All-in-one AI Traffic Camera

User's Manual

V1.0.0

Foreword

General

This manual introduces the installation, functions and operations of the All-in-one AI Traffic Camera (hereinafter referred to as "the Camera"). Read carefully before using the Camera, and keep the manual safe for future reference.

Safety Instructions

The following signal words might appear in the manual.

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

Revision History

Version	Revision Content	Release Time
V1.0.0	First release.	March 2022

Privacy Protection Notice

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

About the Manual

- The manual is for reference only. Slight differences might be found between the manual and the product.
- We are not liable for losses incurred due to operating the product in ways that are not in compliance with the manual.
- The manual will be updated according to the latest laws and regulations of related jurisdictions. For detailed information, see the paper user's manual, use our CD-ROM, scan the QR code or visit our official website. The manual is for reference only. Slight differences might be found between the electronic version and the paper version.
- All designs and software are subject to change without prior written notice. Product updates

might result in some differences appearing between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.

- There might be errors in the print or deviations in the description of the functions, operations and technical data. If there is any doubt or dispute, we reserve the right of final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and company names in the manual are properties of their respective owners.
- Please visit our website, contact the supplier or customer service if any problems occur while using the Camera.
- If there is any uncertainty or controversy, we reserve the right of final explanation.

Important Safeguards and Warnings

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

Transportation Requirements

Transport the device under allowed humidity and temperature conditions.

Storage Requirements

Store the device under allowed humidity and temperature conditions.

Installation Requirements

 WARNING

- Do not connect the power adapter to the device while the adapter is powered on.
- Strictly comply with the local electrical safety code and standards. Make sure the ambient voltage is stable and meets the power supply requirements of the device.
- Do not connect the device to two or more kinds of power supplies, to avoid damage to the device.

- Personnel working at heights must take all necessary measures to ensure personal safety including wearing a helmet and safety belts.
- Do not place the device in a place exposed to sunlight or near heat sources.
- Keep the device away from dampness, dust, and soot.
- Put the device in a well-ventilated place, and do not block its ventilation.
- Use an adapter or cabinet power supply provided by the manufacturer.
- The power supply must conform to the requirements of ES1 in IEC 62368-1 standard and be no higher than PS2. Please note that the power supply requirements are subject to the device label.
- The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.
- An emergency disconnect device must be installed during installation and wiring at a readily accessible location for emergency power cut-off.
- Disconnect the device when installing and connecting the lens.

Operation Requirements

- Make sure that the power supply is correct before use.
- Do not unplug the power cord on the side of the device while the adapter is powered on.
- Operate the device within the rated range of power input and output.
- Use the device under allowed humidity and temperature conditions.

- Do not drop or splash liquid onto the device, and make sure that there is no object filled with liquid on the device to prevent liquid from flowing into it.
- Do not disassemble the device.
- Do not aim the device at strong light sources (such as lamplight, and sunlight) when focusing it.
- Do not vibrate, squeeze or immerse the device in liquid during transportation, storage or installation.
- Do not block the ventilation near the device.
- We recommend you use the device with a lightning protection device for stronger protection against lightning. For outdoor scenarios, strictly comply with the lightning protection regulations.
- Ground the function earthing portion of the device (grounding cable or lightning surge protector) to improve its reliability. The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.
- The device must be used with the protective cover for outdoor scenarios to avoid the risk of water damage to the device.
- Protect the line cord and wires from being walked on or squeezed particularly at plugs, power sockets, and the point where they exit from the device.
- Modify the default password of the device after first-time login to prevent the device from being stolen.

Maintenance Requirements

- Pack the device with packaging provided by its manufacturer or packaging of the same quality before sending it back for repair.
- Please do not touch the photosensitive device with your hands. Use an air blower to clean off the dust and filth on the lens.
- Clean the surface of the device with a soft dry cloth or a clean soft cloth dipped in neutral detergent.
- Use the accessories suggested by the manufacturer. Installation and maintenance must be performed by qualified professionals.

Table of Contents

1 Product Introduction

1.1 Overview

With its high-performance AI processor, All-in-one AI Traffic Camera delivers excellent quality images even in the toughest weather conditions. For monitoring, it uses deep learning algorithms and traffic-specific, GS-CMOS image sensors with a wide dynamic range and high frame rate.
The Camera is ideal for use in intelligent traffic management and for smart city businesses. It is capable of detecting traffic violations, capturing license plates, generating passing vehicle records, collecting traffic data, and detecting events.

1.2 Functions

Reduced Light Pollution

The IR illuminators supplement light when the Camera captures license plates without using the external flashing light or strobe, significantly reducing light pollution.

Ultra-high Frame Rate

Uses traffic-specific, high-performance GS-CMOS image sensors with a wide dynamic range, high frame rate, and high signal-to-noise ratio, displaying realistic video images in the day and night.

Video Metadata

Deep learning algorithms and a high-performance AI processor allow the Camera to detect and extract detailed information on motor vehicles, providing a reliable data source that can be used in making effective decisions.

Applicable to Various Road Scenes

Ideal for scenarios where license plate recognition is needed, the Camera is capable of capturing more than ten different types of traffic violations, and supports traffic information collection and event detection. It is suitable for road scenarios.

Multi-dimensional Data Sensing

Using GPS positioning and behavior detection by electronic gyroscope, the Camera realizes multi-dimensional data sensing.

Safe and Reliable Performance

Built to withstand the toughest conditions, the Camera functions in a wide temperature and voltage range. It has a built-in lightning protection module, and is IP66 rated. Feel safe using it in all-weather types.

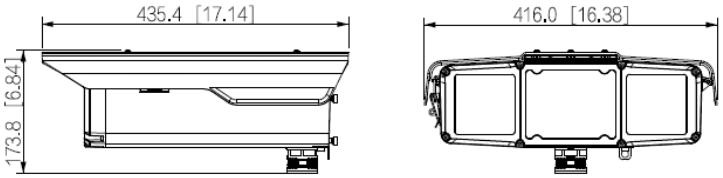
2 Structure

2.1 Appearance

Figure 2-1 Device appearance

2.2 Dimensions

Figure 2-2 Dimensions (mm [inch])



3 Quick Configuration

You can use the ConfigTool to quickly configure the Camera, including initialization, system update and web client login.

- The operation pages vary depending on different versions.
- Get the ConfigTool installation package from technical support and install it on your local computer.

3.1 Initializing the Camera

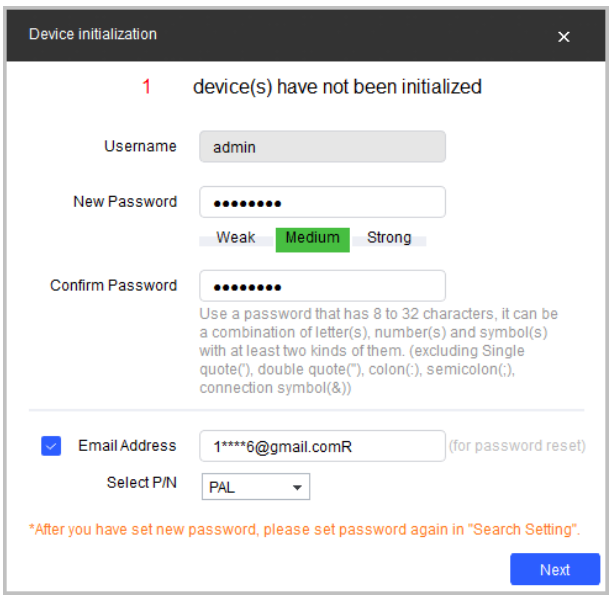
You can initialize the Camera, and cameras connected to the Camera in batches through the ConfigTool.

Uninitialized devices are not available for any operations and are displayed in gray on the Camera list.

Step 1 Start the ConfigTool, and then click **Modify IP**.
The ConfigTool automatically searches for devices on the same network segment with the computer.

Step 2 Select a device to be initialized, and then click **Initialize**.

Figure 3-1 Device initialization



Step 3 Set and confirm the password, and enter an email for future password reset.

The pages are for reference only, and might differ from the actual page.

Step 4 Click **Initialize**, and the system starts initializing the Camera.
is displayed for successful initialization, and is displayed for initialization failure. Click the icon to view details.

Step 5 Click **Finish**.

3.2 Changing IP Address

You can acquire and change the IP address of devices accessed through wired network. This section uses changing IP address with the ConfigTool as the example.

Step 1 Start the ConfigTool.

Step 2 Click **Modify IP**.

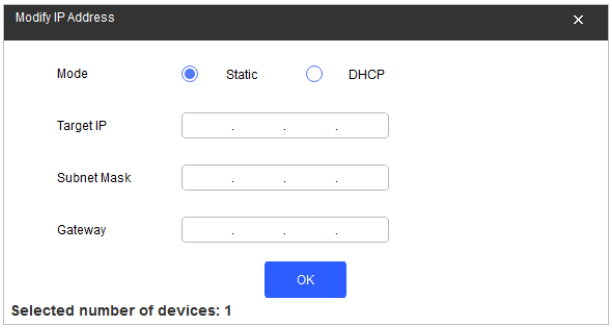
Step 3 Select the device(s) whose IP need(s) to be changed.

- Change one IP address: Click **Edit** corresponding to the device.
- Change IP addresses in batches: Select the devices, and then click **Batch Modify IP**.

Step 4 Set mode, IP, subnet mask and gateway.

Step 5 Click **Confirm**.

Figure 3-2 Change IP addresses in batches



3.3 Upgrading the Camera

Single upgrade and batch upgrade are supported.

Step 1 Start the ConfigTool.

Step 2 Click **Device Upgrade**.

Step 3 Select the Camera to be updated.

- Update one by one: Click corresponding to the Camera.
- Update in batches: Select multiple devices, and then click **Batch Upgrade**.

Step 4 Select the update file.

Step 5 Update the Camera.

- Update one by one: Click to start updating.
- Update in batches: Click **OK** to start updating.

During update, if the Camera is disconnected, as long as the ConfigTool stays on the update page, the upgrade will continue when the Camera is reconnected.

3.4 Logging in to Web

On the **Modify IP** page, click **Web** corresponding to the Camera, and then you are directed to the login page of the web client. Enter the login username and password to log in.

4 Web Client Operations

You can access and manage connected devices, such as cameras and radars through the web client of the Camera.

The web pages displayed in this section are for reference only, and might differ from the actual model.

4.1 Web Introduction

Log in to the web client of the Camera through a browser, on which you can operate, configure and maintain the Camera.

4.1.1 Recommended System Requirements

Table 4-1 Recommended system requirements

Component	Recommended System Requirements
Operating system	Windows 7 and later.
CPU	Intel core i3 and later.
Graphics card	Intel HD Graphics and later.
Memory	2 GB and bigger.
Monitor resolution	1024 × 768 and higher.
Browser	Internet Explorer 11, Chrome 41/33, and Firefox 49.

4.1.2 Login

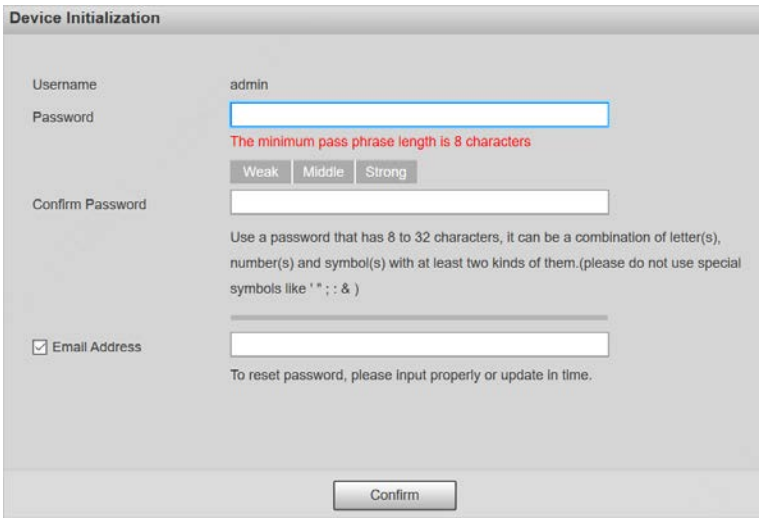
- For first-time login or login after the Camera is restored to factory defaults, initialization is required.
- Make sure that the IP address of the computer and that of the Camera are on the same network segment. Otherwise, the initialization might fail.

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

Step 2 Enter and confirm the password.

Change the password from **Setting** > **System** > **Account** > **Account** > **Username**. For details, see "4.7.9.2.1 Managing Users".

Figure 4-1 Device initialization



Step 3 Select **Email Address**, and then enter an email address.
The email address is used for resetting password.

Step 4 Click **Confirm**.

Step 5 Enter **Username** and **Password** on the login window, and then click **Login**.

The account will be locked for five minutes after five failed username or password attempts.

Step 6 On the **Live** page, click **Please click here to download and install the plug-in** to download and install the plug-in.
The **Live** page is normally displayed.

4.1.3 Resetting Password

When you forget the password, you can set a new password.

- You need to enter an email address during device initialization to receive the security code. Otherwise, password reset is not available. You can also change the email address from **Setting** > **System** > **Account** > **Account** > **Username**. For details, see "4.7.9.2.1 Managing Users".
- The password of a device can only be reset up to 10 times a day.
- You can only get two security codes for each QR code.
- Use the security code to reset the password within 24 hours after you receive it. Otherwise the security code will become invalid.

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

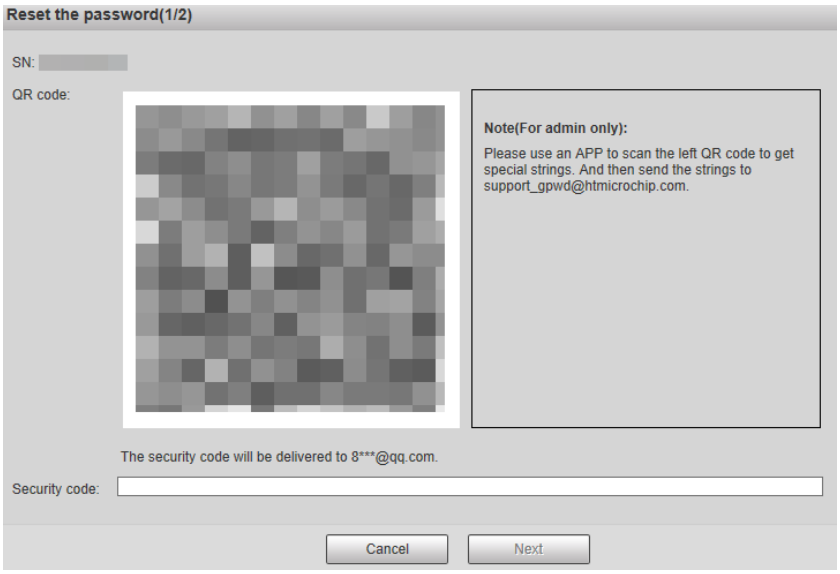
Step 2 Click **Forgot password?** on the login page, and then click **OK** in the pop-up window.

If Internet Explorer is used, **Stop running this script** is displayed. In this case, click **No** to continue to run the script.

Step 3 Scan the QR code, and the scan result will be sent to the reserved email.

Step 4 Send the received scan result to support_gpwd@htmicrochip.com through the reserved email address to get the security code.

Figure 4-2 Reset password (1)

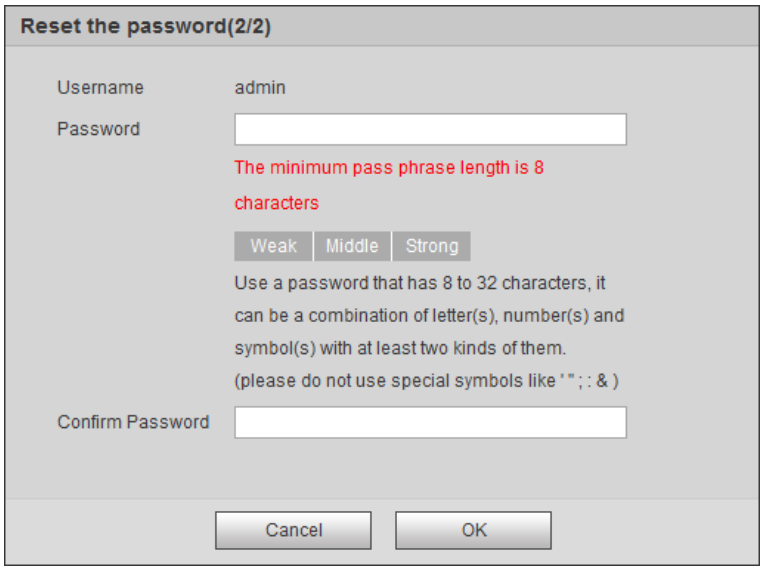


Step 5 Enter the security code, and then click **Next**.

Step 6 Enter and confirm the new password.

Follow the password security prompt to set a password with a high security level.

Figure 4-3 Reset password (2)



Step 7 Click **OK**.

4.1.4 Web Functions

Figure 4-4 Tabs

Table 4-2 Tab functions

Function	Content
Live	View the real-time videos and captures of the camera.
Radar & Video Integration	Integrates the video and radar detection results together, allowing you to view the integrated images and metadata.

Function	Content
Radar	Configure the radar and debug the detection result.
Playback	Plays back video recordings and videos related to traffic violations to track back events (if any).
Query	Search for vehicles and recordings.
Setting	Configure intelligent traffic rules, the basic attributes of the Device, network settings, event management, storage management, system management, and view system information.
Alarm	Set alarm prompts.
Logout	Log out of the web client.

The common buttons on the web page are as follows.

Table 4-3 Common buttons

Button	Description
Default	Restores the parameter to the default value.
Refresh	Restores the parameter to the value saved last time.
Confirm	Saves current configurations.

4.2 Live

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

Figure 4-5 Live

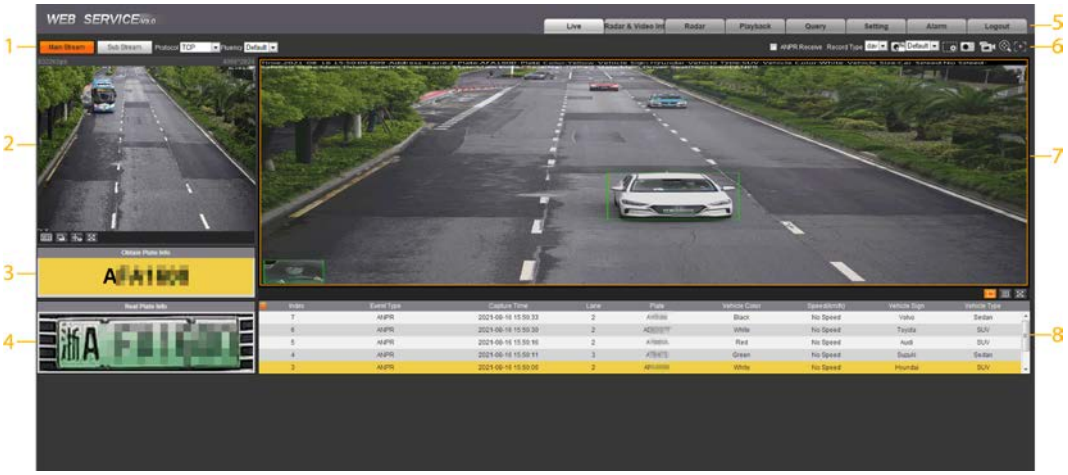


Table 4-4 Description of live page

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

4.2.1 Video Stream

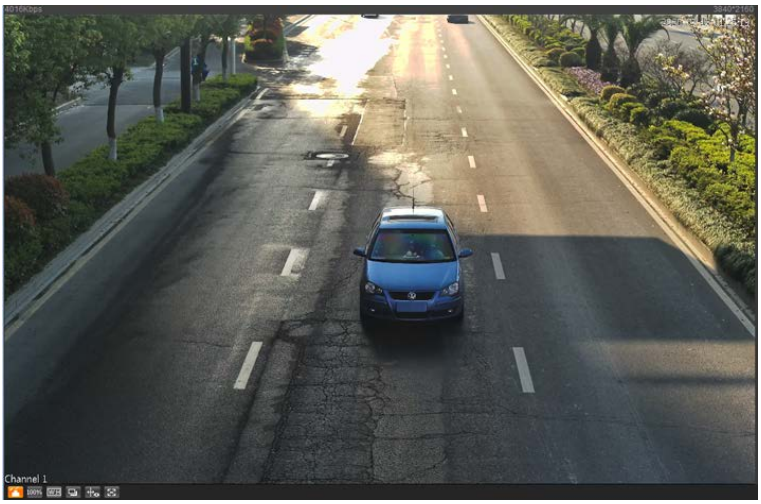
- **Main Stream**: Make sure that the Camera can record videos and carry out network surveillance when the network is normal. You can configure main stream resolution within the supported range of the Camera.
- **Sub Stream**: Replaces main stream to make network surveillance and reduce the network bandwidth usage when network bandwidth is insufficient.
- **Protocol**: Video surveillance protocol. Currently it only supports **TCP**.
- **Fluency**: Fluency of viewing the live video. The fluency can be set to **High**, **Middle**, **Low** and **Default** (recommended).

4.2.2 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 4-6 Big window



- : 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 4-5 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 into 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).

Icon	Name	Description
	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).
	—	Click it to restore 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** > **Camera Attribute** > **General**.

4.2.3 Plate Number Recognition

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

4.2.4 Plate Snapshot

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

4.2.5 System Functions

Click the icons to set system functions, which include playback, video recording and snapshot query, intelligent rules setting, alarm event setting, and system logout. See more details in the following chapters.

4.2.6 Functions on the Live Interface

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

Table 4-6 Function description of the Live page

Icon	Name	Description
	ANPR Receive	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** > **Destination** > **Save Path**.
	Record Type	Select the format of video recordings (**dav** by default).

Icon	Name	Description
	Manual Snapshot	Click it, and the Camera takes a snapshot when a vehicle passes. The snapshot is saved in the storage path. ● Enable **ANPR Receive** first. ● To change the storage path of snapshots, go to **Setting** > **Storage** > **Destination** > **Save Path**.
	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** > **Destination** > **Save 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 Recording	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 web page is closed or you log out if the recording is not manually stopped.
	Easy Focus	Click it to start auto focus, local focus, and license plate check for the monitoring image. **ANPR Receive** and **Plate Check** cannot be enabled at the same time.

4.2.7 Vehicle Snapshot

Select **ANPR Receive**, and then snapshots will be displayed when vehicles pass.

4.2.8 Event List

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

4.3 Viewing Radar & Video Integration

View the integrated data of the Camera video and radar detection results on one page.

Step 1 Click **Radar & Video Integration**.

Step 2 On the left side, click icons at the lower-left corner to view vehicle details on the image.

- Click  to enable radar&video integration, and then the target ID, distance and travelling speed are displayed on the image.
- Click  to display the radar targets.
- Click  to display the video targets.

- Click to display the video image in full screen. Double-click or press Esc to exit the full screen.

Step 3 Adjust the radar detection.

- Click **On** or **Off** next to **Target Trajectory** to display or hide the target trajectory.
- Different types of targets, such as Non-motor vehicles, pedestrians, large, middle and small vehicles, can be displayed in different icons respectively.

Step 4 Click **ANPR Receive** at the upper-right corner, and then the metadata obtained after the radar&video integration are displayed on the list.

4.4 Radar Configuration

Configure the radar to accurately capture events during bad weathers and poor light conditions.

