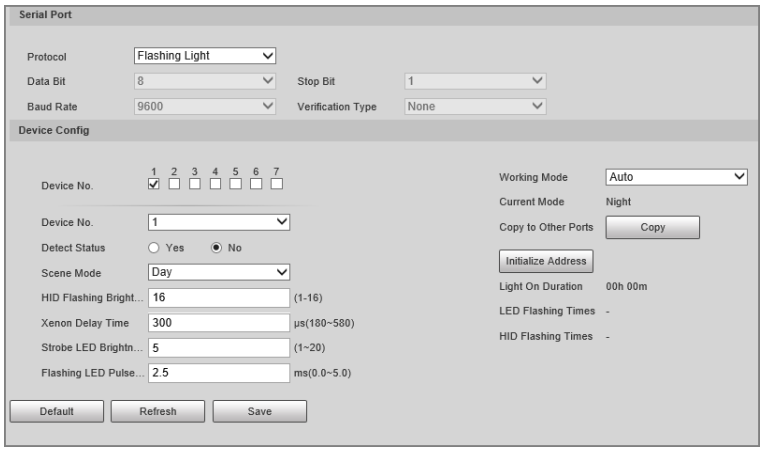
2) Configure radar parameters.

Table 5-31 Radar parameters

Parameter	Description
Enabled Lanes	The number of lanes on which the radar has been enabled.
Working Mode	Select the work mode of the radar from **Speed Measurement**, **Calculation Mode**, **Send Beams by Vehicles**, **Send Continuous Beams** and **Manually Send Beams**.
Starts Monitoring from Lane	The lane number on which the radar starts detecting.
Distinguish Target Intervals	During the interval, the radar only detects one object. This function works together with a special program.
Detection Direction	The direction of radar detection.
Speed to Trigger Snapshot	The low speed limit that triggers the radar to send a capture signal to the Camera. Once the vehicle exceeds the limit, the Camera takes a snapshot.
Wait Time Before Capture	During the speed wait, if the Camera reads the speed from the radar, it is the vehicle speed; Otherwise, the displayed vehicle speed is a random value within the speed limit.
Wait Time After Capture	
Angle	The angle between the radar beam and vehicle driving direction.
Sensitivity	Supports adjusting the sensitivity of the radar capture. 5 is the most sensitive.

3) Select **RS-485** to enable multi-lane radar detection.

Figure 5-53 Radar configuration (multiple lanes)

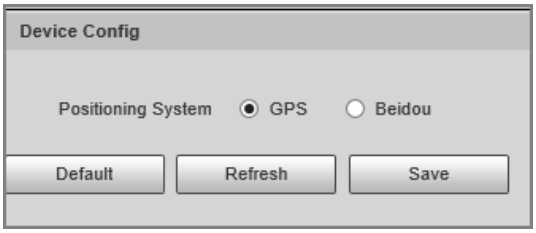


4) Click **Save**.

- Positioning

1) Select **Device Positioning**.

Figure 5-54 Positioning configuration



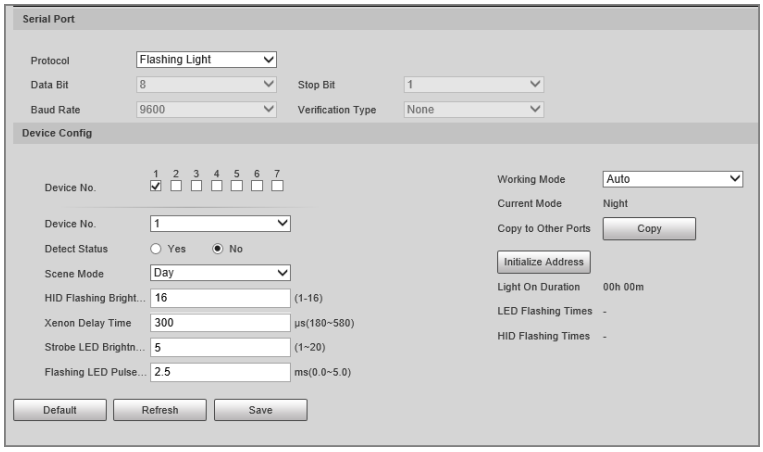
2) Select the positioning method from **GPS** and **Beidou** as needed.

3) Click **Save**.

- External Light

1) Select **External Light**.

Figure 5-55 External light configuration



2) Configure external light parameters.

Table 5-32 External light parameters

Parameter	Description
Protocol	Select from Flashing Light, Strobe and Continuous Light.
Device No.	Select device number as needed.
Device No.	Select external light number based on the selected device number.

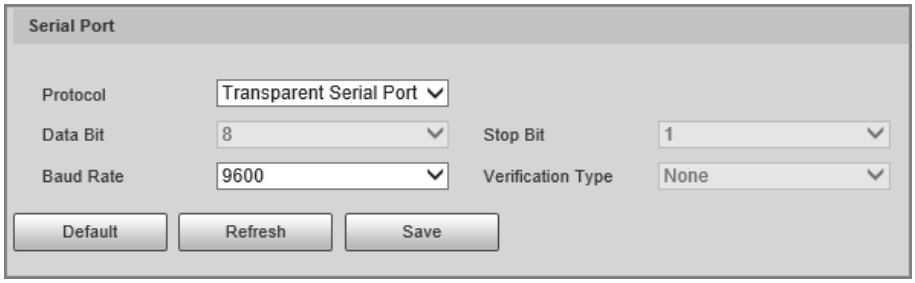
Parameter	Description
Detect Status	Select **Yes** to enable external light status check.
Scene Mode	Select the working environment of the external light.
HID Flashing Brightness	Set as needed.
Xenon Delay Time	
Strobe LED Brightness	
Flashing LED Pulse Width	
Working Mode	Select the work mode of the external light from **Force Set IR**, **Force Set White** and **Auto**.
Copy to Other Ports	Click **Copy** to copy the configuration of the current light to other ports.
Initialize Address	Click **Initialize Address** to restore the RS-485 address of the external light to default.

3) Click **Save**.

- Transparent Serial Port

1) Select **Transparent Serial Port**.

Figure 5-56 Transparent serial port



2) Set **Transparent Serial Port** as **Protocol**, and configure **Baud Rate** as needed.
3) Click **Save**.

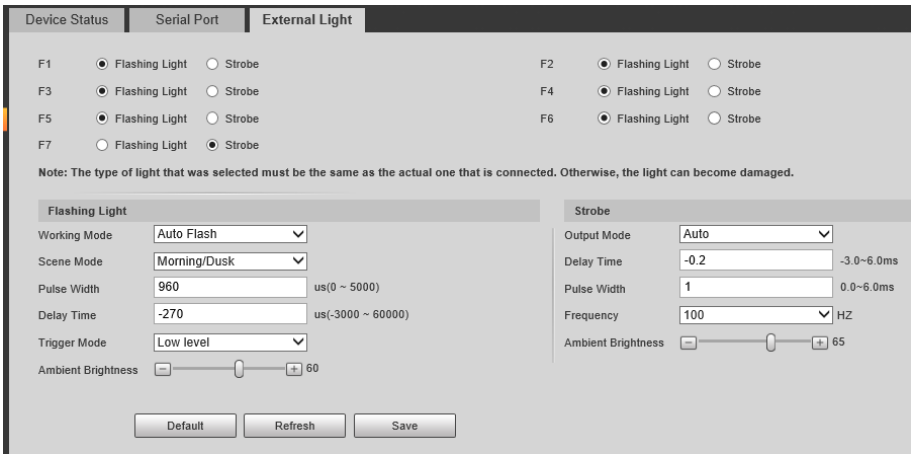
5.5.3 External Light

You can configure the work mode of the flashing lights and strobes connected through RS-485 to the Camera in this section.

