Smart ANPR Camera

Web Operation Manual

V1.0.1

Foreword

General

This manual introduces the functions and operations of the smart camera with access automatic number plate recognition (hereinafter referred to as "the camera"). Read carefully before using the device, and keep the manual safe for future reference.

Safety Instructions

The following signal words might appear in the manual.

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

Revision History

Version	Revision Content	Release Time
V1.0.1	Updated the manual.	March 2023
V1.0.0	First release.	October 2022

Privacy Protection Notice

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

About the Manual

- The manual is for reference only. Slight differences might be found between the manual and the product.
- We are not liable for losses incurred due to operating the product in ways that are not in compliance with the manual.
- The manual will be updated according to the latest laws and regulations of related jurisdictions. For detailed information, see the paper user's manual, use our CD-ROM, scan the QR code or visit our official website. The manual is for reference only. Slight differences might be found between the electronic version and the paper version.

- All designs and software are subject to change without prior written notice. Product updates might result in some differences appearing between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.
- There might be errors in the print or deviations in the description of the functions, operations and technical data. If there is any doubt or dispute, we reserve the right of final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and company names in the manual are properties of their respective owners.
- Please visit our website, contact the supplier or customer service if any problems occur while using the device.
- If there is any uncertainty or controversy, we reserve the right of final explanation.

Important Safeguards and Warnings

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

Transportation Requirements

Transport the device under allowed humidity and temperature conditions.

Storage Requirements

Store the device under allowed humidity and temperature conditions.

Installation Requirements

WARNING

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

- Personnel working at heights must take all necessary measures to ensure personal safety including wearing a helmet and safety belts.
- Do not place the device in a place exposed to sunlight or near heat sources.
- Keep the device away from dampness, dust, and soot.
- Put the device in a well-ventilated place, and do not block its ventilation.
- Use an adapter or cabinet power supply provided by the manufacturer.
- Make sure the power supply meets the SELV (Safety Extra Low Voltage) requirements, and rated voltage conforms to the IEC60065, IEC60950-1 or IEC62368-1 standard. The requirements of the power supply are subject to the device label.
- The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.

Operation Requirements

- Check whether the power supply is correct before use.
- Do not unplug the power cord on the side of the device while the adapter is powered on.
- Operate the device within the rated range of power input and output.
- Use the device under allowed humidity and temperature conditions.
- Do not drop or splash liquid onto the device, and make sure that there is no object filled with

liquid on the device to prevent liquid from flowing into it.

- Do not disassemble the device without professional instruction.

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1 Introduction

1.1 Overview

The camera adopts intelligent deep learning algorithm. It supports vehicle detection, recognition of license plate, logo, model, and color, and encoding mode such as H.265.
The camera consists of a protective housing, illuminator, and intelligent HD camera. The intelligent HD camera adopts progressive scanning CMOS, which features high definition, low illuminance, high frame rate, and excellent color rendition.

1.2 Features

The features are available on select models, and might differ from the actual camera.

Permission Management

- Each user group has its own permissions. Permissions of a user cannot exceed the permissions of its group.
- 2 user levels.
- Permission of opening barrier, and blocklist alarm function.
- Device configuration, and permission management through Ethernet.

Storage

- Stores corresponding video data onto the central server according to the configuration (such as alarm, and timing settings).
- Users can record videos on the webpage according to their requirements. The recorded video file will be stored on the computer where the client is located.
- Supports hot swapping of storage card, and storage when network is disconnected. It overwrites stored pictures, and videos automatically when memory becomes insufficient.
- Stores 1024 log records, and user permission control.
- Supports FTP storage, and ANR (automatic network replenishment).

Alarm

- It can trigger alarm upon camera operation exceptions through network, such as memory card damage.
- Some devices can connect to various alarm peripherals to respond to external alarm input in real time (within 200 ms). It can correctly deal with various alarms according to the linkage predefined by users, and generate corresponding voice prompt (users are allowed to record voice in advance).

Network Monitoring

- Transmits video data of single channel compressed by device to network terminal, and makes it reappear after decompression through network. Keep delay within 500ms when bandwidth is

allowed.

- Supports up to 10 users online at the same time.
- Supports system access, and device management through the webpage of the device.
- Video data transmission adopts HTTP, TCP, UDP, MULTICAST, and RTP/RTCP.

Capture and Recognition

- Recognizes plate number, color, logo, model, and other features of vehicles.
- Supports setting OSD information, and configuring location of channel, and picture.
- Supports capturing and encoding images. Supports watermark encryption on images to prevent them from being tampered.
- The captured pictures contain the time, location, license plate, color, and more on the vehicle.

Peripheral Control

- Peripheral control: Supports setting various peripheral control protocols, and connection pages.
- Connects to external devices such as vehicle detector, signal detector, and more.

Auto Adjustment

- Auto iris: Automatically adjusts the iris opening to the changing light throughout the day.
- Auto white balance: Accurately displays the object color when light condition changes.
- Auto exposure: Automatically adjusts shutter speed according to the exposure value of the image measured by the metering system, and according to shutter, and iris exposure set by factory defaults.
- Auto gain: Automatically increases camera sensitivity when illuminance is very low, enhancing image signal output so that the camera can acquire clear, and bright image.

2 Web Configuration

You can log in to webpage of the device through a browser on your PC, and configure and operate it.

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

2.1 Web Login

2.1.1 Recommended System Requirements

You can access the camera through browsers with or without the plugin. If you do not use the plugin, you will not be able to user certain functions.

- When using a browser with the plugin, you can get a complete experience. We recommend using Internet Explorer.

Table 2-1 Recommended system requirements-with plugin

PC Component	Recommended System Requirements
Operating System	Windows 7, and later
CPU	Intel core i3, and faster processor
Graphics	Intel HD Graphics, and later
RAM	2 GB, and larger
Monitor	1024 × 768, and higher
Browser	Internet Explorer 9/11, Chrome 33/41, Firefox 49

- If Internet Explorer is not available, you can use Chrome. For Chrome, make sure that your computer meet the requirements included in the table below.

  - If you are using a computer with lower performance, we recommend you use sub stream to eliminate video lags.
  - When using a 4 MP camera, adjust the video frame rate to 15 fps.

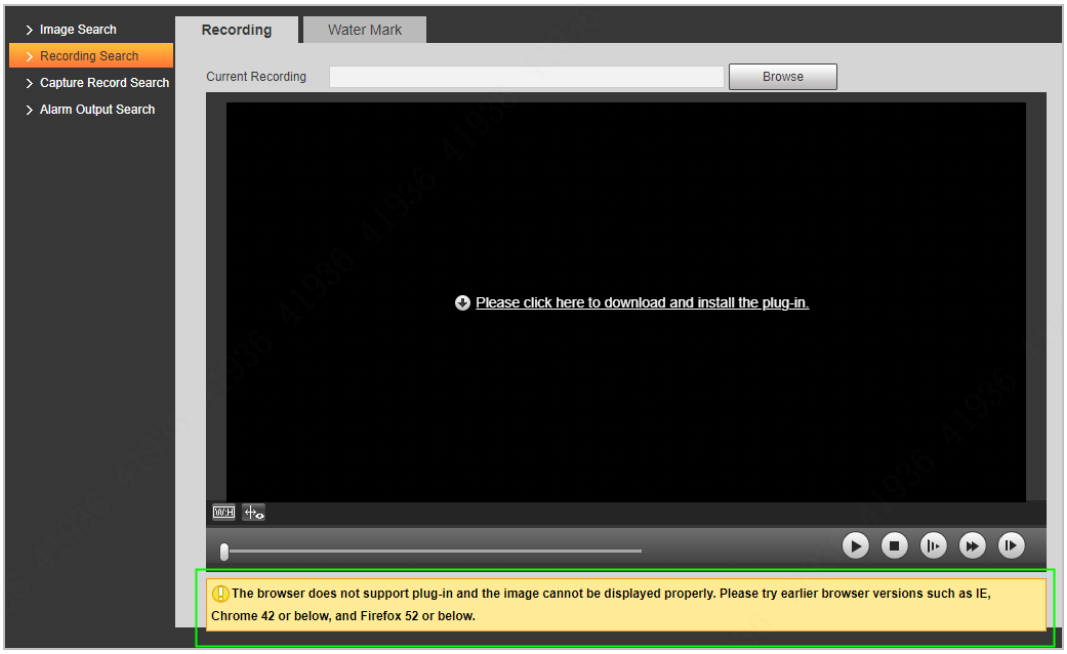
Table 2-2 Recommended system requirements-without plugin

PC Component	Recommended System Requirements
Operating System	Windows 7, and later
CPU	Intel core i5 6500, and faster
Graphics	Intel HD Graphics, and later
RAM	16 GB, and larger

PC Component	Recommended System Requirements
Monitor	1024 × 768, and higher
Browser	Chrome 92 and newer

Browsers that do not support plug-in might have trouble displaying certain videos and images, or downloading data in batches. The camera reminds you when that happens.

Figure 2-1 Reminder



2.1.2 Device Initialization

The camera is delivered uninitialized by default. You need to initialize it, and change its password before further operations. Before initialization, make sure that both PC IP, and device IP are on the same network segment, otherwise you might fail to go to the initialization page.

Procedure

Step 1 Set the IP address, subnet mask, and gateway of PC and device respectively.

- If there is no router in the network, distribute IP address of the same segment.
- If there is router in the network, configure the corresponding gateway, and subnet mask.
- The IP address is 192.168.1.108 by default.

Step 2 Ping the IP address of the camera to check whether network is connected.

Step 3 Go to the IP address of the camera in a browser.

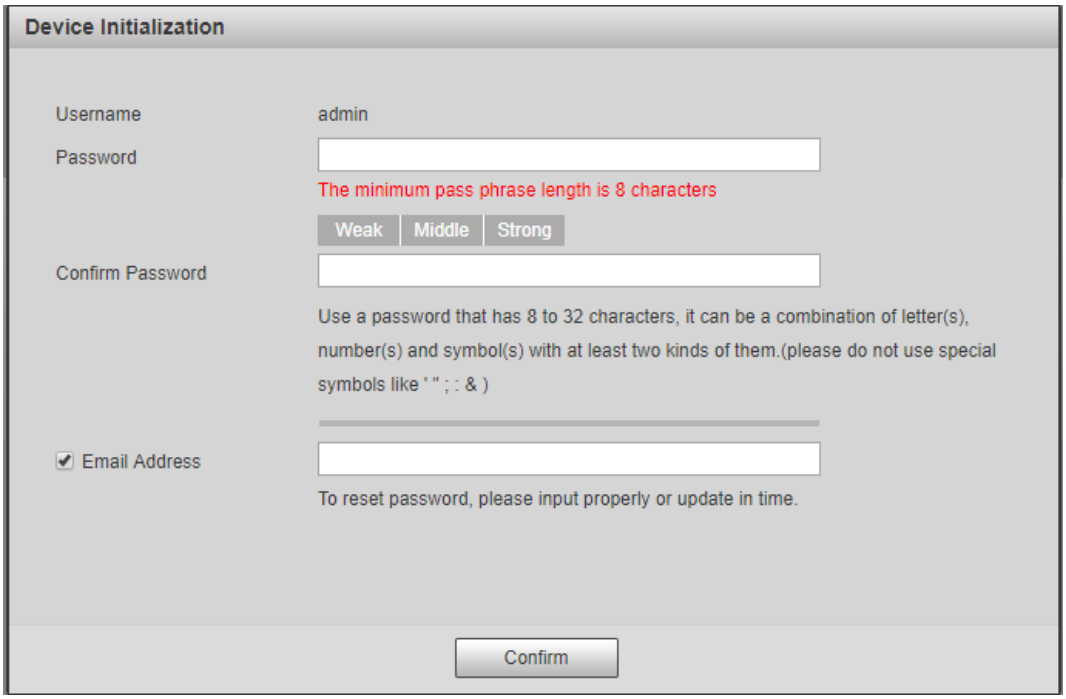
Step 4 Enter and confirm the password.

- The new password must consist of 8 to 32 characters, and contain at least two types from upper case, lower case, number, and special characters (excluding ' " ; :, and &).
- If you want to change your password again, go to **Setting** > **System** > **Account** > **Account**.

Step 5 Select the **Email Address** checkbox, and then enter your email address (recommended to set for resetting your password).

Step 6 Click **Confirm**.

Figure 2-2 Device Initialization



Step 7 Enter the username, and password, and then click **Login**.

Figure 2-3 Login

- A pop-up prompts when the username or password is incorrect to reminds you of remaining attempts.
- The account will be locked for 300 s if you enter incorrect username or password for 5 times consecutively.

Step 8 Click **Please click here to download**, and install the plug-in in the video window. After download is complete, install it according to the on-screen instructions.

Before installing plug-in, make sure that in **Internet Option** > **Security** > **Settings**, the associated plug-in option of active has been modified as **Enable** or **Prompt**.

2.1.3 Login

You can log in to the webpage by following the steps below. For first-time login or login after restoring factory default settings, see "2.1.2 Device Initialization".

Procedure

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

Step 2 Enter your login username, and password, and then click **Login**.

2.1.4 Resetting Password

Reset the password when you forget or want to change it.

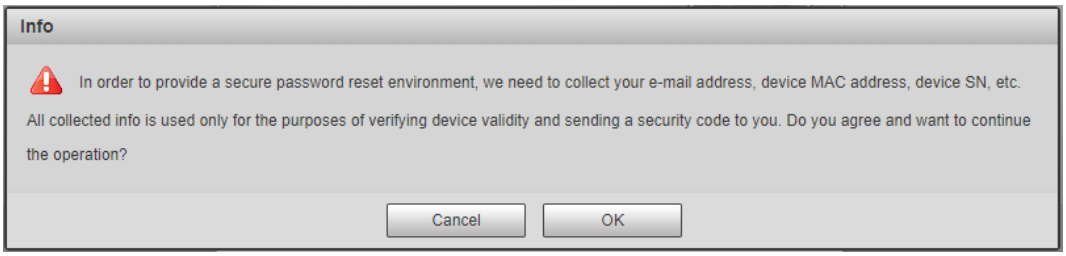
- When scanning the QR code to acquire the security code, one QR code supports up to 2 acquisition.
- The security code received through email is only valid for 24 hours.
- One device can generate up to 10 security codes in one day, so you can change the password 10 times at most in one day.
- Email address must be filled in during device initialization; otherwise you will not receive the security code. The email address of admin can be modified under **Setting** > **System** > **Account** > **Account**.

Procedure

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

Step 2 Click **Forgot password?.**

Figure 2-4 Information

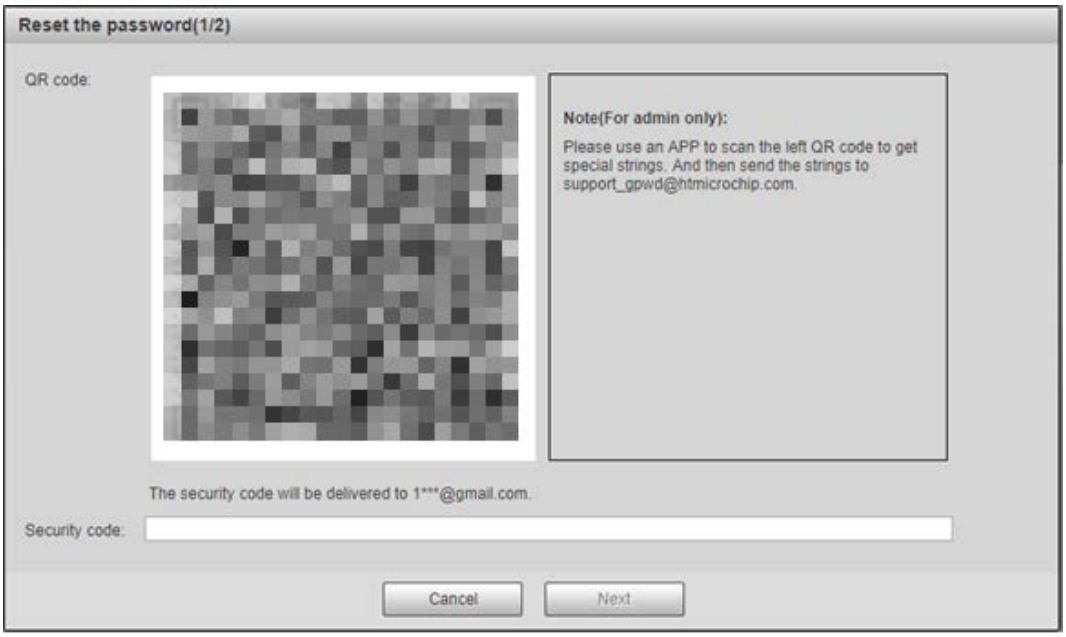


Step 3 Click **OK**.

If you use IE browser, the system might prompt **Stop running the script**, click **No**, and continue to run the script.

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

Figure 2-5 Reset password (1)

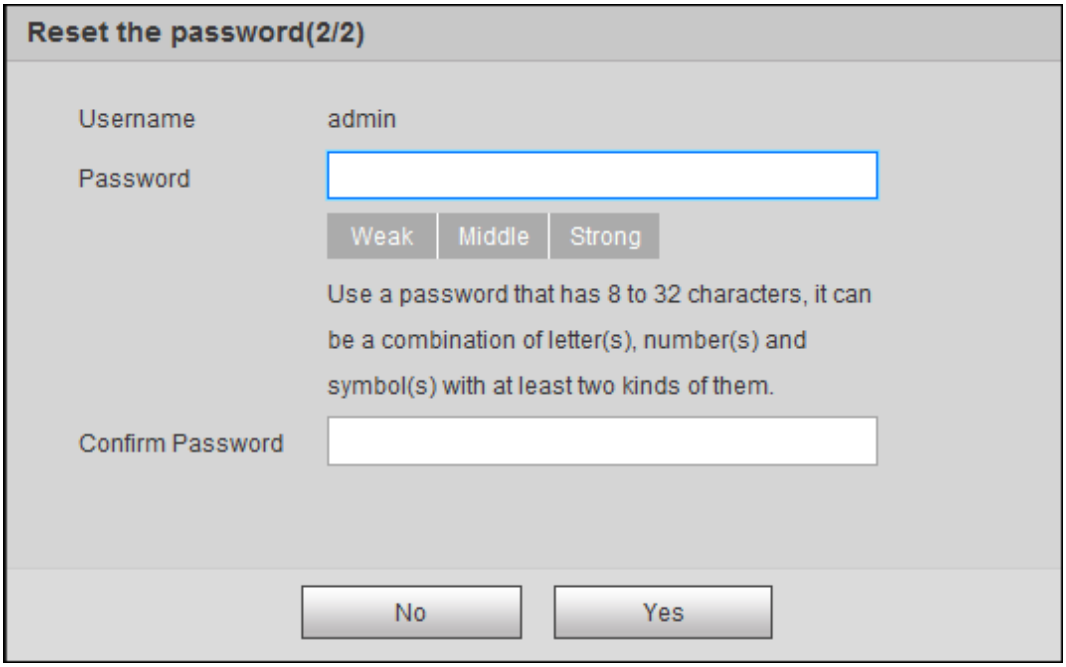


Scan the actual QR code.

Step 5 Enter the received security code.

Step 6 Click **Next**.