4.4.1 Radar Settings

4.4.1.1 Calibrating by Radar & Video

Calibrate the radar. Make sure when the radar sends signals to the camera, the camera can capture the right target.

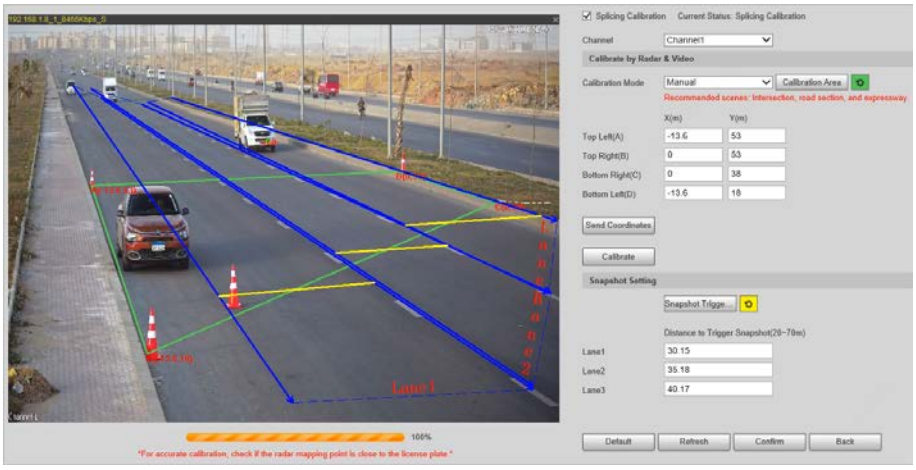
Step 1 Select **Radar** > **Radar Settings**.

Step 2 Click **Calibrate by Radar & Video**.

Step 3 Select a channel on the prompted page, and then select the **Splicing Calibration** checkbox.

You can also calibrate the radar manually without enabling splicing calibration. In this case, you need to manually measure the distance between the drawn calibration area and the Camera.

Figure 4-7 Radar calibration



Step 4 Calibrate the radar.

- Manual calibration

  Set the coordinates of the calibration area and the trigger distance manually.

  In situations where manual measurement is accurate, the precision of manual

calibration is higher than automatic calibration.

1) Select **Manual** next to **Calibration Mode**, and then adjust the calibration frame on the image based on the on-site measurement.
   You can also click , and then click **Calibration Area** to draw an area on the image.
2) Set the coordinates of the calibration area.
3) In the **Snapshot Setting** section, click **Snapshot Triggering Line**, and then draw the lines on each lane.
   The distance between the triggering line and the Camera is displayed on the bottom.
4) Adjust the triggering distance as needed, and then click **Confirm**.
5) Click **Calibrate**, and then click **Confirm**.

- Automatic calibration
  Set the width of the calibration area to be the same as that of the actual road, and then the algorithm will automatically calibrate the radar.

1) Select **Auto** next to **Calibration Mode**.
2) Set the **Area Width** according to the actual width of the road.
3) Click **Calibrate**, and then click **Confirm**.

Step 5 Click **Back**.

4.4.1.2 Configuring General Information

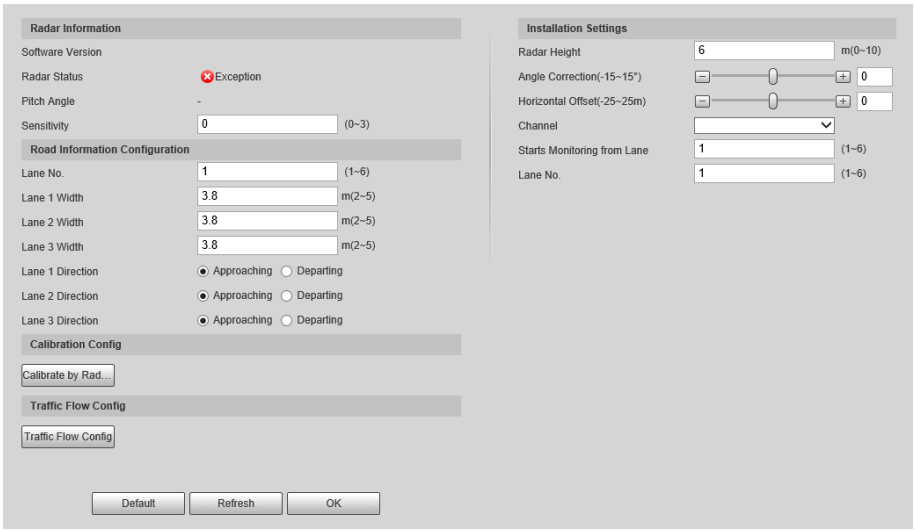
Set the parameters of the radar and the lanes.

Step 1 Select **Radar** > **Radar Settings**.
The information of the connected radar is displayed on the top of the page, and you can adjust the **Sensitivity**.

Under general situations, we recommend you leave the sensitivity as default to avoid false detections brought by higher sensitivity.

Step 2 In the **Road Information Configuration** section, set the lane width and direction based on the actual site.

Figure 4-8 Lane information



Step 3 In the **Installation Settings** section, set the installation information of the Camera.

Table 4-7 Installation information description

Parameter	Description
Radar Height	The installation height of the Camera.
Angle Correction	Adjust the installation angle of the radar. Make sure the angle is the same as that in the **Radar Visualization** section. For details, see "4.4.2 Configuring Radar Visualization".
Horizontal Offset	Adjust the horizontal offset of the radar. Make sure the value is the same as that in the **Radar Visualization** section.
Channel	Select a channel, and then set the monitoring lane of this channel.
Starts Monitoring from Lane	Select a lane, from which the Camera starts monitoring.
Lane No.	The number of lanes to be monitored.

Step 4 Click **OK**.

4.4.2 Configuring Radar Visualization

See the effect of your configurations on radar detection in real time. You can also adjust some of the radar parameters and view the changes.

Step 1 Select **Radar** > **Radar Visualization**.

Step 2 Adjust the value of angle correction and horizontal offset.

Click the image at the lower-right corner to see the correction standards.

Step 3 Click Off On to display **Target Trajectory**.

You can see the trajectory of targets the radar detects.

Figure 4-9 Radar visualization

Step 4 Click , you can see the detection points of the radar on targets.

When the target is large and the detection sensitivity is set high, the radar might recognize it as two targets.

4.5 Viewing Recordings

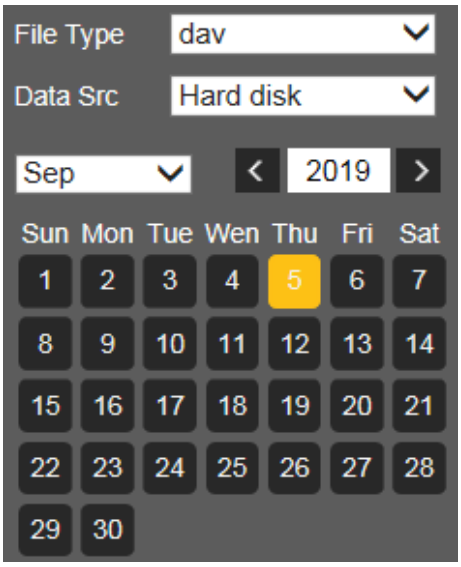
You can search for, view and download recordings.

Step 1 Click **Playback**.

Step 2 Set **File Type** and data source (**Data Src**), and set record time.

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

Figure 4-10 Playback file



Step 3 Select a day with a blue point which indicates that there are recordings on that day, and a colored progress bar is displayed on the timeline.

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

Step 4 Select a record type, and then only files of the selected types will be displayed on timeline and on the file list.

Figure 4-11 Record type

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 4-12 Time format

Step 5 Click any time on the progress bar, and the system plays back recordings starting from that time.

Figure 4-13 Timeline

Table 4-8 Video playing description

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

Step 6 Click , and videos recorded on a selected day will be displayed in a list.

Figure 4-14 Playback file

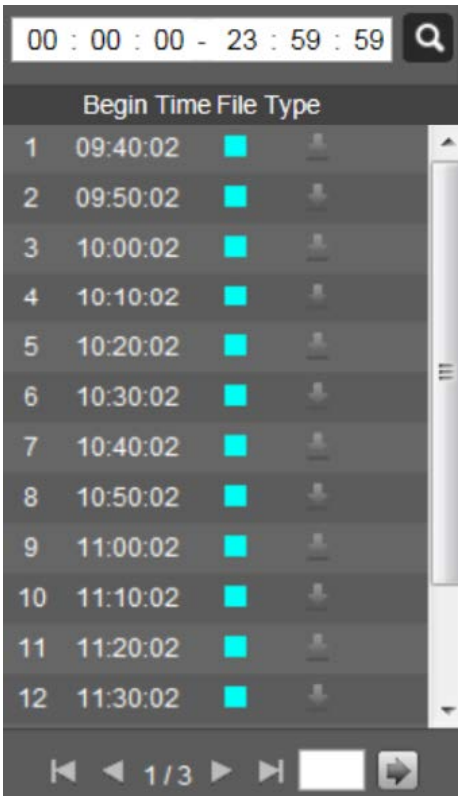


Table 4-9 Playback file description

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

Step 7 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.

4.6 Query

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

4.6.1 Image Search

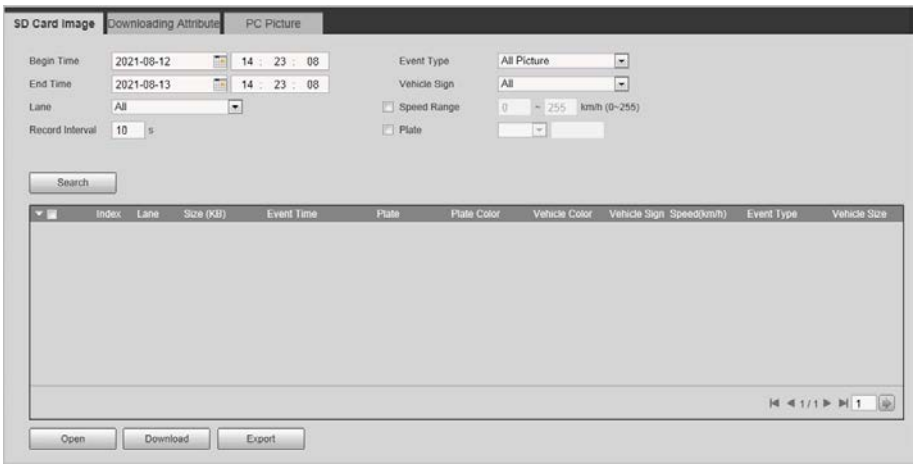
4.6.1.1 Searching for SD Card Image

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

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

Step 1 Select **Query** > **Image Search** > **SD Card Image**.

Figure 4-15 SD card image



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

Table 4-10 SD picture parameters

Parameter	Description
Begin Time	Set the begin 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 Picture**: Search for all snapshots. **Mix Events**: Search for snapshots related to events, which include but are not limited to **ANPR**, **Cross Solid White Line**, and **Wrong-way Driving**.
Vehicle Sign	Search for snapshots by the selected vehicle sign. You can select **All**, **Unknown** or a specific vehicle sign.
Lane	Select the capture lane.
Speed Range	Select the **Speed Range** checkbox, and set the speed range to search for images of vehicles within the defined speed range.
Record Interval	The length of a recorded video associated with the snapshot that you want to save.
Plate	Select the **Plate** 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 **Related Record** is enabled in **Advanced Parameter** (except **ANPR**) under **Setting** > **Event** > **ANPR Snap** > **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.

4.6.1.2 Setting Downloading Attribute

You can configure the image information.

Step 1 Select **Query** > **Image Search** > **Downloading Attribute**.

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

Step 3 Select **Download Mode**.

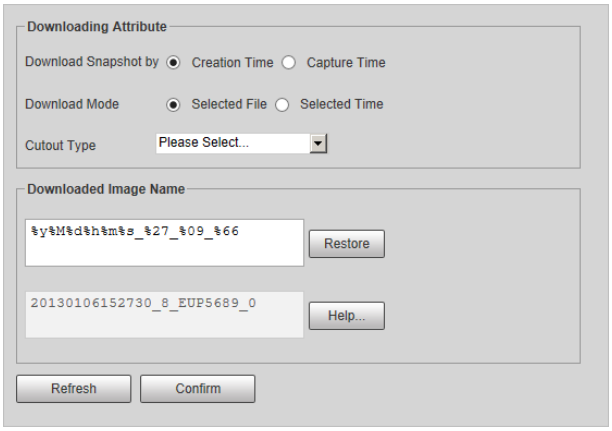
- **Selected File**: Download the selected snapshots.
- **Selected Time**: Download all images captured during the set time period. You can set the time in the **SD Card Image** tab.

Step 4 Select cutouts that you want to download from **All**, **Plate Cutout**, **Binarized Plate**, **Assistant Driver Face** (cutout of front-seat passenger's face), **Driver Face**, and **Vehicle Body Matting**.

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

Step 6 Click **Confirm**.

Figure 4-16 Downloading attribute



4.6.1.3 PC Picture

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

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

Step 1 Select **Query** > **Image Search** > **PC Picture**.

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

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

- When the result is **Error**, the picture is tampered.
- When the result is **Normal**, the picture is not tampered.

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

Figure 4-17 PC picture

4.6.2 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 Query** as an example.

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

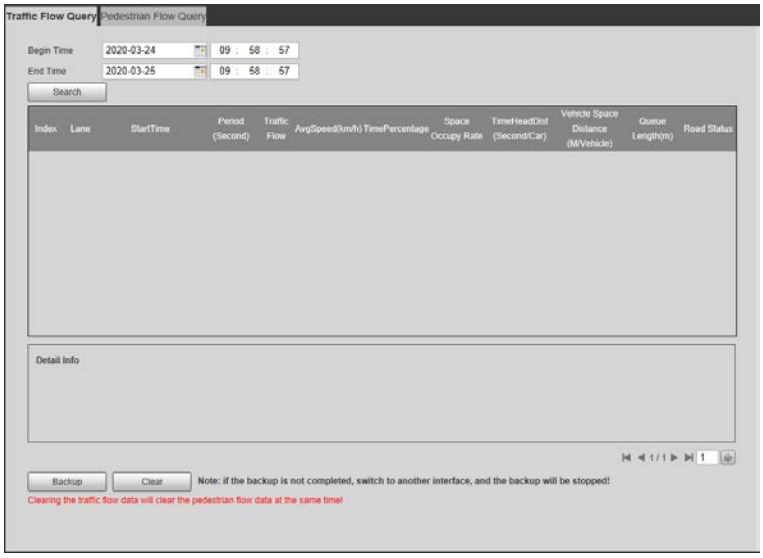
Step 2 Set **Begin Time** and **End Time** of your search.

Step 3 Click **Search**.

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

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

Figure 4-18 Traffic flow query



4.6.3 Recording Search

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

4.6.3.1 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 to the path defined in **Setting** > **Storage** > **Destination** > **Save Path**.
- The function is available on select models, and might differ from the actual product.

Step 1 Select **Query** > **Recording Search** > **Recording**.

Step 2 Click **Browse** to select the recorded video on your computer, and then you can play back the video.

Figure 4-19 Record

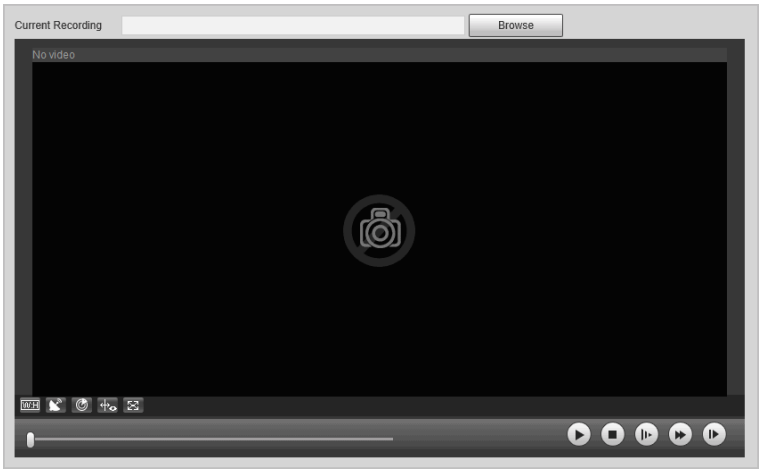


Table 4-11 Play parameters

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 to enable radar&video integration, and then the target ID, distance and travelling speed are displayed on the image
	Click to display the radar targets.
	Click it to play back the video. Click to pause.
	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.

4.6.3.2 Watermark

Verify the watermark of selected video recordings to check whether the recording was tampered. Only .dav recording is supported.

Prerequisites

Before verifying the watermark, you need to select **Watermark Settings** and configure **Watermark**

Character from **Setting** > **Camera** > **Video** > **Video** > **Main Stream**.

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

Procedure

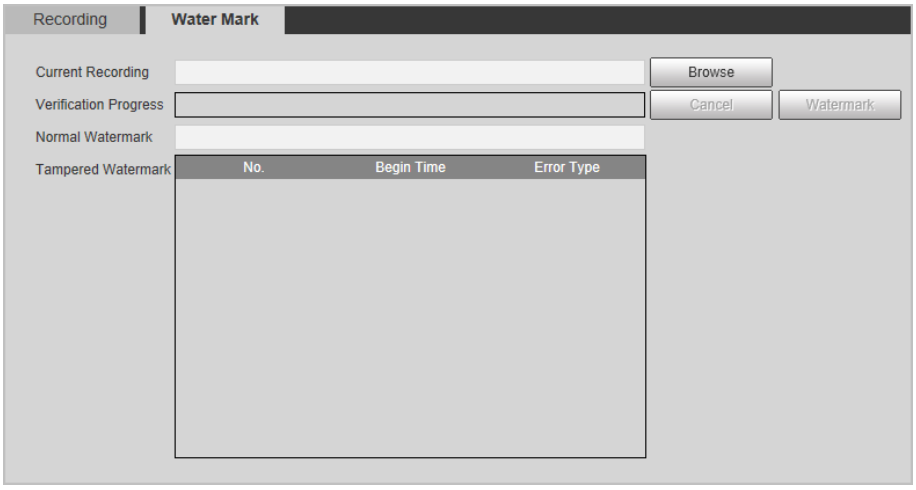
Step 1 Select **Query** > **Record Query** > **Water Mark**.

Step 2 Click **Browse** 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 **Normal Watermark**.
- If the video is tampered, you can check the details next to **Tampered Watermark**.

Figure 4-20 Watermark



4.7 Setting

Set parameters of the Camera, including intelligent traffic rules, network settings, remote devices, event management, storage management, system management, and system information, to realize functions such as image composition, speed measuring, network connection, data storage and alarm.

4.7.1 Camera Settings

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

4.7.1.1 Camera Attributes

4.7.1.1.1 Configuring General Parameters

You can configure the brightness, contrast, saturation, mode, and other properties of the camera channels.

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Camera Attribute** > **General**.

Step 2 Select a channel and then configure the corresponding parameters.

Figure 4-21 General

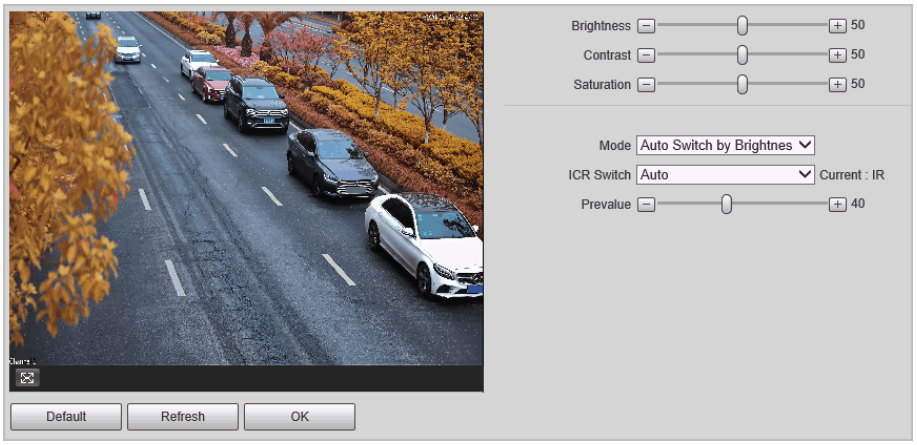


Table 4-12 General parameters

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 bigger. 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 smaller. 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	• Saturation value does not change the overall image brightness. • The larger the value, the more saturated the image. • It is 50 by default. The smaller the value, the more unsaturated the image. The recommended range is 40–60, and the available range is 0–100.
Mode	• **Colorful**: The image is always colored. • **Auto Switch by Brightness**: 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. • **B/W**: The image is always black and white.
ICR Switch	• **Auto**: You need to pre-set the brightness in this mode. When the ambient brightness is higher than the pre-set value, the CPL will start to work. • **CPL**: The CPL is always running. Applicable to scenarios with high brightness. • **IR** (for IR models) or **Normal** (for white light models): Applicable to scenarios with low brightness.

Step 3 Click **OK**.

4.7.1.1.2 Configuring Shutter

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

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Camera Attribute** > **Shutter**.

Step 2 Select a channel, and then configure the corresponding parameters.

Figure 4-22 Shutter

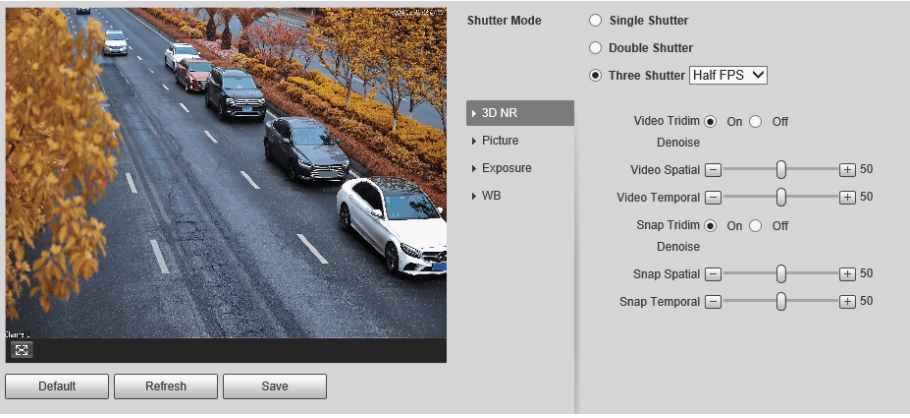


Table 4-13 Shutter parameters

Module	Parameter	Description
Shutter Mode	Single Shutter	Video and snapshot share the same exposure mode.
	Double Shutter	• **Half FPS**: Video and snapshot take half of the frame respectively. • **Full FPS**: Snapshot takes 1frame, and video takes the rest of the frames. **Video Shutter** and **Snap Shutter** can be separately configured.
	Three Shutter	**Video Shutter**, **Snap Shutter** and **Recognition Shutter** can be separately configured. **Three Shutter** mode is available only when **Common Mode** is set to **Snap Match Mode** from **Setting** > **Event** > **ANPR Snap** > **Illegal Capture** > **Other Settings**.
3D NR	Video/Snap Tridim Denoise	When it is **On**, 3D NR is enabled to reduce noise of video/snapshot.
	Video/Snap Spatial	Spatial video/snapshot denoising. The higher the value, the less noise there is.
	Video/Snap Temporal	Temporal video/snapshot denoising. The higher the value, the fewer the flicker noise.
Picture	Scene	You can change the scene and adjust the sharpness of the corresponding scene. Scenes available: **Dawn/Dusk**, **Daytime**, 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.