Procedure

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

Figure 5-57 Light config



Step 2 Configure parameters.

Table 5-33 Light parameters

Parameter		Description
F1/2/3/4/5/6/7		Select the light type connected to each port. The light type must be the same as the actual connected light type. Otherwise, the light might be damaged.
Flashing Light	Working Mode	• **No Flash**: The light is normally off. • **Always Flash**: The light is normally on. • **Auto Flash**: Configure the preset value of brightness. If the ambient brightness is lower, the light automatically turns on; if higher, the light automatically turns off.
	Scene Mode	Select the scene mode for the flashing light from **Morning/Dusk**, **Day** and **Night**, indicating different brightness of the light which suits the environment the best.
	Pulse Width	Configure the pulse width of flashing light. The higher the value, the brighter the light.
	Delay Time	Configure the delay time of the light to keep the snapshot in sync with the flash.
	Trigger Mode	You can select the level that triggers the flashing light. Currently, only **Low level** is supported.
	Ambient Brightness	When setting **Work Mode** to **Default**, you need to set the ambient brightness.
Strobe	Output Mode	Same as **Work Mode** of flashing light.
	Frequency	Set the frequency of the strobe.

Step 3 Click **Save**.

The light type in this section is for reference only, and might differ from the actual model.

5.6 Storage

You can configure the storage path of snapshots and video records.

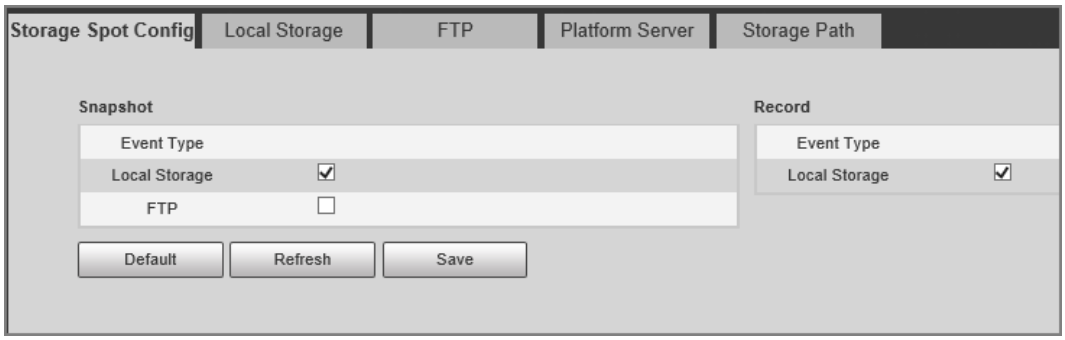
5.6.1 Storage Spot Config

Set the storage path of snapshots and video recordings.

Procedure

Step 1 Select **Setting** > **Storage** > **Storage** > **Storage Spot Config**.

Figure 5-58 Storage spot config



Step 2 Select storage path as needed.

- **Local Storage**: Store in the TF card, which has a limited capacity but offers continuous access to its storage, even during network failure. Videos can only be stored in TF card.
- **FTP**: Store in the FTP server, which offers a greater capacity but it will stop storing when the network fails.

Step 3 Click **Save**.

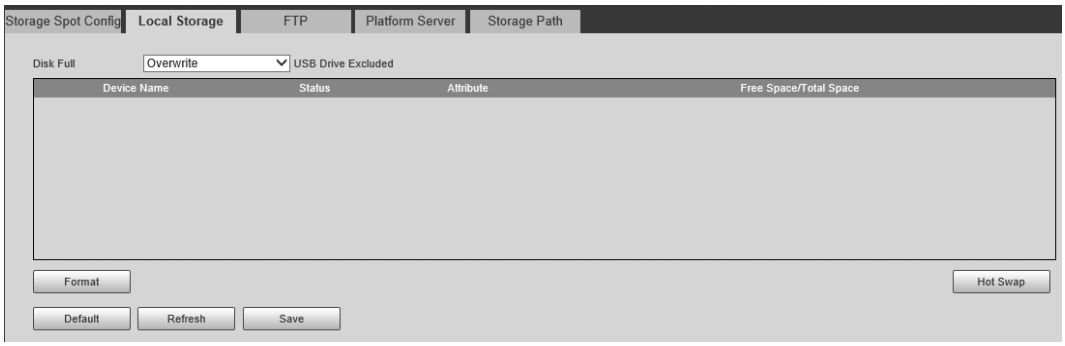
5.6.2 Local Storage

Select **Setting** > **Storage** > **Storage** > **Local Storage**, and the page displays the information of the TF card.

You can **Format** or **Hot Swap** the TF card, or select to **Overwrite** or **Stop** storage when the disk is full. Click **Save** after these operations.

Make sure that a TF card is inserted. Otherwise, no card information will be displayed on the **Local Storage** page.

Figure 5-59 Local storage



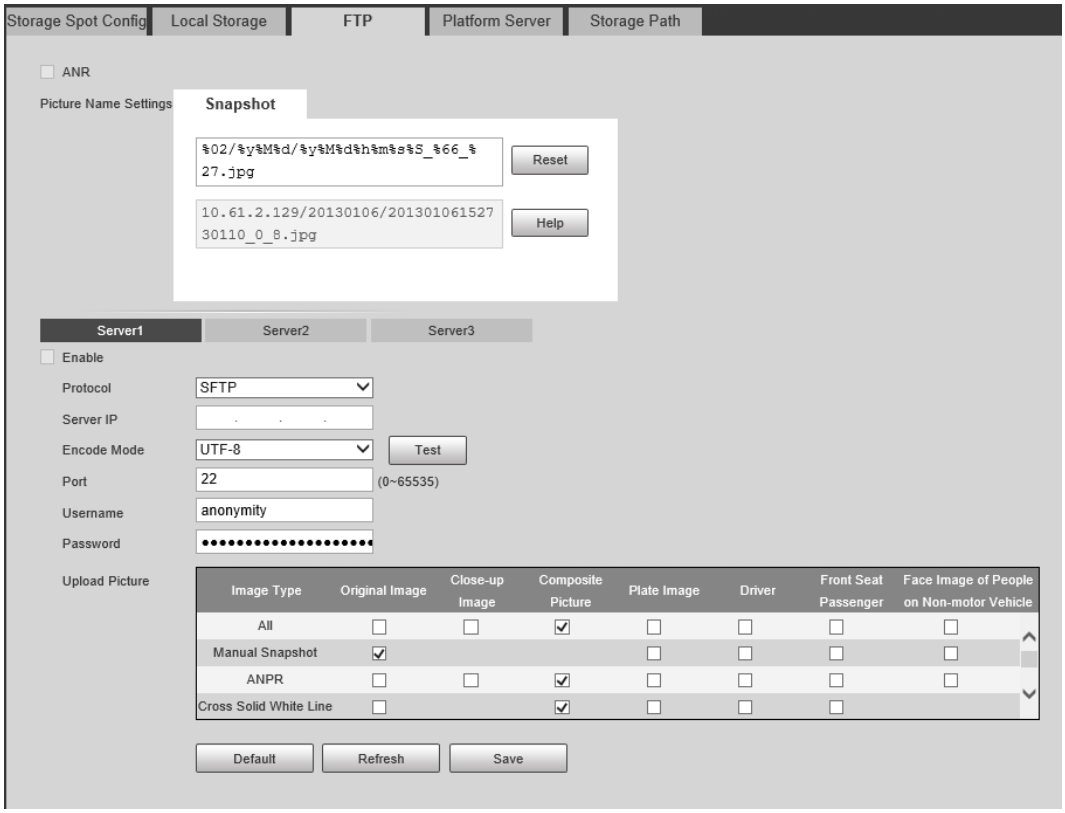
5.6.3 FTP

FTP function can be enabled only when TF card is inserted and FTP server is enabled. Only snapshots can be saved to the FTP server.