Figure 2-6 Reset password (2)



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

Step 8 Click **Yes**.

2.1.5 Web Functions

This section mainly introduces the following 6 functions on the webpage.

Figure 2-7 Tab

Table 2-3 Tab function description

Tab	Function
Wizard	Quick configuration of plate pixel, recognition region, and more.
Live	View, and record live video, and image, adjust the video and image window, set client image parameter, and more.
Search	Search for different types of pictures and videos, and configure watermark verification of videos.
Setting	Set traffic event rules, basic attributes of the camera , network, storage, and system, and view system information.
Alarm	Set alarm prompt.
Logout	Log out of the web client.

The following buttons are very common on the webpage.

Table 2-4 Common buttons description

Button	Description
Default	Restore all parameters to system defaults.
Refresh	Refresh the parameters to the latest value.
Save	Save the settings.

2.2 Wizard

On the **Wizard** page, you can configure capture scenarios, and get assistance with setting installation scenarios.

You can click at the upper-right corner of the **Wizard** page to exit.

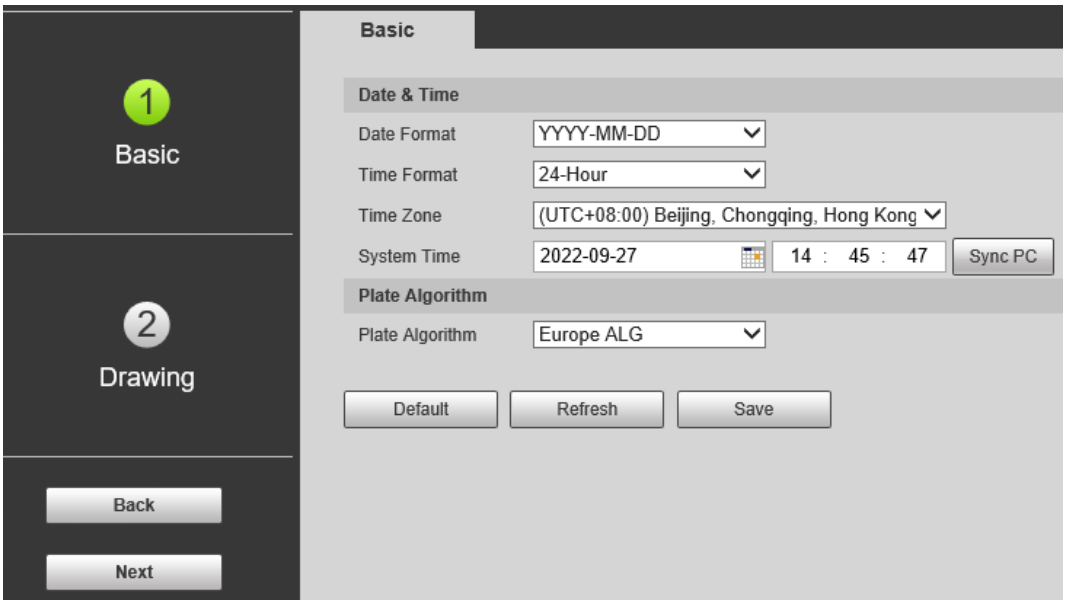
Procedure

Step 1 Click the **Wizard** tab.

Step 2 Select the basic date and time format and system time of the camera, and then click **Save**.

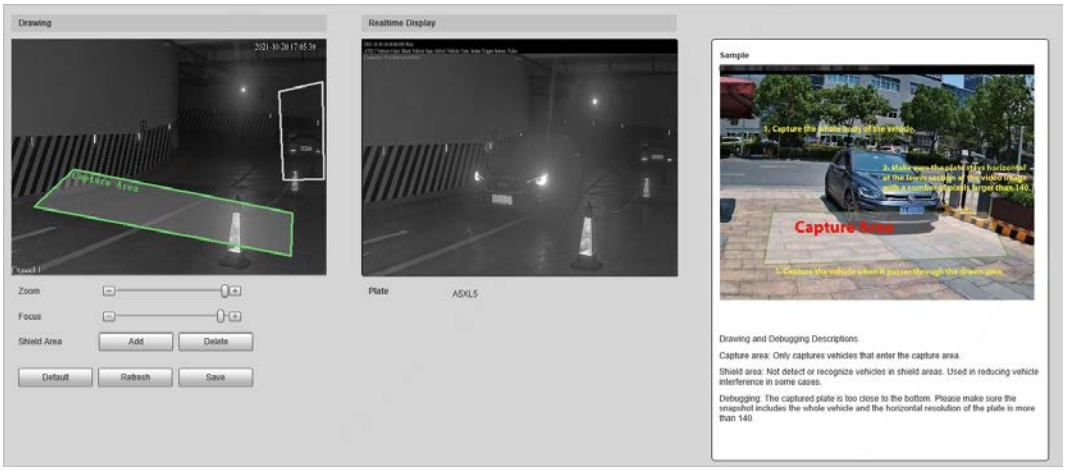
- You can manually enter the time, or click **Sync PC** to synchronize time from the server.
- Set **Plate Algorithm** to your region to get better results.

Figure 2-8 Basic parameters



Step 3 Click **Drawing** to see whether the video image is properly zoomed, and focused by checking the plate pixel.

Figure 2-9 Drawing



1) Drag the zoom, and focus bars to adjust the video image until the image is clear.
2) Follow the tips on the figure on the right side, and then draw an area for capturing vehicles that enter.
3) Click **Add** next to **Shield Area** to draw areas that the camera does not recognize. Click **Delete** to delete the area.
4) **Realtime Display** window in the middle displays the plate recognition result cutout at the upper-left corner and vehicle image in real-time.
5) Click **Save**.

Step 4 Click **Finish**, and then click **Finish** in the middle to exit the **Wizard** page.

Click **Back** to go back to the last step during the guide.

2.3 Live

Click the **Live** tab.

On this page, you can view live videos and real-time capture images, record videos, config LPR, and more.

Figure 2-10 Live

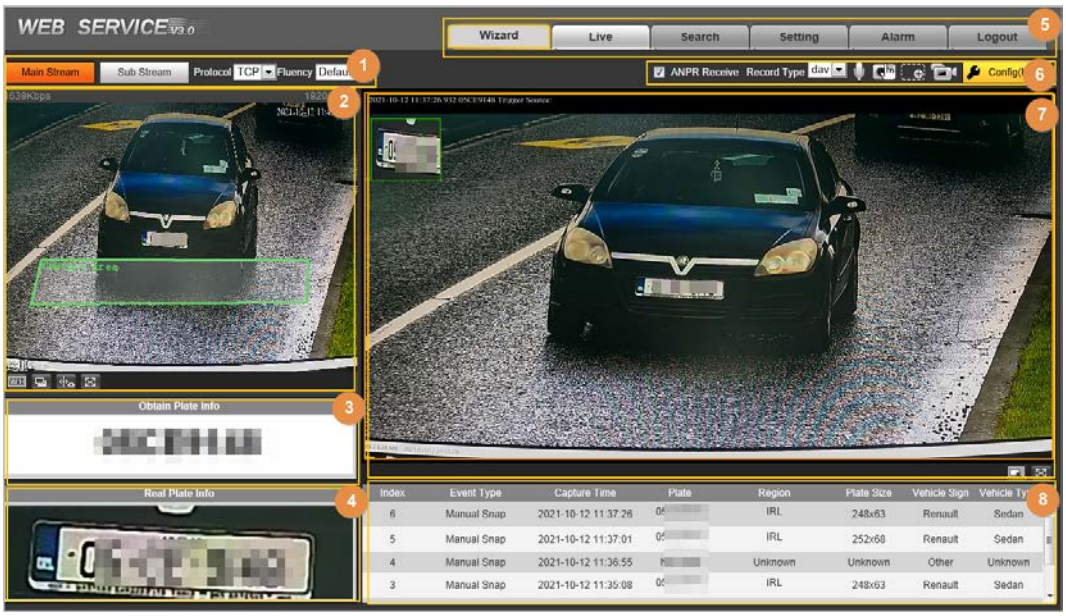


Table 2-5 Live page description

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

2.3.1 Video Stream

- **Main Stream**: Make sure that the camera can record video, and perform 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 possession when network bandwidth is insufficient.
- **Protocol**: Video surveillance protocol, currently it only supports **TCP**.
- **Fluency**: Smoothness when viewing the live video. The fluency can be set to **High**, **Middle**, **Low**, and **Default** (recommended).

2.3.2 Live View

Displays the live video captured by the camera. You can also click the icons to change the display

mode of live view.

- : Adjust the image to its original size or fill the window.
- : Switch to a big window.

Figure 2-11 Big window

- : Click to enable smart track detection. Plate number, vehicle bounding box, and other smart tracking information will be displayed on the video image.
- : Click to display the window in full screen; double-click or right-click to exit full screen.

2.3.3 Recognized Plate Number

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

2.3.4 Plate Snapshot

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

2.3.5 System Functions

Click the tabs to set system functions, including playback, video recording, and snapshot query, intelligent rules setting, alarm event setting, and system logout.

2.3.6 Live Page Functions

This section introduces operations such as image and video capture, zoom, record, and talk.

Figure 2-12 General function

Table 2-6 General function option

Icons	Name	Description
ANPR Receive	ANPR Receive	Select the checkbox, and the camera automatically receives vehicle snapshots, and detects event information triggered by sources such as radar or video detection, and displays such snapshots, and information at the lower part of the page. The snapshots are saved in the storage path defined in **Setting** > **Storage** > **Destination** > **Save Path**.
Record Type dav	Record Type	Select the format of video recordings (**dav** by default).
	Talk	Click it, and then you can communicate with people on site through the camera.
	Manual Snapshot	Click to take a snapshot when a vehicle passes. Snapshots are saved on the storage path. ● Enable **ANPR Receive** first. ● To change the storage path of snapshots, go to **Setting** > **Storage** > **Destination** > **Save Path**.
	Digital Zoom	Drag to select an area in the video, and then the area will be zoomed in. Right-click anywhere on the video, or click to exit.
	Video Recording	Click it to start recording. Click again to stop recording. You can set the storage path of video recordings in **Setting** > **Storage** > **Destination** > **Save Path**.
Config(LPR)	Config (LPR)	You can draw the area of plate detection, adjust camera's focal length, and set applicable regions.

Procedure

Step 1 Click Config(LPR) to configure LPR.

Figure 2-13 Config (LPR)

Step 2 Set the focus and zoom mode, which is used to recognize vehicle.

Table 2-7 Focus parameter description

Parameter	Description
Auto Focus	Auto adjust camera lens, and make the scenario clearly focused.
Regional	Click **Regional**, and then draw a box in the video image to focus the defined region in the box.
Manual Focus	• **Zoom**: Click ⊞ to zoom in, click ⊟ to zoom out. You can also directly drag the adjustment bar. • **Focus**: Click ⊞ to focus on far places, click ⊟ to focus on near places. You can also directly drag the adjustment bar to set focal length. • **Speed**: There are 3 levels to be selected. The higher the speed, the more obvious the adjustment.
Restore All	Restore all configurations to default settings.
Shield Area	Click **Add** to draw a shield area on the video image where the camera does not detect.
Illumination	Click **Illumination**, and the page is directed to the camera attribute. You can set the illumination there.
Plate Algorithm	Select the algorithm to recognize the plate. The recognized result is displayed below.

Step 3 Click **Save**.

2.3.7 Vehicle Snapshot

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

2.3.8 Event List

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

2.4 Search

Click the **Query** tab, and the system displays query page where you can search for pictures, and video recordings.

2.4.1 Picture Query

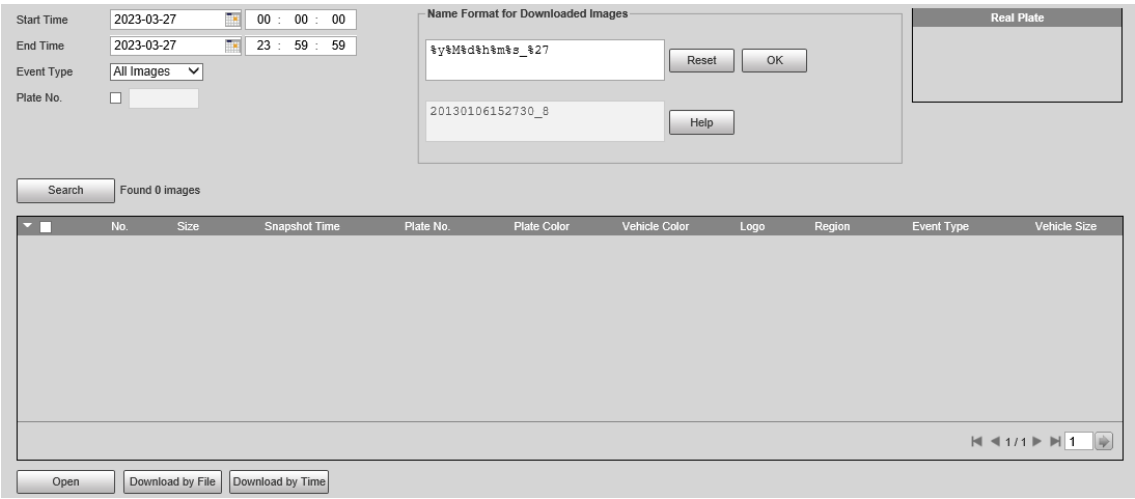
2.4.1.1 Memory Card Image

Search conditions can be set in this section. You can search for event, and plate information of the SD card within the set period.

Procedure

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

Figure 2-14 Memory card picture



Step 2 Set the search conditions.

- Set the begin and end time of search period.
- Select **Event Type**.
- Select **Plate** to enter plate number.

Step 3 Click **Search**, and it displays the results which conform to search conditions.

- Select a file on the list, and the captured image of the plate will be displayed in **Real Plate**.
- Select pictures, and then click **Open** to see the corresponding vehicle snapshot.

Step 4 Select one or more pictures to be downloaded to local PC.

- Click **Download by File**, the selected pictures will be downloaded to the defined path.
- Click **Download by Time**, all the results which are captured within the set period will be downloaded to the defined path.

2.4.1.2 Local Image

The section introduces the way of checking whether the watermark of PC picture is tampered.

Procedure

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

Step 2 Click **Browse**, and select the folder where the verified picture is located.

Step 3 Select the picture which needs to be verified, and then click **Open**.

Step 4 Click **Watermark**. The camera starts verifying whether the picture has watermark and displays the results on the picture list under **Watermark Verification**.

Select pictures and click **Open** or double-click the picture if you need to preview the picture.

2.4.2 Recording Search

2.4.2.1 Recording

You can play videos that are stored on your computer.

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

Figure 2-15 Search for recording

Step 2 Click **Select File**, select record path, click **Open**, and view the video.

Table 2-8 Play function description

Icon	Description
	• : Play video. • : Pause.
	Stop playing video.
	Slow down video playing.
	Speed up video playing.
	Next frame.

2.4.2.2 Watermark

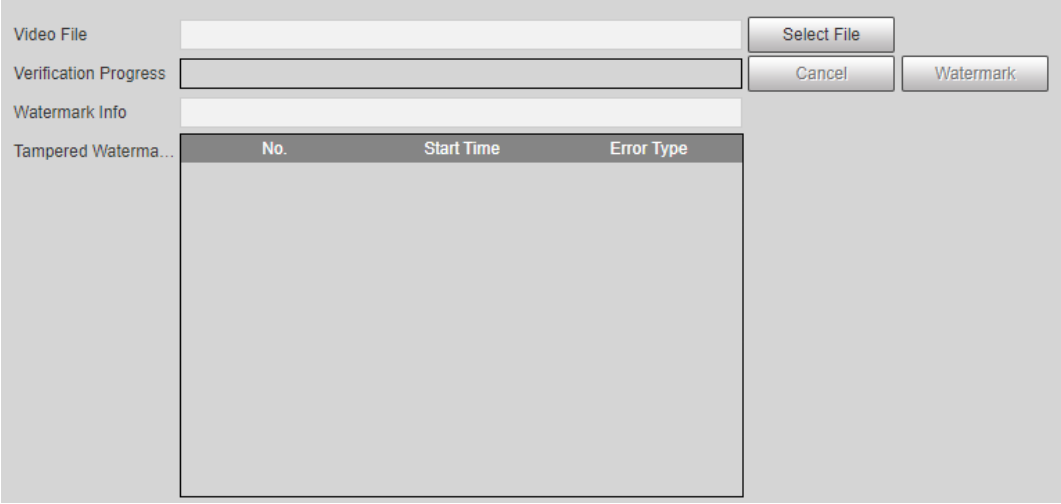
You can verify whether the watermark of local recordings is tampered.

Go to **Setting** > **Camera** > **Video** > **Video Stream**, and select **Watermark** to enable the function, and set the corresponding **Watermark String**. The default character is DigitalCCTV.

Procedure

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

Figure 2-16 Watermark



Step 2 Click **Select File**, and select a file that you want to verify.

Step 3 Click **Watermark**, and the system displays verifying progress and normal watermark. The results will be shown in the **Tampered Watermark** section.

2.4.3 Snapshot Record Search

Search for the vehicle records within the defined period according to the defined direction.

- The camera can store up to 10,000 records when no memory card is installed.
- If the vehicle passing records are unreadable in Excel after it is imported, change them into UTF-8 encoding document in txt, and then the Excel file can be opened normally.

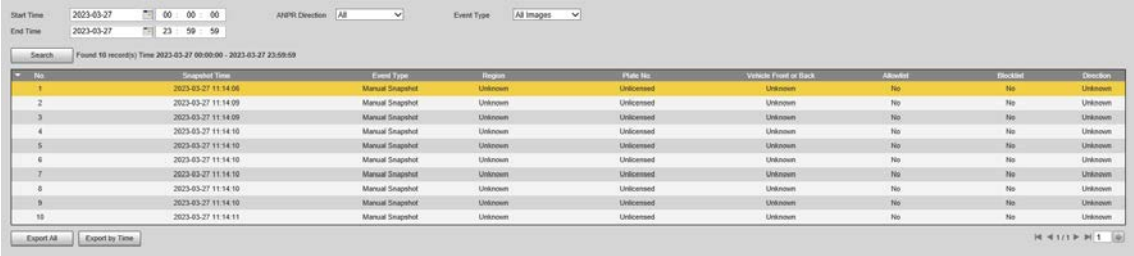
Procedure

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

Step 2 Set **Start Time**, and **End Time**, and then set **ANPR Direction** (vehicle movement direction) and **Event Type**.

Step 3 Click **Search** to search for the plates that meet the search conditions.

Figure 2-17 Capture records



Step 4 Click **Export All** or **Export by Time** to export all results or the searched results based on the conditions to PC.

2.4.4 Alarm Query

Set the search conditions to search alarm output.

Make sure that all the external devices are connected with the camera through RS-485 port.

Procedure

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

Step 2 Set the start time and end Time.

Step 3 Click **Search**.

