

# **4MP AI Enforcement Camera**

## Web Operation Manual



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V1.0.3



# Foreword

### General

This manual introduces the web operations of the 4MP AI Enforcement Camera (hereinafter referred to as "the Camera"). Read carefully before using the device, and keep the manual safe for future reference.

### Models

#### DHI-ITC431-RW1F-L, DHI-ITC431-RW1F-IRL8

### Safety Instructions

The following signal words might appear in the manual.

Signal Words	Meaning	
Anger Danger	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.	
	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.	
	<b>INDIAN</b> Indicates a potential risk which, if not avoided, could result in property damage, data loss, reductions in performance, o unpredictable results.	
© <u>∽∿</u> TIPS	Provides methods to help you solve a problem or save time.	
	Provides additional information as a supplement to the text.	

### **Revision History**

Version	Revision Content	Release Time
V1.0.3	Updated the UI of the web client.	June 2022
V1.0.2	Changed some images.	December 2021
V1.0.1	Updated model information and cybersecurity recommendations.	September 2021
V1.0.0	First release.	September 2021

### **Privacy Protection Notice**

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



### About the Manual

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



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# **1** Web Introduction

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

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

## 1.1 First-time Login

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

Connect the Camera to the network. Step 1

- 1) Connect the Camera and PC over the Ethernet cable.
- 2) Keep the IP address of the PC and the camera on the same network segment. The network segment can be set to 192.168.1.X, but cannot be the same as the factory default IP of the Camera (192.168.1.108).
- 3) Execute ping \*\*\*.\*\*\*. \*\*\*. \*\*\* (device IP) command on PC to check the network connection.
- Enter the IP address of the Camera (192.168.1.108) in the browser address bar, and press Step 2 the Enter key to log in to the web page of the Camera.
- In the Region Setting dialog box, set Language and Video Standard. Then, click Next. Step 3

Figure 1-1 Region setting

Region Setting				_
Language	English	~		
Video Standard	PAL	~		
		Next	7	



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



Figure 1-2 Time zone setting

Time Zone Setting		
Date Format	YYYY-MM-DD 🗸	
Time Zone	(UTC+00:00) Dublin, Edinburgh, Lisbon, London	
System Time	2022-06-16 II : 16 : 38 Sync PC	
Will be modified as	2022-06-16 02:16:38	
	Next	

- <u>Step 5</u> In the **Device Initialization** dialog box, enter your new password.
- <u>Step 6</u> Select the **Email Address** checkbox, and then enter your email address. This helps you reset your password when your password is lost or forgotten.
- Step 7 Click Next.

Online Une

Figure 1-3 Device initialization

Device Initialization	
Username Password	admin
Confirm Password	Low Medium Strong The password must consist of 8 to 32 non-blank characters and contain at least two
Email Address	types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).
	Next

<u>Step 8</u> In the **Online Upgrade** dialog box, select **Auto-check for update** and click **Confirm**.

Figure 1-4 Online upgrade

 e opgitude
Auto-check for updates
Automatically notify me when updates are available. The system checks for updates daily.
To inform you of the latest firmware upgrades for your device, we need to collect device info such as IP address, device name, firmware
version, device SN, etc. All collected info is used only for the purposes of verifying device validity and pushing upgrade notifications.
Confirm
Contirm



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

Figure 1	-5 Login page		
WEB SE	RVICEV3.0		
Username:	admin		
Password:		Forgot password?	
russiinu.		1 orgot passitora:	
	Login Cancel		

<u>Step 10</u> In the **Configuration Wizard** dialog box, set the following parameters: **Scene Type**, **Iris Type**, **Iris**, and **Lens Type**. Then, click **Next Frame**.

Figure 1-6 Configuration wizard (1)

Figure 1-0 Configuration wizard (1)			
Configuration Wiza	Configuration Wizard		
Scene Type	ANPR	~	
ocene rype			
Iris Type	R-P90	<b>~</b>	
Iris	🖲 Auto 🔿 Manual		
Lens Type	OPT-C7189F-400	<b>~</b>	
	Next Frame >		

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

Figure 1-7 Configuration wizard (2)

Configuration Wizar	ď
IP Address Subnet Mask Default Gateway	15 25 15
	< Back Complete

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



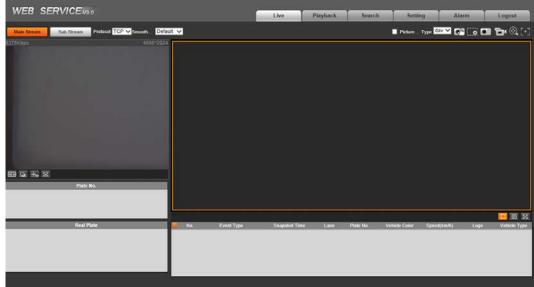
Figure 1-8 Install the plug-in

WEB S	ERVICE	0	
Main Stream	Sub Stream	Protocol TCP	Smooth Defa
Please	click here to down	nload and instal	l the plug-in.
	2 Plate I	No.	

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

<u>Step 9</u> After successfully installing the plug-in, the live view of the Camera is displayed.

Figure 1-9 Live page





### $\square$

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

## 1.2 Login

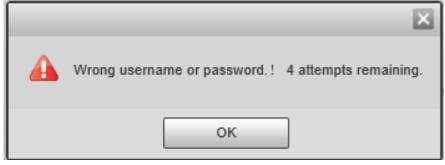
You can log in to the web by following the steps below. For first-time login, see "1.1 First-time Login".

- <u>Step 1</u> Enter the IP address of the Camera in the browser address bar, and press Enter.
- <u>Step 2</u> Enter username and password on the displayed page, and then click **Login**.

 $\square$ 

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

Figure 1-10 Invalid username or password



## 1.3 Logout

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

## 1.4 Password Reset

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

- <u>Step 1</u> Enter the IP address of the Camera in the browser address bar, and press Enter.
- <u>Step 2</u> On the login page, click **Forgot password?**
- Step 3 In the pop-up dialog box, click **OK**.
- <u>Step 4</u> Scan the QR code according to the page prompt, and send the scanning result to the designated email to acquire security code.

 $\square$ 

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

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



Figure 1-11 Reset password (1)

Password Res	st(1/2)
SN:	-
Please scan	Note(For admin only): Option 1. Download the mobile phone client, go to password resetting interface, and scan the QR code on the left of the interface. Option 2. Please use an APP to scan the left QR code to get encryption strings. And then send the strings to support_gpwd@htmicrochip.com.
	The security code will be delivered to 6***@qq.com
Security code:	
	Cancel Next

#### Step 6 Click Next.

<u>Step 7</u> Set **Password**, and enter your new password again in **Confirm Password**.

Figure 1-12 Reset password (2)

Password Reset(2/2)	)							
Username	admin							
Password								
	Low Medium Strong							
	The password must consist of 8 to 32 non-blank							
	characters among upper case, lower case,							
	number, and special character (excluding ' " ; : &).							
Password The password cannot be less than 8 characters.          Low       Medium       Strong         The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).         Confirm Password								
[	Cancel							
l								

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

Step 8 Click OK.



## **1.5 Web Functions**

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

Figure	1-13	Web	function	bar
inguic		WC N	ranction	Nui

Live	Playback	Search	Setting	Alarm	Logout

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



# 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 perform other operations.



Table 2-1 Description of live page

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

# 2.1 Video Stream

- **Main Stream**: 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, the system only supports **TCP**.
- Smoothness Adjustment: Fluency of viewing the live video. The fluency can be set to High, Middle, Low, or Default (recommended).

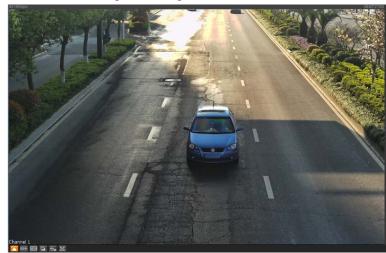


## 2.2 Live View

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

- Image to original size or appropriate window.
- 🔄: Click it to switch to big window. Click it again to exit big window.

Figure 2-2 Big window



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

lcon	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).
O	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).
<b>\$</b>	Hue	Adjust the image hue. For example, change red to blue. The default value is made by the light sensor and normally it does not have to be adjusted. The range is from 0 to 128 (64 by default).
1	Saturation	Adjust the vividness of the colors, without influencing the overall brightness of the image. The range is from 0 to 128 (64 by default).
Reset	_	Click it to reset brightness, contrast, saturation, and hue to their default values.

Table 2-2 Image adjustment



### $\square$

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

# 2.3 Plate Number Recognition

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

## 2.4 Plate Snapshot

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

## **2.5 System Functions**

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

## 2.6 Functions on the Live Page

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

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

Table 2-3 Function description of the Live page



lcon	Name	Description
•	Snapshot	Click it, and a snapshot is taken, even when there is no vehicle passing. The snapshot is saved in the path defined by <b>Setting</b> > <b>Storage</b> > <b>Storage Path</b> > <b>Path</b> .
	Digital Zoom	Click and drag to select any area in the video window, and then the area will be zoomed into. In any area of the video window, click or right-click to exit.
	Video	Click it to start recording. Click again to stop recording and the recorded video will be saved to the set path.
$\odot$	Zoom & Focus	Click to set zoom and focus parameters.
[+]	Aux Focus	Click it to start auto focus, local focus, and license plate check for the monitoring image.

# 2.7 Vehicle Snapshot

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

## 2.8 Event List

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

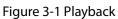


# **3** Playback

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



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



NEB SERVIC	E v3.0				Live	Playback	Search	Setting	Alarm	Logo	out
									File Type	dav	×
									Data Src	Disk	Y
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									Sun Mon T	ue Wen Thu Fi	ni Sat
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									12 13 1	14 15 16 1	7 18
									19 20 2	21 22 23 2	4 25
									26 27 2	28 29 30	
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	04:00										
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Table 3-1 Functions

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

## 3.1 Video Playback

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

lcon	Function	Description
0	Play and pause	<ul> <li>The video is paused or not being played.</li> <li>The video starts playing.</li> </ul>

Table 3-2 Video playback description



lcon	Function	Description
0	Stop	Stop playing video.
	Next frame	Play by frame.
	Slow	Slow down the playback.
¢	Fast	Speed up the playback.