Procedure

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

Figure 5-60 FTP



Step 2 Configure the parameters.

Table 5-34 FTP parameters

Parameter	Description
ANR	When the network disconnects or fails, snapshots will be stored in TF card. After the network is restored, the snapshots will be uploaded from the TF card to FTP or client. Make sure that TF card is inserted in the Camera; otherwise, the offline transfer function cannot be enabled.
Picture Name Settings	Set the naming rule of snapshots to be saved in FTP server. You can click **Help** to view the **Image Naming Rules**, or click **Reset** to restore the default naming rule.
Server1, Server2, Server3	Supports uploading to multiple servers. You can save different types of snapshots to different servers. Select the snapshot types from **Upload Picture**.
Enable	Enable FTP server storage.
Protocol	• **SFTP**: Secure File Transfer Protocol, a network protocol allows file access and transfer over a secure data stream. • **FTP**: File Transfer Protocol, a network protocol implemented to exchange files over a TCP/IP network. Anonymous user access is also available through an FTP server.
Server IP	The IP address of FTP server.
Encode Mode	Refers to the encode mode of Chinese characters when naming images. Only **UTF-8** is supported. After configuring **Server IP** and **Port**, click **test** to check whether the FTP server works.
Port	The port number of FTP server.
Username, Password	The username and password of FTP server.
Upload Picture	Select event(s) and picture type(s) to be uploaded to each FTP server. Different modes (**ANPR**, **E-Police**, and **Yield to Pedestrians**) support different events, and might differ from the actual page.

Step 3 Click **Save**.

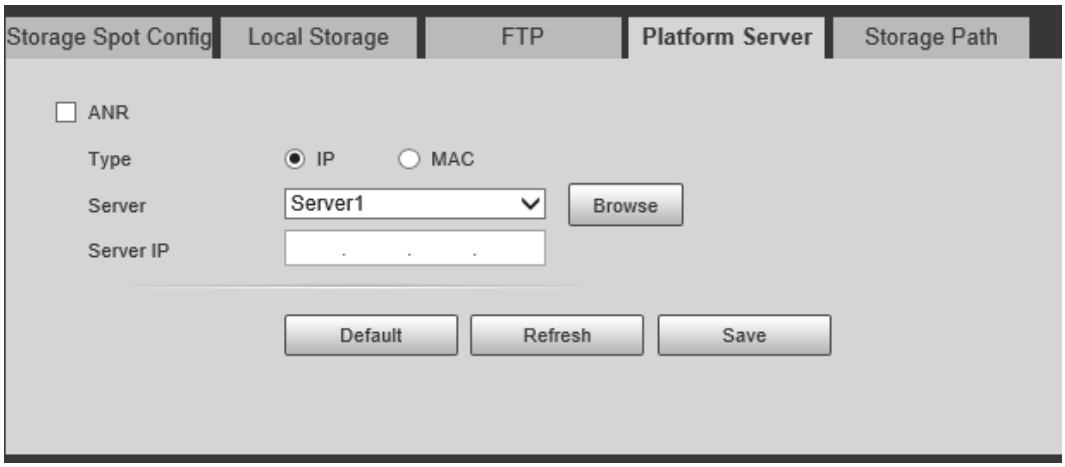
5.6.4 Platform Server

You can set the parameters of storing to the client, which generally refers to the platform. You need to install and log in to platform first before you can store snapshots to platform server.

Procedure

Step 1 Select **Setting** > **Storage** > **Storage** > **Platform Server**.

Figure 5-61 Platform server



Step 2 Configure the parameters.

Step 3 Click **Save**.

5.6.5 Storage Path

You can configure the names and storage paths of snapshots and video recordings.

Procedure

Step 1 Select **Setting** > **Storage** > **Storage** > **Storage Path**.

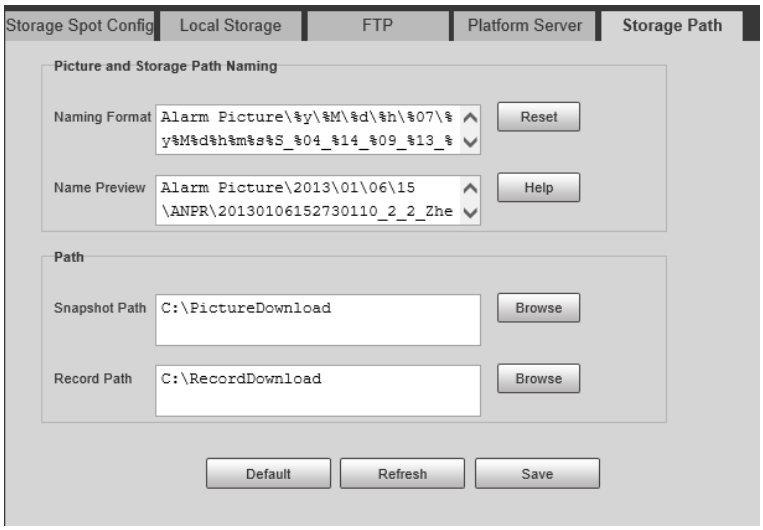
Step 2 Name the snapshots in the **Naming Format** section. You can click **Help** to view the **Image Naming Rules**, or click **Reset** to restore the naming rule to the default.

After setting the naming rule, you can preview an example of the name in the **Name Preview** section.

Step 3 Click **Browse** to set the save paths of snapshots and video recordings respectively.

Step 4 Click **Save**.

Figure 5-62 Storage path



5.6.6 Record Control

You can set how to record the videos and the stream for recording the videos.

Procedure

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

Step 2 Select the record mode.

- **Auto**: Record videos only when a traffic violation event is detected.

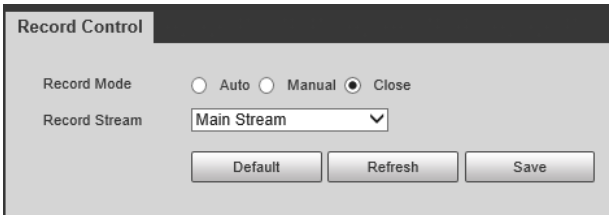
  After enabling auto recording, go to **Setting** > **Event** > **ANPR Snapshot**, in the **Rule Config** section, under **Advanced**, select a lane (**Event Type** is not **ANPR**) and then enable **Record Linkage** to automatically record the corresponding lanes. In addition, select **Local Storage** from **Setting** > **Storage** > **Storage** > **Storage Spot Config**.

- **Manual**: Record videos continuously.
- **Close**: Do not record videos.

Step 3 Select the record stream. You can select from **Main Stream** and **Sub Stream**.

Step 4 Click **Save**.

Figure 5-63 Record control



5.7 System

You can configure system information, add users, restore to factory settings, import and export system configuration files, and more.

5.7.1 General

You can configure display language, video standard, and also set the time and time zone of the Camera.

5.7.1.1 General Settings

You can configure the device code, system, video standard, and more.

Procedure

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

Step 2 Configure the parameters.