Figure 2-18 Alarm output search

No.	Time	Source IP Address	Alarm Type	Alarm-out Port	Plate No.	Time Consumption
1	2022-09-06 11:03:52	10.34.4.18	Forced	1	None	0
2	2022-09-06 11:03:57	10.34.4.18	Forced	2	None	0
3	2022-09-06 11:05:10	10.34.4.18	Forced	1	None	0
4	2022-09-06 11:05:14	10.34.4.18	Forced	2	None	0
5	2022-09-06 11:07:34	10.34.4.18	Forced	1	None	0
6	2022-09-06 11:07:39	10.34.4.18	Forced	2	None	0
7	2022-09-06 11:08:07	10.34.4.18	Forced	1	None	0
8	2022-09-06 11:08:11	10.34.4.18	Forced	2	None	0
9	2022-09-06 19:25:11	10.34.4.18	Forced	1	None	0
10	2022-09-06 19:25:15	10.34.4.18	Forced	2	None	0

Click **Export All** or **Export by Time** to export all results or the searched results.

2.5 Setting

You can configure several parameters such as ANPR, camera, network, event, storage, system, and system information.

2.5.1 ANPR

You can set intelligent parameters of the camera.

2.5.1.1 Setting Snapshot

You can set snapshot rule of the camera.

Procedure

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

Figure 2-19 Snapshot settings-video mode

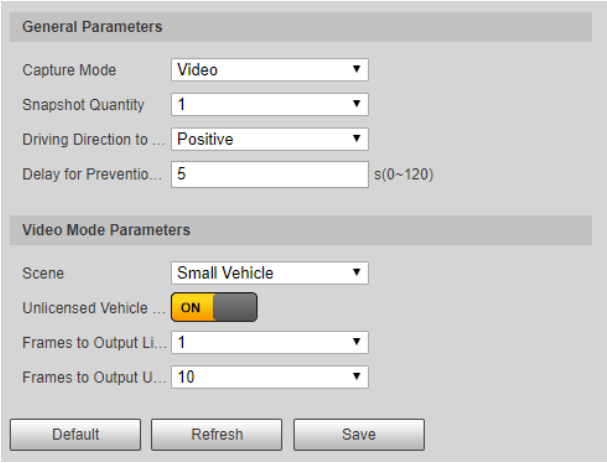
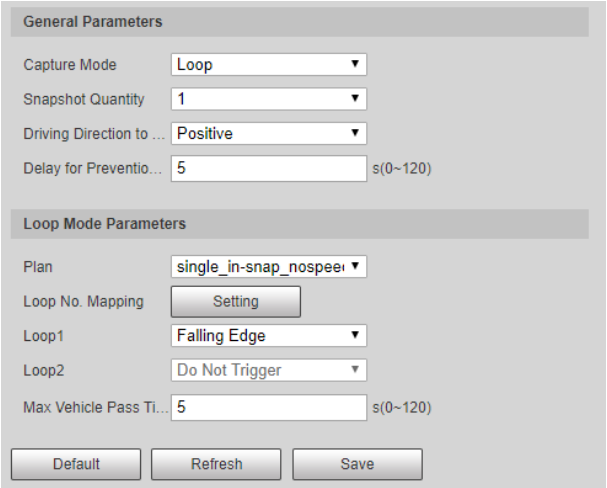


Figure 2-20 Snapshot settings-loop mode



Step 2 Configure the parameters.

Table 2-9 Description of capture parameters

Type	Parameter	Description
General Parameters	Capture Mode	• **Loop**: Use loop to take snapshots. • **Video**: Use video to take snapshots. • **Mix Mode**: Use both loop and video to take snapshots.
	Snapshot Quantity	It can take 1–2 snapshot(s).
	Driving Direction to Trigger Snapshot	• **Positive**: Only captures vehicles that approach. • **Departing**: Only captures vehicles that depart. • **Both Ways**: Captures vehicles that approach or depart.
	Delay for Prevention of Same Plate Capture	Set the time interval during which one plate can only be captured once.
Video Mode Parameters	Scene	Select **Small Vehicle** or **Large Vehicle** as needed.

Type	Parameter	Description
Only available when the **Snap Mode** is set to **Video**.	Unlicensed Vehicle Snapshot	Click to enable the capture towards unlicensed motor vehicles.
	Frames to Output Licensed Vehicle Snapshot	Configure the frame number of capturing licensed vehicle. **1** (default) means to capture when detecting one frame of licensed vehicle passing detection area.
	Frames to Output Unlicensed Vehicle Snapshot	Configure the frame number of capturing unlicensed vehicle. **10** (default) means to capture when detecting 10 frames of unlicensed vehicle passing detection area.
Loop Mode Parameters Only available when the **Snap Mode** is set to **Loop**.	Plan	Set the scheme of snapshots triggered by the loop. • **single_in-snap_nospeed**: Lay single loop, and it will take a snapshot when the vehicle enters a loop. • **double_in1-snap_nospeed**: Lay double loops, and it will take a snapshot when the vehicle enters the first loop. • **double_in2-snap_speed**: Lay double loops, and it will take a snapshot when the vehicle enters the second loop.
	Loop No. Mapping	Select the corresponding relationship between logical loop and physical loop. • When the scheme is **single_in-snap_nospeed**, only need to select the physical loop corresponds to logical loop 1. • You need to configure this in mix mode.
	Loop1	Set the loop trigger mode. • **Do Not Trigger**: No capture is triggered. • **Rising Edge**: Capture is triggered when the vehicle enters loop. • **Falling Edge**: Capture is triggered when the vehicle exits the loop. When the scheme is **single_in-snap_nospeed**, then loop 2 cannot be set.
	Loop2	

Type	Parameter	Description
	Max Vehicle Pass Time	Set a time period, during which a vehicle enters the first loop and triggers the second, the camera only takes snapshots for the first trigger. Applicable for double loops.

Step 3 Click **Save**.

2.5.1.2 AI Setting

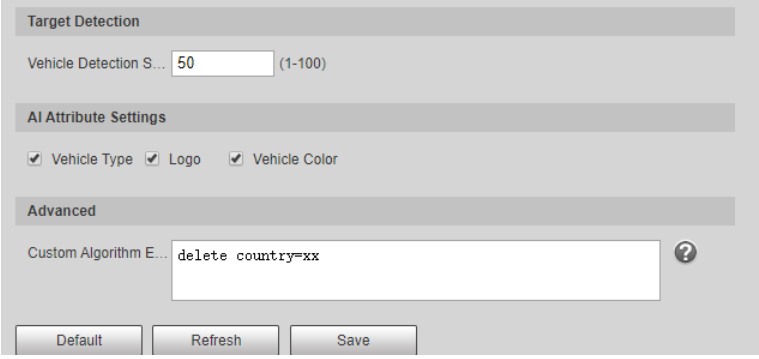
2.5.1.2.1 Configuring Intelligent Analysis

You can set vehicle recognition parameter, recognition mode, and some other functions.

Procedure

Step 1 Select **Setting** > **ANPR** > **AI Setting** > **Intelligent Analysis**.

Figure 2-21 Intelligent analysis



Step 2 Configure parameters.

Table 2-10 Parameters description

Parameter	Description
Vehicle Detection Sensitivity	Set the sensitivity of vehicle detection. The higher the value, the more sensitive the detection.
AI Attribute Settings	Select parameters such as vehicle type, car series, vehicle sign and vehicle color which can be recognized by the camera.
Advanced	Configure advanced vehicle recognition function through algorithm. Click to view the advanced algorithm formula.

Step 3 Click **Save**.

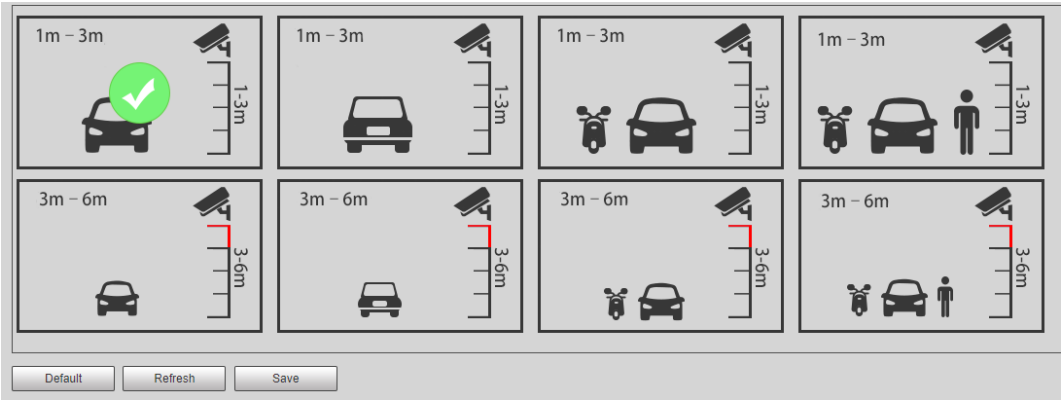
2.5.1.2.2 Selecting Recognition Scene

You can configure the advanced functions of plate recognition, and customize special functions.

Procedure

Step 1 Select **Setting** > **ANPR** > **AI Setting** > **Scene Config**.

Figure 2-22 Scene



Step 2 Select detection scene as needed.

- Head first: Higher recognition sensitivity towards plate on head.
- Tail first: Higher recognition sensitivity towards plate on tail.
- Bicycle (electric bicycle or motorcycle): Higher recognition sensitivity towards electric bicycle or motorcycle plate.
- Height: Higher recognition sensitivity when the camera is installed on higher place.

Step 3 Click **Save**.

2.5.1.3 Configuring OSD

Set the overlapping OSD (On-screen Display) information on video and image.

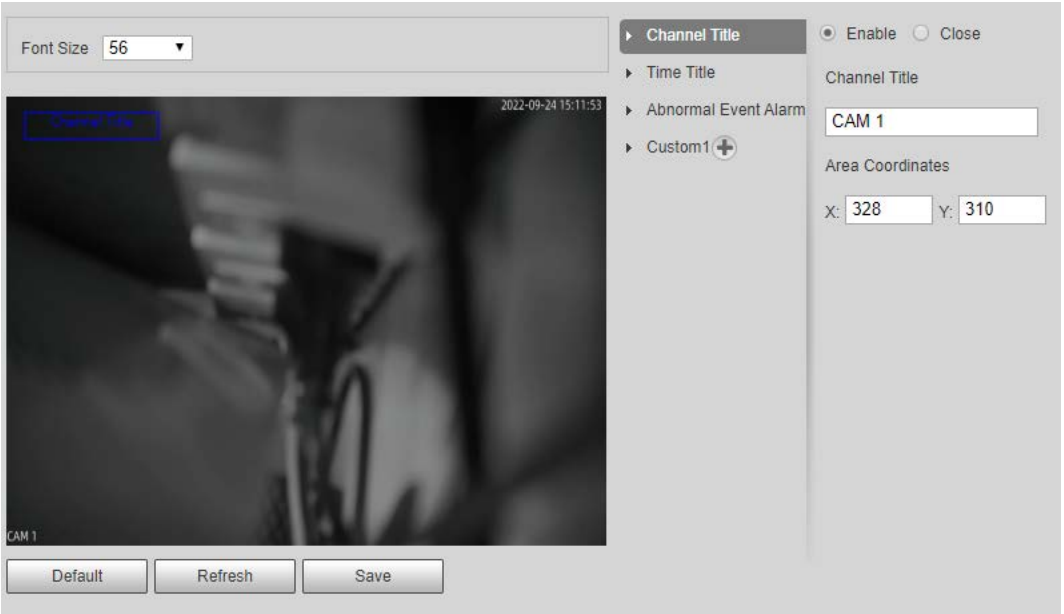
2.5.1.3.1 Video OSD

Set OSD information of video channel.

Procedure

Step 1 Select **Setting** > **ANPR** > **OSD Info** > **Video OSD**.

Figure 2-23 Video OSD



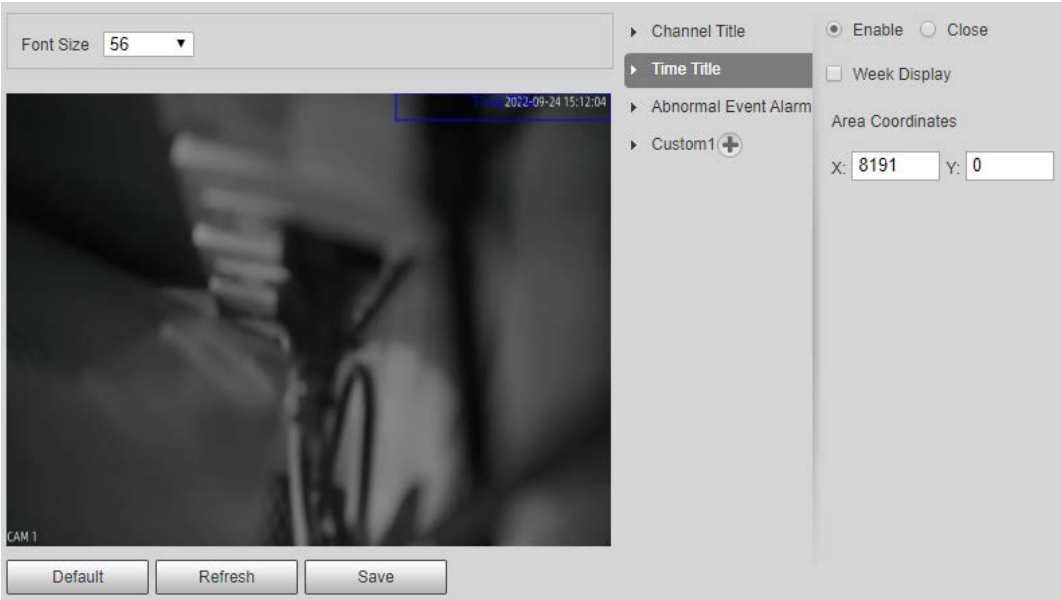
Step 2 Configure the font size.

Step 3 Set channel title and coordinates.

1) Click **Channel Title**.
2) Select **Enable**.
3) Enter a name.
4) Drag the yellow box or enter coordinate directly to set the location of channel title.

Step 4 Set time title and location.

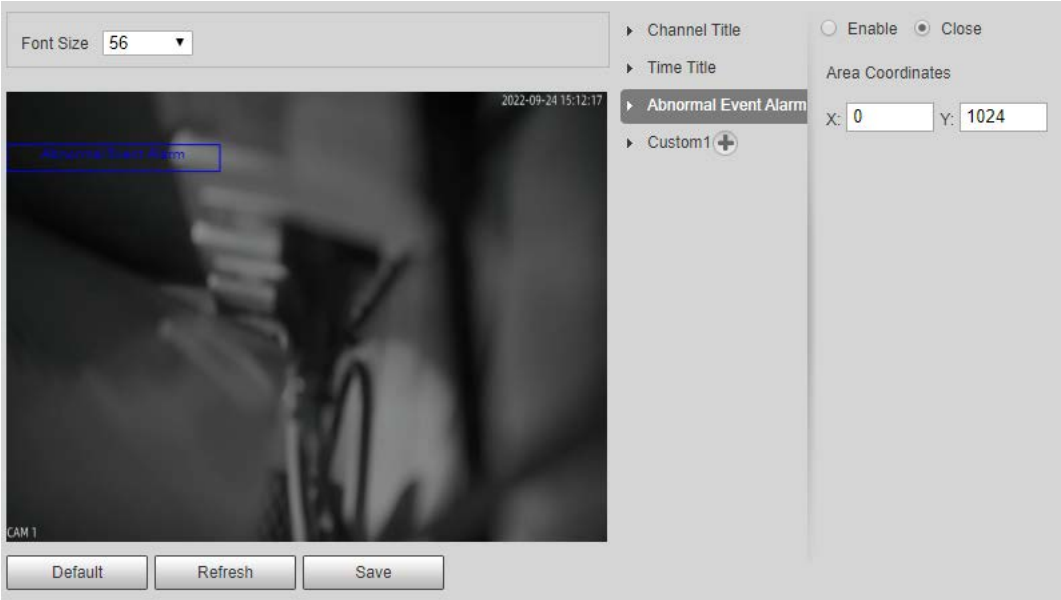
Figure 2-24 Time title



1) Click **Time Title**.
2) Select **Enable**, and select **Week Display**.
3) Drag the yellow box or enter coordinate directly to set the location of time title.

Step 5 Set abnormal event alarm title and location.

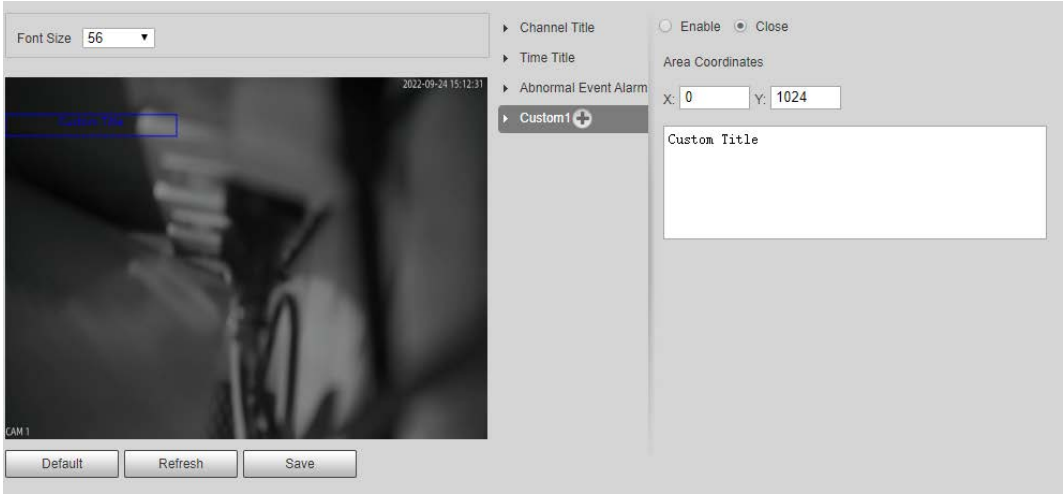
Figure 2-25 Abnormal event alarm title



1) Click **Abnormal Event Alarm Title**.
2) Select **Enable**.
3) Drag the yellow box or enter coordinate directly to set the location.

Step 6 Click **Custom1**, select **Enable**, and then set OSD information and its display location according to requirement.

Figure 2-26 Custom title



Click ⊕ to add more custom OSD information. The system supports up to 6 customized regions.

Step 7 Click **Save**.

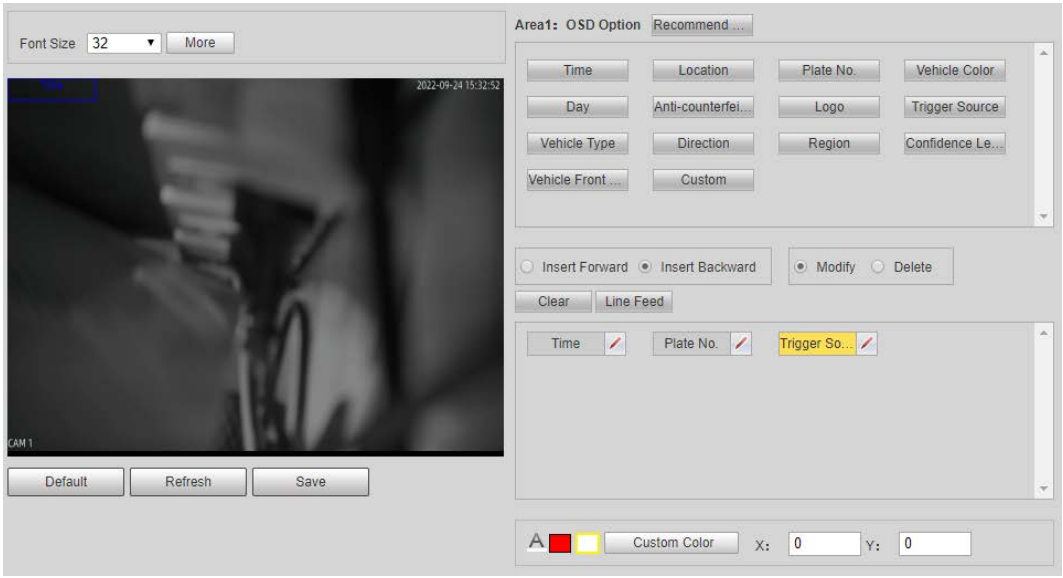
2.5.1.3.2 Original Picture OSD

You can set OSD information of pictures.