Module	Parameter	Description
	WDR	Select **On** 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 the **Iris Adjust Mode**. 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 **Customized Range**, and then set the shutter range. Only available when **Mode** is set to **Manual**.
	Shutter Scope	Set the time range of shutter. Only available when **Shutter** is set to **Customized Range**.
	Gain Scope	Set the value range of gain. Only available when **Mode** is set to **Manual**.
WB	Mode	Set scene mode to adjust the image to its best status.

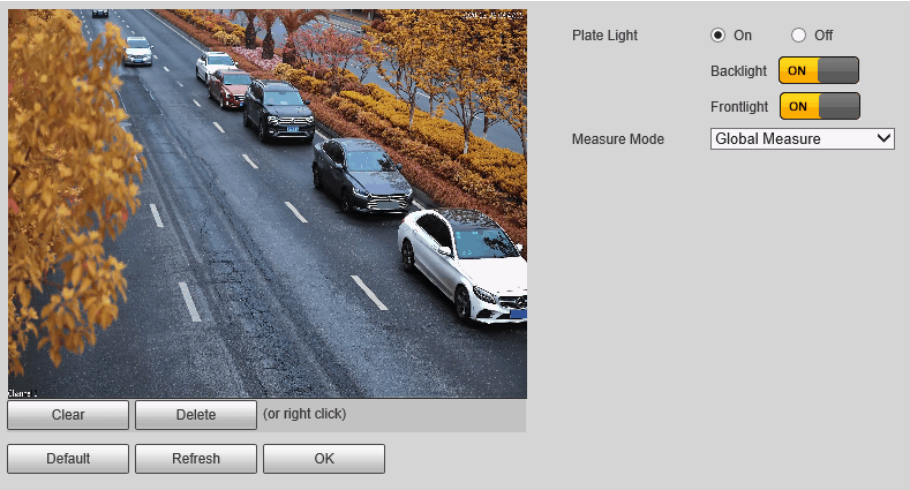
Step 3 Click **Save**.

4.7.1.1.3 Configuring Metering Zone

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

Step 1 Select **Setting** > **Camera** > **Camera Attribute** > **Metering Zone**.

Figure 4-23 Metering zone



Step 2 Configure the parameters.

Table 4-14 Table 5-3 Metering zone parameter description

Parameter	Description
Plate Light	When selecting **On**, you can turn **ON** backlight and frontlight according to scene requirements to improve the backlight and frontlight image brightness.
Backlight	
Frontlight	
Measure Mode	• **Global Measure**: Measure the brightness of the whole image area and intelligently adjust the overall image brightness. • **Partial Measure**: Measure the brightness of drawn areas and adjust the overall image brightness to the opposite. Draw areas on the image, and you can right-click an area or select it and then click **Delete** to delete it. Click **Clear** can delete all areas.

Step 3 Click **OK**.

4.7.1.1.4 Configuring Focus

Adjust the focus of the Camera.

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

Figure 4-24 Focus

Step 2 Configure the parameters.

Table 4-15 Description of focus parameters

Parameter	Description
Lens Type	The type of the Camera lens. Select **Manual** 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.

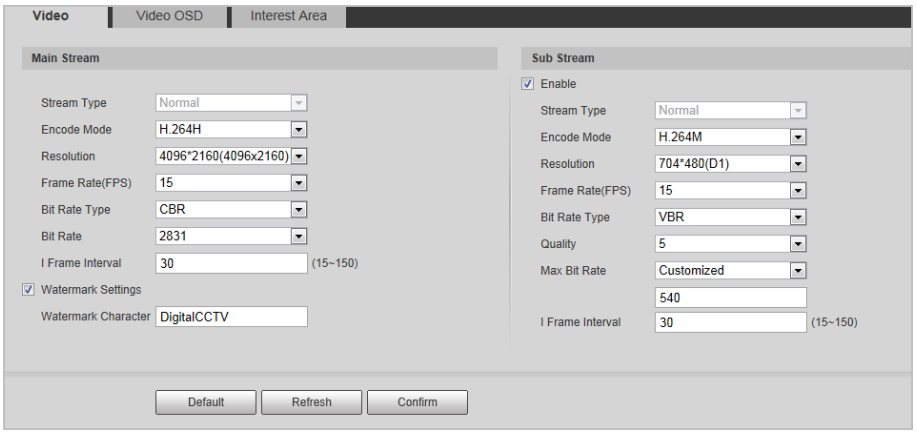
4.7.1.2 Video Attributes

4.7.1.2.1 Configuring Video Parameter

Configure the parameters of video stream.

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

Figure 4-25 Video stream



Step 2 Configure the parameters.

Table 4-16 Video stream parameter

Parameter	Description
Encode Mode	Modes of H.264M, 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**: Gives the best balance between quality and file size as the bitrate can be altered depending on the video. • **CBR** keeps the bitrate the same during encoding, and it is more advantageous to use when the network connection is limited to performing at, for example, 320 Kbps.
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**.
Bit Rate	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.

Parameter	Description
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 Settings	You can verify the watermark to check whether the video has been tampered. Select the **Watermark Settings** 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.

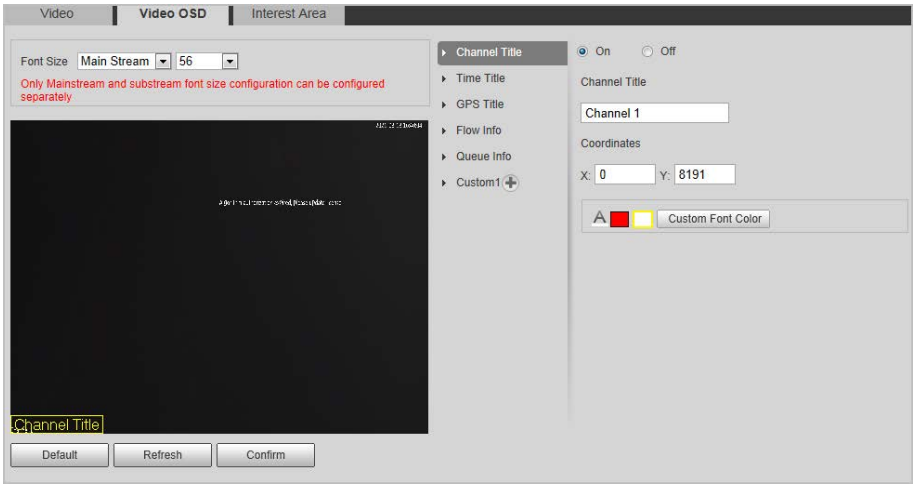
Step 3 Click **Confirm**.

4.7.1.2.2 Configuring Video OSD

Configure the OSD information of videos.

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

Figure 4-26 Video OSD



Step 2 Configure parameters.

Table 4-17 Description of video OSD parameters

Parameter	Description
Font Size	Set the font size of **Main Stream** or **Sub Stream**.
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 **Display Week Info** to display week information on the video image.
GPS Title	Enable the function and set the coordinates and font color (can be customized) of channel information OSD.
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.

Parameter	Description
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 5 custom titles.

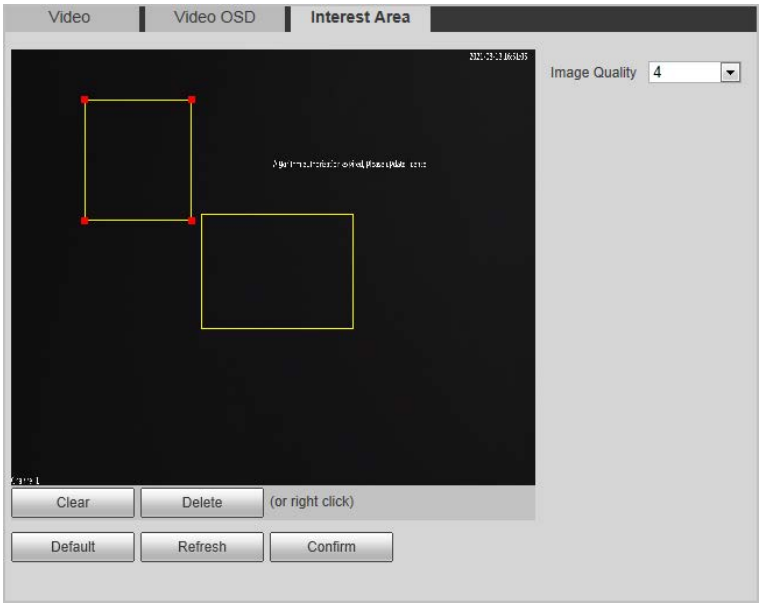
Step 3 Click **Confirm**.

4.7.1.2.3 Interest Area

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

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

Figure 4-27 Interest area



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 **Confirm**.

4.7.2 Network Settings

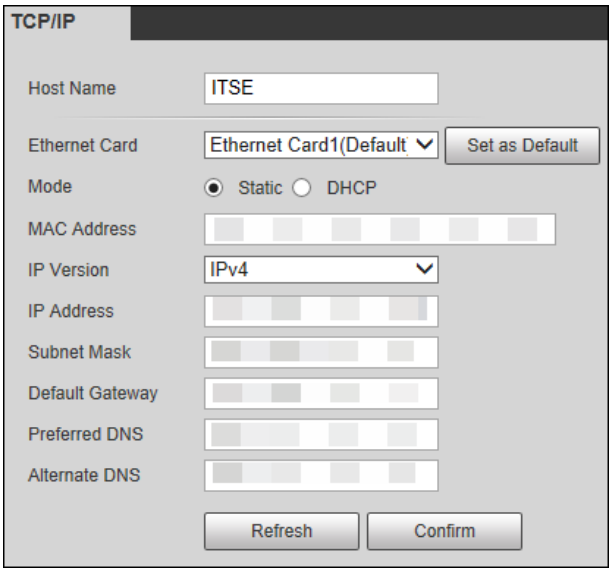
You can set the network parameters of the Camera.

4.7.2.1 TCP/IP

You can set the IP address, DNS server and other parameters of the Camera to make sure that the Camera can connect to other devices on the network.

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

Figure 4-28 TCP/IP



Step 2 Configure parameters.

Table 4-18 TCP/IP parameters

Parameter	Description
Host Name	Set the name of the current host, with a maximum length of 15 characters.
Ethernet Card	Dual Ethernet cards are supported. Select an Ethernet card and then click **Set as Default** to set it to the default.
Mode	Select a network mode. ● DHCP mode: Automatically obtains the IP address. The **IP Address**, **Subnet Mask**, and **Default Gateway** cannot be set when DHCP is enabled. You can check the current IP address regardless if the DHCP takes effect. ● Static mode: Manually set **IP Address**, **Subnet Mask**, and **Default Gateway**, and then click **Confirm**. The web page will automatically go to the login page of the set IP address.
MAC Address	MAC address of the host, which cannot be modified.
IP Version	Only IPv4 is supported.
Address	Enter IP address.
Subnet Mask	Set a subnet mask as needed. The subnet prefix is a number in the range from 1 through 255. The subnet prefix identifies a specific network link and usually contains a hierarchical structure.
Default Gateway	Set a default gateway on the same network segment as the IP address as needed.
Preferred DNS	IP address of DNS.
Alternate DNS	IP address of the alternate DNS.

Step 3 Click **Confirm**.

4.7.2.2 Port

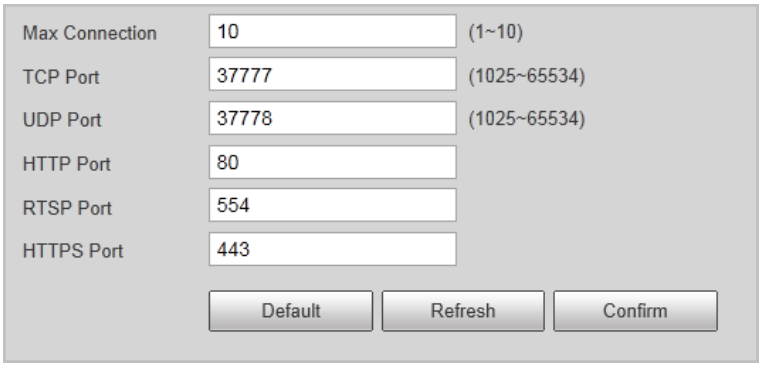
4.7.2.2.1 Port

You can set the information of the connected ports to access the Camera through different protocols and configuration tools.

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

Step 2 Set the maximum number of clients accessing the Camera at the same time (such as web client and platform client) and each port value of the Camera.

Figure 4-29 Port



Step 3 Click **Confirm**.

4.7.2.2.2 ONVIF

Enable ONVIF, and then network video products produced by different manufacturers can communicate with each other.

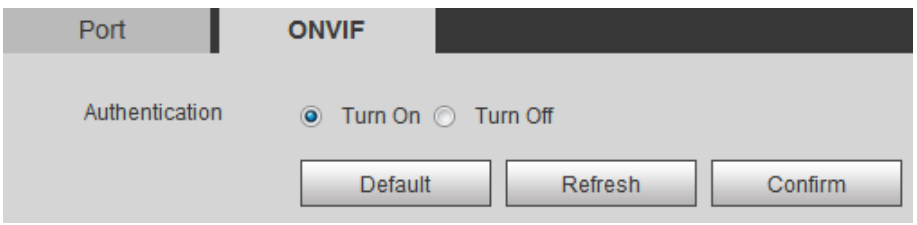
Login verification is required by default when ONVIF is enabled.

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

Step 2 Select **Turn On** or **Turn Off** as needed.

- By turning on ONVIF authentication, login username and password are required when logging in through ONVIF.
- Login verification is not required when turning off ONVIF authentication.

Figure 4-30 ONVIF



Step 3 Click **Confirm**.

4.7.2.3 Auto Registration

Configure automatic registration, and the current device location will be reported to the server specified by the user when the Camera is connected to internet, so that the client software can use the server to access the Camera, and the server can perform operations such as live view,

monitoring, and configuration of the parameters of the Device.

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

Step 2 Select **On** to enable automatic registration, and then enter the address, port, and sub-device ID.

Figure 4-31 Auto registration

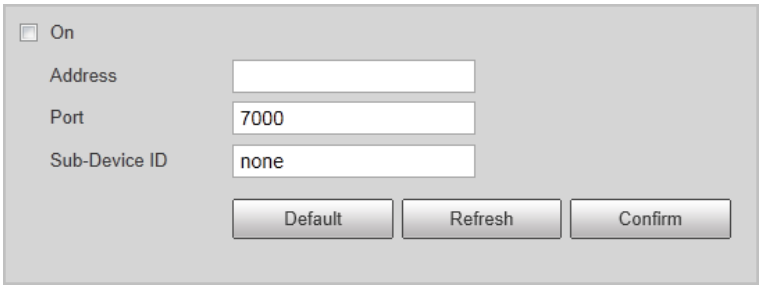


Table 4-19 Auto register parameters

Parameter	Description
Address	Server IP address or server domain that you want to register to.
Port	Port of the server for auto register.
Sub-Device ID	ID of the automatically registered device assigned by the server. Ensure that the ID of the automatically connected device is unique during configuration.

Step 3 Click **Confirm**.

4.7.2.4 Routing Settings

The Camera supports configuring routings for dual NICs, and accessing gateways of target network segments.

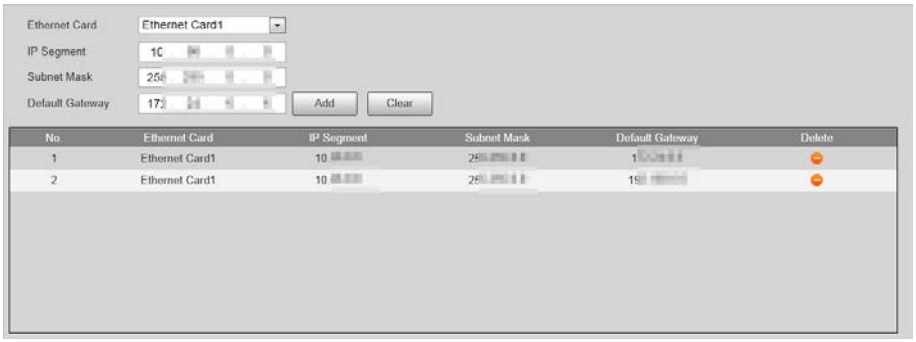
Step 1 Select **Setting** > **Network** > **Routing Settings**.

Step 2 Select Ethernet card and enter IP segment, subnet mask and default gateway.

Step 3 Click **Add**, **Save Succeeded** appears at the bottom and the routing is added to the list.

- Click to delete routing one by one.
- Click **Clear** to quickly delete all added routings.

Figure 4-32 Routing settings



4.7.2.5 802.1x

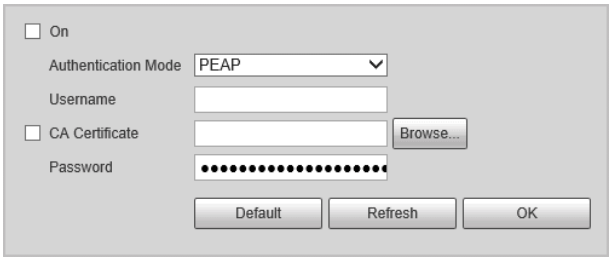
802.1x is a port-based access control and authentication protocol, which can restrict unauthorized

devices or users from accessing the LAN through the access port. When the switch in the network is configured with 802.1x, the Camera also needs to be set to 802.1x, otherwise users cannot access the Camera through the network.

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

Step 2 Select **On**, and then select an Ethernet card. The 802.1x protocol of the NIC is enabled.

Figure 4-33 802.1x



Step 3 Leave the **Authentication Mode** as default, and then enter the username and password for authentication. The username must be the one authorized on the server side.

Step 4 Select **CA Certificate**, click **Browse** to select the CA certificate from local computer. Contact technical support to obtain the CA certificate.

Step 5 Click **OK**.

4.7.3 Remote Device

Remote device (such as enforcement camera or IP camera) information will be displayed on the **Remote Device** 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.

Step 1 Select **Setting** > **Remote Device** > **Remote Config**.

Step 2 Set the delay time for sub camera in **Sub Cam Snap Delay Time**.

Step 3 Select a remote device, and then click .

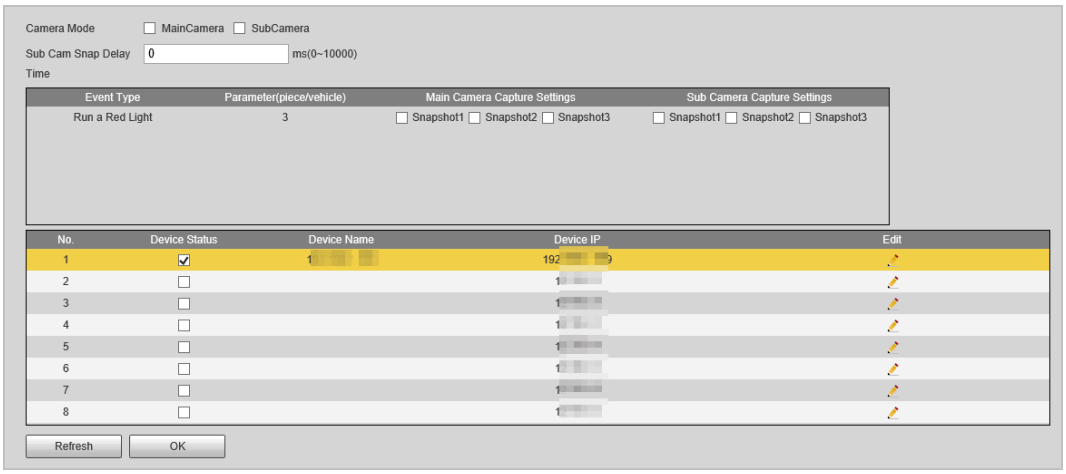
Step 4 Select **Remote Device Enable** to enable using the remote device, and modify other device information, such as name, IP address, login username and password.

Step 5 Select **Remote Snap** 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 web page of each device.

Step 6 Click **OK**.

Figure 4-34 Remote device



4.7.4 Event

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

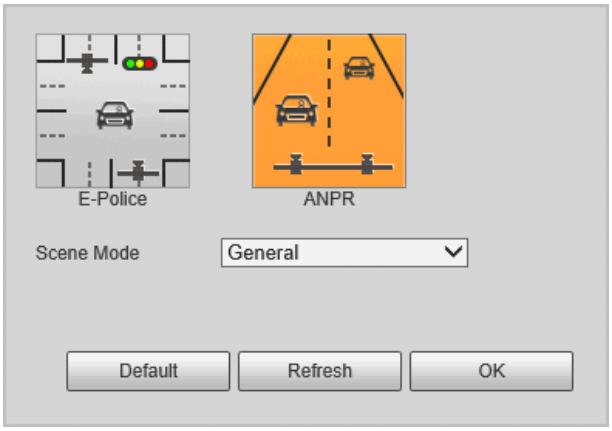
4.7.4.1 Intelligent Scheme

4.7.4.1.1 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 "4.7.4.2 Configuring ANPR Snapshot".
- **E-Police** is ideal for intersections with signal lights to detect violations such as running a red light, and more. See "4.7.4.3 Configuring Electronic Police".

Figure 4-35 Select a working mode



Step 1 Select **Setting** > **Event** > **Intelligent Scheme** > **Intelligent Scheme**.

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

Step 3 For ANPR, set **Scene Mode**.

- **General**: For capturing vehicles.
- **Person**: For capturing people and non-motor vehicles.
- **Non-flash**: For the scenes not using illuminator.

Step 4 Click **OK**.

4.7.4.1.2 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.

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.

Step 1 Select **Setting** > **Event** > **Intelligent Scheme** > **Blocklist and Allowlist** > **Fuzzy Matching**.

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

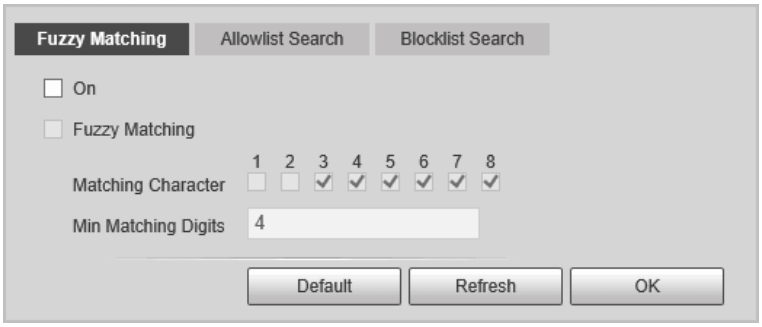
Step 3 Select **Fuzzy Matching** to enable fuzzy matching.

Step 4 Configure the matching rule.

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

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

Figure 4-36 Set fuzzy matching



Step 5 Click **OK**.

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.

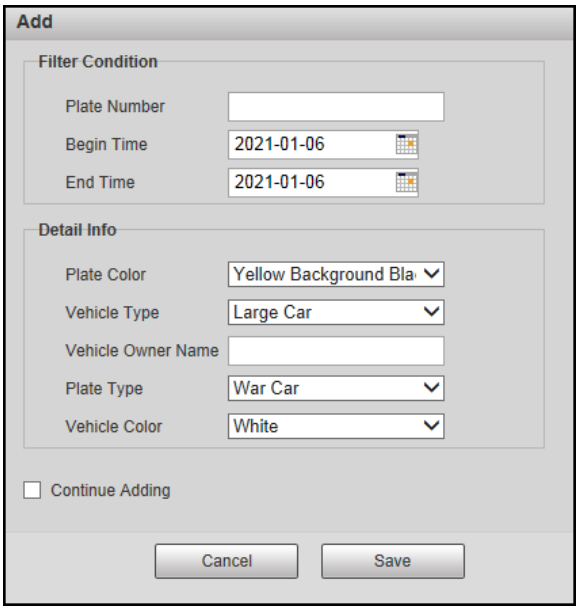
Procedure

Step 1 Select **Setting** > **Event** > **Intelligent Scheme** > **Blocklist and Allowlist** > **Allowlist Search**.