Figure 5-64 General

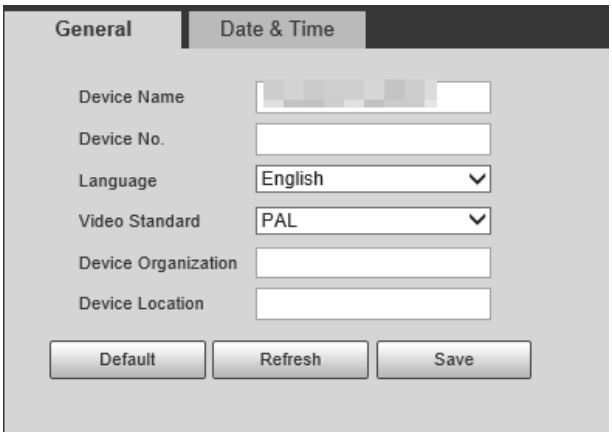


Table 5-35 General parameters

Parameter	Description
Device Name	The device serial number consisting of letters, numbers, underlines and strikethroughs.
Device No.	No. of the Camera. The device code cannot be overlaid with OSD information.
Language	Language of web browser page. You need to log in again when switching to another language. Currently, only **English** is supported.
Video Standard	**PAL** and **NTSC** are available. • **PAL**: Much more common around the world, and can be found in most of Western Europe, Australia, China, and elsewhere. • **NTSC**: Mostly limited to North America, parts of South America, Japan, the Philippines and more.
Device Organization	The group or entity that uses the Camera.
Device Location	The locations where snapshots were taken by the Camera.

Step 3 Click **Confirm**.

5.7.1.2 Date & Time

You can configure date, time, time zone, and more for the Camera.

Procedure

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

Step 2 Configure the parameters.

Figure 5-65 Date & time

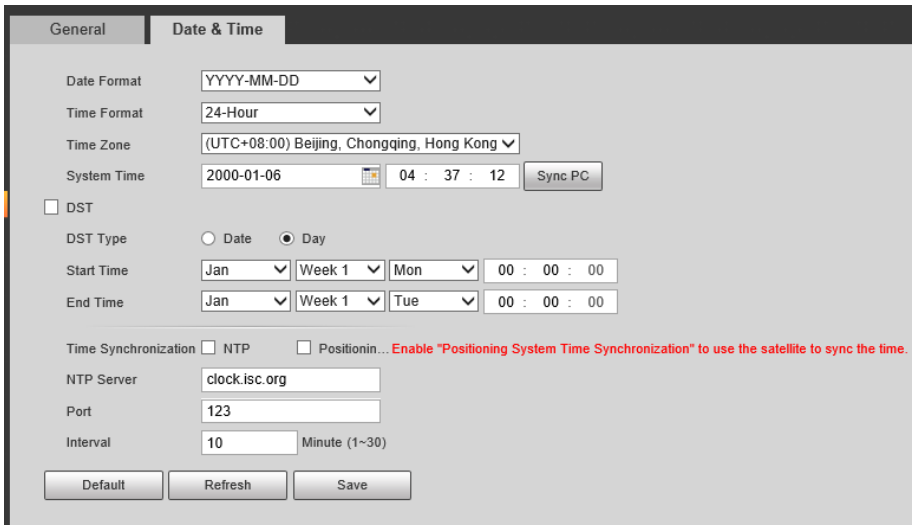


Table 5-36 Date & time parameters

Parameter	Description
Date Format	Select the date format. Three formats are available: **YYYY-MM-DD**, **MM-DD-YYYY** and **DD-MM-YYYY**.
Time Format	Select the time format. Two formats are available: **24-Hour** and **12-Hour**.
Time Zone	The time zone where the Camera is located.
System Time	The current time of the Camera.
Sync PC	Synchronize the time of the Camera to that of the PC. Click **Sync PC**, and the settings will immediately take effect.
DST	Select the **DST** (means daylight saving time)checkbox, set the **DST Type** by **Date** or by **Day**, and then configure the **Start Time** and **End Time** of DST.
Time Synchronization	Time synchronization mode. You can select **NTP** (network time protocol) or **Positioning System Time Synchronization**.
NTP Server	The IP address and the port number of NTP server. Required when **NTP** is set to **Time Synchronization**.
Port	
Interval	The time synchronization interval of the Camera and the NTP or satellite.

Step 3 Click **Save**.

5.7.2 Account Management

You can add or delete users and user groups, assign permissions to new users and user groups, change passwords, and manage users and user groups.

5.7.2.1 Account

You can view the information of a user or user group, add or delete user(s) or user groups, change

user password, assign user permissions, restrict user login, and more.

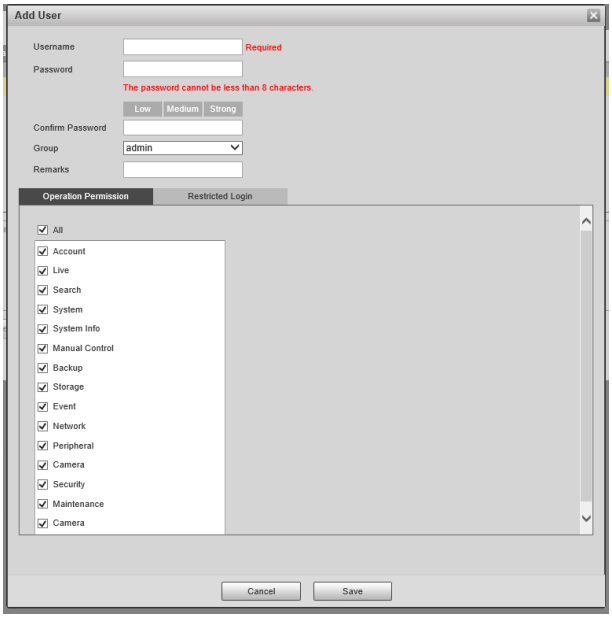
Procedure

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

Step 2 Add a user.

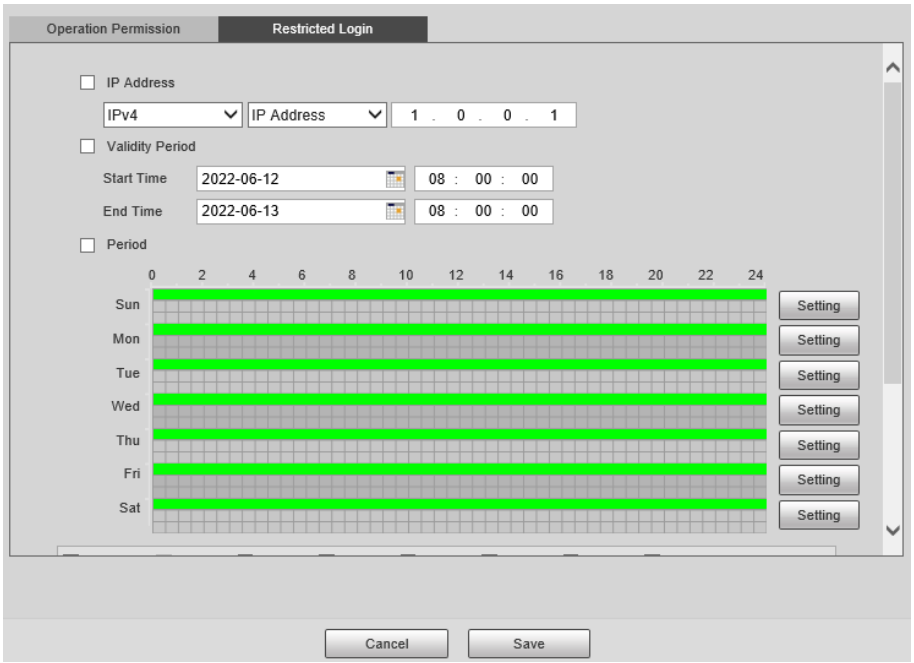
1) Click **Add User**.
2) In the **Add User** dialog box, configure user information including username, password, group name, memo, and operation permissions.