# **3.2 Viewing Recordings**

You can view recordings by performing the following steps.

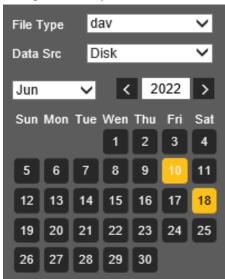


Figure 3-2 Playback file

- Step 1 Set File Type and data source (Data Src), and set record time. The data source is Disk (here referred to as TF card) by default. No video will be played if there are no videos stored on the TF card.
- Step 2Click a day with blue shading, and a colored progress bar is displayed on the timeline.Date with blue shading means there are recordings on this day.
  - Point to this day, and the color turns to orange.
  - Select this day, and the color turns to green.
- <u>Step 3</u> Click any time on the progress bar, and the system plays back videos starting from that time.



<u>Step 4</u> Click **E**, and videos recorded on a selected day will be displayed in a list.



Figure 3-4 Playback file



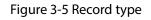
Table 3-3 Playback file description

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

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

# 3.3 Record Type

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







## 3.4 Time Format

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

Figure 3-6 Time format								
C 24hr	🕒 2hr	©1hr	©30min					



# 4 Search

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

## 4.1 Image Search

## 4.1.1 Searching for SD Card Image

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

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Make sure that the TF card is inserted into the Camera. Otherwise, there might be no results. <u>Step 1</u> Select **Search** > **Picture Query** > **Memory Card Image**.

Figure 4-1 Memory card image

Memory Card Imag	e Download		Local	lmage									
Start Time End Time Lane Extract Linked V	2022-06-10 2022-06-11 1 10 s			34 : 34 :		Event Type Logo Speed Range	All Im All 0	ages ~ 255	✓ ✓ km/h (0~255)			Se	earch
	lo. Lane	Size	-	Snapsho	ot Time	Plate No.	Plate Color	Ve	hicle Color	Logo	Speed(km/h)	Event Type	Vehicle Size
												◀ 1/	1 ▶ ▶ 1 📦
Open	Download		Expor	rt									

<u>Step 2</u> Configure the parameters, and then click **Search**.

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



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

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

- <u>Step 4</u> Select the images that you want to download, and then click **Download**.
- <u>Step 5</u> Select the path to save the images, and the system starts downloading the images to your PC.

## 4.1.2 Downloading Attribute

You can configure the image information.

- <u>Step 1</u> Select **Search** > **Picture Query** > **Download**.
- <u>Step 2</u> Set **Download Image by** to download snapshots based on their **Creation Time** or **Snapshot Time**.

#### Select **Download Method**.

- Select Files: Download the selected snapshots.
- **Period**: Download all images captured during the set time period. You can set the time in the **Memory Card Image** tab.
- Step 4Select cutouts that you want to download from All, Plate Cutout, B/W Plate Cutout, FrontSeat Passenger's Face, Driver's Face, and Vehicle Body Cutout.
- <u>Step 5</u> Name the snapshots. Click **Help** to view the image naming rule. Click **Refresh** to go back to default.
- Step 6 Click Save.



Figure 4-2 Dow	nloading att	ribute
Memory Card Image	Download	Local Image
Download		
Download Image by	Oreation Tin	ne 🔘 Snapshot Time
Download Method	<ul> <li>Select Files</li> </ul>	O Period
Cutout Type	Selected 5 items.	<b>_</b>
Name Format for De	ownloaded Images	
%y%M%d%h%m%s_4	\$27_\$09_\$66	Reset
20130106152730	0_8_ZheAPJ896_	Help
Refresh	Save	

### 4.1.3 PC Picture

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

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	L				
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	L				
	۰.	-	-	-	-

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

- <u>Step 1</u> Select Search > Picture Query > Local Image.
- <u>Step 2</u> Click **Browse** to select a picture.
- <u>Step 3</u> Click **Watermark**, and view result under **Watermark**.
  - When the result is **Exception**, the image is tampered.
  - When the result is **Normal**, the image is not tampered.

 $\square$ 

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

#### Figure 4-3 Local images

Mem	ory Ca	ard Image	Download	Local Image				
	D-#h		с		she	Press		
	Path		C		5114			
	<b>v</b>	No.		File Nan	ne	Creation Time	Size(KB)	Watermark
	✓	1	200		)_1_0.jpg	2022-06-11 14:47:35	1394	Exception
	•	2	200		)_2_0.jpg	2022-06-11 14:48:19	803	Normal
							4	
		Open	Watermark					
		opon	Tratornark					



## 4.2 Flow Query

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

 $\square$ 

- The function is available on select models, and might differ from the actual product.
- This section uses **Traffic Flow** as an example.
- <u>Step 1</u> Select **Search** > **Flow Query** > **Traffic Flow** (select **Pedestrian Flow** if you want to search for pedestrian flow).
- <u>Step 2</u> Set **Start Time** and **End Time**.
- Step 3 Click Search.
- <u>Step 4</u> Select search results, and click **Backup** to save the results to your computer.
- <u>Step 5</u> Click **Clear** to delete all results.

Figure 4-4 Traffic flow search

Traffic Flow	Pedestrian Flow							
Start Time	2022-06-10							
End Time	2022-06-11	17 : 45 : 55						
Search								
No. Lar	ne Start Time	Period(sec)	Traffic Average Speed		Time Headway	Space Headway	Queue Length	Road Status
			Flow (km/h)	Occupancy RateOccupancy Rate	(sec/vehicle)	(m/vehicle)	(m)	
Details								
							◀ 1/1 )	▶ ▶ 1 📦
Backup	Clear	lota: Switching to anoth	or page during backup will	interrupt the process, causing the	backup to stop			
	ic flow data will cause the p			interrupt the process, causing the	backup to stop.			
Clearing the traff	ic now data will cause the p	edestrian now data to be	cleared.					

## 4.3 Recording Search

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

## 4.3.1 Recording

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

 $\square$ 

- Click control on the Live page, and the Camera starts recording. The recorded video is saved on the path defined in Setting > Storage > Storage Path > Path.
- The function is available on select models, and might differ from the actual product.
- <u>Step 1</u> Select Search > Search Video > Record.



<u>Step 2</u> Click **Select File** to select the recorded video on your computer, and then you can play back the video.

		Figure 4-	5 Record		
Record	Watermark				
					7
Video File				Select File	
No Video					
WH 🕂 🛛 🖂					
•——					

Table 4-2 Play parameters

lcon	Description
W:H	Click it to select <b>Original</b> or <b>Adaptive</b> playback.
<b>⇔</b> ₀	Click it to enable smart track detection. Number plate, vehicle bounding box, and other smart tracking information will be displayed on the video image.
$\mathbb{X}$	Click it to enter full screen. Double-click the video image or press Esc to exit.
0	Click it to play back the video. Click 🕕 to pause the video.
0	Click it to stop playing back the current video.
	Click it to slow down the video to play at $\times$ 1/2, $\times$ 1/4, or $\times$ 1/8. Click $\bigcirc$ to restore to normal playing speed.
0	Click it to speed up the video to play at $\times$ 2, $\times$ 4, or $\times$ 8. Click $\bigcirc$ to restore to normal playing speed.
	Click it to play back the next frame.

## 4.3.2 Watermark

Prerequisites



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

 $\square$ 

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

### Procedure

- <u>Step 1</u> Select Search > Search Video > Watermark.
- <u>Step 2</u> Click **Select File** to select a recording.
- <u>Step 3</u> Click **Watermark**. The system will display the verification progress and normal watermark information.
  - If the video is verified to be authentic, the watermark you set is displayed next to **Watermark Info**.
  - If the video is tampered, you can check the details next to **Tampered Watermark**.

Record	Watermark						
Video File	C:			.dav	Select File		
Verification Progress					Cancel	Watermark	
Watermark Info	DigitalCCTV						
Tampered Waterma	. No.	Sta	art Time	Error Type			

#### Figure 4-6 Watermark



# **5** Settings

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

## 5.1 Camera

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

## 5.1.1 Configuring Camera Attributes

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

### 5.1.1.1 Configuring General Parameters

You can configure the brightness, contrast, saturation, mode, and other attributes of the Camera. Select Setting > Camera > Image > General. Step 1

		Figi	ire 5-1 Gene	rai			
General	Shutter	Metering	Focus				
			2722 (K-14 (A151)	Brightness Contrast Saturation	□0-		+ 50 + 50 + 50
				Mode ICR Switch Heat to Defog	General	× × ×	Current Mode : General
			MONAN				
GW 1 52 Default	Refresh	Save					

---F 1 C

Configure the parameters. Step 2



Parameter	Description
Brightness	<ul> <li>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.</li> <li>It is 50 by default. The larger the value, the brighter the image.</li> </ul>
Contrast	<ul> <li>The larger the value, the darker the dark area, and the more exposed the bright area.</li> <li>The image might become blurry when the value gets smaller. The recommended range is 40–60, and the available range is 0–100.</li> <li>It is 50 by default. The larger the value, the stronger the contrast.</li> </ul>
Saturation	<ul> <li>The saturation value does not change the overall image brightness.</li> <li>The larger the value, the more saturated the image.</li> <li>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.</li> </ul>
Mode	<ul> <li>Color: The image is always colored.</li> <li>Auto: When the brightness is higher than the threshold, the image automatically changes to color. When it is below the threshold, the image changes to black and white.</li> <li>B/W: The image is always black and white.</li> </ul>
ICR Switch	<ul> <li>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.</li> <li>IR (for IR models) or General (for white light models): Applicable to scenarios with low brightness.</li> </ul>

Step 3 Click Save.

## 5.1.1.2 Configuring Shutter

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

<u>Step 1</u> Select **Setting > Camera > Image > Shutter**.