Procedure

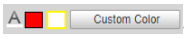
Step 1 Select **Setting** > **ANPR** > **OSD Info** > **Original Picture OSD**.

Figure 2-27 Original picture OSD



Step 2 Move the title box to displayed location, or manually enter coordinate value into the X/Y box on the lower-right corner.

Step 3 Configure the font size of the title next to **Font Size**.

Step 4 Set the color of OSD information in 

.

Step 5 Configure the OSD information separator.

1) Click **More**.
2) Select a separator type.

3) Click **OK**.

Step 6 Configure other OSD options.

Table 2-11 Snap OSD parameters description

Parameter	Description
Insert Forward	Select one OSD option, click **Insert Forward**, and select other OSD options. The new OSD options will be displayed before original OSD option.
Insert Backward	Select one OSD option, click **Insert Backward**, and select other OSD options. The new OSD option will be displayed after the original OSD option.
Modify	Click it, and all the OSD information status is displayed as except **Line Feed**. Click to modify the prefix, suffix, content, and separator of corresponding OSD option.
Delete	Click it, and all the selected OSD information status is displayed as , click to delete corresponding OSD option.
Clear	Delete all OSD information.
Line Feed	Line feed is used to separate different information into multiple lines. For example, information 1 before a line feed is displayed on the first line, and information 2 after the line feed is displayed on the second line.

Step 7 Click **Save**.

2.5.1.4 Configuring Cutout

2.5.1.4.1 Snapshot Cutout

Enable plate cutout function, and the system will cut out the recognized plate picture, and save it to the storage path.

Procedure

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

Figure 2-28 Snapshot cutout

Step 2 Select **Enable** to enable **Plate No.** and **Vehicle Body Cutout**.

Step 3 Click **Save**.

2.5.1.4.2 Plate Overlay

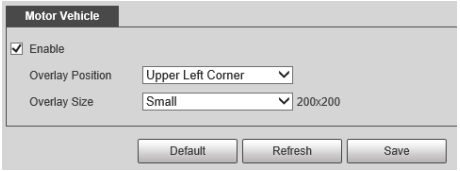
You can select whether to overlap the plate image onto the snapshot, and set the overlap position and size.

Procedure

Step 1 Select **Setting** > **ANPR** > **Cutout Config** > **Plate Overlay**.

Step 2 Configure the parameters.

Figure 2-29 Plate overlay



Step 3 Click **Save**.

2.5.1.5 Setting Blocklist and Allowlist for Vehicles

2.5.1.5.1 Allowlist

Add vehicles into the allowlist and if the barrier control is set to **Open barrier by allowlist**, only vehicles on the allowlist can pass. You can add up to 110,000 records.

Procedure

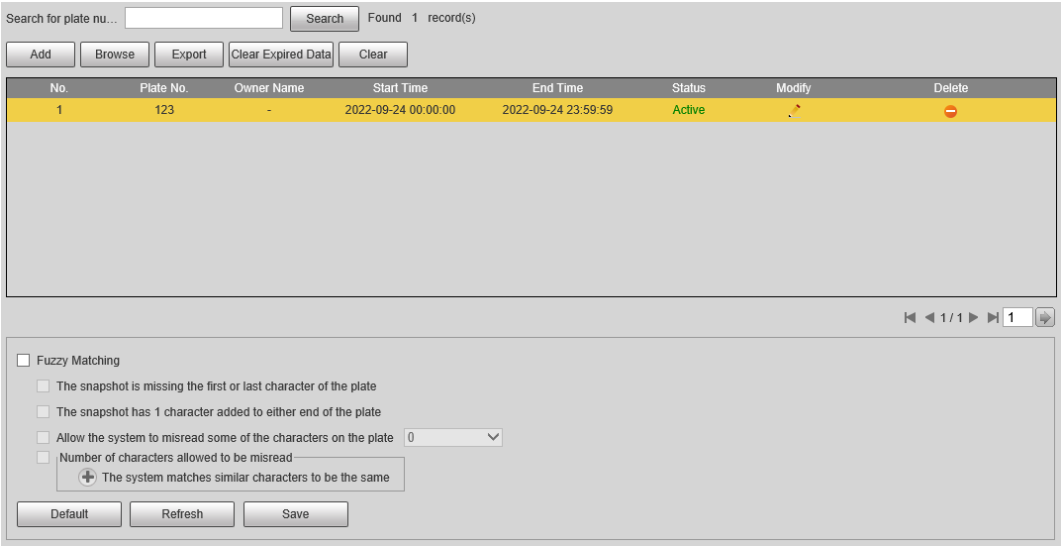
Step 1 Select **Setting** > **ANPR** > **Vehicle Blocklist/Allowlist** > **Allowlist**.

Step 2 Enter a plate number and then click **Search**.

If the plate is on the allowlist, its detailed information will be displayed.

Directly click **Search** to display all records on the allowlist.

Figure 2-30 Allowlist



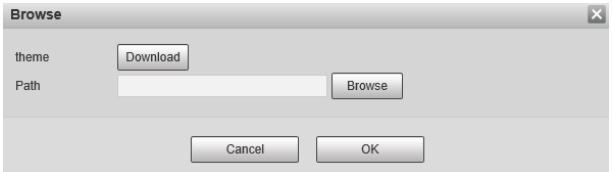
Step 3 Click **Add**, and enter the information of a plate to add it into the allowlist.

Select **Add More**, and click **OK** to continue adding another plate.

Step 4 Click **Save**.

Step 5 Click **Browse**, and then click **Download** on the pop-up window to download the import template.

Figure 2-31 Import



Step 6 Fill in the template and click **Browse** again.

Step 7 On the pop-up window, click **Browse**, select the template and then click **OK**.

All the plate information you have filled in the template are imported to the camera.

Step 8 Click **Export**.

Step 9 Select **Open** or **Close** to encrypt the exported allowlist or not, and then click **OK**.

Step 10 Select **Fuzzy Matching**, and then based on the actual situation, configure the rules.

Allow the system to misread some of the characters on the plate is enabled by default.

Related Operations

- Edit plate information: Click of the corresponding plate number searched, and edit the plate number. Click **OK**.
- Delete single plate number: Click of the corresponding plate number searched, and delete it from the allowlist.
- Delete plate number in batches: click **Clear All**, and then click **OK** in the pop-up window to delete all the allowlist information.
- Click **Clear Expired Data** to delete vehicles whose allowlist permissions have expired.

2.5.1.5.2 Blocklist

When a vehicle is on the blocklist, and the camera recognizes it, an alarm will be triggered. You can add up to 110,000 records.

Procedure

Step 1 Select **Setting** > **ANPR** > **Vehicle Blocklist/Allowlist** > **Blocklist**.

Step 2 The procedures to search, import, and export of blocklist are similar to those of allowlist. For details, see "2.5.1.5.1 Allowlist".

2.5.1.6 Configuring Barrier Control

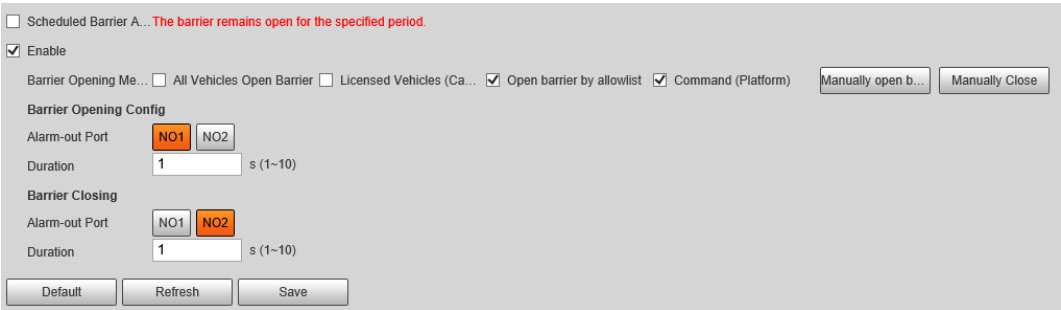
2.5.1.6.1 Barrier Control

You can set the barrier control mode, and configure information of opening, and closing barrier.

Procedure

Step 1 Select **Setting** > **ANPR** > **Barrier Control** > **Barrier Control**.

Figure 2-32 Barrier control



Step 2 Configure the parameters.

Table 2-12 Parameter description

Parameter	Description
Scheduled Barrier Always Open	Select it, and enable the function of barrier always open. Configure the period of barrier always open. The barrier will not close during the defined period.
Enable	Select it to enable barrier control, and configuration.
Barrier Opening Method	Triggers alarm through different modes, and remotely controls the barrier opening and close. ● **All Vehicles Open Barrier**: When the camera captures any vehicle, it outputs an open barrier signal. ● **Licensed Vehicles (Camera)**: When the camera captures any plate, it outputs an open barrier signal. ● **Open barrier by allowlist**: When the camera captures vehicles that are on the allowlist or conform to fuzzy matching, it outputs an open barrier signal. ● **Command (Platform)**: The camera outputs an open barrier signal when it receives a command from the platform. ● Click **Manually open barrier** or **Manually Close** to manually control the barrier. You can set barrier opening control to **Open barrier by allowlist**, and **Command (Platform)** at the same time. **Open barrier by allowlist** takes priority.
Barrier Opening Config	● **Alarm-out Port**: Alarm linkage output port. You can select any one of the 2 ports. ● **Duration**: The duration that the barrier opening or closing signal lasts.
Barrier Closing	

Step 3 Click **Save**.

2.5.1.6.2 Remote Controller

You can connect the camera to a remote controller, and then you can use the remote controller to control the camera.

Procedure

Step 1 Select **Setting** > **ANPR** > **Barrier Control** > **Remote Controller**.

- The unlock button controls the alarm-out port of NO1 COMI, and the lock button controls the alarm-out port of NO2 COM2.
- The relationship between unlock/lock button and alarm-out ports cannot be changed.

Figure 2-33 Remote controller

Step 2 Configure **Warning Light** and **Duration**.

If **Warning Light** is selected, when you press the unlock button on the remote control, the light on the camera will flash for the duration you configure.

Step 3 Click **Connect**, and then press the corresponding button the remote controller.

You must press the button in 10 seconds.

Step 4 (Option) To disconnect the remote controller, click **Disconnect**.

Step 5 Click **Save**.

2.5.1.7 Configuring RS-485 Settings

You can configure RS-485 serial protocol of external devices. After configuration, you can set related parameters of the device on the web client of the camera.

Procedure

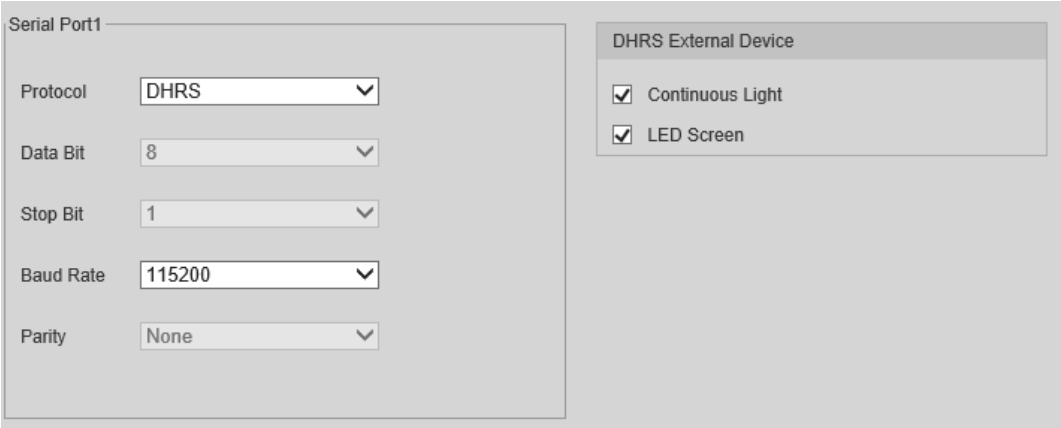
Step 1 Select **Setting** > **ANPR** > **RS-485 Settings**.

Step 2 Configure the parameters.

The camera supports multiple protocols.

- DHRS

Figure 2-34 DHRS parameters



You can select external devices on the right side which support DHRS protocol.

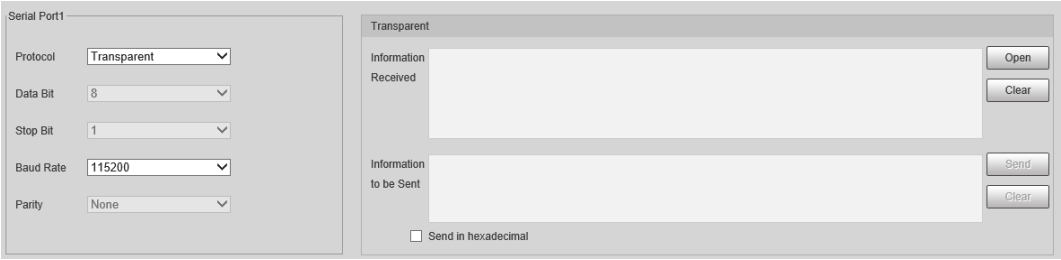
- Transparent

  The third-party platform can control the RS-485 output of the camera through RS-485 transparent transmission, and then you can connect external devices.

  Trigger capture through transmitting capture command. To test the RS-485 transparent

transmission sending and receiving conditions, select **Send in hexadecimal**, and then click **Open** on the right side of the **Information Received** section.

Figure 2-35 RS-485 Transparent transmission



- Push Data through Serial Port

  You can configure the serial port push information. The camera pushes the snapshots to the third serial collection device through RS-485.

  When there are two ports, serial port push protocol is unavailable for serial port 2.

Figure 2-36 Push data through serial port

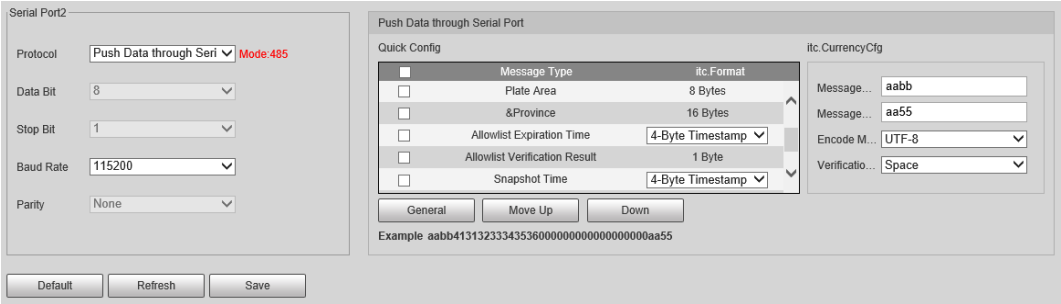


Table 2-13 Parameter description

Parameter		Description
Quick Config	Message Type	• Select one or more items to be sent to the third serial collection device. • Select the checkbox next to **Field Name** to select all the fields. Hover over the items to see their explanations.
	Format	Format of the items.
	General	Items selected by default.
	Move Up/Down	Click to move the item up or down.
General Config	Message Header	The tag head of data package. It is **aabb** by default.
	Message Trailer	The tag tail of data package. It is **aa55** by default.
	Encode Mode	Select encode type from **UTF-8** (default) and **GB2312**.
	Verification Type	Select check mode from **Space**, **SUM Check** and **BCC Check**.

Step 3 Click **Save**.

2.5.1.8 Configuring RS-485 Peripheral

You can view the status of external devices connected to the camera through RS-485. Certain configurations of external illuminators are also available.

Procedure

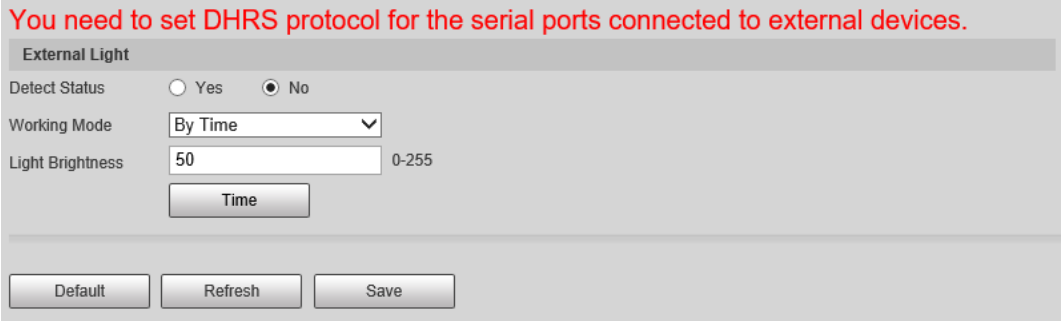
Step 1 Select **Setting** > **ANPR** > **RS485 Peripheral**.

Step 2 Click **External Device Status**, and you can see the detailed information of devices connected to the camera.

Click **Refresh** can update the current status of external devices.

Step 3 Select **External Light** to configure the external light.

Figure 2-37 External light



1. Select **Yes** next to **Detect Status** to enable the status checking of the connected continuous lights.
2. Set the **Working Mode** of the light, which can be **Always On**, **Always Off**, **By Time** and **Adaptive Brightness**.
   - When setting **Work Mode** to **By Time**, you need to configure the time schedule. For details, see "2.5.1.9 Setting Time Schedule".
   - When setting **Work Mode** to **Adaptive Brightness**, you need to set the default value for brightness.

Step 4 Set the **Light Brightness** of the light.

Step 5 Click **Save**.