Figure 5-66 Add user



3) Set login restrictions (if necessary), and then the restricted IP address will be unable to log in to the Camera during the restricted period.

Figure 5-67 Set log restriction



4) Click **Save** to save the settings.

Step 3 Select **Setting** > **System** > **Account** > **Account** > **Group**.

Step 4 Add a group.

1) Click **Add Group**.
2) Configure the **Group** and **Permission** of the group.
3) Click **Save**.

Related Operations

- Delete a user/user group: Click to delete the corresponding user/user group.

  - The admin and user groups cannot be deleted.
  - A group cannot be deleted if there is any user in the group.

- Modify user/user group information: Click corresponding to the user. You can modify information such as username, password, email address, group name, and memo. Click **Save** to save the settings.
- Change password: On the **Modify User** page, select the **Change Password** checkbox. Enter the old and new passwords, and confirm password. Click **Save** after configuration.

  The password must consist of 8–32 non-blank characters and contain at least two types of the following characters: Uppercase, lowercase, numbers, and special characters (excluding ' " ; : &). Configure the password according to the password strength prompt.

- Clear all user information: Click **Clear user** under **Setting** > **System** > **Account** > **Account** > **Clear User**.

5.7.2.2 ONVIF User

ONVIF users can be separately managed from account users and user groups.

- The system manages both ONVIF users and user groups. The factory settings cover one group: admin. You can set up to 18 ONVIF users.
- ONVIF username cannot be repeated. Each ONVIF user must belong to a group, and can only belong to one group. The username can be 31 characters at most, consisting of letters, numbers, "_", "@" and ".".
- The default ONVIF username and password are both admin. There is one admin by default which has the highest authority.

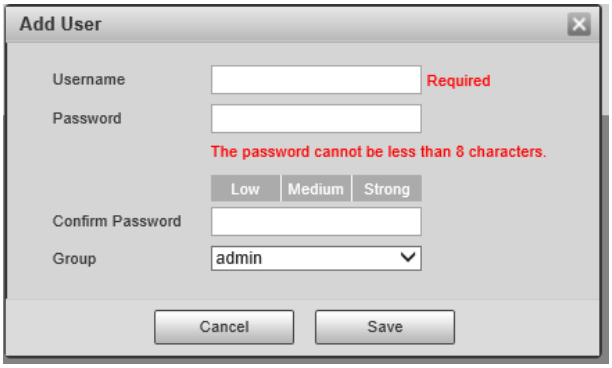
Procedure

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

Step 2 Click **Add User**.

Step 3 Configure user information such as username, password, and group name.

Figure 5-68 Add user



Step 4 Click **Save**.

Related Operations

- Modify ONVIF user information: Click corresponding to the user, and then you can modify information such as username, password, and group name.
- Modify password: On the **Modify User** page, select the **Change Password** checkbox. Enter the old and new passwords, and confirm password.

The password must consist of 8–32 non-blank characters and contain at least two types of the following characters: Uppercase, lowercase, numbers, and special characters (excluding ' " ; : &). Configure the password according to the password strength prompt.

5.7.3 Security

5.7.3.1 System Service

You can enable multiple system services to secure network safety.

Procedure

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

Step 2 Enable the service(s).

Figure 5-69 System service

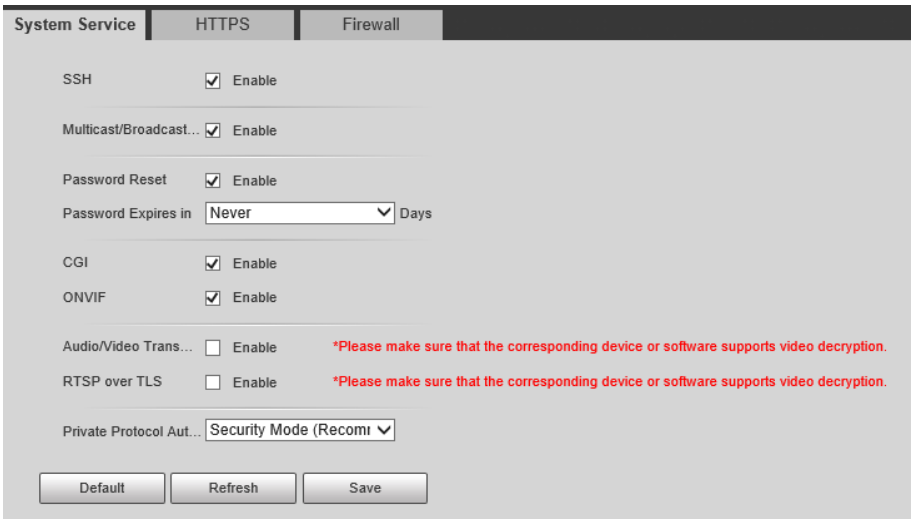


Table 5-37 System service parameters

Parameter	Description
SSH	Secure Shell (SSH) is a cryptographic network protocol for operating network services securely over an unsecure network. It is a method for secure remote login, providing secure access for users.
Multicast/Broadcast Search	Multicast identifies logical groups of computers group members. This allows a single message to be sent to the group. Broadcast allows all devices on the same network segment to see the same message.
Password Reset	Enable it so that you can reset the password.
CGI	Select the **Enable** checkbox to enable Common Gateway Interface (CGI) service.
ONVIF	Select the **Enable** checkbox to enable Open Network Video Interface Forum (ONVIF) service.
Audio/Video Transmission Encryption	Enable this function to encrypt stream transmitted through private protocol. - Make sure that the matched device or software supports the video decryption function. - We recommend enabling the encryption service to avoid data leak.
RTSP over TLS	Enable this function to encrypt stream transmitted through standard protocol. - Make sure that the matched device or software supports video decryption function. - We recommend enabling the encryption service to avoid data leak.
Private Protocol Authentication Mode	Leave it as default.

Step 3 Click **Save**.

5.7.3.2 HTTPS

Prerequisites

- For first-time use of HTTPS or after changing device IP address, you need to create server certificate, and install root certificate.
- After creating server certificate, and installing root certificate, if you change a computer to log in to the web client, then you need to download and install the root certificate again on the new computer or copy the downloaded root certificate on the new computer, and install it.

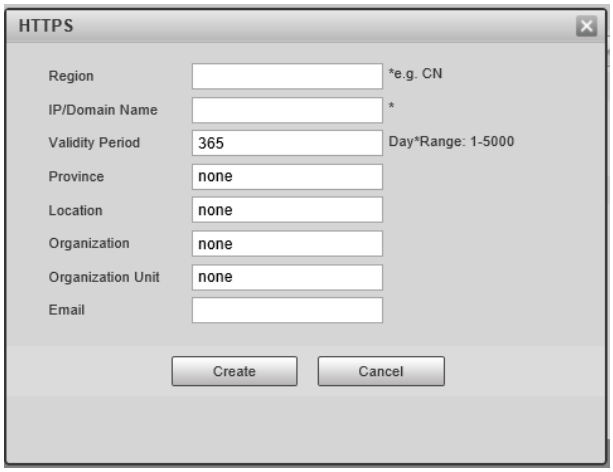
On the **HTTPS** page, users can make PC log in normally through HTTPS by creating certificate or uploading authenticated certificate. It can ensure security of communication data, and provide guarantee for user information, and device safety through reliable, and stable technical approach.