		Figu	ie 5-2 5ilu	llei			
General	Shutter	Metering	Focus				
Cs¥1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Refresh	Save		Shutter Mode 3D NR Image Exposure WB	Single Shutter     Video 3D NR      Ena     Video Spatial 3D     Video Temporal 3	ole O Clos	se

Figure 5-2 Shutter



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

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

Table 5-2 Shutter parameters

Module	Parameter	Description
	Single Shutter	Video and snapshot share the same exposure mode.
Shutter	Double Shutters	<ul> <li>Video Shutter and Snapshot Shutter can be separately configured.</li> <li>Half Frame Rate: Video and snapshot take half of the frame respectively.</li> <li>Full Frame Rate: Snapshot takes 1 frame, and video takes the rest of the frames.</li> </ul>
Mode	Triple Shutters	Video Shutter and Snapshot Shutter can be separately configured, and a Recognition Shutter is added. Triple Shutter mode is available only when General Mode is selected as Capture and Flash Linkage from Setting > Event > ANPR Snapshot > Other Config.
	Video/Image 3D NR	When it is <b>Enable</b> , 3D NR is enabled to reduce noise of video/image.
3D NR	Video/Image Spatial 3D NR	Spatial video/snapshot denoising. The higher the value, the less the noise.
	Video/Image Temporal 3D NR	Temporal video/snapshot denoising. The higher the value, the fewer the flicker noise.
	Scene	You can change the scene and adjust the sharpness of the corresponding scene. Scenes available: <b>Morning/Dusk</b> , <b>Day</b> , and <b>Night</b> .
luces		You can set the sharpness of the corresponding scene.
Image	Sharpness	The higher the value, the clearer the image. But there will be noise if the sharpness is too high.
	WDR	Select <b>Enable</b> to enable WDR (wide dynamic range), which helps provide clear video images in bright and dark light.
Exposure	Mode	<ul> <li>In Auto mode, only Manual iris type is available.</li> <li>In Force mode, several iris types are available, and you also need to configure Iris, which includes: Auto and Manual. If Manual is selected, you can manually drag the slider to adjust the value.</li> </ul>
	Iris Type	Displays the detected iris type.
	Mode	Select the way of adjusting exposure mode. You can select from <b>Manual</b> and <b>Auto</b> .



Module	Parameter	Description
	Shutter	You can select the shutter value, or select <b>Custom</b> , and then set the shutter range.
	Shutter	Set the time range of shutter. You need to configure shutter when <b>Shutter</b> is set to <b>Custom</b> .
	Gain	Set the value range of gain. You need to configure gain scope when <b>Mode</b> is set to <b>Manual</b> .
WB	Mode	Set scene mode to adjust the image to its best status.

Step 3 Click Save.

### 5.1.1.3 Configuring Metering Zone

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

<u>Step 1</u> Select **Setting > Camera > Image > Metering**.

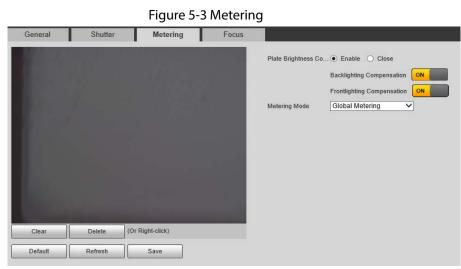




Table 5-3 Metering parameters

Parameter	Description
Plate Brightness Compensation	When selecting <b>Enable</b> , you can turn <b>ON</b> backlight and frontlight according
Backlight Compensation	to scene requirements to improve the backlight and frontlight image brightness.



Parameter	Description
Frontlight Compensation	
Metering Mode	<ul> <li>Global Metering: Measure the brightness of the whole image area and intelligently adjust the overall image brightness.</li> <li>Partial Metering: Measure the brightness of sensitive areas and intelligently adjust the overall image brightness. If the measured area becomes bright, then the whole area becomes dark, and vice versa. Drag the mouse to select the measured area and a yellow box displays over the video image. Drag the box to a proper location, and then click Save to complete configuration.</li> </ul>

Step 3 Click Save.

### **5.1.1.4 Configuring Focus**

Adjust the focus of the Camera.

<u>Step 1</u> Select Setting > Camera > Image > Focus.

				Figur	e 5-4 F	ocus						
General	Shu	itter	Metering	Focus								
- 200		8.51							Lens Type	OPT	-110C1640PE-IR	~ ~
Zoom Zoo	m out 🖃 — (	)		+ Zoom in	Speed 20	~						
Focus	Near 🔄		0	+ Far	Speed 20	~	3 Auto Focu	S				
Reset	Refre	sh										

<u>Step 2</u> Configure the parameters.

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

Step 3 Click **Refresh**.



### 5.1.2 Video

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

### 5.1.2.1 Configuring Video Parameters

Configure the parameters of video streams.

#### <u>Step 1</u> Select Setting > Camera > Video > Video Stream.

	Figure 5-5 Vid	eo stream	
Video Stream V Main Stream Stream Type Encode Mode Resolution Frame Rate (FPS) Bit Rate (FPS) Bit Rate (Kb/S) I Frame Interval Vatermark Watermark String	General        H.264H        4096*2824(4096x2824)         25        CBR        8192        50     (25~150)	Sub Stream  Sub Stream  Stream Type Encode Mode Resolution Frame Rate (FPS) Bit Rate Type Quality Max Bit Rate I Frame Interval	General       ✓         H.264       ✓         1600*1200(UXGA)       ✓         25       ✓         VBR       ✓         5       ✓         2048       ✓         50       (25~150)
Watermark String		ave	

<u>Step 2</u> Configure the parameters.

Table 5-5 Video	stream	parameters

Parameter	Description	
Encode Mode	Modes of H.264, H.264H, MJPEG, and H.265 can be selected.	
Resolution	<ul> <li>The higher the value, the clearer the overall image. For each resolution, the recommended bit stream value is different.</li> <li>The resolution of sub stream cannot be greater than that of main stream.</li> </ul>	
Frame Rate (FPS)	The higher the value, the smoother the video image. The frame rate might vary due to different resolutions.	
	You can select from <b>VBR</b> (variable bitrate) and <b>CBR</b> (constant bitrate).	
Bit Rate Type	<ul> <li>VBR: Gives the best balance between quality and file size as the bitrate can be altered depending on the video.</li> <li>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.</li> </ul>	



Parameter	Description	
	6 quality levels are available. The higher the value, the better the quality.	
Quality		
2	You need to configure the image quality when <b>VBR</b> is set to <b>Bit Rate</b>	
	Туре.	
	Higher bit rate signifies greater image or video quality, but also occupies more storage space.	
Bit Rate(Kb/S)		
	You need to configure the bit rate when <b>CBR</b> is set to <b>Bit Rate Type</b> .	
Max. Bit Rate	It is the upper limit of stream in VBR. In CBR, the value is fixed.	
l 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.	
	You can verify the watermark to check whether the video has been tampered.	
Watermark	Select the <b>Watermark</b> checkbox to enable watermark verification. The watermark character is <b>DigitalCCTV</b> by default.	
	Watermark character consists of up to 85 characters with numbers, letters and underlines.	
Enable	Enable sub stream when your network bandwidth is insufficient or other conditions that influence the video smoothness in main stream.	

Step 3 Click Save.

### 5.1.2.2 Configuring Video OSD

Configure the OSD information of videos.

```
<u>Step 1</u> Select Setting > Camera > Video > Video OSD.
```

Figure 5-6 Video OSD			
Figure 5-6 Video	OSD • Channel Title • Time Title • GPS Display • Traffic Flow Info • Custom1 •	Enable Close Channel Title Channel 1 Area Coordinates X: 0 Y: 8191 Custom Color	
Channel Title Default Refresh Save			

<u>Step 2</u> Configure parameters.



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

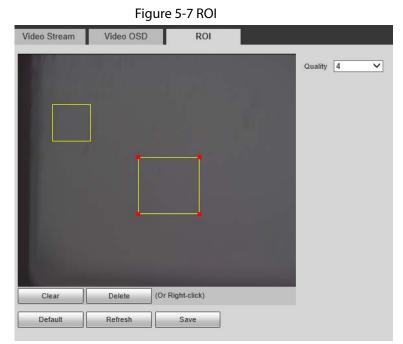
Table 5-6 Video OSD parameters

Step 3 Click Save.

### 5.1.2.3 Interest Area

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

<u>Step 1</u> Select **Setting** > **Camera** > **Video** > **ROI**.



<u>Step 2</u> 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.

- <u>Step 3</u> Set the image quality of the regions of interest. 6 quality levels are available. The higher the value, the better the quality.
- Step 4 Click Save.

## 5.2 Network

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

## 5.2.1 Configuring TCP/IP

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

 $\square$ 

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

<u>Step 1</u> Select Setting > Network Settings > TCP/IP.

TCP/IP	
Host Name	ITC
NIC	Wired(Default)
Mode	Static      DHCP
MAC Address	24 .
IP Version	IPv4 V
IP Address	172
Subnet Mask	255
Default Gateway	172 .
Preferred DNS	223 .
Alternate DNS	223 .
	Refresh Save

Figure 5-8 TCP/IP

<u>Step 2</u> Configure the parameters.

Table 5-7 TCP/IP parameters

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



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

Step 3 Click Save.

## 5.2.2 Port

### **5.2.2.1 Configuring Port**

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

### <u>Step 1</u> Select **Setting > Network Settings > Port > Port**.

Figure 5-9 Port							
Port	ONVIF						
Max Connectio	n 10		(1~20)				
TCP Port	37777		(1025~65	534)			
UDP Port	37778		(1025~65	534)			
HTTP Port	80		(1025~65	534)			
RTSP Port	554		(1025~65	534)			
HTTPS Port	443		(1025~65	534)			
	Default	Ref	iresh	Save			

<u>Step 2</u> Configure the port number of the Camera for each protocol.



Table 5-8 Port parameters					
Parameter Description					
Max Connection	The maximum number of clients (such as web client and platform client) that is allowed to access the Camera simultaneously. It is 10 by default.				
TCP Port	TCP protocol communication port. It is 37777 by default.				
UDP Port	User data packet protocol port. It is 37778 by default.				
HTTP Port	HTTP communication port. It is 80 by default.				
RTSP Port	Media streaming control port. It is 554 by default.				
HTTPS Port	HTTPS communication port. It is 443 by default.				

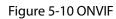
Step 3 Click Save.