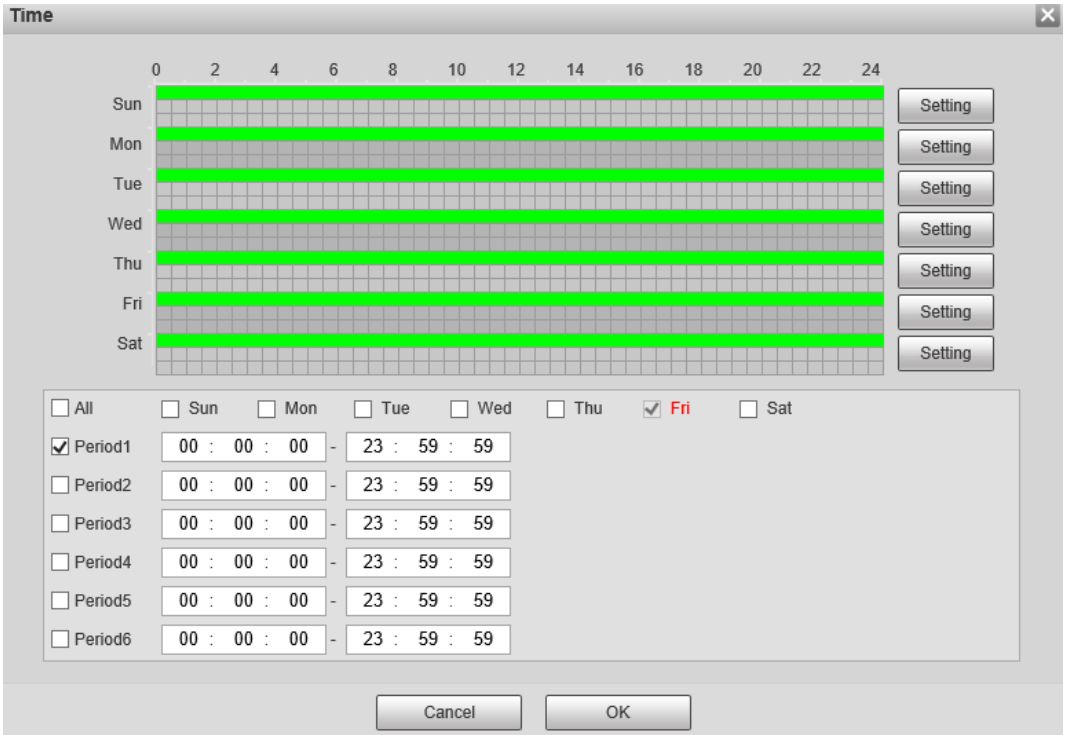
2.5.1.9 Setting Time Schedule

This section introduces the method of setting time schedule, which can be used when setting the work mode of external light and other situations.

Procedure

Step 1 Click **Setting** of a day to start setting the time schedule.

Figure 2-38 Time schedule



Step 2 Double-click each green line to clear the schedule for each day based on the actual situation, and then you can set the schedule as needed.

1. Draw one or more periods on the timeline.
2. The drawn periods are synced to the table below, which shows all periods on one day.
3. You can manually change the time for each period.

Step 3 Click **OK**.

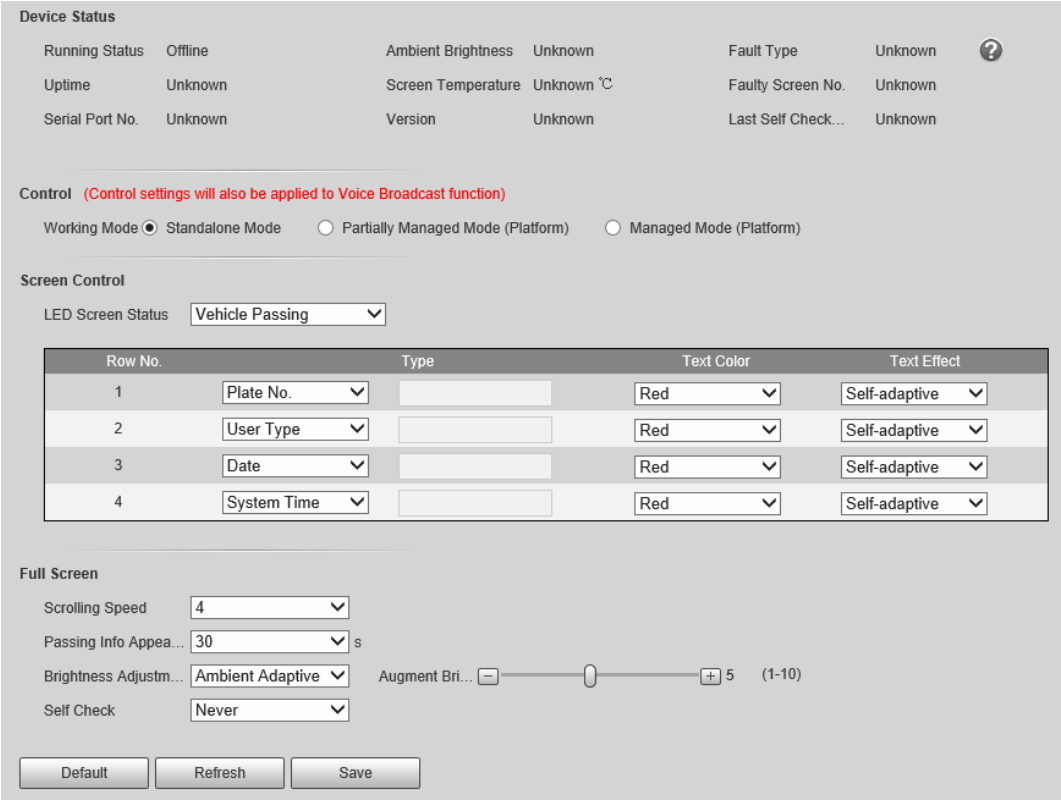
2.5.1.10 Configuring LED Screen

Connect the LED display with the camera through RS-485, and then you can configure the status, display type, display color, action, speed, and more parameters of the LED.

Procedure

Step 1 Select **Setting** > **ANPR** > **LED Screen**.

Figure 2-39 LED screen



Step 2 Configure parameters.

Table 2-14 LED parameters description

Section	Parameter	Description
Device Status		Displays the status of the screen, such as work state, ambient brightness, screen temperature and more.
Control Settings		Set the work mode for the screen. • **Standalone Mode**: Display as configured, and not controlled by any platforms. • **Partially Managed Mode (Platform)**: Select this to allow the platform to control part of the screen information. • **Managed Mode (Platform)**: Grant the platform complete control over the display information on the screen.
Screen Control		Set the color and action of display information when vehicles pass under normal state. The screen will display information as configured during the period for either status.
Full Screen	Scrolling Speed	The rolling speed of the information on the screen.
	Passing Appears On-screen for	The display duration of the passing vehicle information on the screen.

Section	Parameter	Description
	Brightness Adjustment	• **Ambient Adaptive**: The LED adjusts its brightness according to the ambient brightness. Set the **Augment Brightness**, the higher the value, the bigger the brightness change. • **Manual**: Manually adjust the LED brightness by setting the **Intensity**.
	Self Check	• **Auto**: Set the time interval for the LED to do self-check. • **Never**: The LED does no self-check.

Step 3 Click **Save**.

2.5.1.11 Configuring Broadcast

You can configure the broadcast content for events, voice broadcast content when vehicles pass, and the volume and video encoding settings for the broadcast.

2.5.1.11.1 Event Broadcast Settings

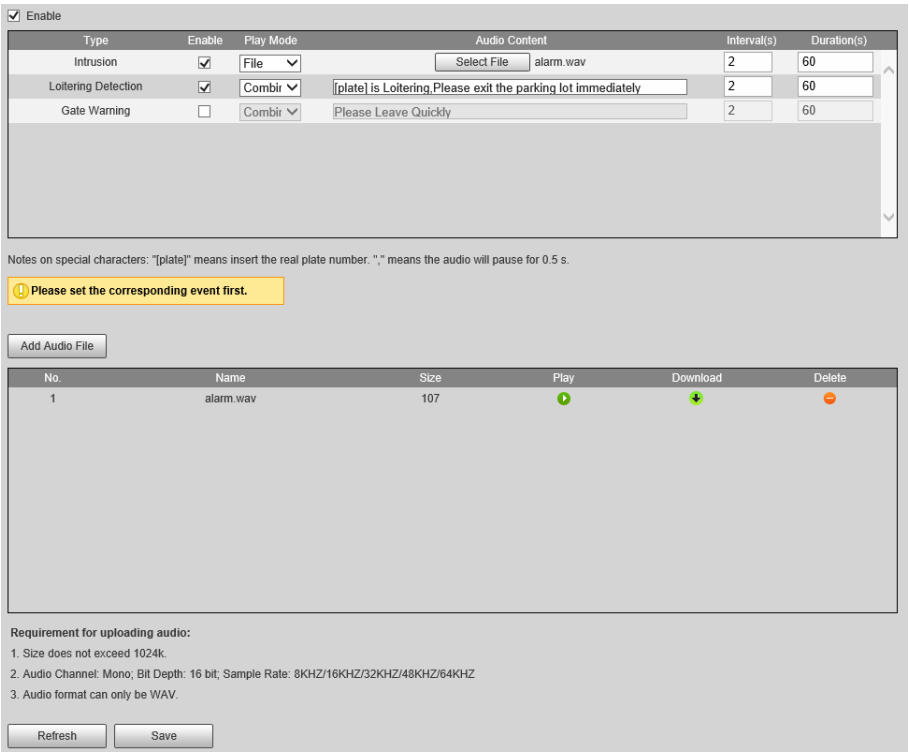
Configure the broadcast content when events are triggered.

Procedure

Step 1 Select **Setting** > **ANPR** > **Voice Broadcast Settings** > **Event Broadcast Settings**.

Step 2 Configure the parameters.

Figure 2-40 Event broadcast



Step 3 Select **Enable** to enable the function.

Step 4 (Optional) Click **Add Audio File**, and then follow the on-screen instructions to upload audio files to be played when events are triggered.

Step 5 Select the checkbox under the **Enable** column to enable an event.

Step 6 Configure other parameters.

- **Play Mode**:
  - **File**: The audio file you selected will be played when the event is triggered.
  - **Combine**: The content in **Audio Content** will be played when the event is triggered.
- **Audio Content**:
  - When the **Play Mode** is set to **File**, select an audio file you uploaded.
  - When the **Play Mode** is set to **Combine**, enter the content to be played when the event is triggered.
    [plate] and "," are two special parameters in the content. [plate] will be replaced with the plate number of the vehicle triggered the event, and "," is used to pause for 0.5 s between segments of the content. For example, the content is set to "[plate] is loitering, Please exit the parking lost immediately", and the plate number of the vehicle is AB12345, the broadcast content will be "AB12345 is loitering [pause for 0.5 s] Please exit the parking lot immediately".
- **Intervals(s)** and **Durations(s)**: The audio file or content will be continuously played for the duration and at each interval you configured.

Step 7 Click **Save**.

2.5.1.11.2 Voice Broadcast Settings

Configure the broadcast content, and the camera will broadcast the content when vehicles pass.

Only certain devices support this function.

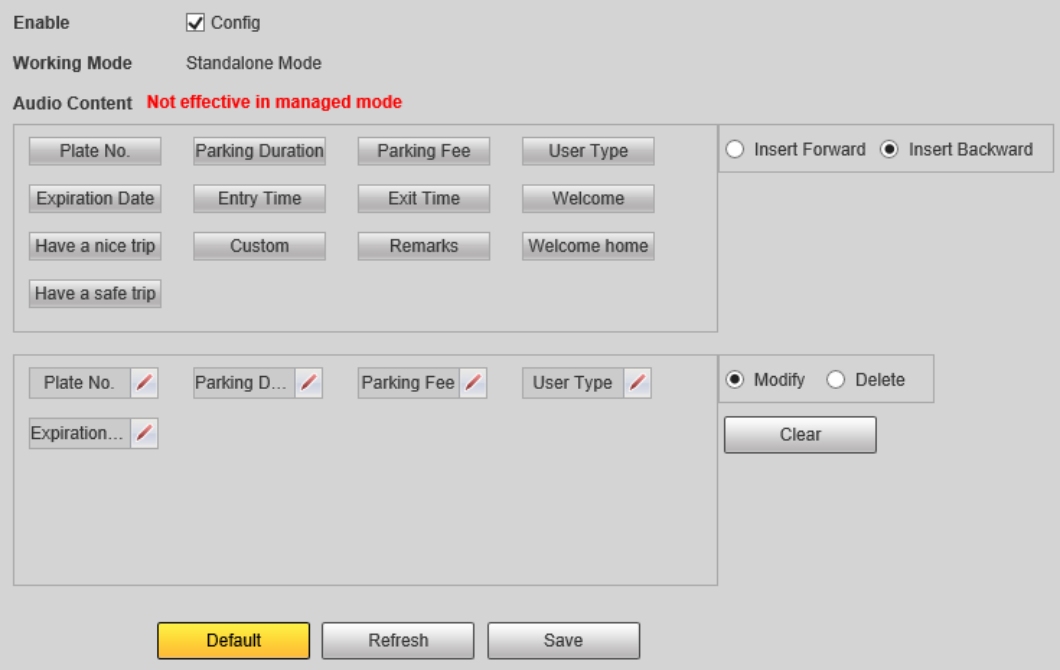
Procedure

Step 1 Select **Setting** > **ANPR** > **Voice Broadcast Settings** > **Voice Broadcast Settings**.

Step 2 Enable one or more options.

If the **Barrier Control** is set as **Order (Server)** and the voice broadcast is controlled by the platform, **Parking Fee**, **Parking Duration**, **Expires at**, **Entry Time** and **Exit Time** will be available.

Figure 2-41 Broadcast content



Step 3 Configure parameters.

Table 2-15 Parameters description

Parameter	Description
Insert Forward	Insert an option before the selected one on the display area.
Insert Backward	Insert an option after the selected one on the display area.
Modify	Click next to the broadcast option to edit the prefix and suffix of the option.
Delete	Click next to the broadcast option to delete the option.
Clear	Delete all broadcast options.

Step 4 Click **Save**.

2.5.1.11.3 Volume/Encoding Settings

Configure the volume for voice broadcast.

Only available for selected models.

Procedure

Step 1 Select **Setting** > **ANPR** > **Voice Broadcast Settings** > **Volume/Encoding Settings**.

Step 2 Configure the parameters.

Figure 2-42 Volume/Encoding

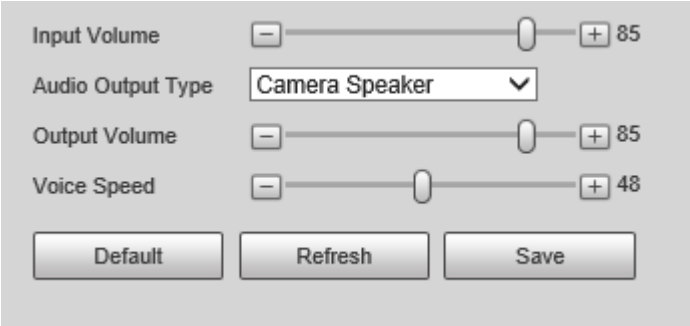


Table 2-16 Parameter description

Parameter	Description
Input Volume	The volume of the sound received by the camera.
Audio Output Type	Where the voice broadcast will be produced. • **Camera Audio Output**: The voice broadcast will be played by the device connected to the audio output port of the camera. • **Camera Speaker**: The voice broadcast will be played by the speaker of the camera.
Output Volume	The volume of the voice broadcast.
Voice Speed	The speed for the voice broadcast.

Step 3 Click **Save**.

2.5.1.12 Setting Device Test

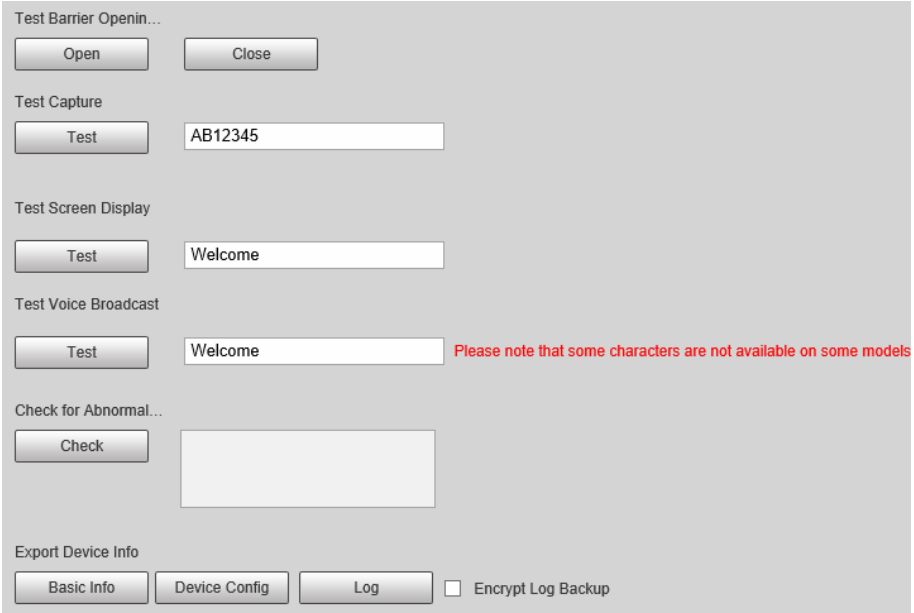
2.5.1.12.1 Device Test

You can test the barrier opening and closing, capture, display content, voice broadcast, and abnormal configuration modules to see if they work as configured. You can also export related device information.

Procedure

Step 1 Select **Setting** > **ANPR** > **Device Test** > **Device Test**.

Figure 2-43 Device test



Step 2 Configure the parameters.

Table 2-17 Parameter description

Parameter	Description
Test Barrier Opening/Closing	Click **Open** or **Close** to test whether the barrier responds correctly.
Test Capture	Enter a plate number, click **Test** to trigger capture, and view the snapshot in the **Live** page.
Test Screen Display	Enter some information, click **Test**, and view whether the information is correctly displayed on the LED screen.
Test Voice Broadcast	Enter some information, click **Test** to check whether the device plays the sound normally. Voice broadcast is only available on select models.
Check for Abnormal Config	Click **Check**, and system checks abnormality automatically.
Export Device Info	Select the information of the device, and export it in batches.

2.5.1.12.2 Capture Adjustment Information

You can overlay shield area box, vehicle body box, license plate box, vehicle body trajectory, plate trajectory, and capture area on the snapshots to assist you in checking whether the snapshots are taken as you require.

Procedure

Step 1 Select **Setting** > **ANPR** > **Device Test** > **Capture Adjustment Info**.

Step 2 Select the checkbox for **Displays rules and tracking info**, and then select the types of information to be displayed.

Step 3 Click **Save**.

Step 4 Go to the **Live** page, and then click to manually capture a license plate. On the snapshot, you can see the rules and tracking information you selected. If they do not meet

your requirements, you can adjust them by repeating the steps above.

2.5.1.12.3 Collection Log

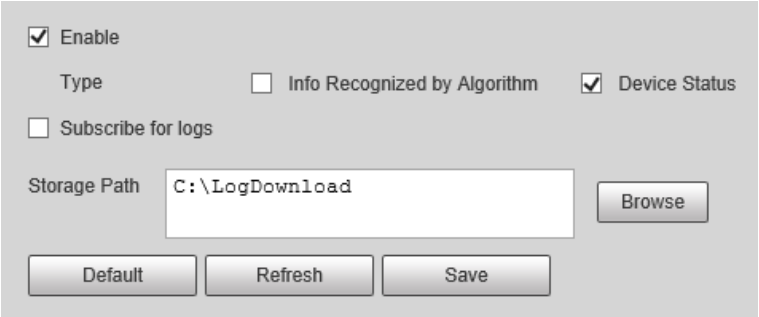
The camera supports collecting operation logs to track errors.

Procedure

Step 1 Select **Setting** > **ANPR** > **Device Test** > **Collection Log**.

Step 2 Select the checkbox of **Enable**.

Figure 2-44 Collection log



Step 3 Select the type of log to collect.

Step 4 Click **Browse** to select a path to save the logs, and then click **Subscribe for logs**.