Procedure

Step 1 Create a certificate or upload the authenticated certificate.

- **Create Certificate**.
  1. Select **Setting** > **System** > **Security** > **HTTPS**.
  2. Click **Create**.

Figure 5-70 HTTPS



3. Enter the required information such as region, IP or domain name, and then click **Create**.

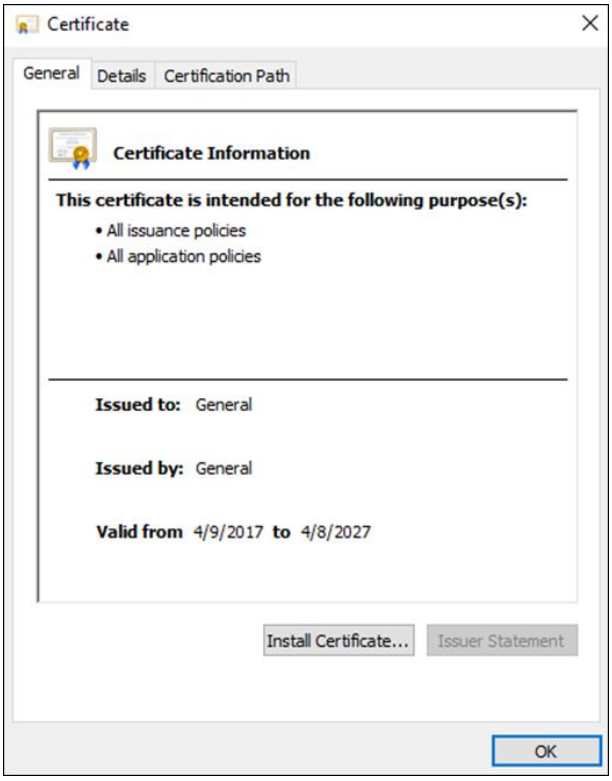
   The entered **IP/Domain Name** must be the same as the IP or domain name of the Camera.

4. Click **Install** under **Request Created**, and then click **Download** to download root certificate.

   The system pops up **Save As** dialog box, select storage path, and then click **Save**.

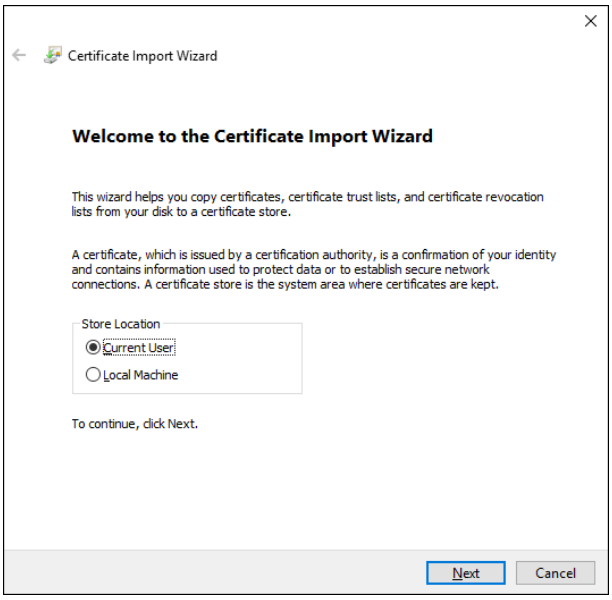
5. Double-click the RootCert.cer icon.
6. Click **Install Certificate…**

Figure 5-71 Install certificate



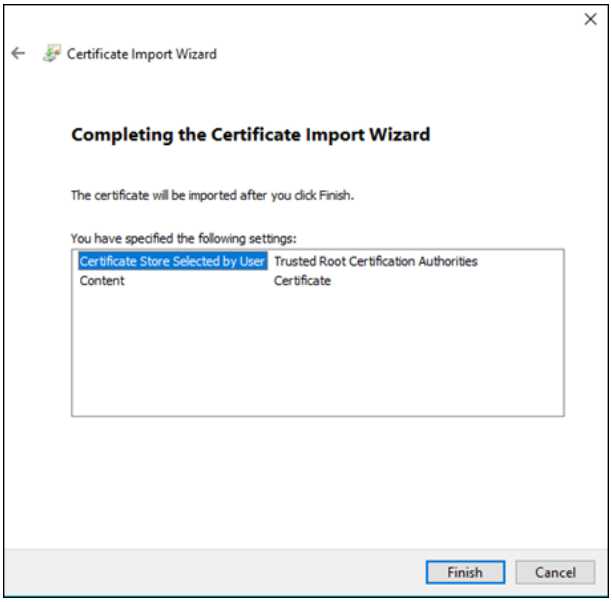
7. Click **Next**.

Figure 5-72 Certificate store



8. Click **Next**.

Figure 5-73 Complete the certificate import wizard



9. Click **Finish**.
10. Click **Yes**, and then click **OK** on the pop-up window.

- **Install Signed Certificate**.
  1. Select **Setting** > **System** > **Security** > **HTTPS**.
  2. Select **Enable**, and **Compatible with TLSv1.1 and earlier versions**.
  3. Click **Browse** to upload the signed certificate, and certificate key, and then click **Upload**.
  4. To install the root certificate, see operation steps from 4 to 10 in **Create Certificate**.

Step 2 Select **Enable**, and click **OK**.

The configuration takes effect until the Camera restarts.

Step 3 Use HTTPS to log in to the Camera.

1. Enter https://*IP address* in the browser.

   IP address is the Camera IP address or domain name.

2. Enter the username, and password to log in to the Camera.

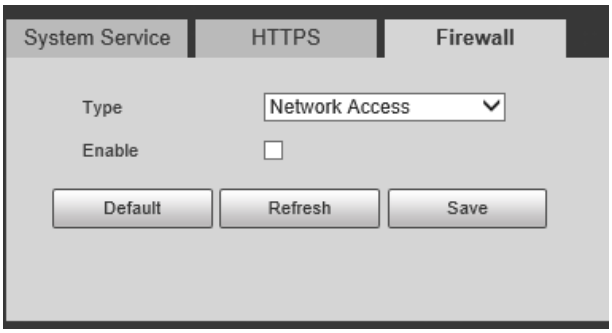
5.7.3.3 Firewall

Set the security rules to protect the safety of your camera system.

Procedure

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

Figure 5-74 Firewall



Step 2 Select **Type**.

- **Network Access**: Add the IP address to allowlist or blocklist to allow or restrict it from accessing the corresponding ports of the device.
- **PING Prohibited**: IP address of your camera is prohibited from ping. This helps to prevent unauthorized attempts at accessing your network system.
- **Anti Half Connection**: Prevents half-open SYN attacks.

Step 3 Select **Enable** to enable the rule type that you selected.

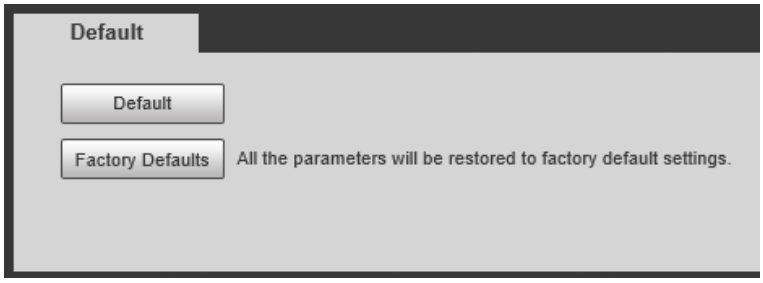
Step 4 Click **Save**.