Step 2 Add a number plate.

1) Click **Add**.

Figure 4-37 Add

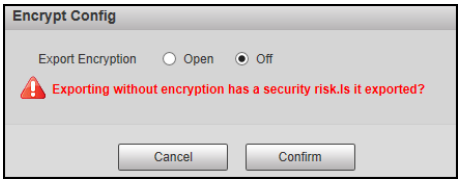


2) Enter the entire plate number.
3) Set the start time and end time to add the plate number in the allowlist. The plate number will be outside of the allowlist beyond this time period.
4) Select the plate color, vehicle type, plate type and vehicle color. Enter the owner of vehicle.
5) Click **Save**.
6) To save and add more, select **Continue Adding** 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 **Confirm** to save the settings.
- Delete a plate number: Click **Delete** to delete the corresponding plate number.
- Delete plate number in batches: Click **Clear All**, and then click **Confirm** 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 4-38 Encrypt configuration



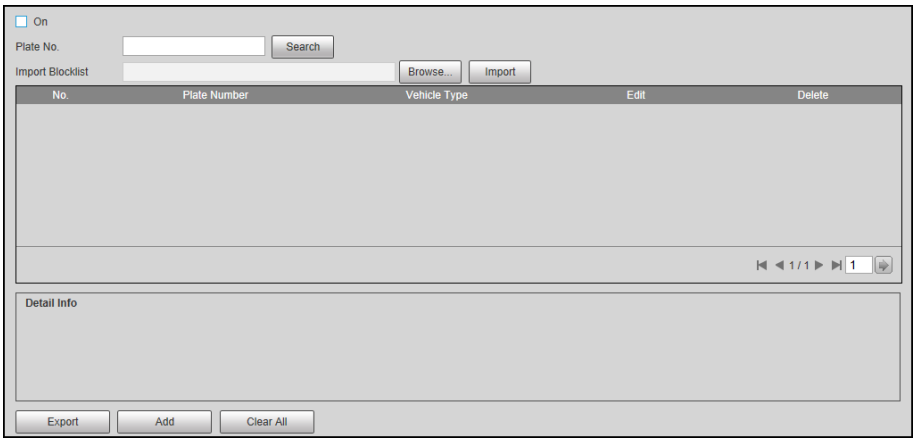
Blocklist Search

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

Select **Setting** > **Event** > **Intelligent Scheme** > **Blocklist and Allowlist** > **Blocklist Search**, and then select **On** to enable the blocklist function.

The search, import, and export of blocklist are similar to that of allowlist. See "Allowlist Search".

Figure 4-39 Blocklist search



4.7.4.2 Configuring ANPR Snapshot

You only need to configure ANPR snapshot rules when setting **Intelligent Scheme** to **ANPR**.

4.7.4.2.1 Configuring Illegal Capture

Configure the video detection parameters for detecting traffic violations.

Click to select a lane on the list in the **Lane Config** section, and then all configurations on the **Illegal Capture** page are for this lane.

Lane Parameters

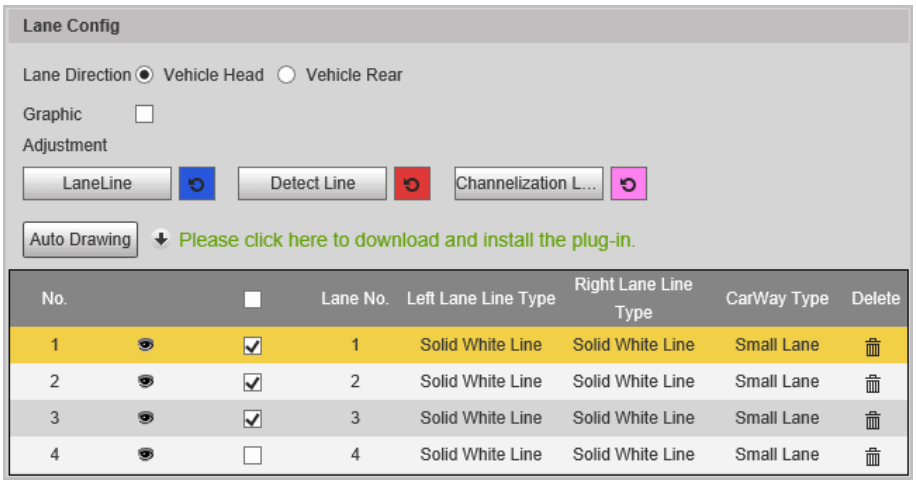
Configure the information of the lanes the Camera is monitoring, such as drawing the lane lines on the image, select the lane direction and set the lane line type according to the actual situation.

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Illegal Capture**.

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

- **Detect Line**: When a vehicle reaches the detection line, a snapshot is triggered.
- **Channelization Lane Line**: Draw channelization lines for channelization lanes to collect the corresponding flow data. Make sure the direction of the lines is the same as that of the lanes.

Figure 4-40 Lane configuration (1)



- If the default lane lines on the image do not meet the actual detection requirements, you can draw new lane lines.
  1. Select a lane from the list, and then delete the lines by clicking .

     You can also click next to **LaneLine**/**Detect Line**/**Channelization Lane Line** to delete the corresponding lines on the image.
  2. Click **LaneLine**/**Detect Line**/**Channelization Lane Line**, and then draw lines on the image.

     Install the plug-in and then click **Auto Drawing**, the Camera draws the lane lines automatically.
- If the default lane lines can be adjusted to match the actual lane lines, you can adjust them.
  1. Select **Graphic Adjustment** to enable lane line adjustment, and then select a lane from the list.
  2. Drag to adjust the lane lines and detection lines according to the actual situation.

Step 3 For the selected lane, select **Lane Direction**.

The direction of the lane line on the image needs to be the same as that of the travelling vehicle.

Step 4 Double-click the selected lane on the list under **Left Lane Line Type**, **Right Lane Line Type** and **CarWay Type** to change the lane lines and lane type as needed.

- Click to display or hide the corresponding lanes on the image.
- Click to select a lane for the Camera to monitor and detect events on.
- Click to delete the corresponding lane lines on the image.

Step 5 Click **Confirm**.

Lane Property

For the selected lane in the **Lane Config** section, you can set its road direction and code.

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Illegal Capture**.

Step 2 Select a lane from the list under **Lane Config**.

Step 3 In the **Lane Property** section, configure lane properties.

Figure 4-41 Lane property (1)

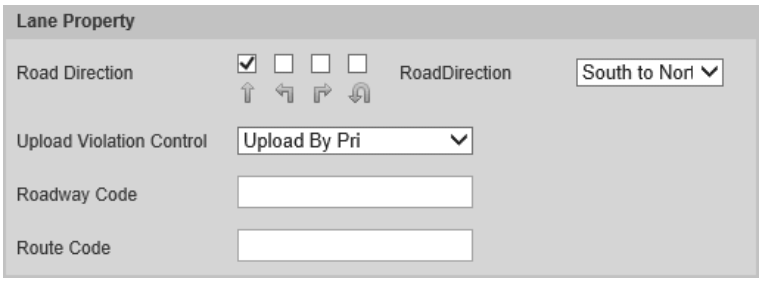


Table 4-20 Lane property description (1)

Parameter	Description
Road Direction	The direction of the lane.
RoadDirection	The geographical direction of the lane.
Upload Violation Control	• **Upload By Pri**: Captures and reports all violations of vehicles on the lane. • **Upload All**: When the vehicle triggers multiple violations, the Camera reports only the event with the highest priority.
Roadway Code	The code of the roadway and route.
Route Code	

Step 4 Click **Confirm**.

Car Detect

Draw the regions for vehicle detection on the image.

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Illegal Capture**.

Step 2 In the **Car Detect** section, click a line or region type, and then draw on the video image.

- To draw a line, click the line type and then draw on the image.
- To draw a region, click the region type, and then click on the image to set the four points of the region.

To clear the lines that you have drawn, click .

Figure 4-42 Line or region types (1)

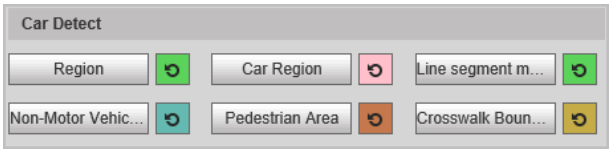


Table 4-21 Car detect description (1)

Parameter	Description
Region	The region of detection.
Car Region	The region for detecting vehicle volume.
Line segment measurement	Used to verify the accuracy of calibration results. Click **Line segment measurement** 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**.

Step 3 Click **Confirm**.

Rule Configuration

For the selected lane in the **Lane Config** section, you can select the traffic violation types and configure the corresponding parameters of the snapshot, trigger source and flashing light.

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Illegal Capture**.

Step 2 Select a lane from the list under **Lane Config**.

Step 3 In the **Rule Config** section, select ☐ of an event, and the click the corresponding ✎ to configure the snapshot parameters.

- In this part, **ANPR** is used as an example.
- The parameters displayed in the following page are for reference only, and might differ from the actual page.

Figure 4-43 Rule configuration (1)

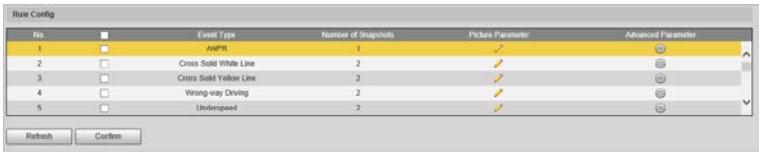


Figure 4-44 Configure picture parameter (1)

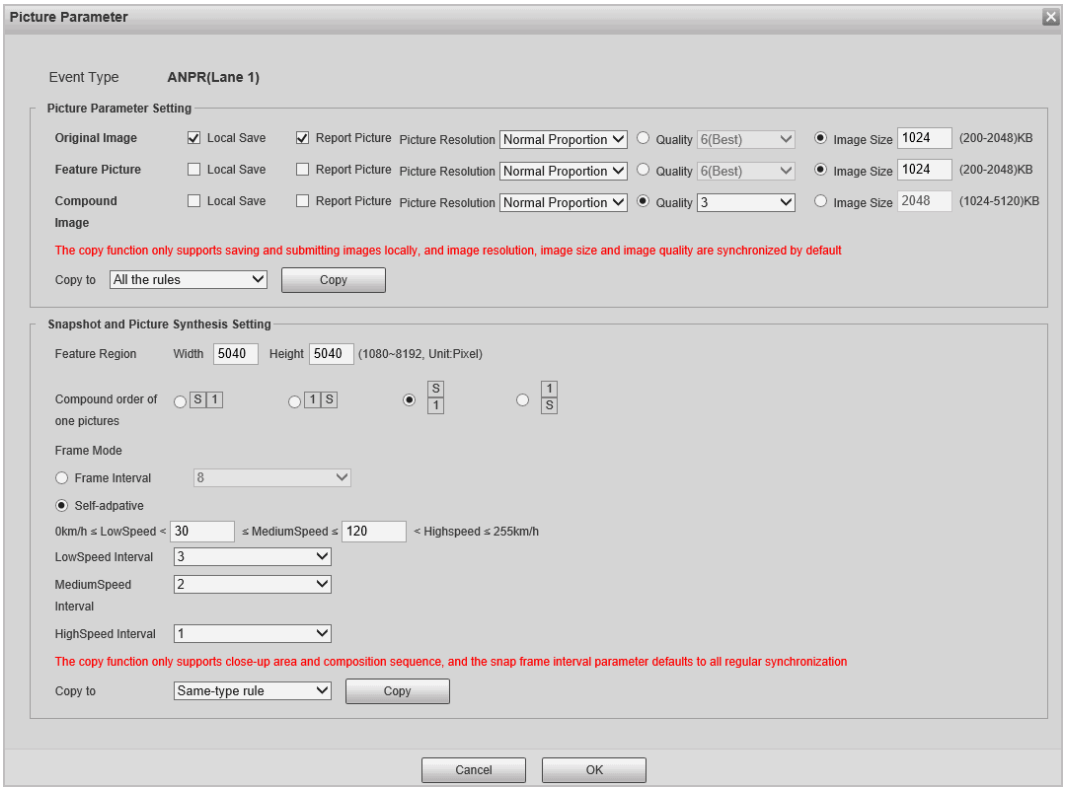


Table 4-22 Picture parameter description (1)

Category	Name	Description
Picture Parameter Setting	Original Image	The original picture of the vehicle that is violating traffic rules.
	Feature Picture	The feature cutout of the original image.
	Compound Image	The composite picture of several sequential images of the vehicle violating the traffic rules.

Category	Name	Description
	Local Save	Save the vehicle picture to your computer when a vehicle is captured.
	Report Picture	Upload the picture to the upper-level device or platform when a vehicle is captured.
	Picture Resolution	Select the resolution of the picture.
	Quality	Select the quality level of the picture.
	Image Size	Set the limit of the picture size.
	Copy to	Copy the current picture configurations to the same-type rule or all the rules of another lane. After selecting an option from **Copy to**, click **Copy**.
Snapshot and Picture Synthesis Setting	Feature Region	Set the width and height of the feature region on a vehicle snapshot, which will be used as the close-up image to combine with other snapshots.
	Compound order of one pictures	Select the layout of the composite picture. It consists of N original snapshots and one close-up of the vehicle. • **S**: Close-up • **1**: Original snapshot
	Frame Mode	• **Frame Interval**: Set the number of frames between 2 snapshots. • **Self-adaptive**: Based on different travelling speed, set different number of frames between 2 snapshots.

Step 4 Click **OK**.

Step 5 Click , and then configure advanced parameters of the rule.

Figure 4-45 Advanced parameters (1)

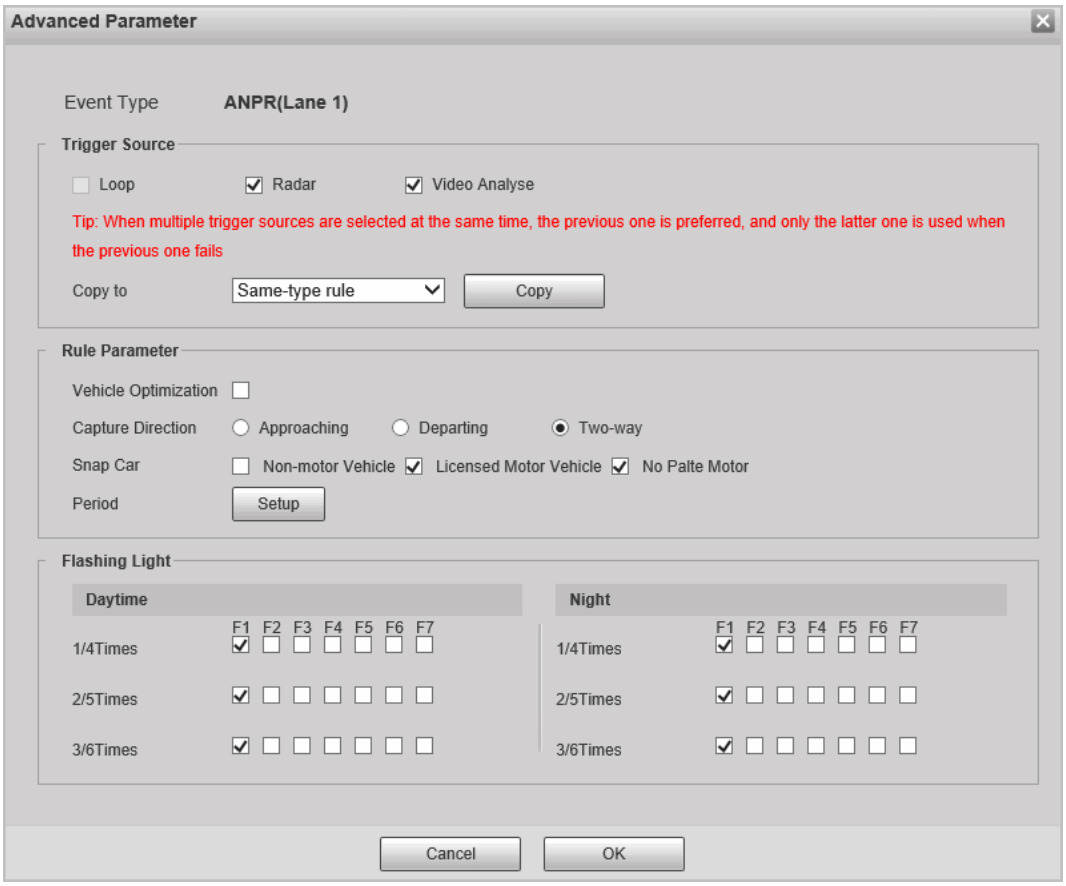


Table 4-23 Advanced parameter description (1)

Parameter	Description
Trigger Source	• **Loop**: Unavailable. • **Radar**: The Camera captures vehicles upon the radar detecting a violation. • **Video Analyse**: The Camera analyzes the real-time video to detect traffic violations. Once a violation is detected, the Camera automatically captures images of the vehicle.
Rule Parameter	• **Vehicle Optimization**: When the vehicle plate to be captured is blocked, the Device will wait till it is recognizable before taking a snapshot. • **Capture Direction**: Travelling direction of vehicles to the Camera. • **Snap Car**: Select the types of vehicles to be captured. • **Period**: The period during which the alarm is valid. Click **Setup**, drag on the time table or select days, and then enter hours on the entry fields.

Parameter	Description
Flashing Light	Select which flashing light flashes when snapshots are taken during daytime or night. • A snapshot can be associated with up to five flashing lights. • Select **F1** in the **1/4Times** section, meaning flashing light F1 flashes when taking the 1st and 4th snapshots.

Step 6 Click **OK**.

Other Settings

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Illegal Capture**.

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

Table 4-24 Other settings description (1)

Parameter	Description
Snap Match Mode	• **Common Mode**: Recommended for the ANPR snap mode. • **Priority Mode**: Recommended for the e-police mode.

Step 3 Click **Confirm**.

4.7.4.2.2 ANPR Intelligent Analysis

Set the recognition objects and algorithm of the intelligent analysis.

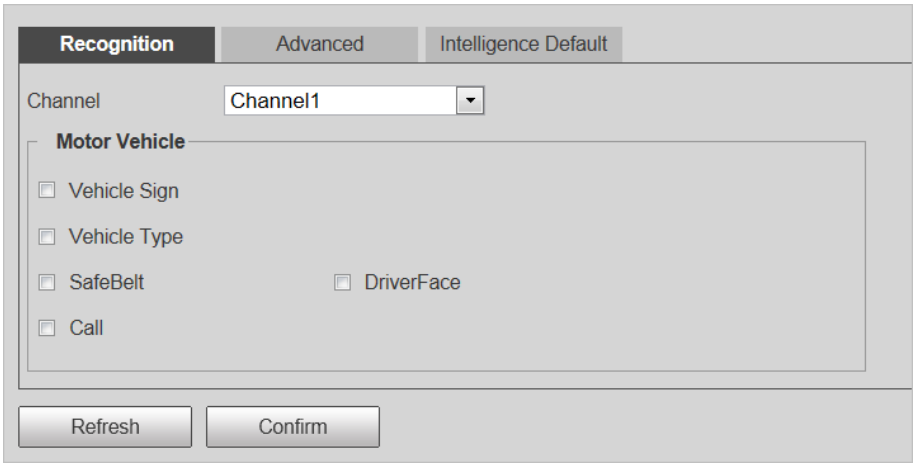
Recognition

Select the recognition objects of motor vehicles for each channel.

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

Step 2 Select a channel, and then select features and actions you want the Camera to recognize.

Figure 4-46 Recognition (1)



Step 3 Click **Confirm**.

Advanced

You can make a custom algorithm for recognition.

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

Step 2 Configure a custom algorithm.

Step 3 Click **Confirm**.

Intelligence Default

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

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

4.7.4.2.3 Setting Snapshot OSD

You can set the OSD information of snapshots.

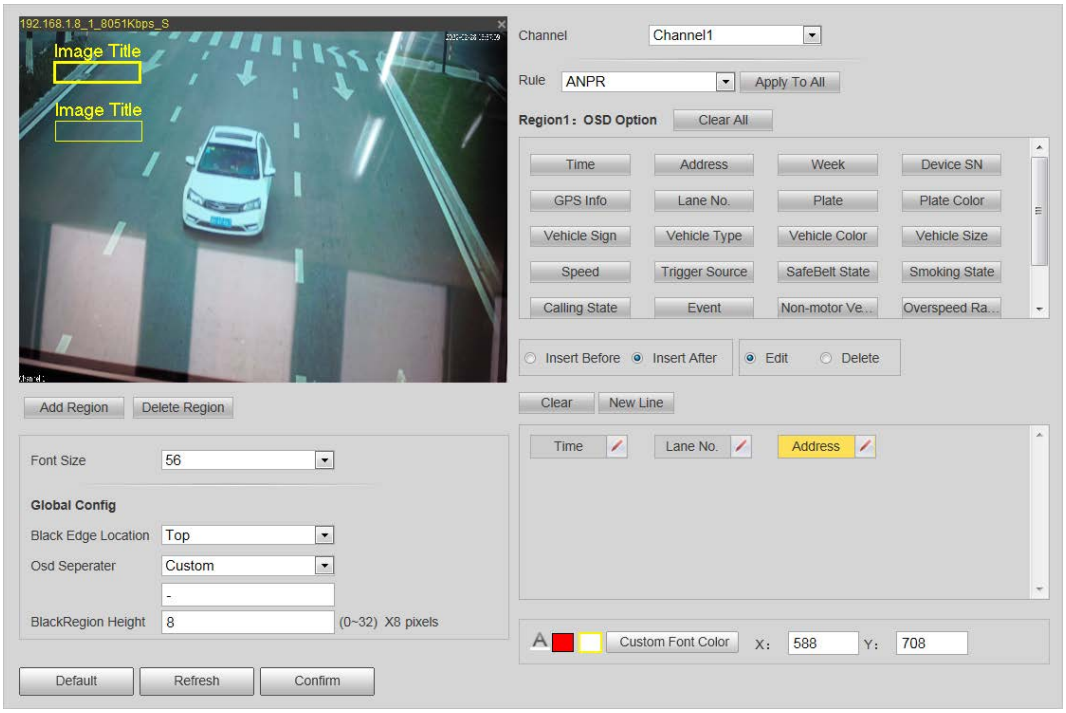
Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Snapshot OSD**.

Step 2 Select a channel.

Step 3 Move the image title box to set its position on the snapshot, or manually enter coordinates into the X/Y box at the lower-right corner of the page.

Click **Add Region** to add more OSD regions on the snapshot.

Figure 4-47 Snapshot OSD



Step 4 Set the font of the OSD information.

1) Select a font size from the list and set the font color at the lower-right corner. Click **Custom Font Color** to select from more colors.
2) Select **Black Edge Location** and **Osd Seperator**, and then set **BlackRegion Height**.
   - **Black Edge Location**: Select the location of the black edge on the image where the OSD content displays.
   - **Osd Seperator**: The separator of the OSD content. Select **Custom**, and then you can enter a custom separator as needed.

Step 5 Select a channel and a rule to apply the OSD information, and then set the OSD options. Click **Apply to All** to apply the current OSD configuration to snapshots taken based on all the rules.