## **5.2.2.2 Configuring ONVIF**

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

#### Select Setting > Network > Port > ONVIF.

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



Port	ONVIF	
Login Verification	● Open ◯ Off	
	Default Refresh Save	

# 5.2.3 Configuring Auto Registration

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

- <u>Step 1</u> Select **Setting > Network Settings > Register**.
- <u>Step 2</u> Select the **Enable** checkbox to enable auto registration function.
- <u>Step 3</u> Enter the IP address of server that needs to be registered, and also the port for auto registration.
- <u>Step 4</u> Enter the **Sub-Device ID**, meaning the device ID assigned by the server for auto registration. Make sure that there are no repeated device IPs.
- Step 5 Click Save.



Figure 5-11 Register						
Register						
Enable						
IP Address	0.0.0.0					
Port	7000					
Sub-Device ID						
	Default Refresh	Save				

# 5.2.4 Configuring 802.1x

<u>Step 1</u>	Select Setting > Netw	vork Settings > 802.1x.
---------------	-----------------------	-------------------------

Figu	ıre 5-12 802.1x
802.1x	
Enable	
Authentication Mode	PEAP V
Username	none
CA Certificate	Browse
Password	••••••
	Default Refresh Save

<u>Step 2</u> Select **Enable** to enable 802.1x, and then configure parameters.

Module	Parameter	Description		
Common Parameter	Authentication Mode	<ul> <li>PEAP: Ordinarily uses TLS only to authenticate the server to the client, and only the sever is required to have a public key certificate.</li> <li>EAP-TLS: Provides mutual authentication of client to server, and server to client. Both the client, and the server must be assigned a digital certificate signed by a CA (Certificate Authority) that they both trust.</li> </ul>		
	CA Certificate	Click <b>Browse</b> to import a CA certificate and then select the <b>CA Certificate</b> to verify whether the certificate is valid.		
	Username	For PEAP method, user authentication is performed by		
PEAP	Password	using password-based credentials (username, and password).		
EAP-TLS	Client Certificate	Click <b>Browse</b> to import a client certificate and a private key for authentication.		
Stop 2 Click Cov	Private Key			

Step 3 Click Save.



# 5.3 Remote Device

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

- <u>Step 1</u> Select Setting > Add Camera > Remote Config.
- <u>Step 2</u> Set the delay time for sub camera in **Snapshot Delay Time for Sub Camera**.
- <u>Step 3</u> Select a remote device, and then click 🧨 .
- <u>Step 4</u> Select **On** to enable using the remote device, and modify other device information such as name, IP address, login username, and password.
- <u>Step 5</u> Select Linkage Snapshot to enable snapshot by the Camera.

 $\square$ 

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 Save.

#### Figure 5-13 Add camera

Snapshot Delay Time 0 Event Type Run a Red Light	Alain Camera ♀ Sub Cam n Number of Sn 3 rice Status	ns(0~10000) napshots	Main Camera Snapshot1 🗌 Snapshot2 🗌	] Snapshot3 💽 Sn	Sub Camera apshot1 🗹 Snapshot2 🗸 Snaps	shot3
Event Type Run a Red Light No. Dev 1	Number of Sn 3	napshots	Snapshot1 🗌 Snapshot2 🗌	] Snapshot3 💽 Sn		shot3
Run a Red Light No. Dev 1	3 rice Status	V	Snapshot1 🗌 Snapshot2 🗌	] Snapshot3 🗹 Sn.		shot3
No. Dev 1	rice Status			] Snapshot3 🛛 🗹 Sn	apshot1 🗹 Snapshot2 🗹 Snaps	shot3
1		Device Name				
1		Device Name				
1		Device Name				
1		Device Name				
1		Device Name				
				Device IP		Modify
2	<u> </u>					1
						2
3						1
4				100 C		1
5						1
6				100 C		1
7						1
8				1000		1
Refresh	Save					

# 5.4 Event

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



# 5.4.1 Intelligent Scheme

## 5.4.1.1 Switching between E-police and ANPR

**ANPR** is applicable to road sections without signal lights to detect violations such as speeding, driving slow, not wearing seat belt, calling while driving, and more. See "5.4.2 Configuring ANPR Snapshot".

Select Setting > Event > Smart Plan > Smart Plan.

Figure 5-14 Select a working mode

Smart Plan	Vehicle Blocklist/Allowlist
ANPR	
Defau	t Refresh Save

## 5.4.1.2 Configuring Blocklist and Allowlist

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

#### 5.4.1.2.1 Fuzzy Matching

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

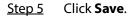
- <u>Step 1</u> Select Setting > Event > Smart Plan > Vehicle Blocklist/Allowlist > Allowlist Settings.
- <u>Step 2</u> Select **Enable** to enable the allowlist.
- <u>Step 3</u> Select **Fuzzy Matching** to enable fuzzy matching.
- <u>Step 4</u> Configure matching rule.
  - Main Matching Characters: The specific digit(s) that should be exactly matched.
  - **Min Matching Characters**: The minimum number of digits that should be exactly matched.

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



Figure 5-15 Set fuzzy matching

Smart Plan Vehicle Blocklist/Allowlist						
Allowlist Settings	Allowlist	Blocklist				
Enable						
Fuzzy Matching						
Main Matching Cha	1 2 3 4 ar □ □ ☑ ☑	5 6 7 <b>v v v</b>				
Min Matching Char	a 4					
	Default	Refresh	Save			



#### 5.4.1.2.2 Allowlist Search

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

#### Procedure

### <u>Step 1</u> Select Setting > Event > Smart Plan > Vehicle Blocklist/Allowlist > Allowlist.

	Figure 5-16 Allowlist					
Smart Plan Vehicle Blo	ocklist/Allowlist					
Allowlist Settings	Ilowlist Blocklist					
Search for plate nu	Search					
Path		Browse Import				
No.	Plate No.	Vehicle Type	Modify	Delete		
				H ◀1/1► H 1		
Details						
Export	Add Clear					

<u>Step 2</u> Add a number plate.1) Click **Add**.



Figure 5-17 Add

Add		×
Filter Condition		
Plate No.		
Start Time	2022-06-11	
End Time	2022-06-11	
Details		
Plate Color	Yellow Background with 🗸	
Vehicle Type	Large-sized V	
Owner Name		
Plate Type	Military Vehicle	
Vehicle Color	White	
Add More		
	Cancel Save	

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

### **Related Operations**

- Search for a plate number: Enter the plate number (or part of it) that you want to search for, and then click **Search** to check whether it is in the allowlist.
- Modify plate information: Click **Modify** to modify detailed information of the corresponding plate number. Click **Save** to save the settings.
- Delete a plate number: Click **Delete** to delete the corresponding plate number.
- Delete plate number in batches: Click **Clear**, and then click **OK** in the pop-up box to delete all the information in the allowlist.
- Import allowlist plates in batches: Click **Browse**, and then select the path to import the file to. Click **Import** to import the allowlist information to the system.
- Export allowlist plates in batches: Click **Export**, and then select the path to save the file to. Click **Export** to export the allowlist information to the system.
- You can encrypt the file when importing and exporting the allowlist, depending on your actual needs.



Figure 5-18 Encrypt configuration

Encryption		
Encryption	Open Oclose	
	Cancel OK	

#### 5.4.1.2.3 Blocklist Search

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

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



Smart Plan Vehicle B	locklist/Allowlist			
Allowlist Settings	Allowlist Blocklist			
Enable				
Search for plate nu… Path	Search			
Path No.	Plate No.	Browse Import Vehicle Type	Modify	Delete
				≤ 1/1 ► ► 1
Details				
Export	Add Clear			

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

## 5.4.2 Configuring ANPR Snapshot

Configure e ANPR parameters.

 $\square$ 

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

### 5.4.2.1 Configuring Violation Capture

Configure the video detection parameters for detecting traffic violations.



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



Figure 5-20 Configuration order for violation capture

### 5.4.2.1.1 Rule Configuration

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

#### <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Violation Snapshot.

<u>Step 2</u> In the **Rule Config** section, click  $\mathbb{Z}$ , and then configure picture parameters.

Figure 5-21 Rule configuration

Rule Co	ontig					
No.		Event Type	Snapshot Quantity	Picture Parameter	Advanced	
1	~	ANPR	1	1	<b>O</b>	
2	$\checkmark$	Run a Red Light	3	1	-	
3		Disobey Direction Arrow	ı 3	0	÷	
4		Cross Solid White Line	2	1	0	
5		Cross Solid Yellow Line	2	0		$\sim$

#### $\square$

....

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



Figure 5-22 Configure picture parameters (1)

Victure Parameter
Event Type ANPR(Lane 1)
Pricture Parameter Original Image  ✓ Save locally  ✓ Report Picture Resolution Normal Proportion  ✓  O Quality 6(Best)  ✓  • Size 1024 (200-2048)KB
Close-up Image Save locally Report Picture Resolution Normal Proportion V Ouality 6(Best) V O Size 1024 (200-2048)KB
Composite Save locally Report Picture Resolution Normal Proportion V Quality 3 V O Size 2048 (1024-5120)KB Picture
Use Copy to sync the configurations of save to local storage and report picture. Image resolution, size, and image quality will be automatically copied to all the rules. Copy to All Rules Copy
Snapshot and Composite Picture Settings
Close-up Area Cust 5040 Altitu 5040 (1080~8192, com.Unit)
Composite Sequen 0 \$ 1 0 1 5 0 5 1 0 5
Capture Interval Mode (Supports checkpoint scene and loop mode)
O I Frame Interval 8 ✓
Self-adaptive
0km/h ≤ Low Speed < 30
Frame Interval for M2
Frame Interval for H 1
Use Copy to sync the configurations of Close-up Area and Composition Sequence. Parameters under Frame Interval will be automatically copied to all the rules.
Copy to Rules of Same Type V Copy
Cancel OK

Table 5-10 Picture parameters

Category	Name	Description
	Original Image	The original picture of the vehicle that is violating traffic rules.
	Composite Picture	The compound picture of several sequential images of the vehicle violating the traffic rules.
	Close-up Image	The close-up of the offending vehicle.
	Save Locally	Save the vehicle picture locally when an offending vehicle is captured.
Picture Parameter	Report Picture	Upload the vehicle picture to the upper-level device or platform when a vehicle is captured.
	Resolution	Select picture resolution.
	Quality	Select the level of picture quality.
	Size	Limit the size of the picture.
	Copy to	Copy the current picture configuration to the same-type rules or all the rules. After selecting an option from <b>Copy to</b> , click <b>Copy</b> .
Snapshot and Picture	Feature Region	Centering on the vehicle, enter the height and width of the close-up of the vehicle.
Synthesis Setting	Compound order of one pictures	<ul><li>S: Close-up</li><li>1: Original images</li></ul>

Step 3 Click OK.