5.7.4 Default

Select **Setting** > **System** > **Default**, and then you can:

- Click **Default** to restore most configurations of the Camera to default settings (except information such as IP address, account, and log).
- Click **Factory Defaults** to restore all configurations of the Camera to default settings, including IP address.

Figure 5-75 Default



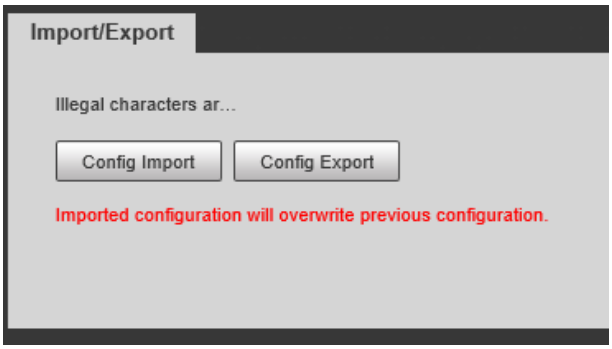
5.7.5 Import/Export

The system supports exporting the configurations from the webpage to local computer, and importing the configuration files from local backup.

Procedure

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

Figure 5-76 Import/Export



Step 2 Click **Config Import** or **Config Export**.

- **Config Import**: Import the configuration files from local backup.
- **Config Export**: Export the configuration from the webpage to your local computer.

The imported and exported files should be in the format of .backup.

Step 3 Select the path of the file to import, or the path of the file to export.

5.7.6 Configuring Auto Maintain

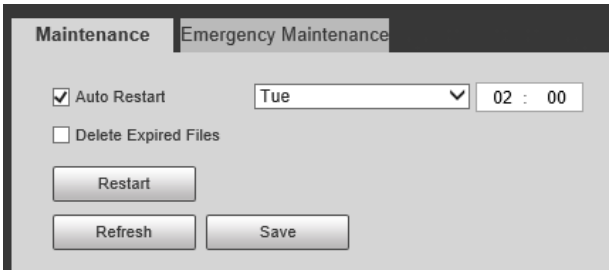
You can select to either automatically restart the Camera at the defined day and time, or manually restart the Camera to solve problems such as stuck images.

5.7.6.1 Maintenance

Procedure

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

Figure 5-77 Auto maintain



Step 2 Select the restart mode.

- **Auto Restart**: Select the **Auto Restart** checkbox, and then configure the day and time. The system will automatically restart at the defined day and time.
- **Restart**: Click it to manually restart the Camera.

Step 3 Select the **Delete Expired Files** checkbox, and the system will automatically delete the old files.

Step 4 Click **Save**.

5.7.6.2 Emergency Maintenance

Procedure

Step 1 Select **Setting** > **System** > **Maintenance** > **Emergency Maintenance**.

Step 2 Select **Enable** to enable emergency maintenance.

Step 3 Click **Save**.

5.7.7 Update

You need to update the firmware to the latest version to make the Camera run properly. Import the update file in the format of .bin to the system, and then update the system.

- **Update** function is currently not available.
- Do not disconnect the power or network, or restart or shut down the Camera during update. Incorrect update programs might result in the Camera being unable to work.

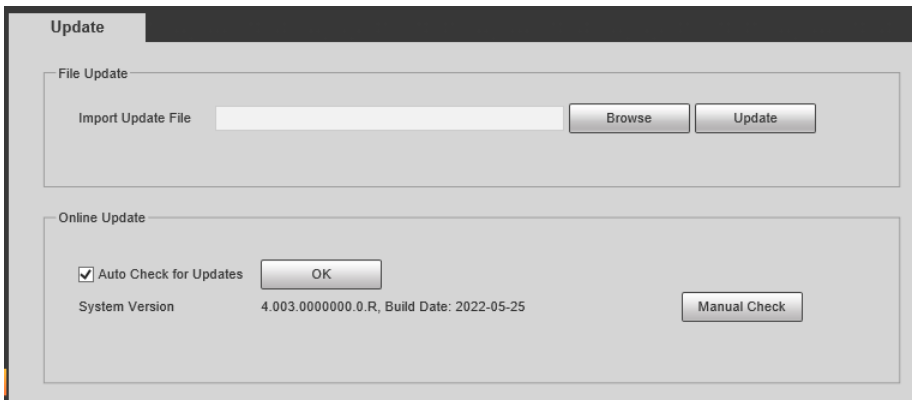
Procedure

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

Step 2 Click **Browse** to select the firmware update file (.bin).

Step 3 Click **Update** to update the firmware.

Figure 5-78 Update



5.8 System Information

You can view information such as version, log, online user, and work status.

5.8.1 Version Information

- Select **Setting** > **System Info** > **Version** to view information such as device model, and the version of the hardware, system, and software.
- Select **Setting** > **System Info** > **Peripheral Version** to view version information of the external device, such as radar and flashing light.

Version might differ depending on the device model.

5.8.2 Log

5.8.2.1 System Log

You can search for and view logs by the time and type, and backup the logs. The log type includes **All**, **System**, **Setting**, **Data**, **Event**, **Record**, **Account**, and **Safety**.

Procedure

Step 1 Select **Setting** > **System Info** > **Log** > **Log**.

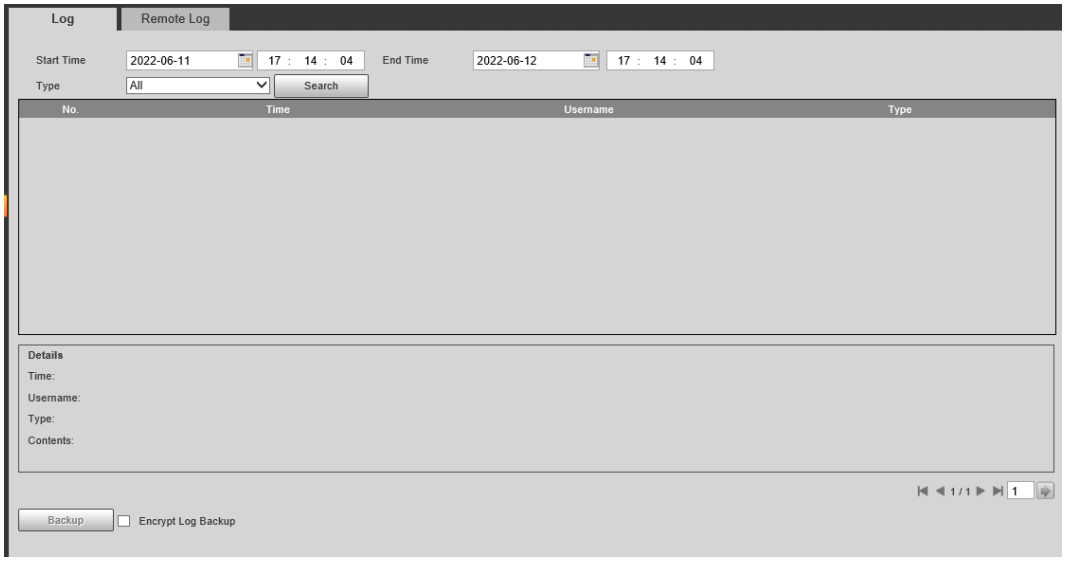
Step 2 Set **Start Time** and **End Time**, and then select log type.

Step 3 Click **Search**.

Step 4 View and backup the search results.