Table 4-25 Snapshot OSD description

Parameter	Description
Insert Before	Select an OSD option, click **Insert Before**, and then select other OSD options. The new OSD options will be displayed before the original OSD option.
Insert After	Select an OSD option, click **Insert After**, and then select other OSD options. The new OSD option will be displayed after the original OSD option.
Edit	Select **Edit**, and then click to modify the prefix, suffix, content, and separator of the corresponding OSD option.
Delete	Select **Delete**, and then click to delete the corresponding OSD option.
Clear/Clear All	Delete all the OSD information.
New Line	After selecting some OSD information, click **New Line**, and the OSD information inserted after **NewLine** will be displayed in a new line on the snapshot.

Step 6 Click **Confirm**.

4.7.4.2.4 Setting Merge OSD

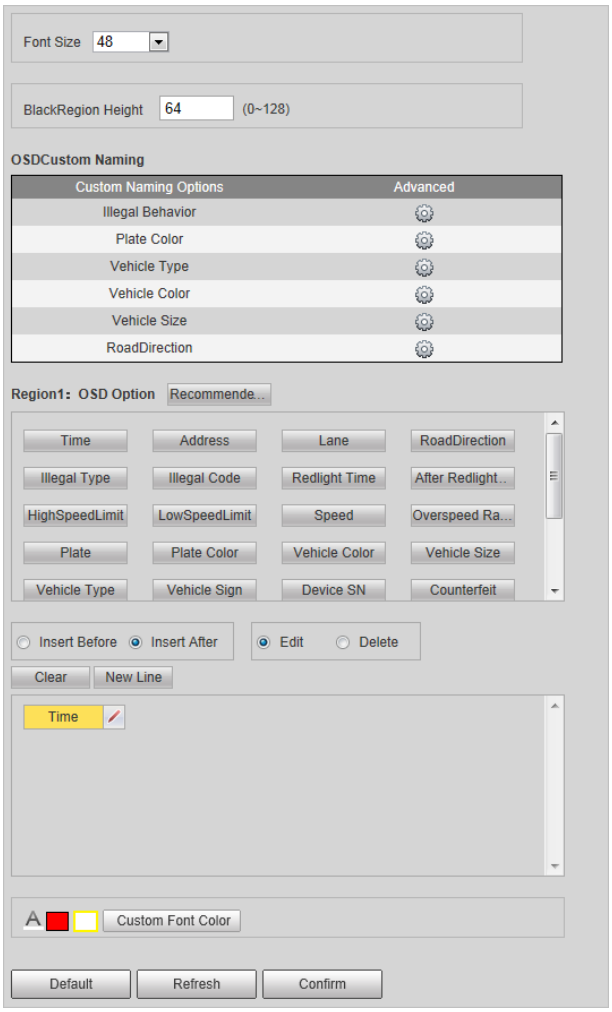
You can set the OSD information of composite snapshots.

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Merge OSD**.

Step 2 Set **Front Size** and **Black Region Height**.

Step 3 Select the information to be displayed on the picture in the **OSD Option** area.

Figure 4-48 Merge OSD



Step 4 Set the sequence and line feed of OSD options. Click  to modify the prefix, suffix, and number of separators of each OSD option.

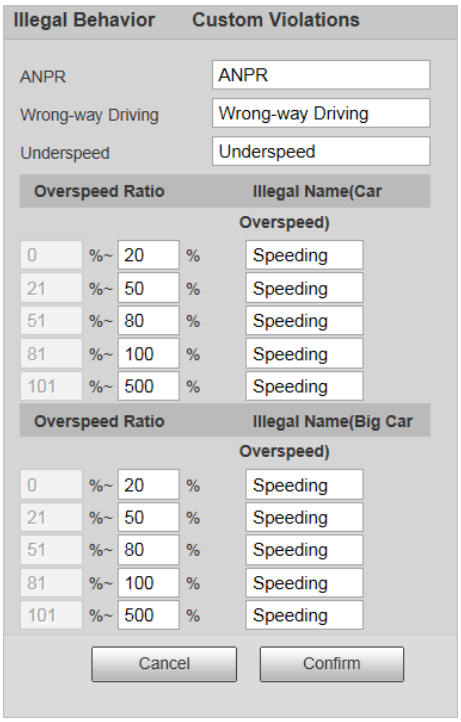
Click **Recommend OSD** for quick configuration.

Step 5 Select font color as required, or click **Custom Font color** to set the required font color.

Step 6 (Optional) Set **OSDCustom Naming** as required. **Illegal Behavior** is used as an example in this section.

1) Click  corresponding to **Illegal Behavior** .

Figure 4-49 Details of illegal behavior parameters



2) Modify the parameters as required.
   For example, change the **Illegal name(Car Overspeed)** next to 0%–20% to **Slightly Overspeed**, the corresponding OSD on the composite pictures will be **Slightly Overspeed**.
3) Click **Confirm**.

Step 7 Click **Confirm**.

4.7.4.2.5 Traffic Flow

You can set the parameters of traffic flow, and then view the real-time traffic flow.

Configuring Flow 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 Data** and **Pedestrian Flow Data** tabs.

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

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

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

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

Step 5 Click **Confirm**.

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 Data** 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.

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 Data** 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.

Viewing Real-time Flow Data

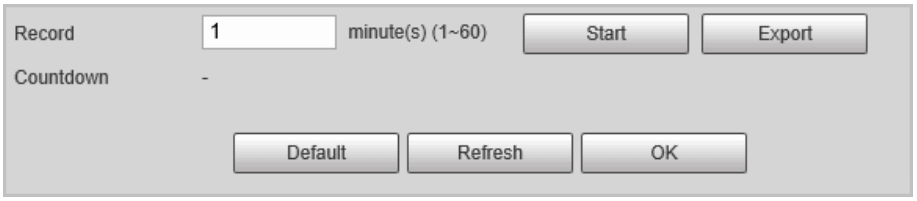
You can search for traffic flow data and view the real-time traffic flow.

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Traffic Flow** > **Real-time Traffic Flow**.

Step 2 Set a time period, and then click **Start**.

The Camera starts recording the flow data of the set period, and the **Countdown** is displayed.

Figure 4-50 Real-time traffic flow



Step 3 Click **Export** to export the recorded flow data to the local computer.

4.7.4.2.6 Configuring Cutout

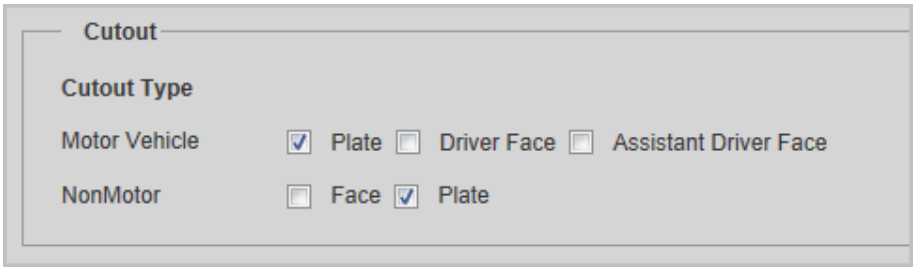
The Camera supports cropping snapshots and saving the cutouts. In addition, you can overlay the face cutouts of drivers and front-seat passengers on the snapshots. Enabling bounding box of vehicles is also available.

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Cutout**.

Step 2 Select a channel.

Step 3 In the **Cutout** section, select the **Cutout Type**.

Figure 4-51 Cutout type (1)

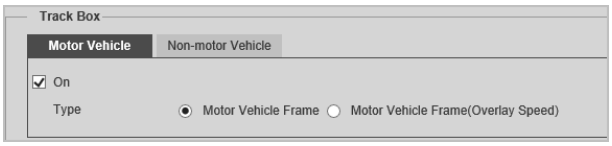


Step 4 In the **Track Box** section, select **On** to enable bounding box of vehicles.

Step 5 Select the bounding box type.

- For motor vehicles, you can overlay the bounding box only on the **Motor Vehicle Frame**, and you can also select whether to overlay speed of the vehicle on the bounding box.
- For non-motor vehicle, select overlaying bounding box on the **Whole** body or only **Face** of the driver.

Figure 4-52 Track box (1)



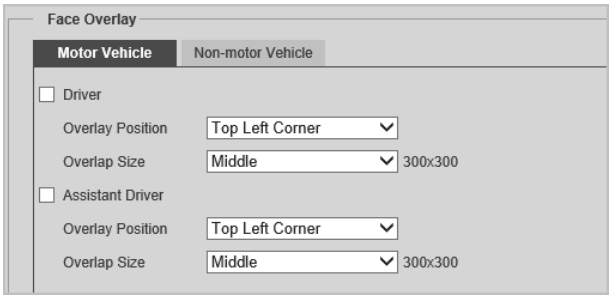
Step 6 In the **Face Overlay** section, select whether to enable face overlay and then select the overlay position and size of driver and assistant driver faces.

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

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

- For non-motor vehicles, select **Driver Face Overlap Enable** to enable face overlay of the driver.

Figure 4-53 Face overlay (1)



Step 7 Click **Confirm**.

4.7.4.3 Configuring Electronic Police

You only need to configure E-police rules when setting **Intelligent Scheme** to **E-police**.

4.7.4.3.1 Configuring Illegal Capture

Configure the video detection parameters for detecting traffic violations.

Click to select a lane on the list in the **Lane Config** section, and then all configurations on the **Illegal Capture** page are for this lane.

Lane Parameters

Configure the information of the lanes the Camera is monitoring, such as drawing the lane lines on the image, select the lane direction and set the lane line type according to the actual situation.

Step 1 Select **Setting** > **Event** > **Electronic Police** > **Illegal Capture**

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

Figure 4-54 Lane configuration (2)

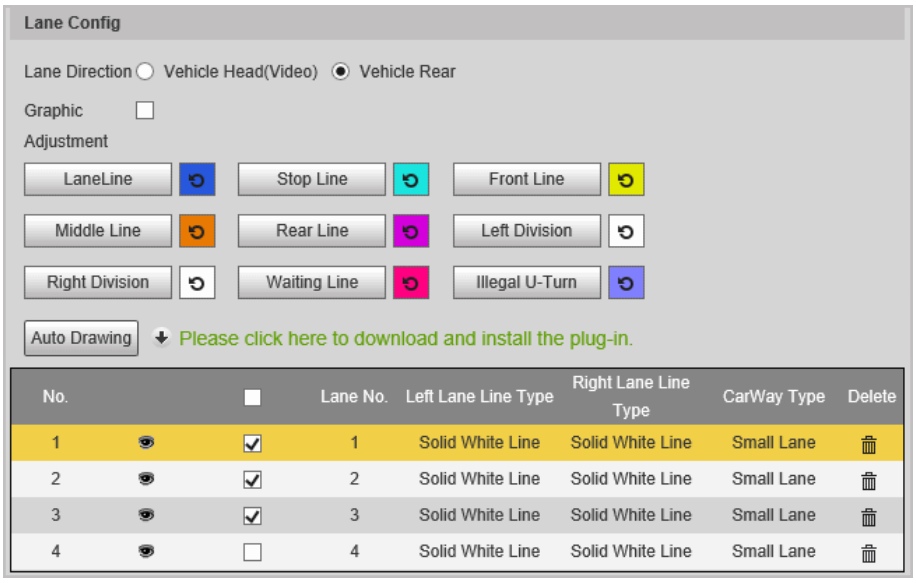


Table 4-26 Lane parameter description

Parameter	Description
Lane Direction	The direction of the lane lines drawn on the image, which must be the same as the actual lanes.
Graphic Adjustment	Select the checkbox to enable the function of adjusting lane lines on the image.
LaneLine	Draw lines along the actual lanes on the image for the Camera to monitor.
Stop Line	Draw the stop line of a lane for the Camera to detect violations such as crossing stop line.
Front Line	Draw three lines on the image, and the Camera takes a snapshot when the vehicle reaches each line. They are used to detect violations such as running a red light and wrong lane driving. ● Front line: A vehicle body away from the stop line. ● Middle line: The side closer to the stop line of the crosswalk. ● The rear line: About the middle but closer to the other side of the intersection.
Middle Line	
Rear Line	
Left Division	The Camera detects whether the vehicle is turning left/right based on this line. It is also the capture position of the third snapshot for violations such as wrong lane driving and running a red light when turning left/right.
Right Division	
Waiting Line	The line of the waiting area boundary, used to detect events of running a red light through the waiting area.
Illegal U-Turn	Draw an area on the lane on which vehicles are not allowed to take a U-turn.
Auto Drawing	Download the plug-in and then click **Auto Drawing**, the Camera draws lines.

- If the default lane lines on the image do not meet the actual detection requirements, you can draw new lane lines.
  1. Select a lane from the list, and then delete the lines by clicking 🗑.

You can also click next to the line type to delete the corresponding lines on the image.

2. Click a type of line, and then draw lines on the image.

Install the plug-in and then click **Auto Drawing**, the Camera draws the lane lines automatically.

- If the default lane lines can be adjusted to match the actual lane lines, you can adjust them.
  1. Select **Graphic Adjustment** to enable lane line adjustment, and then select a lane from the list.
  2. Drag to adjust the lines according to the actual situation.

Step 3 For the selected lane, select **Lane Direction**.

The direction of the lane line on the image needs to be the same as that of the travelling vehicle.

Step 4 Double-click the selected lane on the list under **Left Lane Line Type**, **Right Lane Line Type** and **CarWay Type** to change the lane lines and lane type as needed.

- Click to display or hide the corresponding lanes on the image.
- Click to select a lane for the Camera to monitor and detect events on.
- Click to delete the corresponding lane lines on the image.

Step 5 Click **Confirm**.

Lane Property

For the selected lane in the **Lane Config** section, you can set its road direction and code.

Step 1 Select **Setting** > **Event** > **Electronic Police** > **Illegal Capture**.

Step 2 Select a lane from the list under **Lane Config**.

Step 3 In the **Lane Property** section, configure lane properties.

Figure 4-55 Lane property (2)

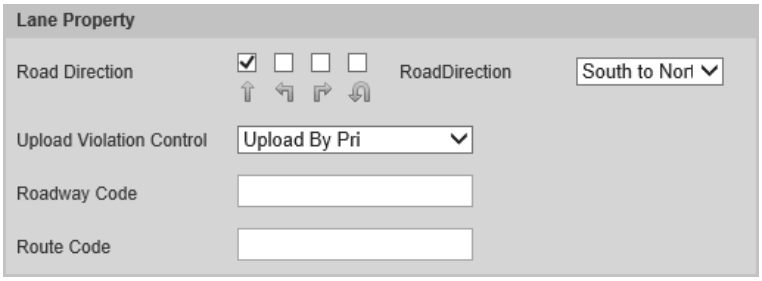


Table 4-27 Lane property description (2)

Parameter	Description
Road Direction	The direction of the lane.
RoadDirection	The geographical direction of the lane.
Upload Violation Control	• **Upload By Pri**: Captures and reports all violations of vehicles on the lane. • **Upload All**: When the vehicle triggers multiple violations, the Camera reports only the event with the highest priority.

Parameter	Description
Roadway Code	The code of the roadway and route.
Route Code	

Step 4 Click **Confirm**.

Car Detect

Draw the regions for vehicle detection on the image.

Step 1 Select **Setting** > **Event** > **Electronic Police** > **Illegal Capture**.

Step 2 In the **Car Detect** section, click a line or region type, and then draw on the video image.

- To draw a line, click the line type and then draw on the image.
- To draw a region, click the region type, and then click on the image to set the four points of the region.

To clear the lines that you have drawn, click .

Figure 4-56 Line or region types (2)

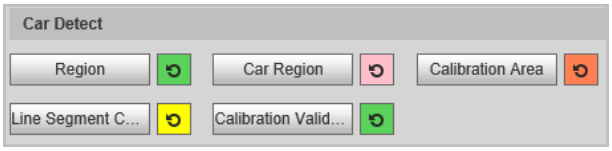


Table 4-28 Car detect description (2)

Parameter	Description
Region	The region of detection.
Car Region	The region for detecting vehicle volume.
Calibration Area	The region for analyzing vehicle traffic.
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 **Confirm**.

Rule Configuration

For the selected lane in the **Lane Config** section, you can select the traffic violation types and configure the corresponding parameters of the snapshot, trigger source and flashing light.

Step 1 Select **Setting** > **Event** > **Electronic Police** > **Illegal Capture**.

Step 2 Select a lane from the list under **Lane Config**.

Step 3 In the **Rule Config** section, select of an event, and the click the corresponding to configure the snapshot parameters.

- In this part, **ANPR** is used as an example.
- The parameters displayed in the following page are for reference only, and might differ from the actual page.

Figure 4-57 Rule configuration (2)

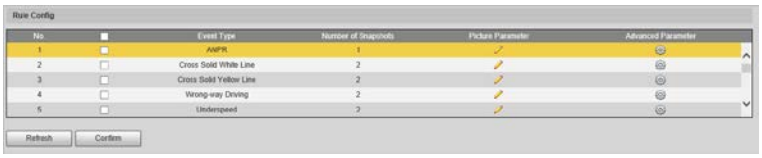


Figure 4-58 Configure picture parameter (2)

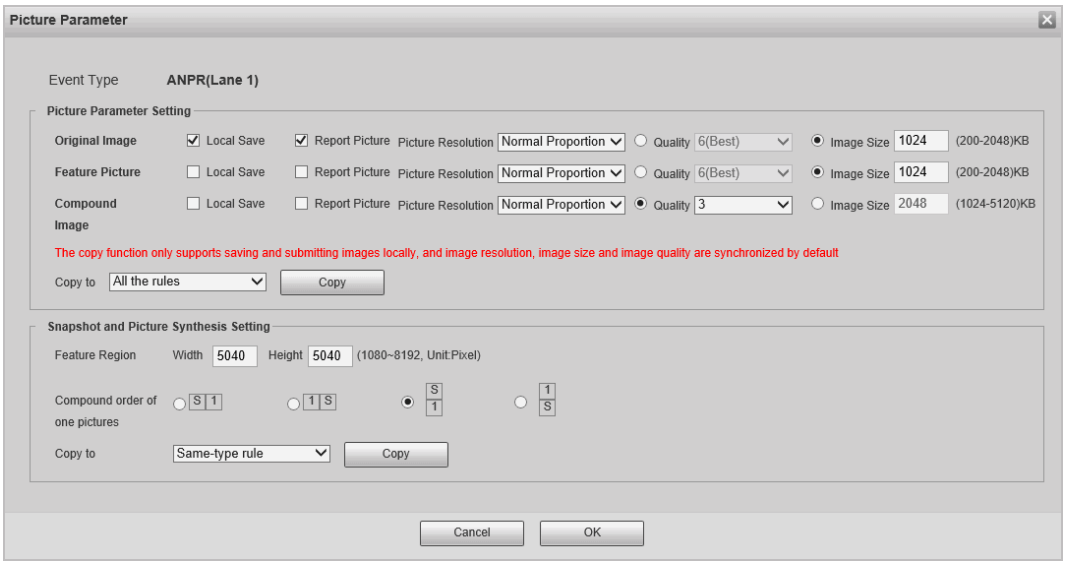


Table 4-29 Picture parameter description (2)

Category	Name	Description
Picture Parameter Setting	Original Image	The original picture of the vehicle that is violating traffic rules.
	Feature Picture	The feature cutout of the original image.
	Compound Image	The composite picture of several sequential images of the vehicle violating the traffic rules.
	Local Save	Save the vehicle picture to your computer when a vehicle is captured.
	Report Picture	Upload the picture to the upper-level device or platform when a vehicle is captured.
	Picture Resolution	Select the resolution of the picture.
	Quality	Select the quality level of the picture.
	Image Size	Set the limit of the picture size.
	Copy to	Copy the current picture configurations to the same-type rule or all the rules of another lane. After selecting an option from **Copy to**, click **Copy**.
Snapshot and Picture Synthesis Setting	Feature Region	Set the width and height of the feature region on a vehicle snapshot, which will be used as the close-up image to combine with other snapshots.
	Compound order of one pictures	Select the layout of the composite picture. It consists of N original snapshots and one close-up of the vehicle. • **S**: Close-up • **1**: Original snapshot

Step 4 Click **OK**.

Step 5 Click , and then configure advanced parameters of the rule.

Figure 4-59 Advanced parameters (2)

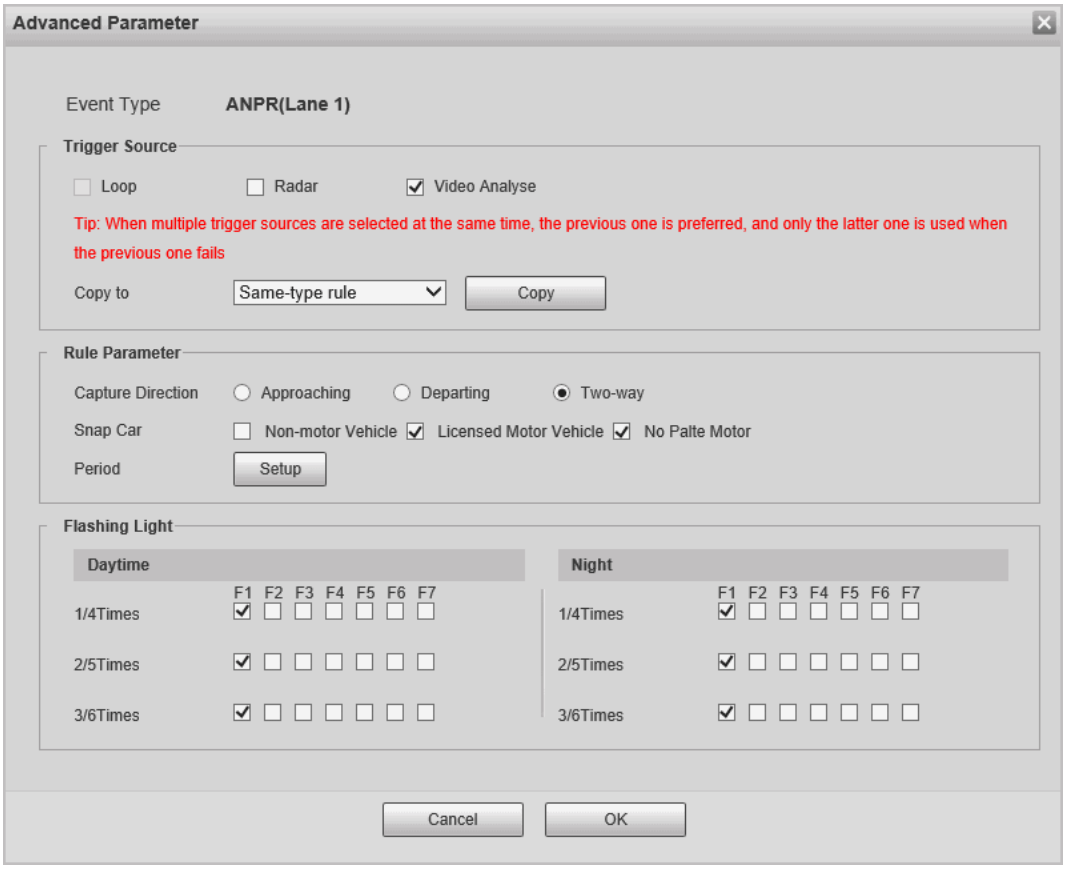


Table 4-30 Advanced parameter description (2)

Parameter	Description
Trigger Source	• **Loop**: Unavailable. • **Radar**: The Camera captures vehicles upon the radar detecting a violation. • **Video Analyse**: The Camera analyzes the real-time video to detect traffic violations. Once a violation is detected, the Camera automatically captures images of the vehicle.
Rule Parameter	• **Capture Direction**: Travelling direction of vehicles to the Camera. • **Snap Car**: Select the types of vehicles to be captured. • **Period**: The period during which the alarm is valid. Click **Setup**, drag on the time table or select days, and then enter hours on the entry fields.
Flashing Light	Select which flashing light flashes when snapshots are taken during daytime or night. • A snapshot can be associated with up to five flashing lights. • Select **F1** in the **1/4Times** section, meaning flashing light F1 flashes when taking the 1st and 4th snapshots.