Step 5 Click **Save**.

2.5.2 Camera

You can configure image, video, and stream parameters.

2.5.2.1 Configuring Image Attributes

You can adjust the brightness, contrast, saturation of the video image, and set shutter parameters to get clear videos and recordings that you want.

2.5.2.1.1 General

This section provides guidance on configuring parameters such as image brightness, contrast, saturation, and hue.

Procedure

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

Figure 2-45 General settings

Step 2 Configure the parameters.

Table 2-18 Parameters description

Parameter	Description
Brightness	Adjust the overall image brightness. Change the value when the image is too bright or too dark. The bright and dark areas will have equal changes. The image becomes blurry when the value is too high. The recommended value is from 40 to 60. The range is from 0 to 100. It is 50 by default. The higher the value is, the brighter the image becomes.
Contrast	Change the value when the image brightness is proper but contrast is not enough. ● If the value is too big, the dark area is likely to become darker, and the bright area is likely to be overexposed. ● The picture might be blurry if the value is set too small. The recommended value is from 40 to 60, and the range is from 0 to 100. It is 50 by default. The higher the value is, the more obvious the contrast between the bright area, and dark area will become.
Saturation	Adjust the color vividness, and will not influence the image overall brightness. ● The image becomes too flamboyant if the value is too big. ● The image is not flamboyant enough if the value is too small. The recommended value is from 40 to 60, and the range is from 0 to 100. It is 50 by default. The higher the value is, the more flamboyant the image becomes.
Gamma	Adjust the image brightness level. The higher the value, the brighter, and blurry the image.
Fill Light	Select IR or white light mode.
Day/Night	● **Color**: Applicable during the day, image shows in colors. ● **B/W**: Applicable during nights, the image is black and white. ● **Auto**: Set a value for brightness. When the brightness is higher or lower than the value, the image shows in colors or black and white respectively. Only applicable when Fill Light is set to **IR Mode**.

Parameter	Description
Default Environment Brightness	Default value for brightness. You can drag the slider to adjust the value. The higher the value, the brighter the video image.
White Light	Select when the white light illuminator will work. If you select **Auto**, you must specify the associated parameters that the illuminator will work based on the values you defined. Only applicable when Fill Light is set to **White Light**.
IR Light	• **Always Off**: Set the IR light to always on. • **Always On**: Set the IR light to always off. • **Day/Night**: Automatically turn on or off the IR light according to the configured Day/Night mode. Only applicable when Fill Light is set to **IR Mode**.
Light Brightness	Set the illumination intensity when there are no vehicles passing.
Passing Light Brightness	Set the illumination intensity when there are vehicles passing.

Step 3 Click **Save**.

2.5.2.1.2 Shutter

This section provides guidance on configuring camera shutter, including shutter mode, exposure mode, gain mode, and scene mode.

Procedure

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

Step 2 Configure the parameters.

Table 2-19 Shutter parameters description

Parameter	Description
3D NR	
Video 3D NR	Select **Enable** to enable the function.
Video Spatial 3D NR	Spatial video denoising. The higher the value, the fewer the noise.
Video Temporal 3D NR	Temporal video denoising. The higher the value, the fewer the flicker noise.
Image	
Scene	You can change the scene, and adjust the sharpness of corresponding scene. Scenes available: **Morning/Dusk**, **Day**, and **Night**.
Sharpness	You can set the sharpness of corresponding scene. The higher the value, the clearer the image. But there will be noise if sharpness is too high.

Parameter	Description
WDR	Select **On** to enable WDR (wide dynamic range), which helps provide clear video images in bright and dark light.
Exposure	
Iris	Select the iris adjust mode from **Auto**, and **Manual**.
Mode	Select the way of adjusting exposure mode. You can select from **Manual**, and **Auto**.
Shutter	You can select the shutter value, or select **Customize**, and then set the shutter range. You need to set shutter when set **Mode** to **Manual**.
Shutter Scope	Set the time range for shutter. You need to set shutter when **Customize** is set as **Shutter**.
Gain Scope	Set the value range for gain. You need to set gain scope when set **Mode** to **Manual**.
WB	
Mode	Set a scene mode to adjust the image to its best status.

Step 3 Click **Save**.

2.5.2.1.3 Metering

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

Procedure

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

Step 2 Configure the parameters.

Table 2-20 Parameter description

Parameter	Description
Plate Light	When selecting **Enable**, you can turn **ON** or **OFF** backlighting compensation, and frontlighting compensation according to scene requirement, and then improve the image brightness in backlighting situations.
Backlighting Compensation	
Frontlighting Compensation	
Metering Mode	• **Global Metering**: Measure the brightness of the whole image area, and intelligently adjust the overall image brightness. • **Partial Metering**: Measure the brightness of sensitive area, and intelligently adjust the overall image brightness. If the measured area becomes bright, then the whole area becomes dark, and vice versa.

Step 3 Drag to select the measured area, and the system displays a yellow box. Drag the box to a

proper location.

Only need to draw measuring areas when setting **Metering Mode** to **Partial Metering**.

Step 4 Click **Save**.

2.5.2.2 Configuring Video Parameters

2.5.2.2.1 Video

You can set the video stream information.

Procedure

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

Figure 2-46 Video stream

Step 2 Configure parameters.

Table 2-21 Parameters description

Parameter	Description
Encode Mode	Currently it only supports H.264M, H.264H, H.265, and MJPEG.
Resolution	Select the video resolution. The resolution of sub stream cannot be greater than that of the main stream.
Bit Rate Type	Include **VBR**, and **CBR**. Image quality can only be set in VBR mode.
I Frame Interval	Frame or time interval between two I frames. The bigger the interval, the smaller space taken by the decompressed video. The system default is set twice as big as frame rate.

Parameter	Description
Watermark	Set the watermarks, which will be added into videos of the camera. ● Select **Watermark** to enable the watermark adding. ● **Watermark String** is DigitalCCTV by default. ● The watermark character can only consist of number, letter, underline, and maximum length contains 85 characters.

Step 3 Click **Save**.

2.5.2.2.2 Snapshot

You can set the picture stream, including resolution, quality or picture size.

Procedure

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

Step 2 Configure parameters.

Table 2-22 Parameters description

Parameter	Description
Snapshot Type	Only supports general snapshot currently.
Resolution	The snapshot resolution.
Size	It is in accordance with resolution value.
Quality	Set the snapshot quality which includes 6 levels optional.
Size	Select a coding size, or select **Custom** to define the size (50–1024). You can only select one between picture quality and picture coding size to set the configuration.

Step 3 Click **Save**.

2.5.2.2.3 ROI

Set one or more interested areas in the image, and then the areas will be in the configured quality.

- It supports up to 3 areas at the same time.
- The image quality is displayed by level: **Worst, Worse, Bad, Good Better,** or **Best**.
- Click **Clear**, and delete all the area boxes; Select one box, and then click **Delete** or right-click to delete it.

Procedure

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

Step 2 Draw a rectangle on the video image as the interested area.

You can adjust the image quality, clear all drawn areas or delete them one by one through clicking **Delete** or right-click the area.

Step 3 Click **Save**.

2.5.3 Network Settings

You can set IP address, port, and other parameters.

2.5.3.1 Configuring TCP/IP

Configure the IP address of the camera, and DNS server so that the camera can connect with other devices in the same network.

Some models support dual network port. Do not set them in the same network segment; otherwise it might cause network error.

Procedure

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

Step 2 Configure parameters based on the actual situation.

Step 3 Click **Save**.

2.5.3.2 Configuring Port

You can set the maximum number, and value of the ports.

Procedure

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

Step 2 Set the maximum number of connections of the camera, and then configure each port.

Step 3 Click **Save**.

2.5.3.3 Configuring DDNS

Prerequisites

Confirm the server type which supports domain name analysis.

- After enabling DDNS, your device information might be collected by the third-party servers.
- When a user registers and logs in to the DDNS website, you can view all the connected device information.

Procedure

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

Step 2 Select **Type** to enable DDNS, and then enter the information of the server.

Interval means the update interval of the connection between the server and the device.

Step 3 Click **Save**.

2.5.3.4 Configuring Register

Through auto registration, when the device is connected from external network, the system will report its current location to the server so that the client platform can access the device through

server.

Procedure

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

Step 2 Check **On** to enable the function.

Step 3 Configure the parameters.

Table 2-23 Parameter description

Parameter	Description
IP Address	The IP address of the server on which the device registers.
Port	The port of the server for auto registration.
Sub-Device ID	The device ID distributed by the server for auto registration. Make sure that the ID is unique during auto registration.

Step 4 Click **Save**.

2.5.3.5 Configuring Multicast

When multiple users preview the video of the same device, unavailability might happen due to network bandwidth restriction. You can fix it by setting up a multicast IP (224.0.0.0–239.255.255.255) to access videos through the multicast protocol.

Procedure

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

Step 2 Select the checkbox of **Enable** to enable the function.

Step 3 Enable main stream or sub stream based on the actual situation and set IP address and port number.

Step 4 Click **Save**.

2.5.3.6 Configuring Email

Configure the email, and when alarms or abnormal events are triggered, an email will be sent to the recipient server through SMTP server. The recipient can log in to the incoming mail server to receive emails.

After enabling this function, there is a risk of data leakage that the system will send the device data to the given server.

Procedure

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

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

Table 2-24 Parameter description

Parameter	Description
SMTP Server	IP address of the outgoing mail server that complies with SMTP protocol.

Parameter	Description
Port	Port number of the outgoing mail server complying with SMTP protocol. It is 25 by default.
Anonymity	For servers supporting anonymous email, you can log in anonymously without entering username, password, and sender information.
Username	Username and password of the sender mailbox.
Password	
Sender	Email address of the sender.
Encryption Type	Select encryption type from **None**, **SSL**, and **TLS**.
Subject	You can enter no more than 63 characters in English letters, and numbers.
Receiver	Email address of the receiver. Supports 3 addresses at most.
Attachment	Select the checkbox to add attachments in the email.
Test Email	Test whether the email function is normal. If the configuration is correct, the email address of the receiver will receive the test email. Save the email configuration before running the rest.

Step 3 Click **Save**.

2.5.3.7 Configuring SNMP

Set SNMP and connect to the camera through tools such as MIB Builder and MG-SOFT MIB Browser, and then you can manage and monitor the camera on the tool.

Prerequisites

- Install a software for monitoring and managing SNMP (Simple Network Management Protocol) device.
- Get the corresponding version of MIB file from technical support.

Procedure

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

Step 2 Select the version of SNMP to enable it.

- **V1**: The device can only process the information of version 1.
- **V2**: The device can only process the information of version 2.
- **V3**: Set the username, password and authentication type to enable safety verification when the server accesses the device.

Step 3 Enter the IP address of the computer on which the MIB software is installed as **Trap Address**, and leave other parameters as default.

Step 4 Click **Save**, and then you can view the device configurations through MIB software.

2.5.3.8 Configuring 802.1x

Procedure

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

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

Table 2-25 Parameters description

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

Step 3 Click **Save**.

2.5.3.9 Configuring PPPoE

Connect to the network through PPPoE, and the device can automatically obtain a dynamic IP on public network.

Prerequisites

- The device is connected to public network.
- The username and password of PPPoE are provided.

- Disable UPnP when using PPPoE.
- You cannot change the device IP on web client after connected through PPPoE.

Procedure

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

Step 2 Select the checkbox of **Enable**, and then enter username and password.

Step 3 Click **Save**.

2.5.3.10 Configuring Platform Access

2.5.3.10.1 P2P

If enabled, the camera can be added to other platforms through P2P.

Procedure

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

Step 2 Select the checkbox of **Enable**.

Step 3 Click **Save**.

You can add the camera to other platforms using its serial number or by scanning its QR code.

2.5.3.10.2 ONVIF

You can enable the Open Network Video Interface Forum (ONVIF) function to connect devices from different manufactures to the same network.

ONVIF login authentication is enabled by default.

Procedure

Step 1 Select **Setting** > **Network Settings** > **Platform Access** > **ONVIF**.

Step 2 Select the **Open**.

Step 3 Click **Save**.

2.5.3.10.3 Info Push Platform

You can configure this parameter to push the captured vehicle violations information to the server.

- All communications must be based on the HTTP protocol, conform to RFC2616 standards, and support Digest authentication.

  IO multiplexing must be available on the server.
- Related business data must be in JSON format with ContentType: application/json;charset=UTF-8 as HTTP headers, which means the encoding method is UTF-8.

Procedure

Step 1 Select **Setting** > **Network Settings** > **Platform Access** > **Info Push Platform**.

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

Figure 2-47 Info push platform

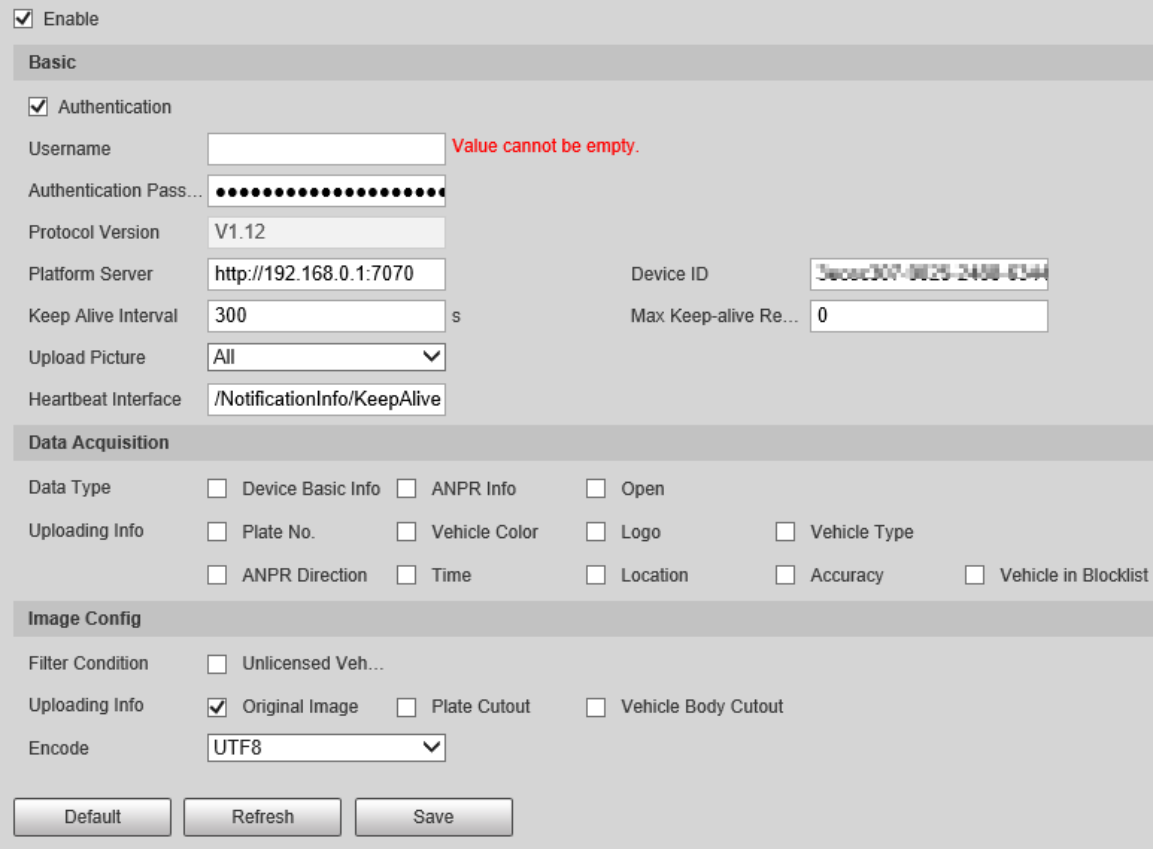


Table 2-26 Parameter description

Section	Parameter	Description
Basic configuration	Keep Alive Interval	Update interval of the connection between the server and the device.
	Max Keep-alive Request	Set the maximum number of heartbeats of the connection between the server and the device. When the set number is exceeded, the device has disconnected.
Data Acquisition	Data Type	Select the data type to be uploaded.
	Uploading Info	Select the specific information to be uploaded.
Image Config	Filter Condition	Select whether to upload information of unlicensed vehicles.
	Upload Type	Select the type of pictures to be uploaded.

Step 3 Click **Save**.

2.5.4 Event

This section provides guidance on configuring alarm, exception, defocus detection, and intelligent analysis.

2.5.4.1 Alarm

2.5.4.1.1 Enabling Alarm-in and Alarm-out Ports

You can set several parameters of relay activation such as relay-in, period, anti-dither, and sensor type. When an alarm is triggered, the system sends the alarm signal to external devices to trigger, for example, buzz.

Procedure

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

Step 2 Select the checkbox of **Enable** to enable alarm input for the current channel.

Step 3 Select alarm input channel.

Step 4 Click **Setting** next to **Period** to set the period of alarm input. For details, see "2.5.1.9 Setting Time Schedule".

Step 5 Configure other parameters.

Table 2-27 Parameter description

Parameter	Description
Anti-dither	Enter anti-dither time (1 s–100 s). System will only record one when there are multiple alarms during the defined time.
Sensor Type	Select relay-in type according to the connected alarm input device. ● **NO**: Low level valid. ● **NC**: High level valid.
Alarm-out Port	Optocoupler output. Select the checkbox to activate corresponding alarm output device when alarm occurs.
Duration	The time that delays alarm when alarm occurs.

Step 6 Click **Save**.

2.5.4.1.2 Alarm-out Port

This function is used to check if the alarm-out port is working properly.

Procedure

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

Step 2 Click **NO1** or **NO 2**.

Select the one or both that are connected to devices so that there is a response for you to know if the port is working properly.

Step 3 Click **Trigger Mode** to send an alarm-out signal.

For example, the camera connects to a buzzer. When you click **Trigger Mode**, the buzzer buzzes, meaning the alarm-out port works properly.

2.5.4.2 Abnormality

Set an alarm-out mode for different events. When an abnormality happens, the system triggers an alarm.

Procedure

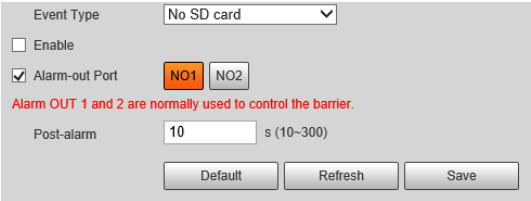
Step 1 Select **Setting** > **Event** > **Exception**.

Step 2 Select a type of event from SD card exception, network exception, invalid access, security exception, and blocklist.

Step 3 (Optional) Select an event type.

You only need to select this for SD card and network exceptions.

Figure 2-48 No SD card for SD card exception



Step 4 Select the checkbox of **Enable**.

Step 5 Configure the parameters of each event.

Table 2-28 Parameters description

Parameter	Description
Enable	Select to enable the corresponding abnormality event.
Alarm-out Port	Select to enable the corresponding alarm output of abnormality event, and select the corresponding port.
Post-alarm	The alarm linkage keeps running for the defined time after alarm ends.
Original Image	Configure the storage available that triggers an abnormality alarm. Only need to configure when setting **Event Type** to **Memory insufficient**.
Original Image	The original snapshot and license plate cutout image will be sent as attachments in the email. Only need to configure when selecting **Blocklist**.
Plate Cutout	
Login Attempt	Configure the number of login attempts allowed. It ranges from 3–10 times. Only need to configure when setting **Invalid Access**.
Send Email	The system sends an email to the defined email address when an alarm is triggered. To set the email address, go to **Setting** > **Network Settings** > **Email**. Only need to configure when setting **Invalid Access** and **Blocklist**.