<u>Step 4</u>

<u>4</u> Click (), and then configure advanced parameters.



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

Figure 5-23	Advanced	parameters
-------------	----------	------------

Adv	anced					X
	Event Type	ANPR(Lane 1)				
Γ	Trigger Source					
	Loop	✓ Video				
	Note: The trigger so	urces are prioritized in descending o	order. Whe	en a source becomes in	effective, the one after it is used.	
	Copy to	Rules of Same Type 🗸	Co	ру		
	Rule Parameter					
	Driving Direction to.	. O Positive O Revers	se	<ul> <li>Both Ways</li> </ul>		
	Vehicles that Trigge	🗹 Non-Motor Vehicle 🗹 Lice	nsed Moto	or Vehicle 🗹 Unlicens	sed Motor Vehicle	
	Schedule	Setting				
	Flashing Light Confi	g				
	Day			Night		
	1st or 4th Image	F1 F2 F3 F4 F5 F6 F7		1st or 4th Image	F1 F2 F3 F4 F5 F6 F7	
	2nd or 5th Image			2nd or 5th Image		
	3rd or 6th Image			3rd or 6th Image		
		Canc	el	ОК		

Category	Name	Description	
	Loop	Unavailable	
	Radar	The system captures offending vehicles upon the radar detecting a violation.	
Trigger Source	Video	The system analyzes the live video to detect traffic violations. Once a violation is detected, the system automatically captures images of the offending vehicle.	
	Copy to	Copy the current picture configuration to the same-type rules or all the rules. After selecting an option from <b>Copy to</b> , click <b>Copy</b> .	
	Driving Direction to Trigger Snapshot	Vehicle driving direction to the camera.	
Rule Parameter	Schedule	The period during which the alarm is valid. To set a time, you can click <b>Setting</b> , and then drag your cursor over the time table or select days, and enter hours in the entry fields.	
	Vehicles that trigger snapshots	The vehicle types to capture.	

Step 5 Click Save.



#### 5.4.2.1.2 Lane Property

- <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Violation Snapshot.
- <u>Step 2</u> In the **Lane Property** section, configure lane properties.

#### Figure 5-24 Lane property

Lane Property			
Road Direction	Enable Vehicle Waiting	Passing Direction	South to Norl 🗸
Upload Image of	Violation with Highest P 🗸		
Road Code			
Road Section Code			

Table 5-12 Lane property parameters

Parameter	Description	
Road Direction	The direction of the lane.	
Passing Direction	The geographical direction of the lane.	
Upload Image of	<ul> <li>All Violations: Captures and reports all violations of vehicles or the lane.</li> <li>Violation with Highest Priority: When the vehicle trigger multiple violations, the Camera reports only the event with the highest priority.</li> </ul>	
Road Code	The code of the roadway and route.	
Route Section Code	The code of the loadway and lodte.	

Step 3 Click Save.

#### 5.4.2.1.3 Lane Parameters

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

- <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Violation Snapshot.
- <u>Step 2</u> In the **Lane Config** section, configure lane parameters.

Figure 5	-25 Lane	configuration

Lane Directio	on 🖲 Vehicle He	ead 🔿 Vehicle	Tail				
Edit Line							
Lane Li	ne o	Detection Lin	e 🕤				
		Detection Lin					
	_						
		and the second second		and the second			
Auto Drawir	ng 🔸 Please	click here to	download and ir	nstall the plug-in.			
Auto Drawir No.	ng 🔮 Please	click here to	download and in Lane No.	nstall the plug-in. Left Lane Line	Right Lane Line	Lane Type	Delete
_	ng 🔸 Please	click here to o			Right Lane Line Solid White Line	Lane Type Small-sized Vehicl	Delete
_			Lane No.	Left Lane Line			
No. 1		_ ✓	Lane No. 1	Left Lane Line Solid White Line	Solid White Line	Small-sized Vehicl	Ê



#### Table 5-13 Lane parameters

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

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

1		Γ	h
ų	5	5	ι.

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

Table 5-14 Lane lines

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

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

Step 5 Click Save.

### 5.4.2.1.4 Car Detect

- <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Violation Snapshot.
- <u>Step 2</u> In the **Vehicle Detection** section, click the line or region type, and then draw on the video image.
  - To draw a line, click the line type and then drag your mouse cursor on the image.
  - To draw a region, click the region type, and then draw the lines by dragging your cursor on the image and make them form a closed region.

To clear the lines that you have drawn, click 💿.

Figure 5-26 Line or region types

Vehicle Detection		
Area Line 🔊	Vehicle Area 🔊	Calibration Area
Line Segment C	Calibration Verifi	Match Line O



Parameter	Description	
Area Line	The region of detection.	
Vehicle Area	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 <b>Line</b> <b>Segment Calibration</b> 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 <b>Calibration</b> <b>Validation</b> .	
Calibration Validation	Used to verify the accuracy of calibration results.	

Table 5-15 Vehicle detection parameters

Step 3 Click Save.

### 5.4.2.1.5 Other Settings

#### <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Violation Snapshot.

<u>Step 2</u> In the **Other Config** section, configure parameters.

Figure 5-27 Other settings

Other Config				
Measure Speed by				
Only suitable for scene	es where the target is recogniz	ed by a camera and the		
speed is measured by	a radar.			
Capture and Flash Snapshot Line Mode 🗸				
In this mode, the came	era will capture vehicles at the	snapshot line and video		
capture will not be linked to the flashing light.				
Spacing between V	2000	cm (0~25500)		
Max Speed	180	km/h (0~255)		
Pixels	0 * 0	Draw Target		

Table 5-16 Other settings

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



Step 3 Click Save.

# 5.4.2.2 Configuring Intelligent Analysis

Configure the intelligent functions of the Camera.

### 5.4.2.2.1 Recognition

#### <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Intelligent Analysis > Recognition.

Figure 5-28 Recognition

Recognition	Advanced	Default	
Motor Vehicle			
Logo			
Vehicle Type			
Non-Motor Vehicl	e		
Passenger count	vehicle ty		
License Plate Enh	ancement		
Track Overlay			
Recognition Mode	Only recognize the f	iron 🗸	
Refresh	Save		

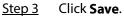
<u>Step 2</u> Configure parameters.

Table 5-17 Recognition parameters

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



Parameter	Description			
	The vehicle plate recognition mode.			
	<ul> <li>Only recognize the front plate: Recognize and snap the number plate on the vehicle head.</li> </ul>			
Recognition Mode	• Only recognize the rear plate: Recognize and snap the number plate on the vehicle rear.			
	• Front plate priority: Head plate has the priority.			
	• <b>Rear plate priority</b> : Rear plate has the priority.			



#### 5.4.2.2.2 Advanced

You can make a custom algorithm.

#### <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Intelligent Analysis > Advanced.

#### Figure 5-29 Custom algorithm

Recognition	Advanced	Default	
Custom Algorithm E	abcd		9
Refresh	Save		

<u>Step 2</u> Configure a custom algorithm.

Step 3 Click Save.

#### 5.4.2.2.3 Default

- <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Intelligent Analysis > Default.
- <u>Step 2</u> Click **Default** to restore settings including lane property, violation capture, and intelligent business to default.

# 5.4.3 Configuring OSD

### 5.4.3.1 Configuring Original Picture OSD

Configure OSD content, style and position for captured image.

- <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Original Picture OSD.
- <u>Step 2</u> Configure OSD black edge position, black region height, OSD separator, and front size.



#### Figure 5-30 Original picture OSD

		Rule	~ /	Apply to All		
		Area1: OSD Option	Clear			
		Time	Location	Day	Device No.	^
		GPS Info	Lane No.	Plate No.	Plate Color	
		Logo	Vehicle Type	Vehicle Color	Vehicle Size	
		Vehicle Speed	Trigger Source	Seatbelt	Smoking	
		Calling	Event Name	Non-motor Ve	Speeding Ratio	~
		Clear Line F		Modify	Delete	
Font Size 56	<b>v</b>	Time	Location 🖌			^
Global Config						
Black Edge Location Above	~					
OSD Separator Custom	~					~
	(6~32) X8 Pixel					

Step 3 Select a rule type.

<u>Step 4</u> Configure OSD parameters.

#### Table 5-18 OSD parameters

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

Step 5 Click Save.

## 5.4.3.2 Configuring Combination Picture OSD

<u>Step 1</u> Select Setting > Event > ANPR Snapshot > Combination Picture OSD.



			Rule ANPR	✓ A	pply to All		
			Area1: OSD Option	Clear			
			Time	Location	Day	Device No.	^
			GPS Info	Lane No.	Plate No.	Plate Color	
			Logo	Vehicle Type	Vehicle Color	Vehicle Size	
			Vehicle Speed	Trigger Source	Seatbelt	Smoking	
			Calling	Event Name	Non-motor Ve	Speeding Ratio	~
Font Size	56 🗸		Clear Line Fr		Modify O D	elete	~
Global Config							
Black Edge Location	Above 🗸						
OSD Separator	Custom 🗸						
Black Edge Height	8	(6~32) X8 Pixel		ustom Color X	1 0 Yi	0	
				A		1	

Figure 5-31 Combination picture OSD

<u>Step 2</u> Configure parameters. For details, see Table 5-18.

Step 3 Click Save.

# **5.4.4 Configuring Traffic Flow Analysis**

## 5.4.4.1 Traffic Data

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

- <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Traffic Flow Statistics > Flow Data.
- <u>Step 2</u> Select the **Pedestrian Flow** checkbox to enable statistics of pedestrian flow as needed.
- <u>Step 3</u> Set the **Statistical Cycle** and **Flow Upper Limit** of making statistics.
- <u>Step 4</u> Select the lane that you want to make flow statistics.
- Step 5 Click Save.