Step 6 Click **OK**.

Other Settings

Step 1 Select **Setting** > **Event** > **ANPR Snap** > **Illegal Capture**.

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

Figure 4-60 Other settings

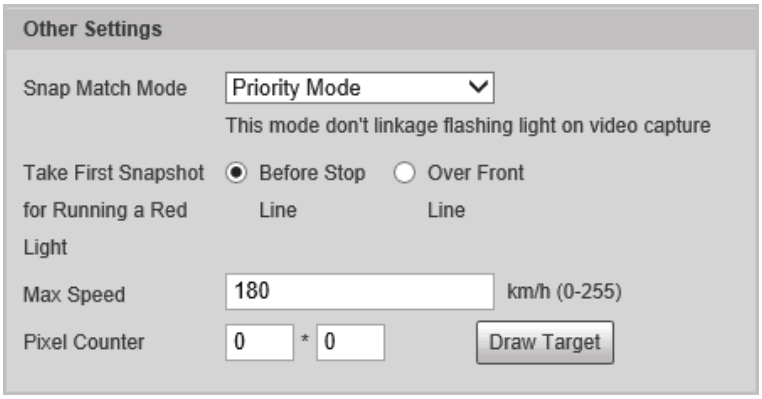


Table 4-31 Other settings description (2)

Parameter	Description
Snap Match Mode	• **Common Mode**: Recommended for the ANPR snap mode. • **Priority 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.
Pixel Counter	Click **Draw Target**, and then draw a rectangular area on the image to show the pixel size of that area. Right-click the area to cancel the pixel counter.

Step 3 Click **Confirm**.

4.7.4.3.2 E-police Intelligent Analysis

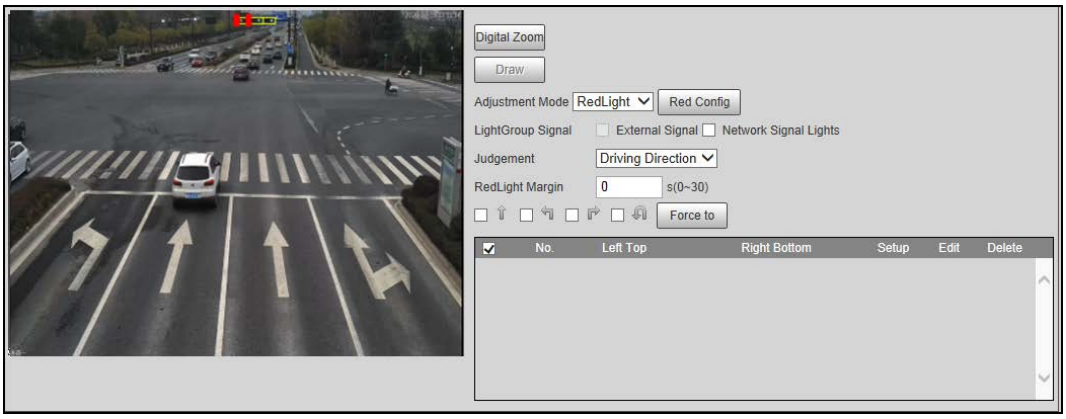
Configure the intelligent functions of the Camera.

Configuring Signal Lights

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

Step 1 Select **Setting** > **Event** > **Electronic Police** > **Intelligent Analysis** > **Signal Lights Config**.

Figure 4-61 Signal lights config



Step 2 Click **Digital Zoom**, drag 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**, drag your cursor on the image to draw the traffic lights frame.

Step 4 Configure parameters.

Table 4-32 Signal lights parameter description

Parameter	Description
Adjustment Mode	• **Red Light**: Correct the image color according to the red light signal. • **Force**: Correct the image color directly.
Red Config	Click **Red Config** to configure correction parameters. 1. Select **Picture Red** or **Video Red** to determine whether you need to correct picture or video. 2. Configure the level of correction for day and night. 3. Click **Confirm**.
LightGroup Signal	• **External Signal**: Synchronize external traffic light signals such as signal detectors and traffic light detectors to the current traffic lights. • **Network Signal Lights**: Synchronize the traffic light scheme of the traffic signal controller to the current traffic lights.
Judgment	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.
RedLight Margin	Do not capture the illegal act of running a red light within seconds after the red light turns on.
Force to	Force the traffic light of the corresponding direction to red.

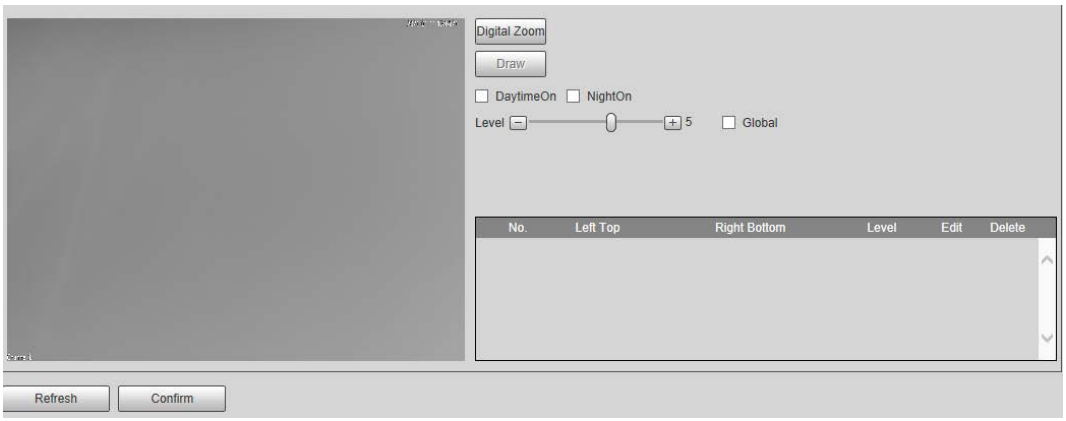
Step 5 Click **Confirm**.

Halation Control

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

Step 1 Select **Setting** > **Event** > **Electronic Police** > **Intelligent Analysis** > **Halation Control**.

Figure 4-62 Halation control



Step 2 Click **Digital Zoom**, and then select the region for halation control on the image.

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

Step 4 Configure parameters.

Table 4-33 Halation control description

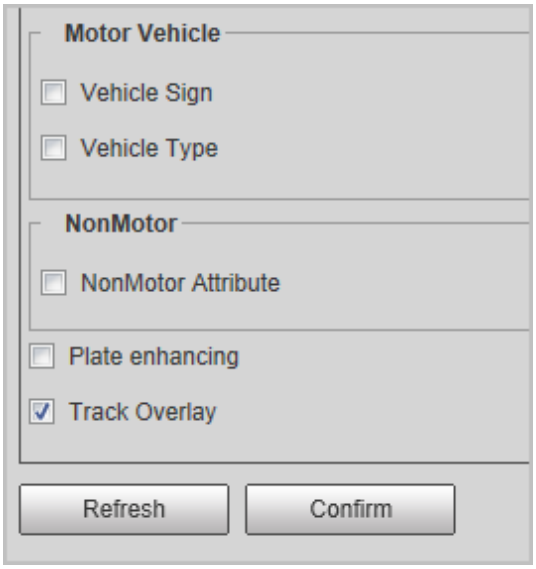
Parameter	Description
DaytimeOn	Enable halation control for daytime.
NightOn	Enable halation for nighttime.
Global	Apply the same halation control level to all the selected regions.
Level	The level of halation control. The smaller the value, the more obvious the effect.

Step 5 Click **Confirm**.

Recognition

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

Figure 4-63 Recognition (2)



Step 2 Configure parameters.

Table 4-34 Recognition parameters (2)

Parameter	Description
Motor Vehicle	Identifies motor vehicle sign and vehicle type. Select the options that you need to recognize.
NonMotor	Identifies non-motor vehicle attributes such as type, helmet, and rider number.
Plate enhancing	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 tracked.

Step 3 Click **Confirm**.

Advanced

You can make a custom algorithm.

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

Step 2 Configure a custom algorithm.

Step 3 Click **Confirm**.

Intelligence Default

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

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

4.7.4.3.3 E-police Traffic Flow

Configure and view the traffic flow data in the E-police mode. For details, see "4.7.4.2.5 Traffic Flow".

E-police mode does not support data collection of real-time traffic flow.

4.7.4.3.4 Configuring Cutout

The Camera supports cropping snapshots and saving the cutouts. In addition, you can overlay the face cutouts of drivers and front-seat passengers on the snapshots. Enabling bounding box of vehicles is also available.

Step 1 Select **Setting** > **Event** > **Electronic Police** > **Cutout**.

Step 2 Select a channel.

Step 3 In the **Cutout** section, select the **Cutout Type**.

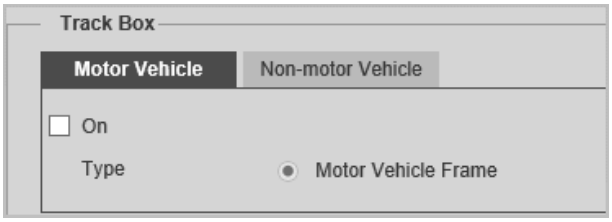
Figure 4-64 Cutout type (2)

Step 4 In the **Track Box** section, select **On** to enable bounding box of vehicles.

Step 5 Select the bounding box type.

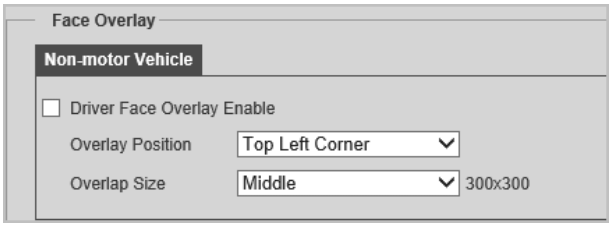
- For motor vehicles, you can overlay the bounding box only on the **Motor Vehicle Frame**.
- For non-motor vehicle, select overlaying bounding box on the **Whole** body or only **Face** of the driver.

Figure 4-65 Track box (2)



Step 6 In the **Face Overlay** section, select whether to enable face overlay and then select the overlay position and size of driver faces.

Figure 4-66 Face overlay (2)



Step 7 Click **Confirm**.

4.7.4.4 Device Direction

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

Select **Setting** > **Event** > **Device Direction**.

4.7.5 Alarm

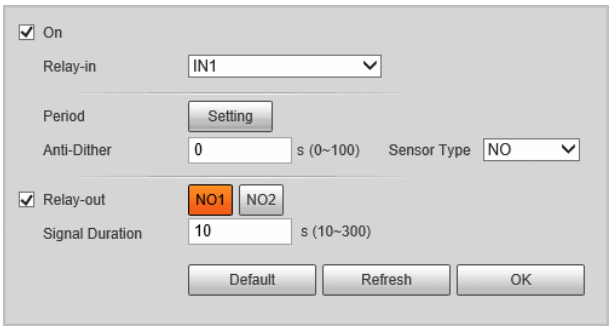
You can configure how the Camera responds when alarms occur.

4.7.5.1 Setting Relay Activation

Set the input and output channel of alarms on the Camera, and then when an alarm is triggered, the Camera outputs the signal to the external device connected to the corresponding output channel, such as a buzzer.

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

Figure 4-67 Relay activation



Step 2 Select **On** to enable the relay-in for the current channel.

Step 3 Select the relay-in channel.

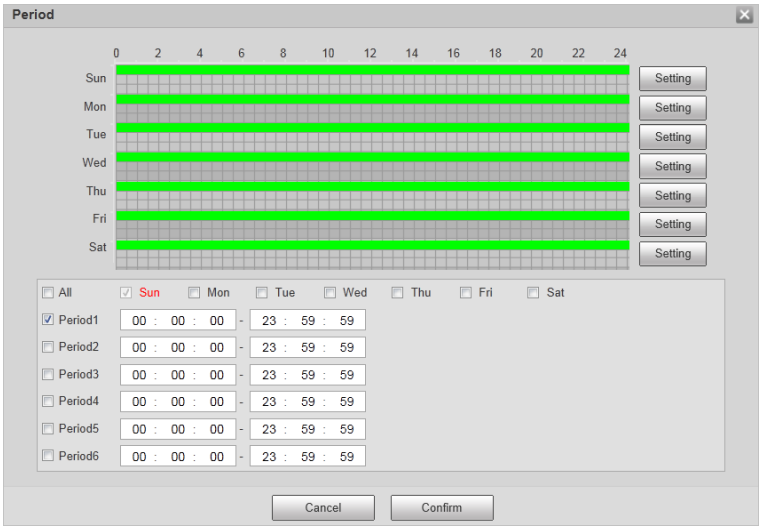
The settings in the subsequent steps are based on the current channel number. They will take effect after you click **Confirm**. If you switch the channel number before clicking **Confirm**, all settings for the current channel will not be effective.

Step 4 Set the relay-in arming and disarming periods.

The Camera outputs alarm signals during armed periods.

1) Click **Setting**.
2) Set the arming and disarming periods.
   - Method 1: Press and hold the left mouse button, and directly drag to set the period on the timeline corresponding to Sunday to Saturday.
   - Method 2: Click **Setting** corresponding to Sunday to Saturday, and then select and set the arming and disarming periods. You can set up to six periods.

Figure 4-68 Period



3) Repeat the earlier steps to set the periods corresponding to other days.
4) Click **Confirm**.

Step 5 Set other parameters.

Table 4-35 Relay activation parameters

Parameter	Description
Anti-Dither	Set the anti-dither duration to filter out false alarms.

Parameter	Description
Sensor Type	Select sensor type according to the connected relay-in device. • Normally open: Effective for low level. • Normally closed: Effective for high level.
Relay-out	Optocoupler output. When enabled, the corresponding external device can be activated after an alarm goes off.
Signal Duration	Set the duration of the output signal.

Step 6 Click **Confirm**.

4.7.5.2 Relay-out

You can simulate to trigger alarm output signal.

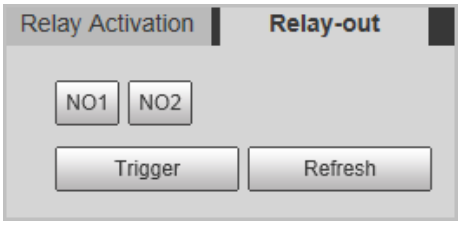
Step 1 Select **Setting** > **Event** > **Alarm** > **Relay-out**.

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

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

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

Figure 4-69 Relay-out



4.7.6 Abnormality

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

- **SD Card**: Alarm will be triggered when there is **No Storage**, **Storage Error**, or **Scarcity of Storage Space** (no enough storage space).
- **Network Error**: Alarm will be triggered when there is **Off-line Event** (the Camera is offline) or **IP Conflict**.
- **Illegal 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.

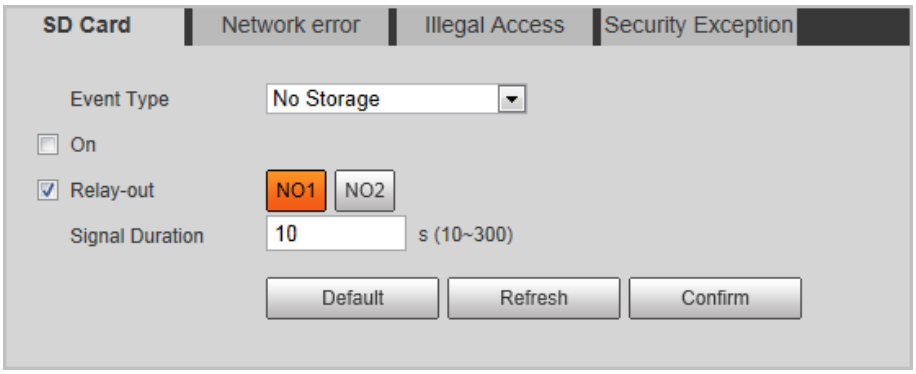
- You can set the alarm tone by selecting **Alarm** at the upper-right side of the Camera's web page.
- **Traffic Light Fault** is only available in **E-Police** mode.

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

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

Step 2 Configure the parameters.

Figure 4-70 SD card event



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

Table 4-36 Parameters of abnormality events

Parameter	Description
Enable	Select it to enable alarm of abnormality event. Select **Alarm Enable** for **Traffic Light Fault** event in **E-Police** mode.
Relay-out	Select it to enable the corresponding alarm output of event, and select the corresponding port.
Signal Duration	The alarm linkage keeps running for the defined time after alarm ends. The time range is 10 s–300 s.
Capacity Limit	Configure the storage available for triggering abnormality.
Ethernet Card1, Ethernet Card2	Select the Ethernet card that triggers alarm output.
Max Switch Time Value	Configure the maximum time that traffic light remains unchanged. This parameter is required only for **Traffic Light Fault** in **E-Police** mode.
Login Error	Configure the number of login errors allowed. The range is 3–10 times.
Rollover Angel Threshold	Configure the threshold of rollover angle.
Pitch Angle Threshold	Configure the threshold of pitch angle.
Acceleration Threshold	Configure the threshold of acceleration.

Step 3 Click **Confirm**.

4.7.7 Peripheral

4.7.7.1 Extra Device Status

Select **Setting** > **Peripheral** > **Peripheral** > **Extra Device Status**, and then you can view the information of the connected external devices.

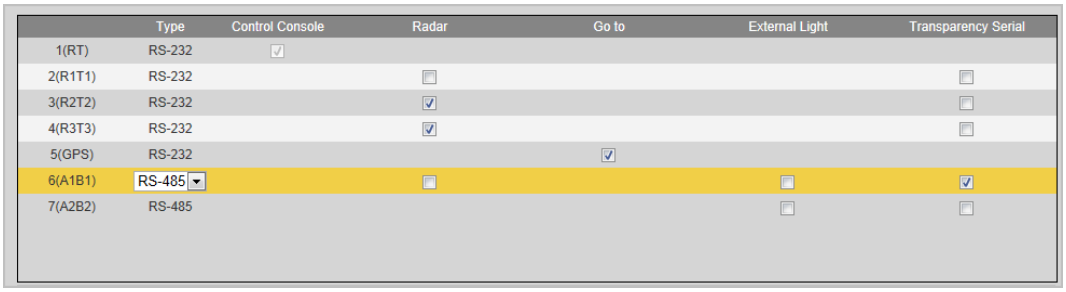
4.7.7.2 Serial Port Settings

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.

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

Step 2 Configure external devices.

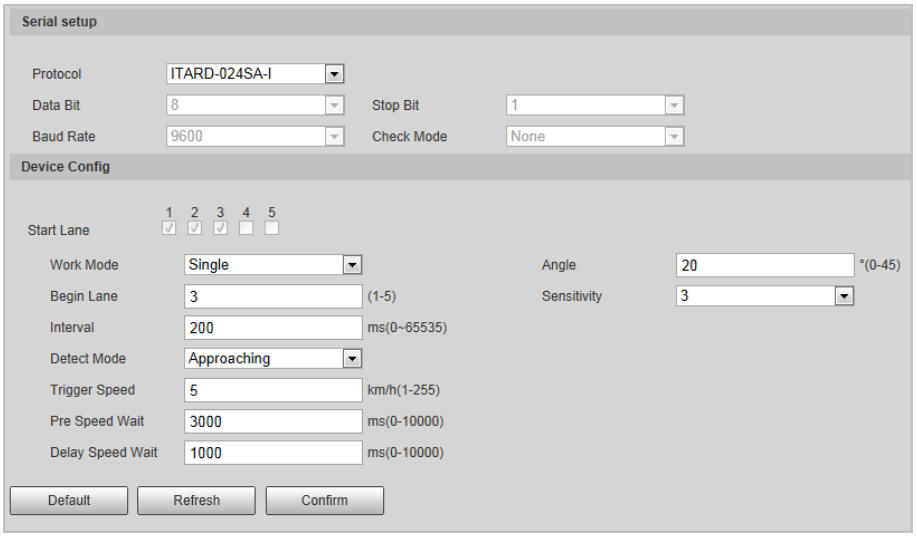
Figure 4-71 Serial port settings



- 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 4-72 Radar configuration (single lane)



2) Configure radar parameters.

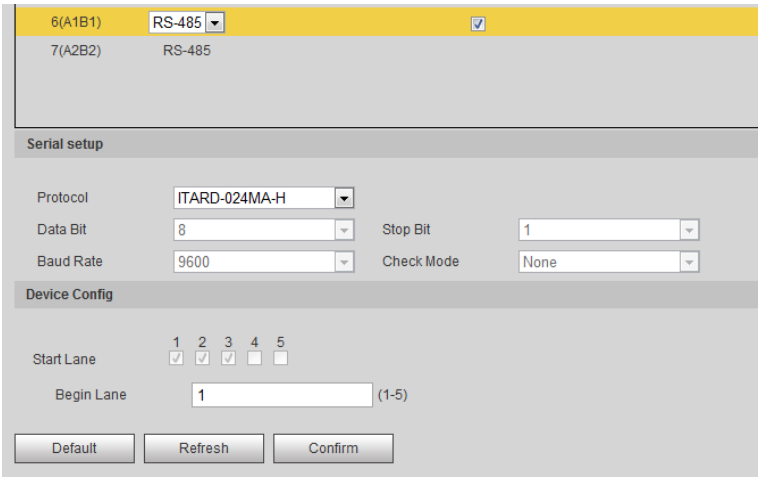
Table 4-37 Description of important parameters of the radar

Parameter	Description
Start Lane	The number of lanes on which the radar has been enabled.
Work Mode	Select the work mode of the radar from **Speed Measure Mode**, **Calculate Mode**, **Single**, **Continuous** and **Manual**.

Parameter	Description
Begin Lane	The lane number on which the radar starts detecting.
Interval	During the interval, the radar only detects one object. This function works together with a special program.
Detect Mode	The direction of radar detection.
Trigger Speed	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.
Pre Speed Wait	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.
Delay Speed Wait	
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 4-73 Radar configuration (multiple lanes)

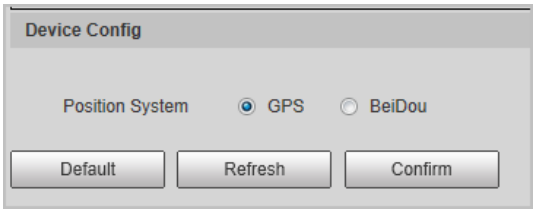


4) Click **Confirm**.

- Positioning

1) Select **Go to**.