You can save the search results to your computer in a .txt file.

Figure 5-79 Log



5.8.2.2 Remote Log

Critical logs can be saved to the log server. This helps provide important clues to the source of security incidents. The log server needs to be deployed in advance by a professional or system administrator.

Procedure

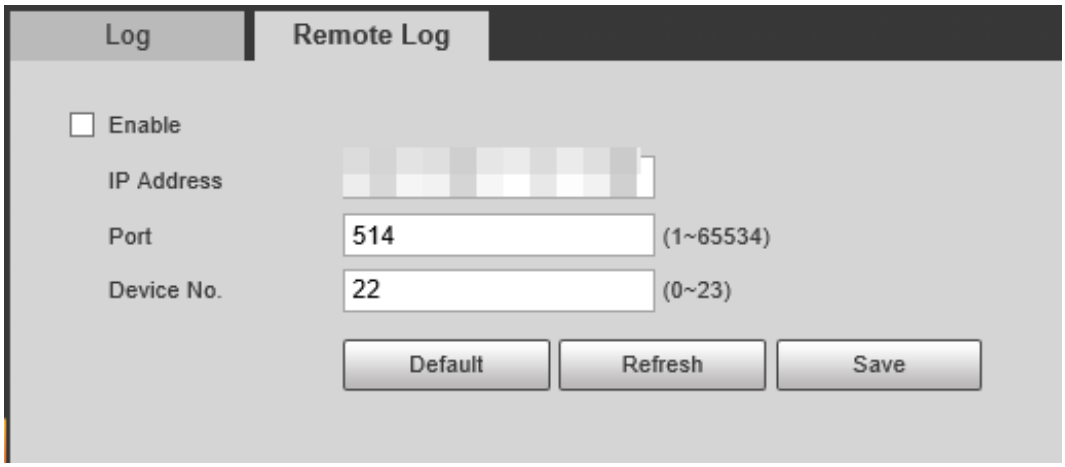
Step 1 Select **Setting** > **System Info** > **Log** > **Remote Log**.

Step 2 Select **Enable** to enable **Remote Log**.

Step 3 Configure the IP address, port and device number.

Step 4 Click **Save**.

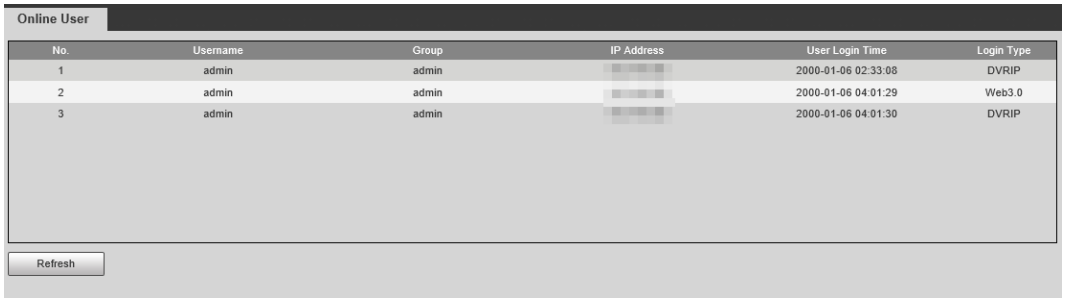
Figure 5-80 Remote log



5.8.3 Online User

Select **Setting** > **System Info** > **Online User**, and then you can view online users' information, such as username, user local group, IP address, and user login time.

Figure 5-81 Online user



5.8.4 Running Status

Select **Setting** > **System Info** > **Running Status**, and then you can view device work status, including CPU, memory and temperature.

5.8.5 Legal Information

Select **Setting** > **System Info** > **Legal Info** to check the legal information.

6 Alarm

Select **Alarm** at the upper-right corner of the webpage, and then you can select the event type to trigger an alarm, and also configure the sound of the alarm.

The alarm type might differ depending on the device model.

Figure 6-1 Alarm (ANPR)



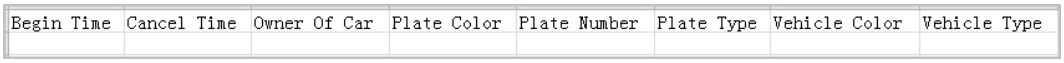
Table 6-1 Alarm parameters

Name	Parameter	Description
Alarm Type	Disk Full	Alarm is triggered when storage is full.
	Disk Error	Alarm is triggered when storage error occurs.
	External Alarm	Alarm is triggered by alarm input device.
	No SD card	Alarm is triggered when there is no storage space available.
	Traffic Light Alarm	Alarm is triggered when a traffic light fails. This function is only available in **E-Police** mode
	Vehicle Blocklist	Alarm is triggered when a license plate in the blocklist is detected.
	Invalid Access	Alarm is triggered when illegal access is detected.
	Security Exception	Alarm is triggered when a network security problem is detected, such as session hijacking.
Operation	Subscribe Alarm	When an alarm is triggered, the Camera will inform users on the webpage.
Alarm Tone	Play Alarm Tone	Select the **Play Alarm Tone** checkbox, and then click **Select** to select the alarm tone. The system will play the defined alarm tone when an alarm is triggered.
	Tone Path	

Appendix 1 Allowlist Format

- Fields in the allowlist include start time, time of cancellation, owner's name, license plate color, license plate number, license plate type, vehicle color, type, and more.

Appendix Figure 1-1 Allowlist format template



Begin Time	Cancel Time	Owner Of Car	Plate Color	Plate Number	Plate Type	Vehicle Color	Vehicle Type

- The license plate number must not exceed 12 characters, and the vehicle owner's name must not exceed 30 characters. The start time and end time format must be in strict accordance with the "yy-mm-dd hh:mm:ss" format, and the start time must be earlier than the end time. See the range of values for each time parameter in the table below.

Appendix Table 1-1 Time parameter range

Time Parameter	Value Range
Year	[2000, 2037]
Month	[1, 12]
Day	[1, 31]
Hour	[0, 23]
Minute	[0, 59]
Second	

- In the format template, you need to fill in the number information corresponding to the various attributes of the vehicle. Refer to the tables below for the plate color number, plate type number, model number, vehicle color number, and arm type number.

Appendix Table 1-2 Plate color number

Plate Color	Number
Yellow plate with black text	1
Blue plate with white text	2
Black plate with white text	3
White plate with black text	4

Appendix Table 1-3 Plate type number

Plate Type	Number
Business	1
Private	2

Appendix Table 1-4 Vehicle type number

Vehicle Type	Number
Business	1
Private	2

Appendix Table 1-5 Vehicle color number

Vehicle Color	Number
White	A
Gray	B
Yellow	C
Pink	D
Red	E
Purple	F
Green	G
Blue	H
Brown	I
Black	J
Other	Z

Appendix Table 1-6 Arm type number

Arm Type	Number
Annual inspection overdue	1
Stolen & robbed vehicle	2
Hit and run vehicle	3
Traffic violation	4
Other	5

- After filling in the information and creating the excel template file, save the file in .csv format with the file name TrafficAllowList.

Appendix 2 Cybersecurity Recommendations

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

Mandatory actions to be taken for basic device network security:

1. **Use Strong Passwords**

   Please refer to the following suggestions to set passwords:

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

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

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

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

1. **Physical Protection**

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

2. **Change Passwords Regularly**

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

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

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

4. **Enable Account Lock**

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

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

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

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

- Enable IP/MAC address filtering function to limit the range of hosts allowed to access the device.

More information

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

ENABLING A SAFER SOCIETY AND SMARTER LIVING

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