Step 6 Click **Save**.

2.5.4.3 Defocus Detection

When the video image is out of focus, this will trigger an alarm.

Procedure

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

Step 2 Select the checkbox of **Enable**, and then click **Save**.

2.5.4.4 IVS

The camera supports detecting targets that are loitering or enter an off-limit area. You can configure up to 4 rules.

Procedure

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

There is one rule by default.

Step 2 Click **Draw Rule**, draw an area on the video image, right-click to complete drawing.

Step 3 (Optional) Use the target filter function to only detect targets with a certain size.

1) Select **Max Size** > **Draw Target**, and then click and hold on the video image to draw an area.

   You can drag any of its corners to adjust it.

2) Click **Min Size**, and then click and hold on the video image to draw an area.

   You can also drag any of its corners to adjust it.

   Only targets smaller than the maximum size, but bigger than the minimum size will be detected.

Step 4 Configure other parameters.

Table 2-29 Parameter description

Parameter	Description
Arm and Disarm Period Mode	Configure when targets will be detected and trigger alarms. For details, see "2.5.1.9 Setting Time Schedule".
Target	Select the types of targets to trigger alarms.
Interval	The interval between each alarm to be triggered. For example, if you set it to 200 s, with each alarm triggered, another alarm can only be triggered after 200 s.
Duration	An alarm can only be triggered if a target is detected for as long as the defined duration. For example, if you set it to 3 s, a loitering alarm will only be triggered after a car has been loitering for 3 s or more.
Warning Light	If selected, the illuminator on the camera will flash for the duration you defined when an alarm is triggered.
Duration	
Audio Linkage	If selected, linked audio is played when the event occurs. For details on setting audio linkage, see "2.5.1.11.1 Event Broadcast Settings".
Send Email	The camera sends an email to the defined email address when an alarm is triggered. To set the email address, go to **Setting** > **Network Settings** > **Email**.
Linkage Snapshot	If selected, the camera will take a snapshot when an alarm is triggered.

Step 5 Click ⊕ to add more rules, and then repeat the previous steps to configure them.

You can configure up to 4 rules.

Step 6 Click **Save**.

2.5.5 Storage

This section provides guidance on setting associated information of storage, and record control.

2.5.5.1 Storage Spot Config

Set the locations for storing snapshots.

Procedure

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

Step 2 Select a location to store snapshots.

- **Local Storage**: Stores the snapshots on the memory card.
- **FTP**: Stores the snapshots on the FTP server.

If you select both locations, a copy of each snapshot will be stored on both of them.

Step 3 Click **Save**.

2.5.5.2 Local Storage

Display the information on the local SD card. You can set hot swap, and format SD card.

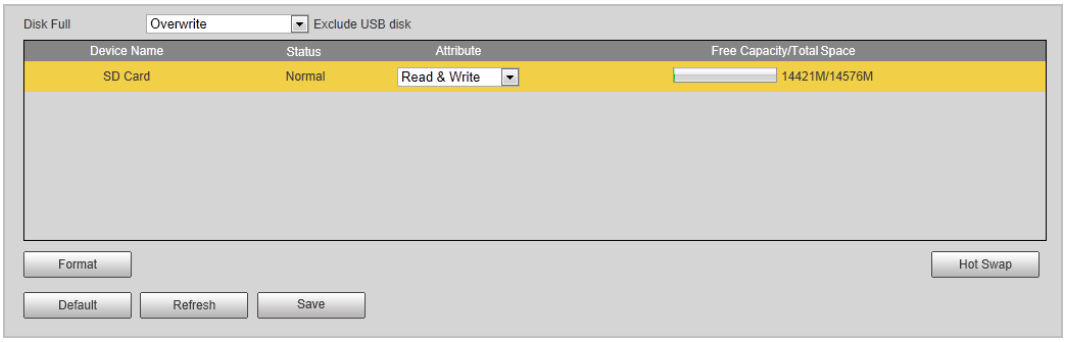
Format the SD card before use.

Procedure

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

- Select **Overwrite** or **Stop** from **Disk Full**, meaning overwrite the records or stop storing new pictures or videos respectively when disk is full.
- View the storage information of the card.
- Click **Hot Swap**, and then you can pull out the SD card.
- Click **Format**, and then you can format the SD card.

Figure 2-49 Local configuration parameter description



Step 2 Click **Save**.

2.5.5.3 FTP

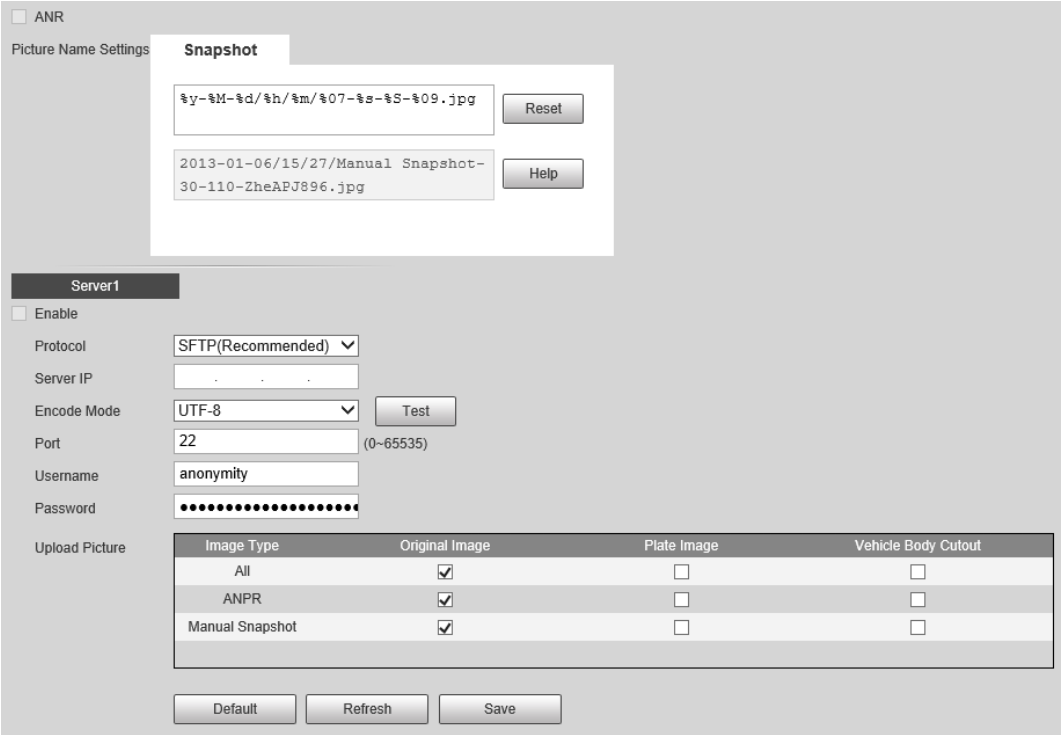
FTP function can be enabled only when it is selected as destination path. When the network does not work, you can save all the files to the internal SD card for emergency.

You can set picture name, and storage path. Click **Help…** to view the naming rule.

Procedure

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

Figure 2-50 FTP



Step 2 Configure the parameters.

Table 2-30 FTP configuration parameter description

Parameter	Description
ANR	When the network disconnects or fails, snapshots will be stored in TF card. After the network is restored, the snapshots will be uploaded from the TF card to FTP or client. Make sure that TF card is inserted in the camera; otherwise, the offline transfer function cannot be enabled.
Picture Name Settings	Set the naming rule of snapshots to be saved in FTP server. You can click **Help…** to view the naming rule, or click **Reset** to restore the default naming rule.
Enable	Enable FTP server storage.
Protocol	• **SFTP (Recommended)**: Secure File Transfer Protocol, a network protocol allows file access, and transfer over a secure data stream. • **FTP**: File Transfer Protocol, a network protocol implemented to exchange files over a TCP/IP network. Anonymous user access is also available through an FTP server.

Parameter	Description
Server IP	The IP address of FTP server.
Encode Type	Refers to the encode mode of Chinese characters when naming pictures. Two modes are available: **UTF-8**, and **GB2312**. After configuring **Server IP**, and **Port**, click **test** to check whether the FTP server works.
Port	The port number of FTP server.
Username	The username, and password of FTP server.
Password	
Upload Picture	Select the types of pictures to be uploaded to the FTP server.

Step 3 Click **Save**.

2.5.5.4 Platform Server

You can set the parameters of storing to client.

Procedure

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

Step 2 Configure the parameters.

Table 2-31 Parameter description

Parameter	Description
ANR	When network is disconnected or failed, you can store the picture into local storage card, and it will automatically upload to platform server after network resumes.
Type	Select connection type with platform server. ● IP: Connect to platform server through IP address. ● MAC: Connect to platform server through MAC address.
Server	Select server, which includes **Server1**, and **Server2**.
Server IP	● When the type is set to **IP**, you need to fill in IP address of the server. ● When the type is set to **MAC**, you need to fill in MAC address of the server.

Step 3 Click **Save**.

2.5.5.5 Storage Path

This section provides guidance on configuring picture, record naming, and storage path.

Procedure

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

Step 2 According to your actual requirements, set the name of picture, and storage path. Click **Help…** for more details.

Step 3 Set the root path of record, and snapshot as needed.

Step 4 Click **Save**.

2.5.6 System

You can configure general information, add user, restore to default settings, and configure import and export files.

2.5.6.1 General

2.5.6.1.1 General Setup

This section provides guidance on configuring device SN, language, and video standard.

Procedure

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

Step 2 Configure the parameters.

Table 2-32 Parameters description

Parameter	Description
Device Name	The ID number of the camera. Supports English letters and numbers.
Device No.	The code of the camera. It cannot be used as OSD information.
Language	The language displayed on web. The language will be automatically switched after logging in to webpage again. Currently it only supports English.
Video Standard	• **PAL**: Phase Alternating Line. Currently most countries around the world (including most countries in Europe, Africa, Australia, and China) adopt this standard. • **NTSC**: National Television System Committee. The main countries which adopt this standard include America, Canada, and Japan.
Device Organization	The company information of the camera.
Device Location	Set the location information for the snapshot that the camera takes.

Step 3 Click **Save**.

2.5.6.1.2 Date & Time

You can set date, and time format, system time, DST (Daylight Saving Time) or NTP server, and more.

Procedure

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

Step 2 Configure the parameters.

Table 2-33 Parameter description

Parameter	Description
Date Format	Select date format.
Time Format	Select 24h or 12h system.
Time Zone	The time zone where the camera is located.

Parameter	Description
System Time	Set current system time of the camera. It becomes valid immediately after setting.
Sync PC	Synchronizes the time of the camera with the time on PC.
DST	Enable the function, and then set start time, and end time of DST according to date or week.
NTP	Select to enable the function of network time synchronization.
NTP Server	Time server address.
Port	Port number of time server.
Interval	The synchronization interval between device and time server.

Step 3 Click **Save**.

2.5.6.2 Account

2.5.6.2.1 Account Management

The system supports configuring operation user of web. You need to configure user group before configuring user account.

- The user with **Account** control authority can also change the password of other users.
- We recommend you give fewer authorities to normal users than premium users to make user management convenient.
- You cannot delete the user in login status.

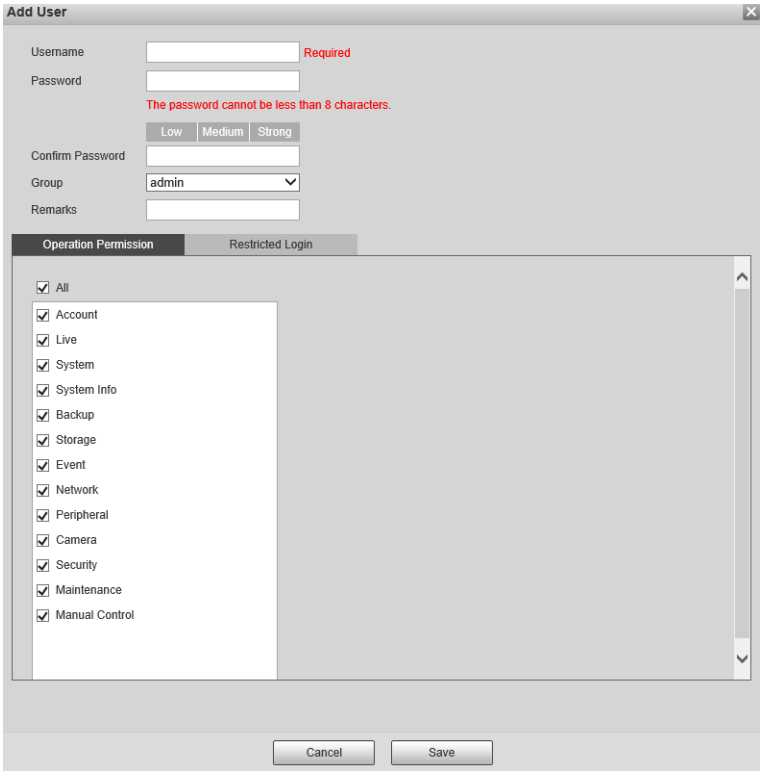
You can add, delete or modify user.

Procedure

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

Step 2 Click **Add User**.

Figure 2-51 Add a user



Step 3 Configure parameters.

Table 2-34 Add user parameters description

Parameter	Description
Username	Username contains up to 15 characters, consisting of number, letter, underline, and hyphen. It cannot be the same as the existed username.
Password	Enter and confirm the new password. ● The password must consist of 8–32 non-blank characters and contain at least two types of the following characters: Uppercase, lowercase, numbers, and special characters (excluding ' " ; : &). ● Follow the password security prompt to set a secure password. ● Password should be the same as **Confirm Password**.
Confirm Password	
Group	Select the group to which new users belong. Each group has different permissions.
Remarks	Remarks of the user.
Operation Permission	Select the permissions that you want assign to the user.
Restricted Login	Set the IP address that is restricted to log in, and the restriction time.

Step 4 Click **Save**.

Step 5 Select **Group**.

You can add new group, delete added group or modify group permission, and memo.

- The system supports up to 8 user groups, and the default user groups are **admin** and **user**.
- You can modify, and delete the added user group, but not the default user group.

Step 6 Click **Add Group**, and then enter the name of user group, and select permissions for the

group.

The group name can contain up to 15 characters, consisting of number, letter, underline, and hyphen. It must be unique.

Step 7 Click **Save**.

Related Operations

After adding a user or user group, click to change the user or user group information; click to delete the added user or user group.

Admin user/group cannot be deleted.

2.5.6.2.2 ONVIF User

You can add, delete, and modify ONVIF on the user management page.

Procedure

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

Step 2 Click **Add User**.

Step 3 Configure the parameters. For details, see "2.5.6.2.1 Account Management".

Step 4 Click **Save**.

Related Operations

After adding a user, click to change user information; click to delete the added user.

The admin user cannot be deleted.

2.5.6.3 Security

2.5.6.3.1 System Service

Select to enable system services as needed.

Procedure

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

Step 2 Select needed system service.

Table 2-35 Parameters description

Parameter	Description
SSH	SSH (Secure Shell) implements data encrypted transmission, and effectively avoid information leakage during remote management.
Multicast/Broadcast Search	• **Multicast**: It realizes point-to-multipoint network connection between sender, and receiver. • **Broadcast Search**: Broadcast data packet in IP subnet, all the hosts in the subnet will receive these data packets.
Password Reset	When you forget the password of admin user, you can set new password through password reset function.

Parameter	Description
Password Expires in	The password word will expire after the defined days have passed, and then you must change the password.
CGI	CGI is the port between external application program and web server.
ONVIF	Realizes network video framework agreement to make different network video products interconnected.
Audio/Video Transmission Encryption	Enable this function to encrypt streams transmitted through private protocols.
RTSP over TLS	Enable this function to encrypt stream transmitted through standard protocol. We recommend you keep the function on.
Private Protocol Authentication Mode	Keep the recommended **Security Mode**.

Step 3 Click **Save**.

2.5.6.3.2 HTTPS

On the **HTTPS** page, you can create a certificate or upload an authenticated certificate so that you can log in to the webpage using HTTPS protocol. It can ensure security of communication data, and provide guarantee for user information, and device safety through reliable, and stable technical approach.

Prerequisites

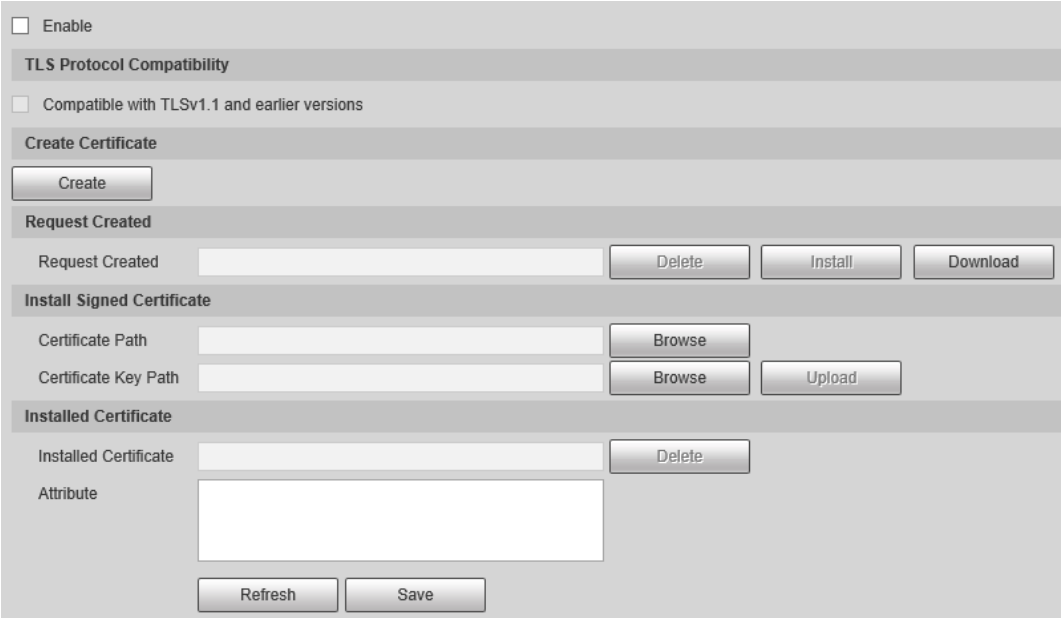
- For first-time use of HTTPS or after changing device IP address, you need to create server certificate, and install root certificate.
- After creating server certificate, and installing root certificate, if you replace the PC for logging in to the webpage, you need to download, and install the root certificate again on the new PC or copy the downloaded root certificate on the new PC, and install.

Procedure

Step 1 Create certificate or upload the authenticated certificate.

- If you select **Create Certificate**, follow the steps below.
  1. Select **Setting** > **System** > **Security** > **HTTPS**.

Figure 2-52 HTTPS



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

   The entered **IP or Domain name** must be the same as the IP or domain name of the camera.
4. Click **Install** under **Request Created**, and then click **Download** to download root certificate.