Figure 4-74 Positioning configuration

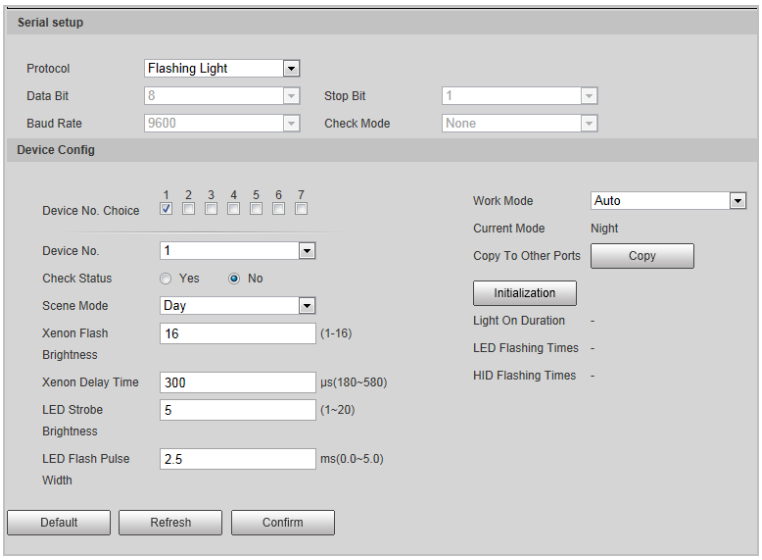


2) Select the positioning method from **GPS** and **BeiDou** as needed.
3) Click **Confirm**.

- External Light

1) Select **External Light**.

Figure 4-75 External light configuration



2) Configure external light parameters.

Table 4-38 Important external light parameters description

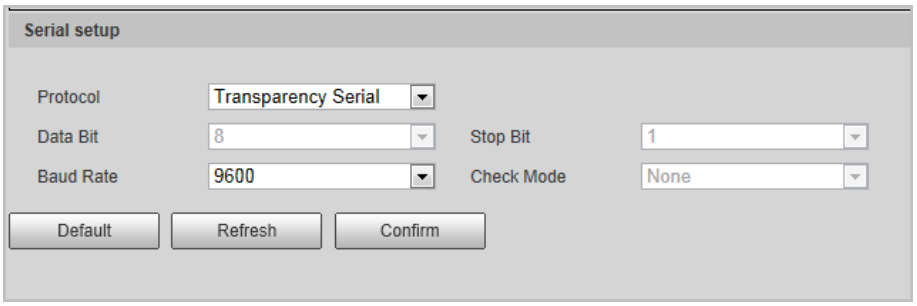
Parameter	Description
Protocol	Select from Flashing Light, Strobe and Continuous Light.
Device No. Choice	Select device number as needed.
Device No.	Select external light number based on the selected device number.
Check Status	Select **Yes** to enable external light status check.
Scene Mode	Select the working environment of the external light.
Xenon Flash Brightness	Set as needed.
Xenon Delay Time	
LED Strobe Brightness	
LED Flash Pulse Width	
Work Mode	Select the work mode of the external light from **Force Infrared**, **Force White** and **Auto**.
Copy to Other Ports	Click **Copy** to copy the configuration of the current light to other ports.
Initialization	Click **Initialization** to restore the RS-485 address of the external light to default.

3) Click **Confirm**.

- Transparency Serial

1) Select **Transparency Serial**.

Figure 4-76 Transparency serial



2) Set **Transparency Serial** as **Protocol**, and configure **Baud Rate** as needed.
3) Click **Confirm**.

4.7.7.3 Light Configuration

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

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

Figure 4-77 Light config

Step 2 Configure parameters.

Table 4-39 Illuminator parameter description

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	Work Mode	• **Forbidden**: The light is normally off. • **Always**: The light is normally on. • **Default**: 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 **Dawn/Dusk**, **Daytime** 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.

Parameter		Description
	Delay Time	Configure the delay time of the light to keep the snapshot in sync with the flash.
	Burst Mode	You can select the level that triggers the flashing light. Currently, only **Low** level is supported.
	Prevalue	When setting **Work Mode** to **Default**, you need to set the brightness prevalue.
Strobe	Output Mode	Same as **Work Mode** of flashing light.
	Frequency	Set the frequency of the strobe.

Step 3 Click **OK**.

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

4.7.8 Storage

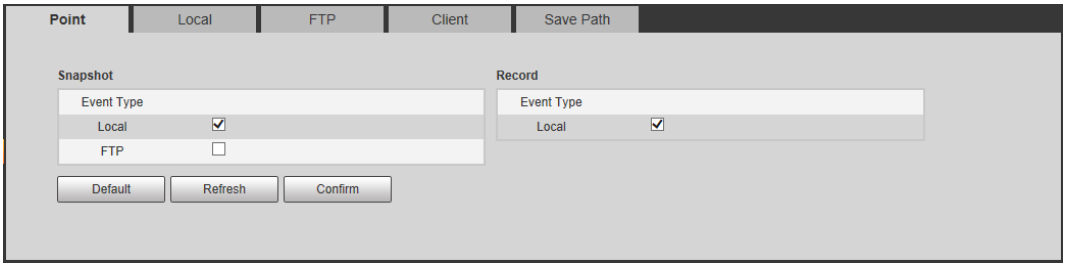
You can configure the storage path of snapshots and video records.

4.7.8.1 Point

Set the storage path of snapshots and video recordings.

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

Figure 4-78 Point



Step 2 Select storage path as needed.

- **Local**: 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 **Confirm**.

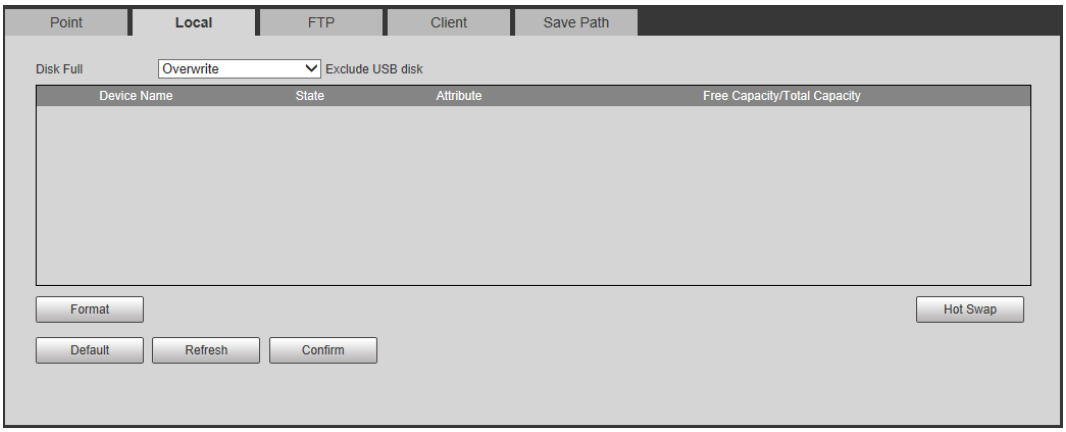
4.7.8.2 Local

Select **Setting** > **Storage** > **Destination** > **Local**, 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 **Confirm** after these operations.

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

Figure 4-79 Local

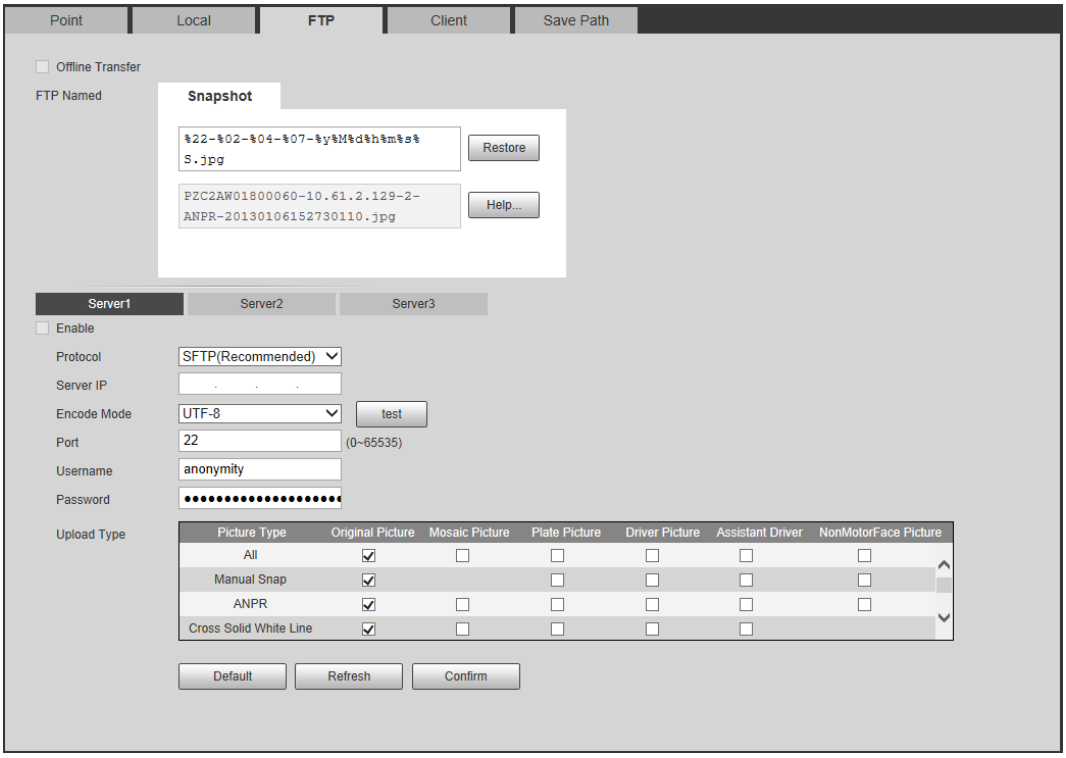


4.7.8.3 FTP

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.

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

Figure 4-80 FTP



Step 2 Configure the parameters.

Table 4-40 FTP parameters

Parameter	Description
Offline Transfer	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.

Parameter	Description
FTP Named	Set the naming rule of snapshots to be saved in FTP server. You can click **Help…** to view the **Picture Naming Help**, or click **Restore** 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 Type**.
Enable	Enable FTP server storage.
Protocol	• **SFTP (Recommended)**: 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. Two modes are available: **UTF-8** and **GB2312**. 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 Type	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 **Confirm**.

4.7.8.4 Client

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.

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

Figure 4-81 Client

Step 2 Configure the parameters.

Step 3 Click **Confirm**.

4.7.8.5 Save Path

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

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

Step 2 Name the snapshots in the **Input Name** section. You can click **Help…** to view the **Picture**

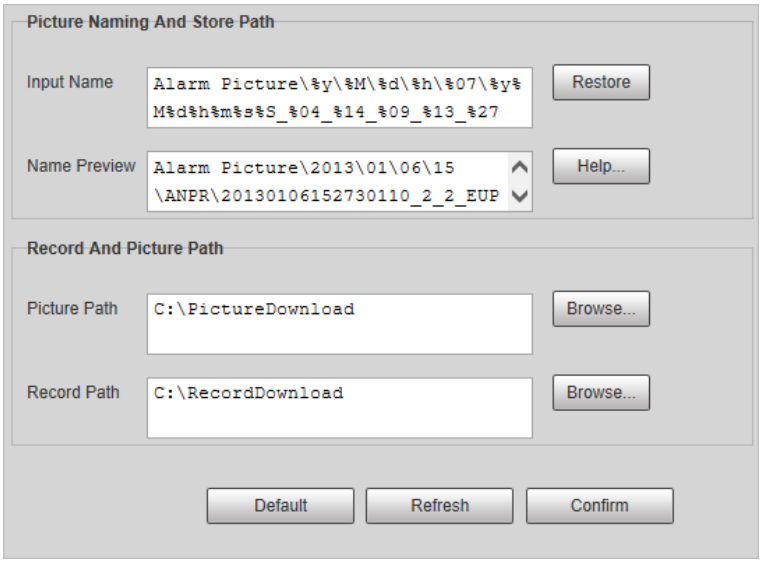
Naming Help, or click **Restore** to restore the naming rule to the default.

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 **Confirm**.

Figure 4-82 Save path



4.7.8.6 Record Control

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

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

Step 2 Select the record mode.

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

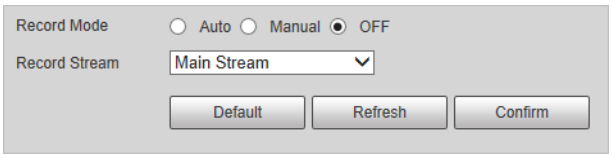
  After enabling auto recording, go to **Setting** > **Event** > **ANPR Snap**, in the **Rule Config** section, under **Advanced Parameter**, select a lane (**Event Type** is not **ANPR**) and then enable **Related Record** to automatically record the corresponding lanes. In addition, select **Local**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

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

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

Step 4 Click **Confirm**.

Figure 4-83 Record control



4.7.9 System

4.7.9.1 General

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

4.7.9.1.1 General Settings

You can configure the Camera No., video standard, and more.

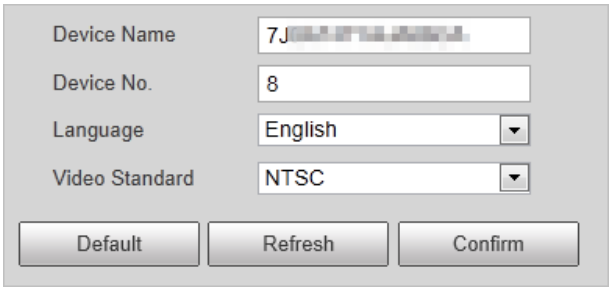
Step 1 Select **Setting** > **System** > **General Setup** > **General Setup**.

Step 2 Configure the parameters.

For **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.

Figure 4-84 General



Step 3 Click **Confirm**.

4.7.9.1.2 Date & Time

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

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

Step 2 Configure the parameters.

Figure 4-85 Date & time

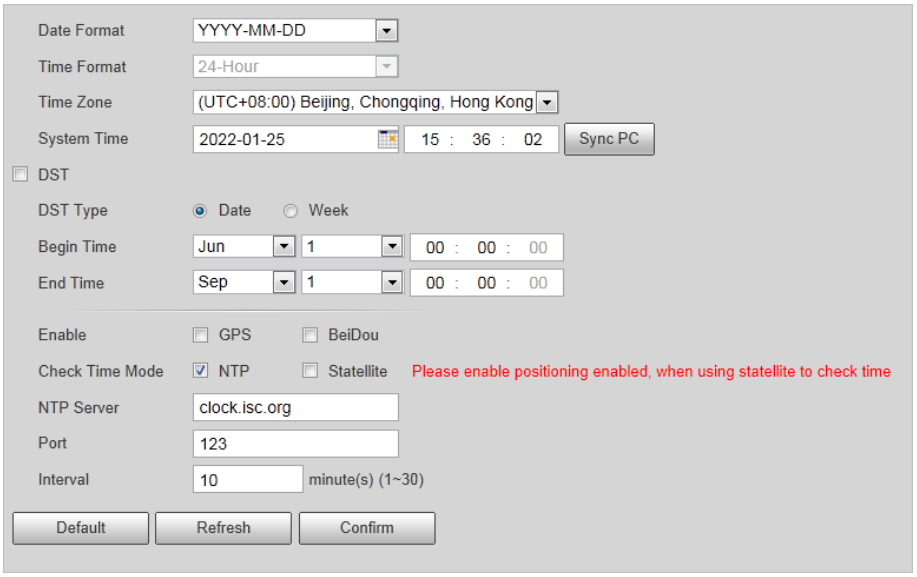


Table 4-41 Date&time parameters

Parameter	Description
Date Format	Select the date format. Three formats are available: **YYYY-MM-DD**, **MM-DD-YYYY** and **DD-MM-YYYY**.
Time Format	Only **24-Hour** is available.
Time Zone	The time zone where the Camera locates.
System Time	The current time of the Camera.
Sync PC	Sync the time of the Camera with the time of the computer. Click **Sync PC**, and settings will immediately take effect.
DST	Select the **DST** (Daylight Saving Time) checkbox, set the **DST Type** by **Date** or by **Week**, and then configure the **Start Time** and **End Time** of DST.
Enable	Select **GPS** or **BeiDou** positioning system.
Check Time Mode	Select time synchronization mode. • **NTP**: Select the checkbox to enable **NTP** (network time protocol) time synchronization. In this case, you need to set the NTP server IP address, port, and time synchronization interval. • **Satellite**: Synchronize the time according to the positioning. In this case, you need to enable **GPS** or **BeiDou** positioning first.

Step 3 Click **Confirm**.

4.7.9.2 Account Management

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

4.7.9.2.1 Managing Users

You can view user information, add or delete user(s), change user password, assign user permissions, restrict user login, and more.

- After the Camera is initialized, the admin user generated by default has the highest permission. The admin user cannot be deleted, and its permissions cannot be changed.
- Users with **User** permission can change its own password, and change the password of other users.
- Users who have logged in cannot be deleted.

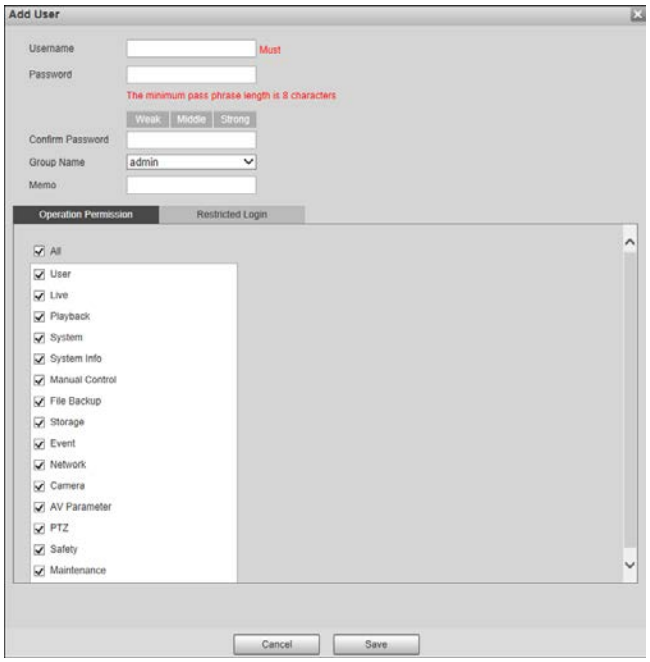
Procedure

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

Step 2 Click **Add User**.

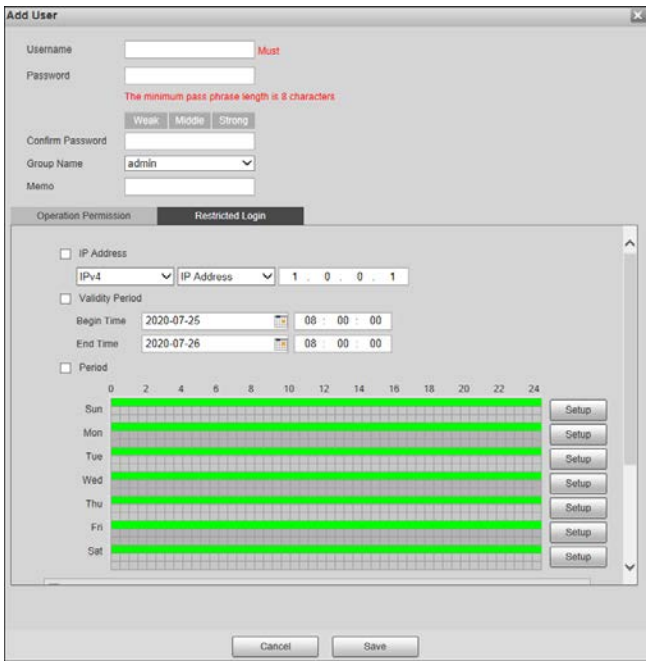
Step 3 Configure the user information including username, password, group name, memo, and operation permissions.

Figure 4-86 Add user



Step 4 Set login restrictions (if necessary), and then the restricted IP addresses or IP within the defined segment will be allowed to log in to the Camera during the defined validity period and time.

Figure 4-87 Configure login restriction



Step 5 Click **Save**.

Related Operations

- Click to delete the corresponding user. Admin user cannot be deleted.
- Click corresponding to the user. You can edit the information such as username, password, email address, group name, and memo. Click **Save** to save the settings.
- Click to edit the restricted login settings of the user account.
- Select **Setting** > **System** > **Account** > **Account** > **Clear user information** to clear all user information.

4.7.9.2.2 Managing User Groups

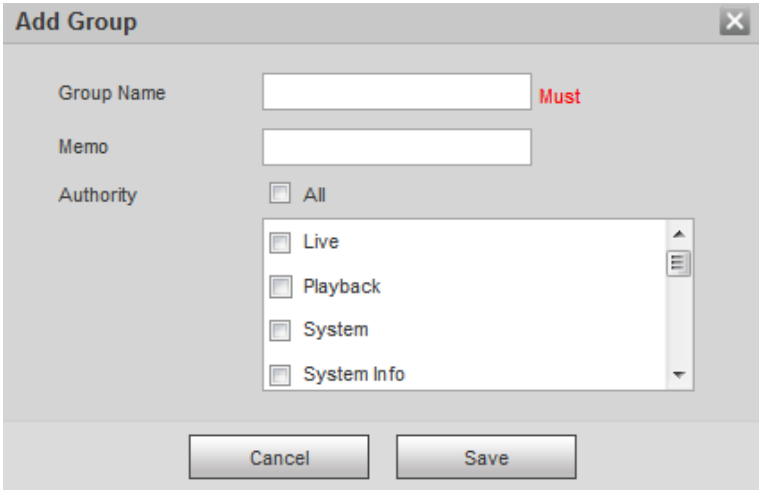
After the Camera is initialized, two user groups, admin and user, are generated by default. You can also add or delete user group(s), and change user group password and permissions.

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

Step 2 Add, modify, and delete user groups.

- Add a user group
  1. Click **Add Group**.
  2. Configure the **Group Name** and **Authority** of the group.

Figure 4-88 Add user group



  3. Click **Save**.

Click an added user group, and then you can view its permissions.

- Modify a user group
  1. Click .
  2. Modify the memo and permissions of the group.

Permission of admin user group cannot be deleted.

  3. Click **Save**.
- Delete a user group

Click to delete the selected user group. Admin and user groups cannot be deleted.

4.7.9.2.3 ONVIF User

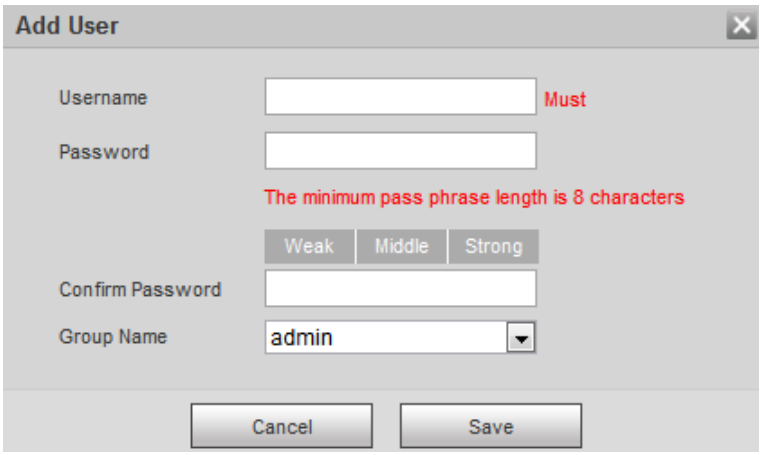
You can view ONVIF user information, add or delete ONVIF users, and change ONVIF user passwords.

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

Step 2 Add, modify, and delete an ONVIF user.

- Add user
  1. Click **Add User**.
  2. Configure user information such as username, password, and group name.

Figure 4-89 Add user



3. Click **Save**.

- Modify user

  Click  to modify the information such as username, password, and group name.

  Group of admin user cannot be modified.

- Delete user

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

4.7.9.3 Safety

4.7.9.3.1 System Service

You can enable multiple system services to secure network safety.

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

Figure 4-90 System service

Step 2 Enable the services as needed.