Figure 5-32 Traffic flow statistics

Violation Snapshot Inte	ligent Analysis Original Picture OSD Combination Picture OSD Traffic Flow Statistics
Flow Data	Traffic Flow Pedestrian Flow
Traffic Flow	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
Pedestrian Flow	
Statistical Cycle	60 sec (1~15000)
Flow Upper Limit	10000
	Default Refresh Save



### 5.4.4.2 Traffic Flow Data

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

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

### 5.4.4.3 Pedestrian Flow Data

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

- Click 
   The second sec
- Click **Export** to export the flow information to local computer.

## 5.4.5 Cutout

### 5.4.5.1 Snapshot Cutout

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

 $\square$ 

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

#### <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Cutout Config.

- <u>Step 2</u> Select the cutout type.
- Step 3 Click Save.

Figure 5-33 Snapshot cutout (ANPR mode)

Cutout Config	
Cutout Type	
Motor Vehicle	Plate No. Driver's Face Front Seat Passenger's Face
Non-Motor Vehicle	Face 🗹 Plate No.

### 5.4.5.2 Face Overlap

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

- <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Cutout Config > Face Overlay.
- <u>Step 2</u> For motor vehicles, select **Driver** and/or **Front Seat Passenger** (front-seat passenger) to enable face overlay of the driver and the front-seat passenger.



### $\square$

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

- <u>Step 3</u> For non-motor vehicles, select **Enable** to enable face overlay of the driver.
- <u>Step 4</u> Configure the overlay position and size of driver face and front-seat passenger face.
- Step 5 Click Save.

### 5.4.5.3 Target Box

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

- <u>Step 1</u> Select Setting > Event > ANPR Snapshot > Cutout Config > Target Box.
- <u>Step 2</u> Select **Enable** to enable the overlaying track box.
- <u>Step 3</u> For non-motor vehicle, select overlaying track box on the **All** body or only **Face** of the non-motor vehicle driver.
- Step 4 Click Save.

## 5.4.6 Device Location

You can view the device position information, such as its longitude and latitude. Select **Setting** > **Event** > **Device Location**.

## 5.4.7 Alarm

You can configure how the Camera responds when alarms occur.

### 5.4.7.1 Alarm

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

- <u>Step 1</u> Select **Setting > Event > Alarm > Alarm**.
- <u>Step 2</u> Select the **Enable** checkbox to enable alarm input.

Figure 5-34 Alarm

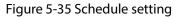
Alarm	Alarm-out Port
Enable Alarm-in Port	IN1 V
Schedule Anti-dither	Setting           0         s (0~100)         Sensor Type         NC         V
Alarm-out Por Post-alarm	t NO1 NO2 10 s (10~300)
	Default Refresh Save

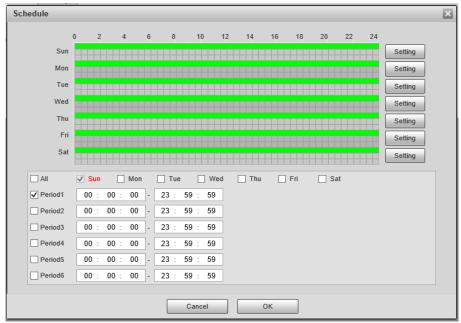
<u>Step 3</u> Configure the parameters.



Table 5-19 Alarm	parameters
------------------	------------

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





Step 4 Click Save.

### 5.4.7.2 Alarm-out Port

You can simulate to trigger alarm output signal.

- <u>Step 1</u> Select Setting > Event > Alarm > Alarm-out Port.
- <u>Step 2</u> Click **NO1** or **NO2** to configure one-channel alarm output.
- <u>Step 3</u> Click **Trigger Mode** to trigger alarm output.
- <u>Step 4</u> Click **Refresh** to view the status of alarm output.



Figure 5-36 Alarm-out Port

5	
Alarm	Alarm-out Port
NO1 NO2	
Trigger Mode	Refresh

## 5.4.8 Exception

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

- SD Card Exception: Alarm will be triggered when there is No SD card, SD card error, or Memory insufficient.
- Network Exception: Alarm will be triggered when there is Offline (the Camera is offline) or IP Conflict.
- Invalid Access: Alarm will be triggered when unauthorized access is detected by the system.
- Security Exception: Alarm will be triggered when security problem occurs.
- Traffic Light Fault: Alarm will be triggered when the Camera detects traffic light fault.

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- 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 > Exception.

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

Configure the parameters. Step 2

Figure 5-57 5D Card event						
SD Card Exception Netw	ork Exception	Invalid Access	Security Exception			
Event Type	Memory insuffi	icient. 🗸				
Enable						
Free Space	10	%(0~99)				
☑ Alarm-out Port	NO1 NO2					
Post-alarm	10	s (10~300)				
	Default	Refresh	Save			

### Figure 5-37 SD card event

 $\square$ 

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



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

#### Table 5-20 Parameters of abnormal events

Step 3 Click Save.

# 5.5 Peripheral

## 5.5.1 Device Status

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

## **5.5.2 Serial Port Settings**

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

#### <u>Step 1</u> Select Setting > Peripheral > Peripheral > Serial Port.

<u>Step 2</u> Configure external devices.

	Туре	Console	Radar	Device Positioning	External Light	Transparent Serial Po
1(RT)	RS-232	$\checkmark$				
2(R1T1)	RS-232					
3(R2T2)	RS-232					
4(R3T3)	RS-232					
5(GPS)	RS-232			$\checkmark$		
6(A1B1)	RS-485 🗸				$\checkmark$	
7(A2B2)	RS-485					
Default	Refresh	Save				

• One serial port can only enable one external device.



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

#### Figure 5-39 Radar configuration (single lane)

Serial Port						
Protocol	ITARD-024SA-I	~				
Data Bit	8	✓ Stop Bit	1	~		
Baud Rate	9600	<ul> <li>Verificati</li> </ul>	on Type None	$\checkmark$		
Device Config						
Working Mode	Send Beams by Ve	ehicle 🗸		Angle	20	°(0-45)
Starts Monitoring	fr 1	(1-5)		Sensitivity	3	~
Distinguish Target	t I 200	ms(0~65	i35)			
Detection Directio	n Approaching	~				
Speed to Trigger S	Sn 5	km/h(1-2	5)			
Wait Time Before	C 3000	ms(0-100	00)			
Wait Time After C	ap 1000	ms(0-100	00)			
Default	Refresh	Save				

2) Configure radar parameters.

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



Parameter	Description
Sensitivity	Supports adjusting the sensitivity of the radar capture. 5 is the most sensitive.

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

Figure 5-41 Radar configuration (multiple lanes)

Protocol F	lashing Light 🗸 🗸	]			
Data Bit 8	3	Stop Bit	1	$\checkmark$	
Baud Rate	9600 🗸	Verification Type	None	$\checkmark$	
evice Config					
		_			
Device No.		7		Working Mode	Auto
				Current Mode	Night
Device No.	1	~		Copy to Other Ports	Сору
Detect Status	🔿 Yes 💿 No				
Scene Mode	Day	~		Initialize Address	
HID Flashing Bright	. 16	(1-16)		Light On Duration	00h 00m
Xenon Delay Time	300	µs(180~580)		LED Flashing Times	•
Strobe LED Brightn		(1~20)		HID Flashing Times	-
Shope LED Dirginui					
Flashing LED Pulse		ms(0.0~5.0)			

- 4) Click Save.
- Positioning
- 1) Select **Device Positioning**.

Figure 5-42 Positioning configuration

Device Config		
Positioning System	• GPS	🔿 Beidou
Default	Refresh	Save

- 2) Select the positioning method from **GPS** and **Beidou** as needed.
- 3) Click Save.
- External Light
- 1) Select External Light.

Figure 5-43 External light configuration

Serial Port						
Data Bit	8	> > >	Stop Bit Verification Type	1 None	~	
Device No. Device No. Detect Status Scene Mode HID Flashing Bright. Xenon Delay Time Strobe LED Brightn. Flashing LED Pulse Default	300 5	~	(1-16) µs(180-580) (1-20) ms(0.0-5.0)		Working Mode Current Mode Copy to Other Ports Initialize Address Light On Duration LED Flashing Times HID Flashing Times	

2) Configure external light parameters.



Table 5-22 External light parameters

Parameter	Description			
Protocol	Select from Flashing Light, Strobe and Continuous Light.			
Device No.	Select device number as needed.			
Device No.	Select external light number based on the selected device number.			
Detect Status	Select <b>Yes</b> to enable external light status check.			
Scene Mode	Select the working environment of the external light.			
HID Flashing Brightness				
Xenon Delay Time	Cotor mondad			
Strobe LED Brightness	Set as needed.			
Flashing LED Pulse Width				
Working Mode	Select the work mode of the external light from Force Set IR, Force Set White and Auto.			
Copy to Other Ports	Click <b>Copy</b> to copy the configuration of the current light to other ports.			
Initialize Address	Click <b>Initialize Address</b> to restore the RS-485 address of the external light to default.			

3) Click Save.

- Transparent Serial Port
- 1) Select Transparent Serial Port.

Figure 5-44 Transparent serial port

Serial Port					
Protocol	Transparent Ser	ial Port 🗸			
Data Bit	8	$\sim$	Stop Bit	1	$\sim$
Baud Rate	9600	~	Verification Type	None	$\sim$
Default	Refresh	Save			

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

# **5.5.3 Continuous Light**

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

<u>Step 1</u> Select **Setting > Peripheral > Peripheral > Continuous Light**.



```
Figure 5-45 Light config
```

Device Status	Serial Port Continuous Light
Light Group	$\begin{bmatrix} 1 & 2 \\ \checkmark & \checkmark \end{bmatrix}$
Output Mode	Auto 🗸
Brightness	— — — — — + 10
Auto Mode	◯ Time
Ambient Brightness	
	Default Refresh Save

- Light Group: Select 1 or 2 (each number controls 2 LEDs on the Camera) to turn on or off the illuminators.
- Output Mode:
  - **Always**: The spotlight is always on.
  - ♦ **Close**: The spotlight is always off.
  - Auto: The spotlight turns on or off according to the ambient brightness.
- Step 2 Click Save.