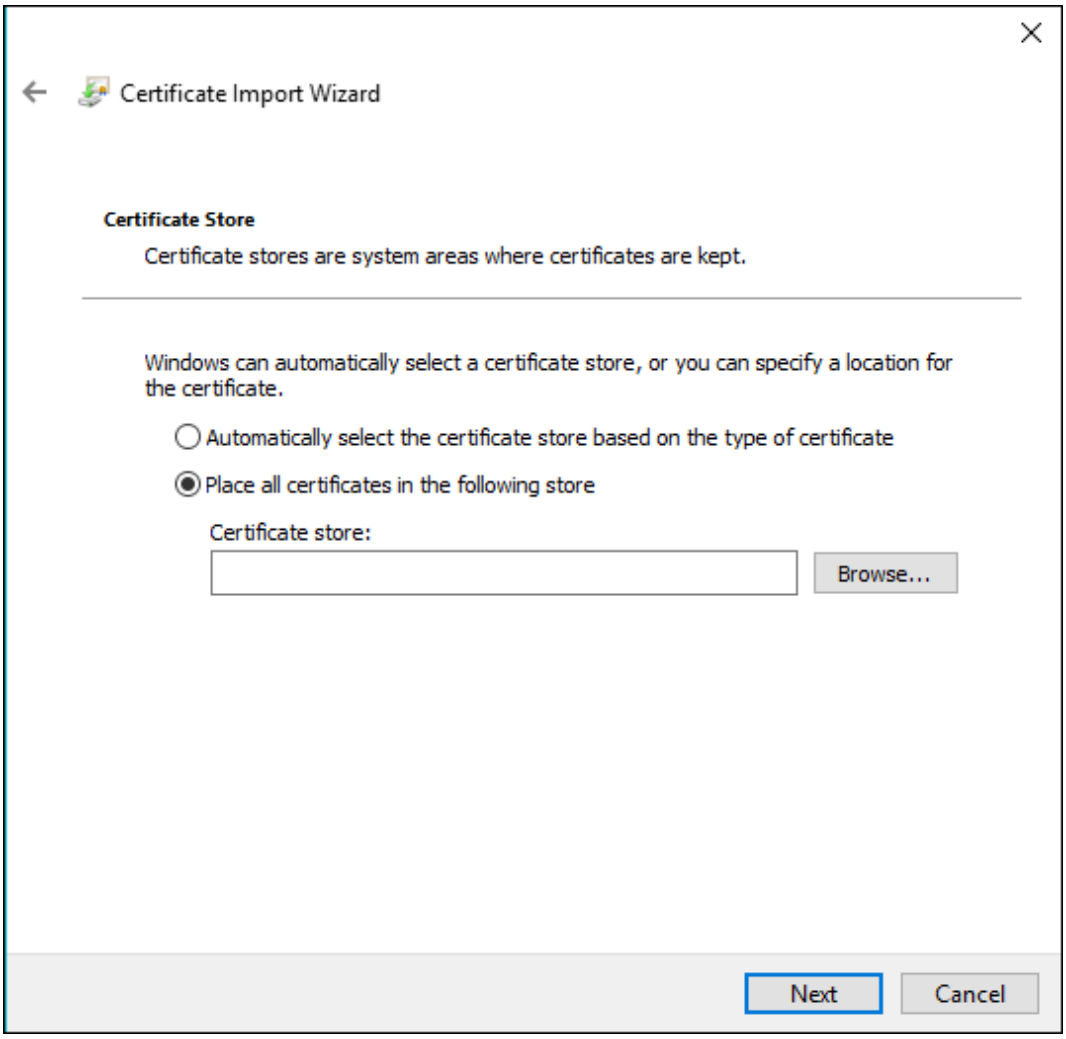
   The system pops up **Save As** dialog box, select storage path, and then click **Save**.
5. Double-click the RootCert.cer icon.
6. Click **Install Certificate…**.

Figure 2-53 Install certificate

7. Click **Next**.

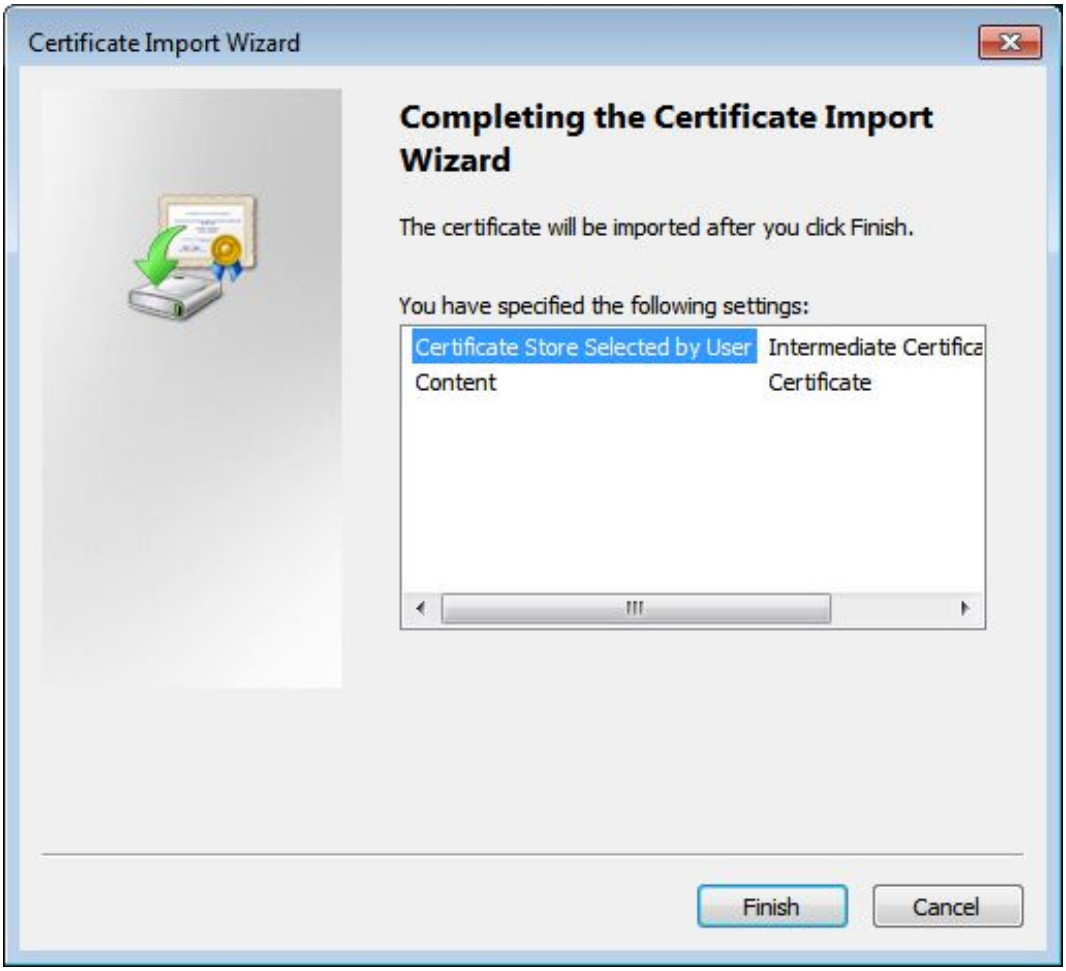
   The **Certificate Store** page is displayed. You can select **Automatically select the certificate store based on the type of certificate** or **Place all certificates in custom certificate store**.

Figure 2-54 Certificate store



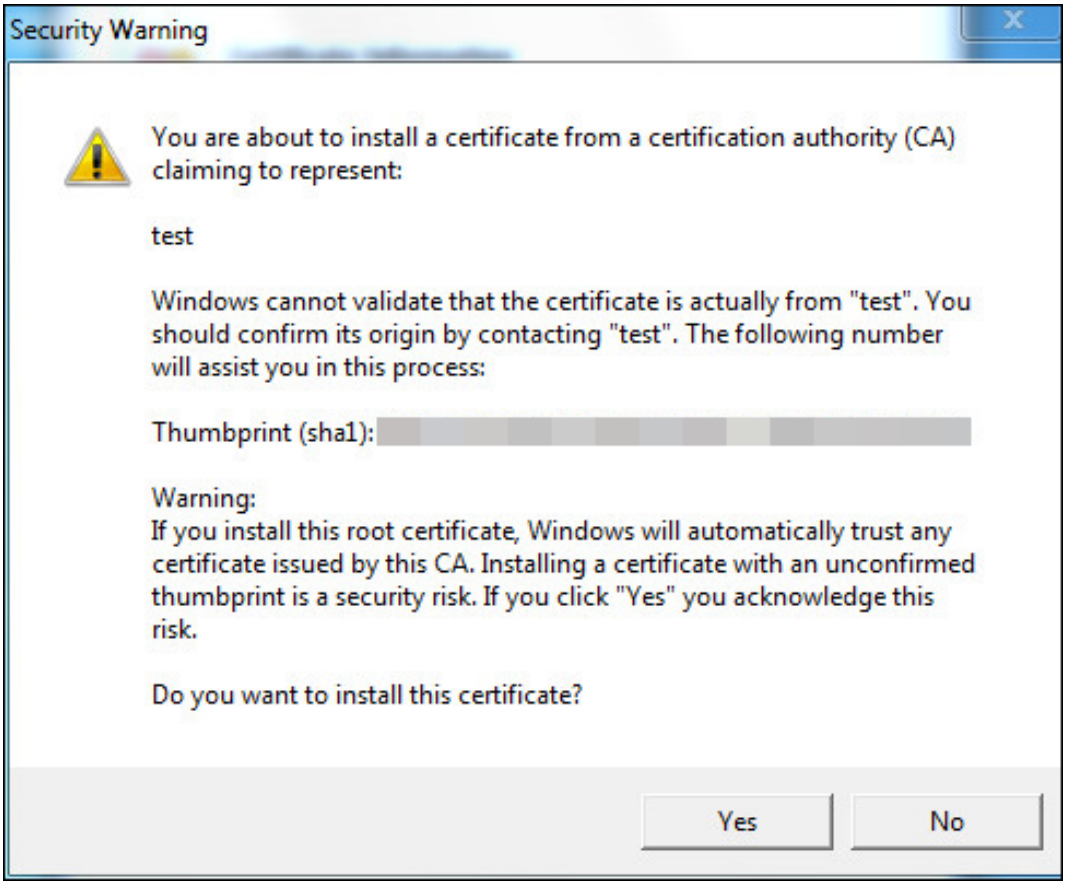
8. Click **Next**.

Figure 2-55 Completing certificate import wizard



9. Click **Finish**.

Figure 2-56 Security warning



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

- If you select **install signed certificate**, follow the steps below.
  1. Select **Setting** > **System** > **Security** > **HTTPS**.
  2. Click **Create**.
  3. Enter the required information such as region, IP or domain name, and then click **Create**.

     The entered **IP or Domain name** must be the same as the IP or domain name of the camera.
  4. Select the checkbox of **Enable**, and **Compatible with TLSv1.1, and earlier versions**.
  5. Click **Browse** to upload the signed certificate, and certificate key, and then click **Upload**.
  6. To install the root certificate, follow sub step 4 to 10 in Step 1.

Step 2 Log in to the camera using HTTPS protocol.

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

   xx.xx.xx.xx is the device IP address or domain name.
2. Enter the username, and password to log in to the camera.
   The browser will prompt certificate error if certificate is not installed.

2.5.6.3.3 Firewall

Set the security rules to protect your camera.

Procedure

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

Step 2 Select a firewall type.

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

Step 3 Select the checkbox of **Enable**, and then click **Save**.

2.5.6.4 Default Settings

You can restore the device to default settings or factory defaults.

Select **Setting** > **System** > **Default**, and then select **Default** or **Factory Default** as needed.

- **Default**: Restore your settings to default value. In this case, network IP address information of the camera will not restore to default settings.
- **Factory Default**: Restore the system to factory default settings. In this case, the camera will restart, and you need to initialize the camera before any further operation.

2.5.6.5 Import/Export

Export the system configuration file to back up the system configuration; import system configuration file to make quick configuration or recover system configuration.

Procedure

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

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

- **Config Import**: Import the local system configuration file to the system.
- **Config Export**: Export associated configuration to local, and save as file whose suffix is .backup.

Step 3 Select a path to save the file.

Step 4 Click **Open** or **Save**, and view import and export result on the webpage.

2.5.6.6 System Maintenance

You can set the time of auto restart, and automatically delete old files.

Procedure

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

Step 2 Configure the parameters.

Table 2-36 Auto maintain parameter description

Parameter	Description
Auto Restart	● Select **Auto Reboot**, and then set the restart period, and time. ● The system will automatically restart within the defined period and time.
Delete Expired Files	Configure which files to be deleted automatically. For example, the parameter is set to 2 days ago, then all files generated 2 days ago will be deleted automatically.
Restart	Manually restart the camera.

Step 3 Click **Save**.

Step 4 Click **Emergency Maintenance**, and then select the checkbox of **Enable** to enable emergency maintenance of the camera.

Step 5 Click **Save**.

2.5.6.7 Update

Update the software of the camera online or through an update file.

- Update using the wrong program might result in the camera not working properly.
- During update, do not disconnect the camera from power or network, or restart it or close the webpage.

Procedure

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

Step 2 Update the camera.

- Using an update file.
  1. Click **Browse**, and then select the update file in .bin format.
  2. Click **Update**.
- Manual update.
  1. Click **Manual Check** to manually check the system version.
  2. Follow the onscreen instruction to update the camera.

Step 3 (Optional) Select the **Auto Check for Updates**, and then click **OK**.

The camera will regularly check for updates, and automatically update when available.

2.5.7 System Info

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

2.5.7.1 Version

You can view the version information of the camera.

Select **Setting** > **System Info** > **Version**.

- Versions of different devices might vary depending on the actual webpage.
- Algorithm recognition is available when algorithm is authorized (when the icon is displayed in

green). If algorithm is not authorized, the camera will not be able to recognize vehicle series, model, and logo. License plate recognition is always supported.

2.5.7.2 Log

2.5.7.2.1 System Log

You can view log information such as system, configuration, data, event, record and user management.

The earliest log records will be overwritten when the number of log records reaches 1024.

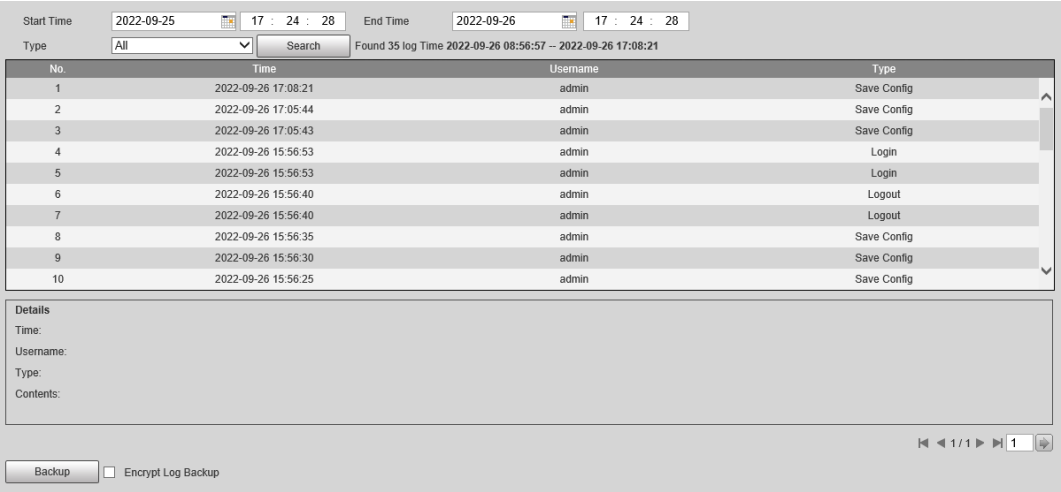
Procedure

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

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

Step 3 Click **Search**.

Figure 2-57 Log



Step 4 Click a searching result to view its details.

Step 5 (Optional) Click Backup, and then follow the on-screen instructions to export the search results to your computer.

To protect the search results you exported, you can encrypt it with a password. Select **Encrypt Log Backup**, enter a password, and then click **Backup**.

2.5.7.2.2 Remote log

You can save your important logs to a log server. This helps provide important clues to the source of security incidents. A log server must be deployed in advance by a professional or system administrator.

Procedure

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

Step 2 Select the checkbox of **Enable**.

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

Step 4 Click **Save**.

2.5.7.3 Online User

Select **Setting** > **System** > **Online User** to view the information of all the online users.

Click **Refresh** to view the latest status.

2.5.7.4 Running Status

Select **Setting** > **System** > **Running Status** to view the system running status.

Click **Refresh** to get the latest details.

2.6 Alarm

Click the **Alarm** tab, and then you can select alarm types, operations, and alarm tones.

Table 2-37 Alarm parameters description

Type	Parameter	Description
Alarm Type	Disk Full	An alarm is triggered when storage card is full.
	Disk Error	An alarm is triggered when storage card fault occurs.
	External Alarm	It generates alarm through peripheral device when alarm is triggered.
	No SD Card	An alarm is triggered when there is no storage card.
	Vehicle Blocklist	An alarm is triggered when the blocklist vehicle appears.
	Invalid Access	An alarm is triggered when the times of login password error reach the max value.
	Security Exception	An alarm is triggered when there is security exception.
Operation	Subscribe Alarm	You will be informed when an alarm occurs.
Alarm Tone	Play Alarm Tone	It generates alarm prompt tone when alarm occurs. Alarm tone supports customized settings.
	Tone Path	The path of customized alarm tone.

2.7 Logout

Click **Logout** to log out of the webpage.

3 FAQ

Question	Solution
Device error, unable to start or operate normally	Press and hold the Reset button for 5 seconds to restore the camera to factory default settings.
SD card hot swapping	Stop recording, and image capturing, and then wait for at least 15 seconds before removing the SD card. This helps ensure data integrity, and avoid losing all the data of the card.
SD card read/write limit	Do not set the SD card as the storage media of pre-set recording. It might reduce the SD card duration.
SD card cannot be used as storage media	When the SD card hibernates or its capacity is null, format the card through web first.
Network upgrade failed	Check whether the right upgrade program (such as version, compatibility) is used.
Recommended SD card	We recommend you use SD card of 16 GB or larger. This helps avoid data loss arising from insufficient capacity. You can use a card of 16 GB, 32 GB, 64 GB, and 128 GB.
Failed to pop up the installation dialog box of web control webrec.cab	Set the security level of IE browser as **Low**, and **Active Plug-in, and Control** is set as **Enable**.

Appendix 1 Cybersecurity Recommendations

Mandatory actions to be taken for basic device network security:

1. **Use Strong Passwords**

   Please refer to the following suggestions to set passwords:

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

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

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

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

1. **Physical Protection**

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

2. **Change Passwords Regularly**

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

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

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

4. **Enable Account Lock**

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

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

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

6. **Enable HTTPS**

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

7. **MAC Address Binding**

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

the risk of ARP spoofing.

8. **Assign Accounts and Privileges Reasonably**

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

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

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

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

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

10. **Audio and Video Encrypted Transmission**

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

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

11. **Secure Auditing**

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

12. **Network Log**

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

13. **Construct a Safe Network Environment**

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

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