Table 4-42 Description of system service parameters

Parameter	Description
SSH	Secure Shell (SSH) is a cryptographic network protocol for operating network services securely over an unsecured network. It is a method for secure remote login, providing secure access for users.

Parameter	Description
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 you can reset the password when you forgot your password. You can also set the validity of the password in **Password Expires in xx day(s)**.
CGI Service	The service is enabled by default. CGI is the interface between external applications and the web server, and devices can be accessed through this protocol.
Onvif Service	The service is enabled by default. It allows network video products produced by different manufacturers to communicate with each other.
Audio and Video Transmission Encryption	Select the **Enable** checkbox to enable encryption during audio and video transmission. Make sure that the matched device or software supports video decryption function; otherwise, do not enable it.
RTSP over TLS	Enable this function to encrypt stream transmitted through standard protocol. We recommend you keep the function on.
Private Protocol Authentication Mode	Leave it as default.

Step 3 Click **OK**.

4.7.9.3.2 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.

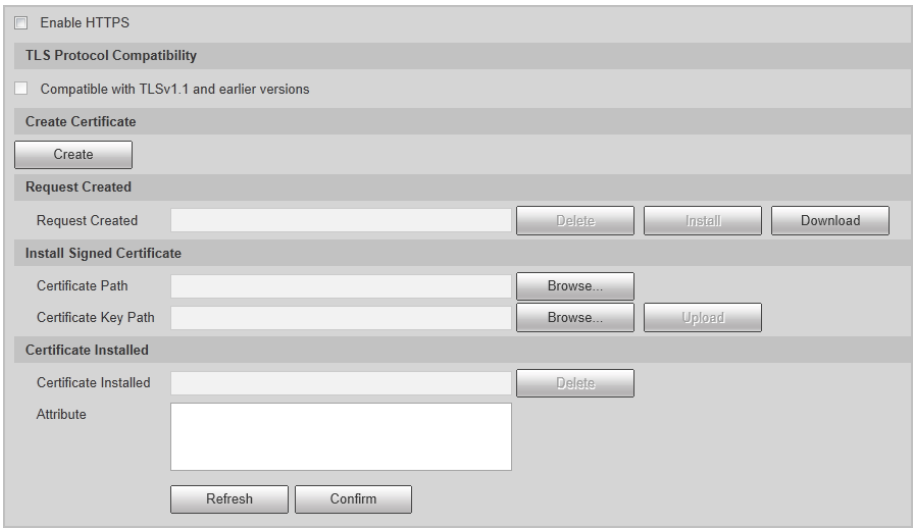
On the **HTTPS** page, users can make computer log in normally through HTTPS by creating certificate or uploading authenticated certificate. It can ensure security of communication data, and provide guarantee for user information, and device safety through reliable and stable technical approach.

Procedure

Step 1 Create certificate or upload the authenticated certificate.

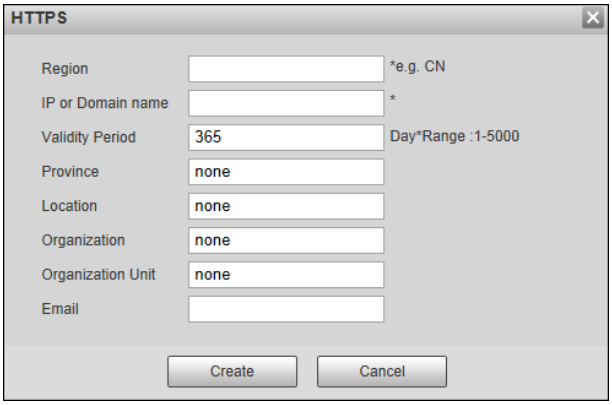
- Create a certificate.
  1. Select **Setting** > **System** > **Safety** > **HTTPS**.

Figure 4-91 HTTPS



2. Click **Create**.

Figure 4-92 HTTPS



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

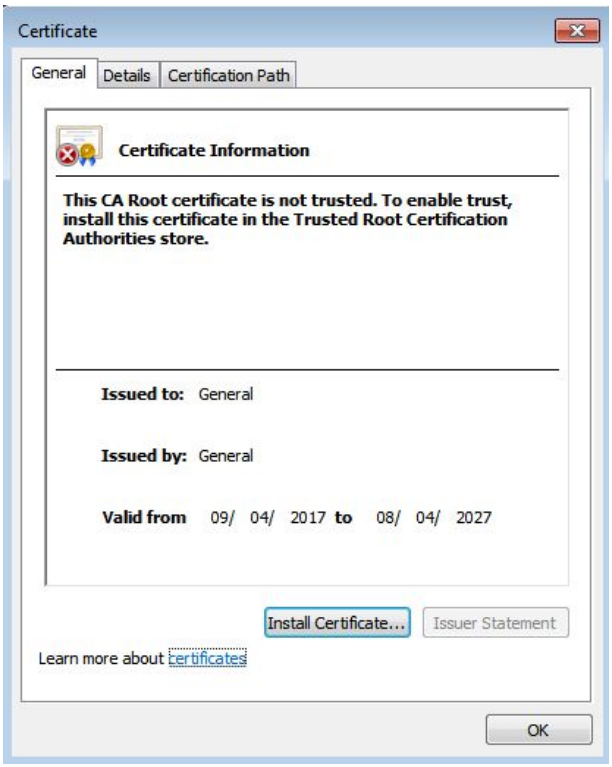
   The entered **IP or Domain name** must be the same as the IP or domain name of the Camera.

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**.

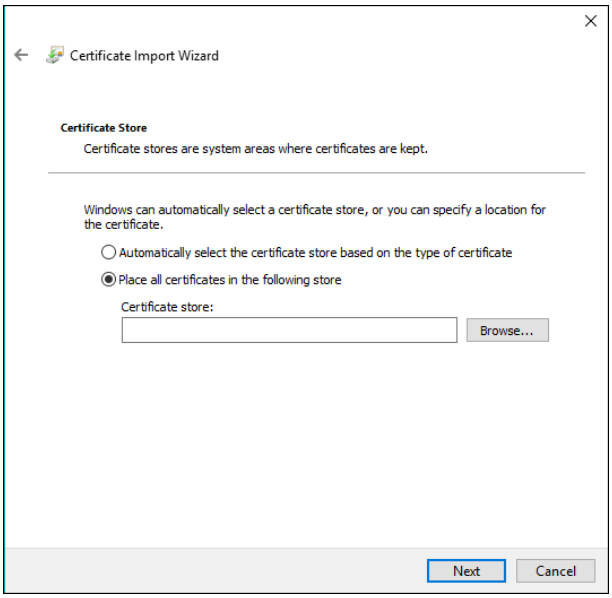
5. Double-click the RootCert.cer icon.
6. Click **Install Certificate…**.

Figure 4-93 Install certificate



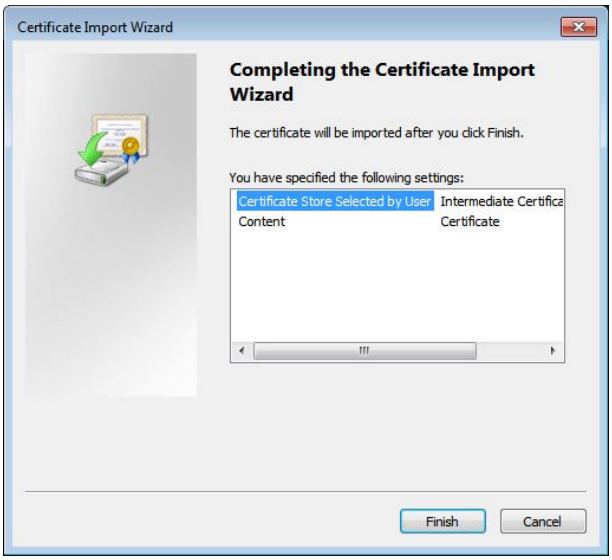
7. Click **Next**.

Figure 4-94 Certificate store



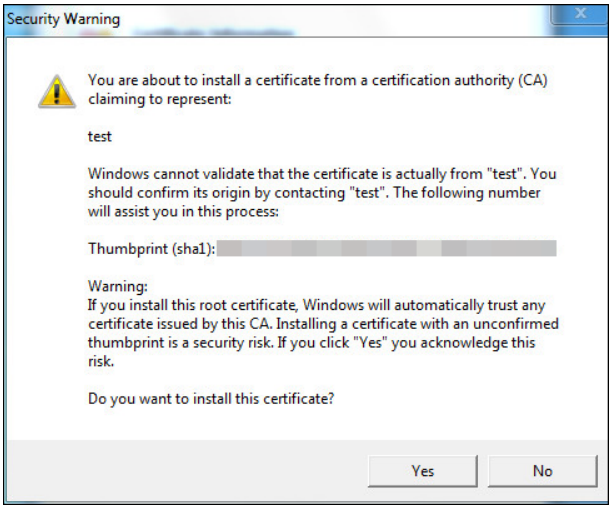
8. Click **Next**.

Figure 4-95 Completing certificate import wizard



9. Click **Finish**.

Figure 4-96 Security warning



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

- Install a signed certificate.
  1. Select **Setting Safety** > **System** > **Safety** > **HTTPS**.
  2. Select **Enable HTTPS**, 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 HTTPS**, and click **Confirm**.

The configuration takes effect until the Camera restarts.

Step 3 Use HTTPS to log in to the Camera.

1. Enter https://*xx.xx.xx.xx* in the browser.

   xx.xx.xx.xx is the Camera IP address or domain name.

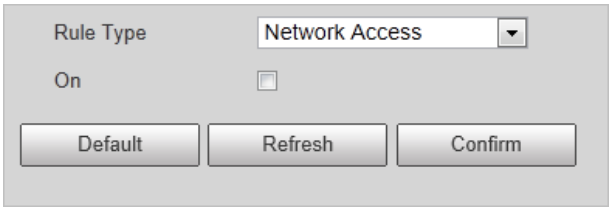
2. Enter the username, and password to log in to the Camera.

4.7.9.3.3 Firewall

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

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

Figure 4-97 Firewall



Step 2 Select **Rule Type**.

- **Network Access**: Add the IP address to allowlist or blocklist to allow or restrict it to access corresponding ports of the Camera.
- **PING Prohibited**: IP address of your camera is prohibited from ping. This helps prevent attempt of accessing your network system without permission.
- **Prevent Semijoin**: Prevents half-open SYN attacks.

Step 3 Select **On** to enable the selected rule type.

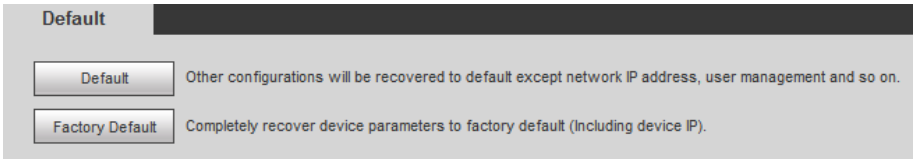
Step 4 Click **Confirm**.

4.7.9.4 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 Default**, and then enter the correct login password in the pop-up box to restore all configurations of the Camera to default settings, including IP address.

Figure 4-98 Default

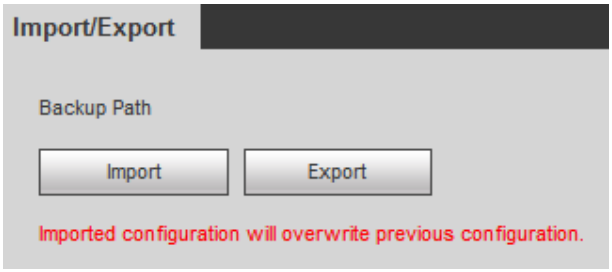


4.7.9.5 Import/Export

The system supports exporting the configurations on web to local computer for backup, and importing the configuration files from local backup for quick configuration or restoration.

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

Figure 4-99 Import/Export



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

- **Import**: Import the configuration files from local backup.
- **Export**: Export the configuration on the web page to local computer.

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

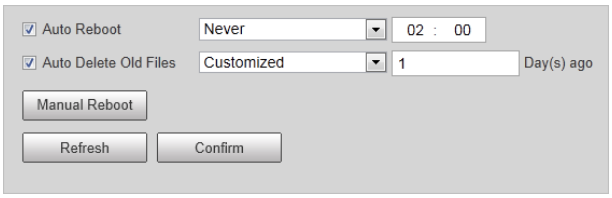
Step 3 Select the path of file to import, or the path of file to export.

4.7.9.6 Auto Maintain

The system automatically restarts at 02:00 every day by default. You can also select to automatically restart the Camera at the defined day and time, or manually restart the Device to solve problems such as stuck images.

Step 1 Select **Setting** > **System** > **Auto Maintain**.

Figure 4-100 Auto maintain



Step 2 Select **Auto Reboot**, and then set the restart time.

Step 3 Select **Auto Delete Old Files**, and then set a time point, and all the old files before this time will be deleted.

Step 4 (Optional) Click **Manual Reboot** can restart the Camera immediately.

Step 5 Click **Confirm**.

Step 6 Select **Emergency Maintenance**, and then select **On** to enable the function.

Step 7 Click **Save**.

4.7.9.7 System Upgrade

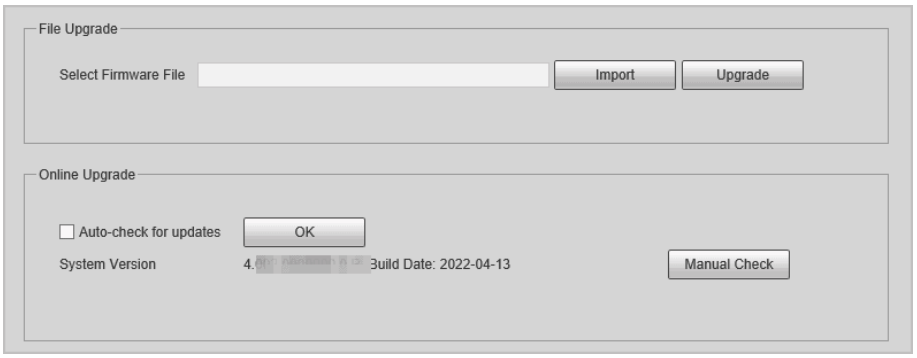
You need to update the system to the latest version to make the Camera run properly.

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

Step 2 Upgrade the system through file upgrade or online upgrade.

- File Upgrade
  1. Click **Import**, and then select the upgrade file in the pop-up dialog box.
  2. Click **Upgrade** to start system upgrading.
- Online Upgrade
  - Select **Auto-check for updates**, and then click **Confirm**. When a new version is detected, click **Upgrade Now**, the system starts upgrading.
  - Click **Manual Check**, and when a new version is detected, click **Upgrade Now**, the system starts upgrading.

Figure 4-101 System upgrade



4.7.10 System Information

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

4.7.10.1 Version Information

Select **Setting** > **System Info** > **Version**, and then click **Version** or **Peripheral Edition Info** to view information such as device type, software version, web version, and version of the radar and flashlight.

Versions might vary depending on the different devices.

4.7.10.2 Log

4.7.10.2.1 System Log

You can search for and view logs by the time and type, and backup the logs.

After the number of log records reaches a certain number, the earliest log records will be overwritten. To prevent critical logs from being overwritten, the system performs log overwriting in three levels: Low, medium, and high.

- Low: When the log records reach 896, the earliest log records will be overwritten.
- Medium: When the log records reach 256, the earliest log records will be overwritten.
- High: When the log records reach 640, the earliest log records will be overwritten.

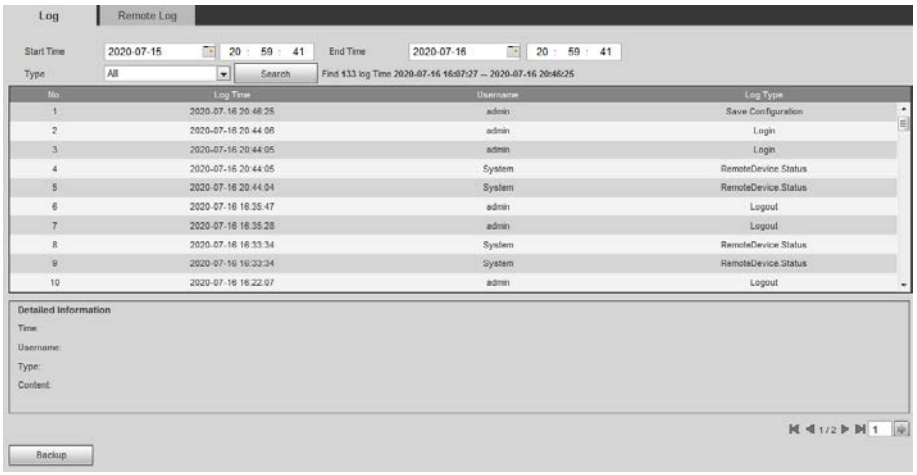
Step 1 Select **Setting** > **System Info** > **Log** > **Log**.

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

Step 3 Click **Search**. You can stop searching according to your need.

- View: Click a log to view its details.
- Back up: Click **Backup** to back up the log to local computer in .txt format.

Figure 4-102 System log

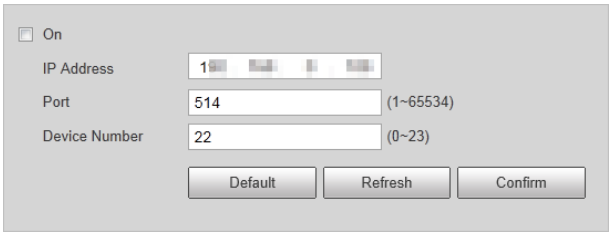


4.7.10.2.2 Remote Log

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

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

Figure 4-103 Remote log



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

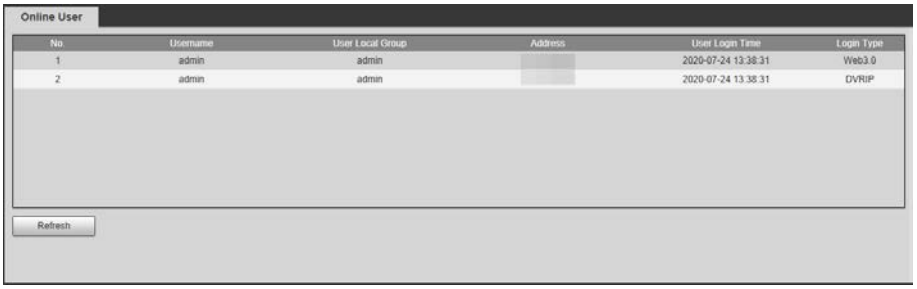
Step 3 Configure the IP address, port, and device number of remote device.

Step 4 Click **Confirm**.

4.7.10.3 Online User

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

Figure 4-104 Online user



4.7.10.4 Work Status

Select **Setting** > **System Info** > **Work State**, and then you can view device work status, including

CPU, memory and temperature.

4.7.10.5 Legal Information

Select **Setting** > **System Info** > **Legal Info** to view the Open Source Software Notice.

4.8 Alarm

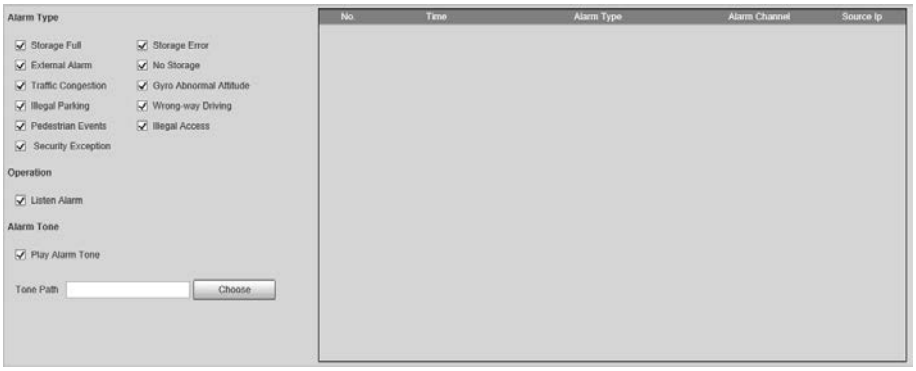
You can select the event type that triggers an alarm, and also configure how to sound the alarm.

Step 1 Select **Alarm** at the upper-right side of web.

Step 2 Select alarm type as needed.

When alarms are triggered, information of the selected alarm type will be displayed at the right side.

Figure 4-105 Alarm



Step 3 Configure alarm operation and alarm tone.

Table 4-43 Description of alarm parameters

Parameter	Description
Operation	Select **Listen Alarm**, and when an alarm is triggered and you are not viewing the alarm page,  will be displayed on the alarm menu bar, and the alarm information will be automatically recorded. When you click the alarm menu bar, the icon disappears. If you are viewing the alarm page when an alarm is triggered, the alarm icon will not appear, but alarm information will be recorded in the alarm list on the right.
Alarm Tone	Select **Play Alarm Tone** to enable playing alarm tone, and then click **Choose** to select the audio file. When an alarm is triggered, the system plays the selected audio. Currently, only **.wav** audio file is supported.

4.9 Logout

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

password to log in again.

Appendix 1 Reference for Filling in Allowlist and Blocklist Template

Appendix Table 1-1 Plate color number

Plate Color	Plate Color No.
Yellow Plate with Black Text	1
Blue Plate with White Text	2
Black Plate with White Text	3
White Plate with Black Text	4
Black	5
Blue	6
Cyan	7
Red	8
Gradient Green	9
White	10
Yellow and Green	11
Yellow	12

Appendix Table 1-2 Vehicle color number

Vehicle Color	Vehicle Color No.
White	A
Black	B
Red	C
Yellow	D
Gray	E
Green	F
Blue	G
Pink	H
Purple	I
Brown	J
Yellow Green	K
Cyan	L
Dark Blue	M
Dark Brown	N
Dark Cyan	O
Dark Golden	P
Dark Green	Q

Vehicle Color	Vehicle Color No.
Dark Olive	R
Dark Orange	S
Dark Pink	T
Dark Purple	U
Dark Red	V
Dull Purple	W
Dark Yellow	X
Deep Sky Blue	Y
Others	Z
Dark Gray	a
Forest Green	b
Golden	c
Green Yellow	d
Chestnut	e
Light Rosy	f
Olive	g
Orange	h
Ocean Green	i
Silver Gray	j
Tomato Red	k
White Smoke	l

Appendix Table 1-3 Vehicle type number

Vehicle Type	Vehicle Type No.
Large Vehicle	1
Small Vehicle	2
Tractor	14
Bus	23
Heavy Truck	24
MPV	25
Light Truck	26
Van	27
Medium Bus	28
Medium Truck	29
Minicar	30
Two-wheeled Vehicle	31
Tank Truck	32

Vehicle Type	Vehicle Type No.
Public Bus	33
Pickup	34
SUV	35
Sedan	36
SUV-MPV	37
Taxi	38
Tricycle	39
Unknown	40
Ambulance	41
Mixer Truck	42
Construction Truck	43
Fire Truck	44
General	45
Engineering Truck	46
Fuel Tank Truck	47
Police Car	48
Pulverized Material Vehicle	49
Tank Truck	50
Sewage Suction Truck	51
Hazardous Chemicals Truck	52
Sanitation Truck	53

Appendix 2 Cybersecurity Recommendations

Mandatory actions to be taken for basic device network security:

1. **Use Strong Passwords**

   Please refer to the following suggestions to set passwords:

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

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

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

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

1. **Physical Protection**

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

2. **Change Passwords Regularly**

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

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

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

4. **Enable Account Lock**

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

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

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

6. **Enable HTTPS**

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

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