# 5.6 Storage

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

# 5.6.1 Storage Spot Config

Set the storage path of snapshots and video recordings.

```
<u>Step 1</u> Select Setting > Storage > Storage > Storage Spot Config.
```

Figure	5-46	Storac	ie spot	config
riguic	5 10	JUUIUU		coning

		5	5			
Storage	Spot Config	Local Storage	FTP	Platform Server	Storage Path	
5	Snapshot				Record	
	Event Type				Event Type	
	Local Storage	$\checkmark$			Local Storage	• 🗸
	FTP					
	Default	Refresh	Save			
<sup> </sup>						

<u>Step 2</u> Select storage path as needed.

- Local Storage: Store in the TF card, which has a limited capacity but offers continuous access to its storage, even during network failure. Videos can only be stored in TF card.
- **FTP**: Store in the FTP server, which offers a greater capacity but it will stop storing when the network fails.
- Step 3 Click Save.



# 5.6.2 Local Storage

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

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

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

Figure	5-47	Local	storage
--------	------	-------	---------

Storage Spot Config	Local Storage	FTP Platf	orm Server Storage Path		
Disk Full	Overwrite	VSB Drive Excluded			
Devic	e Name	Status	Attribute	Free Space/Total Space	
Format					Hot Swap
Default	Refresh	Save			

## 5.6.3 FTP

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

<u>Step 1</u> Select Setting > Storage > Storage > FTP.

Fig	ilire	5-48	FTP
110	IULE	J-TO	

		inge		• • •					
Storage Spot Config Lo	ocal Storage	FTP	Platform Se	erver Sto	rage Path				
ANR									
Picture Name Settings	Snapshot								
	%02/%y%M%d/%y% 27.jpg	4%d%h%m%s%S_	<sup>\$66_\$</sup>	Reset					
	10.61.2.129/20 30110_0_8.jpg	130106/20130	1061527	Help					
Server1	Server2	S	Server3						
Enable									
Protocol	SFTP	~							
Server IP									
Encode Mode	UTF-8	V Tes	st						
Port	22	(0~65535	)						
Username	anonymity								
Password	•••••	••••							
Upload Picture	Image Type	Original Image	Close-up Image	Composite Picture	Plate Image	Driver	Front Seat Passenger	Face Image of Pe on Non-motor Ve	
	All			~					~
	Manual Snapshot	$\checkmark$							
	ANPR			$\checkmark$					~
	Cross Solid White Line	e 🗌		$\checkmark$					-
	Default	Refresh	Sav	e					

#### <u>Step 2</u> Configure the parameters.

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

Step 3 Click Save.

## 5.6.4 Platform Server

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

<u>Step 1</u> Select Setting > Storage > Storage > Platform Server.



Figure 5-49 Pl	atform server
----------------	---------------

	-				
Storage Spot Config	Local Storage	FTP	Platform Server	Storage Path	
ANR					
Туре	● IP ○ MAC				
Server	Server1	✓ Bro	wse		
Server IP					
	Default	Refresh	Save		

<u>Step 2</u> Configure the parameters.

Step 3 Click Save.

## 5.6.5 Storage Path

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

- <u>Step 1</u> Select Setting > Storage > Storage > Storage Path.
- <u>Step 2</u> Name the snapshots in the Naming Format section. You can click Help to view the Image Naming Rules, or click Reset to restore the naming rule to the default.
   After setting the naming rule, you can preview an example of the name in the Name Preview section.
- Step 3 Click **Browse** to set the save paths of snapshots and video recordings respectively.
- Step 4 Click Save.

	riguic 5 50	Storage par	11	
Storage Spot Config	Local Storage	FTP	Platform Server	Storage Path
Picture and Sto	orage Path Naming			
Naming Format	Alarm Picture\%y\ y%M%d%h%m%s%S_%04			
Name Preview	Alarm Picture\201 \ANPR\20130106152		Help	
Path				
Snapshot Path	C:\PictureDownloa	ad	Browse	
Record Path	C:\RecordDownload	1	Browse	
	Default	Refresh	Save	]

#### Figure 5-50 Storage path

## 5.6.6 Record Control

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

<u>Step 1</u> Select Setting > Storage > Record Control.



<u>Step 2</u> Select the record mode.

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

 $\square$ 

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

- Manual: Record videos continuously.
- **Close**: Do not record videos.
- <u>Step 3</u> Select the record stream. You can select from **Main Stream** and **Sub Stream**.
- Step 4 Click Save.

Figure 5-51 Record control		
Record Control		
Record Mode Record Stream	O Auto O Manual ● Close Main Stream	
	Default Refresh Save	е

# 5.7 System

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

## 5.7.1 General

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

## 5.7.1.1 General Settings

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

- <u>Step 1</u> Select Setting > System > General > General.
- <u>Step 2</u> Configure the parameters.



Figure 5-52 General

General	Date & Time	
Device Name		
Device No.		
Language	English	$\sim$
Video Standar	rd PAL	$\sim$
Device Organ	ization	
Device Location	on	
Default	Refresh	Save

Table 5-24 General parameters

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

Step 3 Click Save.

## 5.7.1.2 Date & Time

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

- <u>Step 1</u> Select Setting > System > General > Date & Time.
- <u>Step 2</u> Configure the parameters.



Figure 5-53 Date & time

General Dat	e & Time
-	
Date Format	YYYY-MM-DD 🗸
Time Format	24-Hour V
Time Zone	(UTC+08:00) Beijing, Chongqing, Hong Kong 🗸
System Time	2000-01-06 04 : 37 : 12 Sync PC
DST	
DST Type	O Date ( ) Day
Start Time	Jan V Week 1 V Mon V 00 : 00 : 00
End Time	Jan V Week 1 V Tue V 00 : 00 : 00
Time Synchronization	NTP     Positionin Enable "Positioning System Time Synchronization" to use the satellite to sync the time.
-	
NTP Server	clock.isc.org
Port	123
Interval	10 Minute (1~30)
Default	Refresh Save

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

Table 5-25 Date & time parameters

Step 3 Click Save.

## 5.7.2 Account Management

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

### 5.7.2.1 Account

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

<u>Step 1</u> Select **Setting > System > Account > Account > Username**.



Step 2 Add a user.

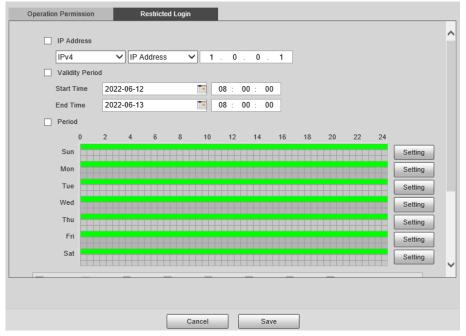
- 1) Click Add User.
- 2) In the **Add User** dialog box, configure user information including username, password, group name, memo, and operation permissions.



Figure 5-54 Add user

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

Figure 5-55 Set log restriction



- 4) Click **Save** to save the settings.
- <u>Step 3</u> Select Setting > System > Account > Account > Group.
- Step 4 Add a group.
  - 1) Click Add Group.
  - 2) Configure the **Group** and **Permission** of the group.
  - 3) Click Save.



### **Related Operations**

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

 $\square$ 

- ◇ The admin and user groups cannot be deleted.
- A group cannot be deleted if there is any user in the group.
- Modify user/user group information: Click corresponding to the user. You can modify information such as username, password, email address, group name, and memo. Click Save to save the settings.
- Change password: On the **Modify User** page, select the **Change Password** checkbox. Enter the old and new passwords, and confirm password. Click **Save** after configuration.

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

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

### 5.7.2.2 ONVIF User

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

- The system manages both ONVIF users and user groups. The factory settings cover one group: admin. You can set up to 18 ONVIF users.
- ONVIF username cannot be repeated. Each ONVIF user must belong to a group, and can only belong to one group. The username can be 31 characters at most, consisting of letters, numbers, "\_", "@" and ".".
- The default ONVIF username and password are both admin. There is one admin by default which has the highest authority.
- <u>Step 1</u> Select Setting > System > Account > ONVIF User.
- Step 2 Click Add User.
- <u>Step 3</u> Configure user information such as username, password, and group name.

Figure 5-50 Add user		
Add User		×
Username Password	Required	
	Low         Medium         Strong	
Confirm Password		
Group	admin 🗸	
	Cancel Save	

Figure 5-56 Add user

Step 4 Click Save.

**Related Operations** 



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

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

## 5.7.3 Security

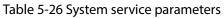
## 5.7.3.1 System Service

You can enable multiple system services to secure network safety.

- <u>Step 1</u> Select Setting > System > Security > System Service.
- <u>Step 2</u> Enable the service(s).

Figure 5-57 System service

System Servi	ce HTTPS	Firewall			
SSH	🖌 Ena	ole			
Multicast	/Broadcast 🗹 Ena	ble			
Password	d Reset 🔽 Ena	ole			
Password	d Expires in Never	✓ Day	;		
CGI	🖌 Ena	ole			
ONVIF	🗹 Ena	ole			
Audio/Vio	deo Trans 📃 Ena	ble *Please make	ure that the correspondin	g device or software su	pports video decryption.
RTSP ov	er TLS 🗌 Ena	ble *Please make	ure that the correspondin	g device or software su	pports video decryption.
Private P	rotocol Aut Securit	/ Mode (Recomi 🗸			
Defaul	t Refresh	Save			



Parameter	Description
SSH	Secure Shell (SSH) is a cryptographic network protocol for operating network services securely over an unsecure network. It is a method for secure remote login, providing secure access for users.
Multicast/Broadcast Search	Multicast identifies logical groups of computers group members. This allows a single message to be sent to the group. Broadcast allows all devices on the same network segment to see the same message.
Password Reset	Enable it so that you can reset the password.
CGI	Select the <b>Enable</b> checkbox to enable Common Gateway Interface (CGI) service.



Parameter	Description					
ONVIF	Select the <b>Enable</b> checkbox to enable Open Network Video Interface Forum (ONVIF) service.					
Audio/Video Transmission Encryption	<ul> <li>Enable this function to encrypt stream transmitted through private protocol.</li> <li>Make sure that the matched device or software supports the video decryption function.</li> <li>We recommend enabling the encryption service to avoid data leak.</li> </ul>					
RTSP over TLS	<ul> <li>Enable this function to encrypt stream transmitted throus standard protocol.</li> <li>Make sure that the matched device or software supports vid decryption function.</li> <li>We recommend enabling the encryption service to avoid da leak.</li> </ul>					
Private Protocol Authentication Mode	Leave it as default.					

Step 3 Click Save.

## 5.7.3.2 HTTPS

#### Prerequisites

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

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

#### Procedure

<u>Step 1</u> Create a certificate or upload the authenticated certificate.

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



Figure 5-58 HTTPS

HTTPS		×
Region		*e.g. CN
IP/Domain Name		*
Validity Period	365	Day*Range: 1-5000
Province	none	
Location	none	
Organization	none	
Organization Unit	none	
Email		
L	Create	ancel

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

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

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

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

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

Figure 5-59 Install certificate

Certificate	×
General Details Certification Path	
Certificate Information	_
This certificate is intended for the following purpose(s):	
All issuance policies     All application policies	
	_
Issued to: General	
Issued by: General	
Valid from 4/9/2017 to 4/8/2027	
Install Certificate Issuer Stateme	nt
0	ĸ

7. Click Next.



#### Figure 5-60 Certificate store

÷	F Certificate Import Wizard	×
	Welcome to the Certificate Import Wizard	
	This wizard helps you copy certificates, certificate trust lists, and certificate revocation lists from your disk to a certificate store.	
	A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.	
	Store Location © <u>Current User</u> O Local Machine	
	To continue, dick Next.	
	<u>N</u> ext Canc	el

8. Click Next.

Figure 5-61 Complete the certificate import wizard

Completing the Certificate Import Wizard	
The certificate will be imported after you click Finish.	
You have specified the following settings:	
Certificate Store Selected by User Trusted Root Certification Authorities Content Certificate	
Finish	Cancel

- 9. Click Finish.
- 10. Click **Yes**, and then click **OK** on the pop-up window.
- Install Signed Certificate.
  - 1. Select Setting > System > Security > HTTPS.
  - 2. Select Enable, and Compatible with TLSv1.1 and earlier versions.
  - 3. Click **Browse** to upload the signed certificate, and certificate key, and then click **Upload**.
  - 4. To install the root certificate, see operation steps from 4 to 10 in **Create Certificate**.
- <u>Step 2</u> Select **Enable**, and click **OK**.

The configuration takes effect until the Camera restarts.

- <u>Step 3</u> Use HTTPS to log in to the Camera.
  - 1. Enter https://IP address in the browser.



#### $\square$

IP address is the Camera IP address or domain name.

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

### 5.7.3.3 Firewall

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

#### <u>Step 1</u> Select Setting > System > Security > Firewall.

Figure 5-62 Firewall

System Service	HTTPS	Firewall
Туре	Network Acc	ess 🗸
Enable		
Default	Refresh	Save

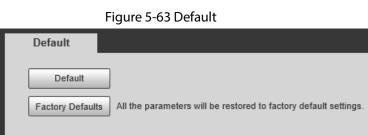
Step 2 Select Type.

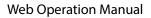
- **Network Access**: Add the IP address to allowlist or blocklist to allow or restrict it from accessing the corresponding ports of the device.
- **PING Prohibited**: IP address of your camera is prohibited from ping. This helps to prevent unauthorized attempts at accessing your network system.
- Anti Half Connection: Prevents half-open SYN attacks.
- <u>Step 3</u> Select **Enable** to enable the rule type that you selected.
- Step 4 Click Save.

## 5.7.4 Default

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

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







## 5.7.5 Import/Export

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

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

\_.

Figure 5-	-64 Import/Export
Import/Export	
Illegal characters	
Imported configu	ration will overwrite previous configuration.

Click Config Import or Config Export. <u>Step 2</u>

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

 $\square$ 

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

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

## 5.7.6 Configuring Auto Maintain

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

## 5.7.6.1 Maintenance

<u>Step 1</u> Select **Setting > System > Maintenance > Maintenance**.

#### Figure 5-65 Auto maintain

Maintenance Emerge	ency Maintenance		
Auto Restart	Tue	~	02 : 00
Delete Expired Files			
Restart			
Refresh	Save		

Select the restart mode. <u>Step 2</u>

- Auto Restart: Select the Auto Restart checkbox, and then configure the day and time. The system will automatically restart at the defined day and time.
- **Restart**: Click it to manually restart the Camera.
- Select the Delete Expired Files checkbox, and the system will automatically delete the old Step 3 files.



Step 4 Click Save.

### 5.7.6.2 Emergency Maintenance

- <u>Step 1</u> Select Setting > System > Maintenance > Emergency Maintenance.
- <u>Step 2</u> Select **Enable** to enable emergency maintenance.
- Step 3 Click Save.

## 5.7.7 Update

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

 $\square$ 

- Update function is currently not available.
- Do not disconnect the power or network, or restart or shut down the Camera during update. Incorrect update programs might result in the Camera being unable to work.
- <u>Step 1</u> Select Setting > System > Update.
- <u>Step 2</u> Click **Browse** to select the firmware update file (.bin).
- <u>Step 3</u> Click **Update** to update the firmware.

#### Figure 5-66 Update

Jpdate			
File Update			
Import Update File		Browse	Update
Online Update			
Auto Check for Updates System Version	OK 4.003.0000000.0.R, Build Date: 2022-05-25		Manual Check
System version	4.003.000000.0.N, Build Date: 2022-03-23		Walluar Officer

## **5.8 System Information**

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

## **5.8.1 Version Information**

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

 $\square$ 

Version might differ depending on the device model.



## 5.8.2 Log

## 5.8.2.1 System Log

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

All, System, Setting, Data, Event, Record, Account, and Safety.

<u>Step 1</u> Select Setting > System Info > Log > Log.

- <u>Step 2</u> Set **Start Time** and **End Time**, and then select log type.
- Step 3 Click Search.
- <u>Step 4</u> View and backup the search results.

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

Figure 5-67 Log

			5	5			
Log	Remote Log						
Start Time Type	2022-06-11 All	■ 17 : 14 : 04 ✓ Search	End Time	2022-06-12	17 : 14 : 04		
No.		Time		Userna	ime	т	уре
Details							
Time:							
Username:							
Type:							
Contents:							
							4 ≤ 1/1 ► ► 1
Backup	Encrypt Log Back	up					

## 5.8.2.2 Remote Log

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

- <u>Step 1</u> Select Setting > System Info > Log > Remote Log.
- <u>Step 2</u> Select **Enable** to enable **Remote Log**.
- <u>Step 3</u> Configure the IP address, port and device number.
- Step 4 Click Save.



	Figure 5-68 F	lemote log	
Log	Remote Log		
Enable			
IP Address			
Port	514	(1~65534)	)
Device No.	22	(0~23)	
	Default	Refresh	Save
	Doradit		Jave

## 5.8.3 Online User

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

Figure 5-69 Online user

Online User					
No.	Username	Group	IP Address	User Login Time	Login Type
1	admin	admin	10.000	2000-01-06 02:33:08	DVRIP
2	admin	admin	and the second sec	2000-01-06 04:01:29	Web3.0
3	admin	admin		2000-01-06 04:01:30	DVRIP
Refresh					

## 5.8.4 Running Status

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

## **5.8.5 Legal Information**

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



# 6 Alarm

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

$\square$	

The alarm type might differ depending on the device model.



Alarm Type		No	Time	Alarm Type	Alarm Channel	Source IP Address
Disk Full	Disk Error					
External Alarm	No SD card					
Vehicle Blocklist	Invalid Access					
Security Exception						
Operation						
Subscribe Alarm						
Alarm Tone						
Play Alarm Tone						
Tone Path	Select					

#### Table 6-1 Alarm parameters

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



## **Appendix 1 Allowlist Format**

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

Appendix Figure 1-1 Allowlist format template

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

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

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

#### Appendix Table 1-1 Time parameter range

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

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

#### Appendix Table 1-2 Plate color number

Appendix Table	1-3 Plate type number
----------------	-----------------------

Plate Type	Number
Business	1
Private	2

#### Appendix Table 1-4 Vehicle type number

Vehicle Type	Number
Business	1
Private	2



### Appendix Table 1-5 Vehicle color number

Vehicle Color	Number
White	A
Gray	В
Yellow	с
Pink	D
Red	E
Purple	F
Green	G
Blue	Н
Brown	1
Black	J
Other	Z

#### Appendix Table 1-6 Arm type number

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

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



## **Appendix 2 Cybersecurity Recommendations**

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

#### Mandatory actions to be taken for basic device network security:

#### 1. Use Strong Passwords

Please refer to the following suggestions to set passwords.

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

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

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

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

#### 1. Physical Protection

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

#### 2. Change Passwords Regularly

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

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

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

#### 4. Enable Account Lock

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

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



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

#### 6. Enable HTTPS

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

#### 7. MAC Address Binding

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

#### 8. Assign Accounts and Privileges Reasonably

According to business and management requirements, reasonably add users and assign a minimum set of permissions to them.

#### 9. Disable Unnecessary Services and Choose Secure Modes

If not needed, it is recommended to turn off some services such as SNMP, SMTP, UPnP, etc., to reduce risks.

If necessary, it is highly recommended that you use safe modes, including but not limited to the following services:

- SNMP: Choose SNMP v3, and set up strong encryption passwords and authentication passwords.
- SMTP: Choose TLS to access mailbox server.
- FTP: Choose SFTP, and set up strong passwords.
- AP hotspot: Choose WPA2-PSK encryption mode, and set up strong passwords.

#### 10. Audio and Video Encrypted Transmission

If your audio and video data contents are very important or sensitive, we recommend that you use encrypted transmission function, to reduce the risk of audio and video data being stolen during transmission.

Reminder: encrypted transmission will cause some loss in transmission efficiency.

#### **11.Secure Auditing**

- Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.
- Check device log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.

#### 12.Network Log

Due to the limited storage capacity of the device, the stored log is limited. If you need to save the log for a long time, it is recommended that you enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

#### 13.Construct a Safe Network Environment

In order to better ensure the safety of device and reduce potential cyber risks, we recommend:

- Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.
- The network should be partitioned and isolated according to the actual network needs. If there are no communication requirements between two sub networks, it is suggested to use VLAN, network GAP and other technologies to partition the network, so as to achieve the network isolation effect.
- Establish the 802.1x access authentication system to reduce the risk of unauthorized access to private networks.



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

## More information

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

## ENABLING A SAFER SOCIETY AND SMARTER LIVING