

# **AI Enforcement Camera**

## **Web Operation Manual**



V1.0.2

# Foreword

## General

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

## Safety Instructions

The following signal words might appear in the manual.

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

## Writing Conventions

To simplify the description, we establish the following conventions in this manual.

- The functions supported by the product shall be subject to the actual interface of the product.
- To protect personal privacy and security, personal information such as faces and license plates mentioned herein has been processed.
- To ensure device security, information such as IP addresses, MAC addresses, and serial numbers mentioned herein has been processed.

## Revision History

| Version | Revision Content                                                             | Release Time   |
|---------|------------------------------------------------------------------------------|----------------|
| V1.0.2  | Updated the camera settings, network settings, ITC settings, and more.       | March 2026     |
| V1.0.1  | Updated AI configuration, flashing light mode, system information, and more. | September 2025 |
| V1.0.0  | First release.                                                               | February 2025  |

## Privacy Protection Notice

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

## About the Manual

- The manual is for reference only. Slight differences might be found between the manual and the product.
- We are not liable for losses incurred due to operating the product in ways that are not in compliance with the manual.
- The manual will be updated according to the latest laws and regulations of related jurisdictions. For detailed information, see the paper user 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.

- Temperature:  $-40^{\circ}\text{C}$  to  $+65^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$  to  $+149^{\circ}\text{F}$ ).
- Humidity: 10% RH–90% RH.

## Installation Requirements



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



- Personnel working at heights must take all necessary measures to ensure personal safety including wearing a helmet and safety belts.
- Do not place the device in a place exposed to sunlight or near heat sources.
- Keep the device away from dampness, dust, and soot.
- Put the device in a well-ventilated place, and do not block its ventilation.
- Use an adapter or cabinet power supply provided by the manufacturer.
- If the device uses a power adapter, ensure it meets the following requirements:
  - ◇ If a power adapter was shipped with your device, we recommend you use it. If you need to buy a separate adapter, make sure it meets the following requirements.
    - The power supply must conform to the requirements of IEC 60950-1 and IEC 62368-1 standards.
    - The voltage must meet the SELV (Safety Extra Low Voltage) requirements and not exceed ES-1 standards.
    - When the power of the device does not exceed 100 W, the power supply must meet LPS requirements and be no higher than PS2.
  - ◇ Do not connect the power adapter to the device while the adapter is powered on.

- The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.
- An emergency disconnect device must be installed during installation and wiring at a readily accessible location for emergency power cut-off.
- Disconnect the device when installing and connecting the lens.

## Operation Requirements



- Make sure that the power supply is correct before use.
- Do not unplug the power cord on the side of the device while the adapter is powered on.
- Operate the device within the rated range of power input and output.
- Use the device under allowed humidity and temperature conditions.
  - ◇ Temperature:  $-40^{\circ}\text{C}$  to  $+65^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$  to  $+149^{\circ}\text{F}$ ).
  - ◇ Humidity: 10% RH–90% RH.
- Do not drop or splash liquid onto the device, and make sure that there is no object filled with liquid on the device to prevent liquid from flowing into it.
- Do not disassemble the device.
- Do not aim the device at strong light sources (such as lamplight, and sunlight) when focusing it.
- Do not vibrate, squeeze or immerse the device in liquid during transportation, storage or installation.
- Do not block the ventilation near the device.
- We recommend you use the device with a lightning protection device for stronger protection against lightning. For outdoor scenarios, strictly comply with the lightning protection regulations.
- Ground the function earthing portion of the device (grounding cable or lightning surge protector) to improve its reliability. The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.
- The device must be used with the protective cover for outdoor scenarios to avoid the risk of water damage to the device.
- Protect the line cord and wires from being walked on or squeezed particularly at plugs, power sockets, and the point where they exit from the device.
- Modify the default password of the device after first-time login to prevent the device from being stolen.

## Maintenance Requirements

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

# Table of Contents

|                                          |     |
|------------------------------------------|-----|
| Foreword.....                            | I   |
| Important Safeguards and Warnings.....   | III |
| 1 Product Introduction.....              | 1   |
| 2 Initializing the Device.....           | 2   |
| 2.1 Device Login.....                    | 4   |
| 2.2 Resetting Password.....              | 5   |
| 2.3 Logout.....                          | 6   |
| 3 Webpage Introduction.....              | 7   |
| 4 Basic Functions.....                   | 8   |
| 4.1 Local Settings.....                  | 8   |
| 4.2 Configuration Wizard.....            | 9   |
| 4.3 Live.....                            | 13  |
| 4.3.1 Live View.....                     | 15  |
| 4.3.2 Frequently Used Functions.....     | 17  |
| 4.3.3 Live View Function Bar.....        | 18  |
| 4.3.4 Plate Number Recognition.....      | 19  |
| 4.3.5 Vehicle Snapshot.....              | 19  |
| 4.3.6 Event List.....                    | 20  |
| 4.4 Search.....                          | 20  |
| 4.4.1 Picture Query.....                 | 21  |
| 4.4.2 Flow Query.....                    | 23  |
| 4.4.3 Search Video.....                  | 23  |
| 4.5 Playback.....                        | 25  |
| 4.6 Camera.....                          | 26  |
| 4.6.1 Configuring Camera Attributes..... | 26  |
| 4.6.2 Configuring Encode Parameters..... | 32  |
| 4.7 Network Settings.....                | 35  |
| 4.7.1 Configuring TCP/IP.....            | 35  |
| 4.7.2 Port.....                          | 37  |
| 4.7.3 Configuring Auto Registration..... | 38  |
| 4.7.4 Configuring Routing Settings.....  | 39  |
| 4.7.5 Configuring Multicast.....         | 40  |
| 4.7.6 Configuring 3G/4G.....             | 40  |
| 4.7.7 Configuring Platform Access.....   | 43  |
| 4.7.8 Configuring Basic Service.....     | 45  |
| 4.7.9 Configuring Network Proxy.....     | 46  |
| 4.8 Event.....                           | 46  |

|                                                    |     |
|----------------------------------------------------|-----|
| 4.8.1 Alarm.....                                   | 46  |
| 4.8.2 Exception.....                               | 49  |
| 4.9 Remote Configuration.....                      | 54  |
| 4.10 Peripheral.....                               | 54  |
| 4.11 Storage.....                                  | 62  |
| 4.11.1 Storage Spot Configuration.....             | 62  |
| 4.11.2 Local Storage.....                          | 63  |
| 4.11.3 FTP.....                                    | 64  |
| 4.11.4 Platform Server.....                        | 65  |
| 4.12 System.....                                   | 66  |
| 4.12.1 General.....                                | 66  |
| 4.12.2 Account Management.....                     | 69  |
| 5 Intelligent Functions.....                       | 76  |
| 5.1 ITC.....                                       | 76  |
| 5.1.1 Configuring Smart Plan.....                  | 76  |
| 5.1.2 Intelligent Analysis.....                    | 86  |
| 5.1.3 Configuring Image.....                       | 87  |
| 5.1.4 Traffic Flow Statistics.....                 | 91  |
| 5.1.5 OSD Configuration.....                       | 92  |
| 5.1.6 Configuring Blocklist and Allowlist.....     | 94  |
| 5.1.7 Smart Restore Factory Settings.....          | 97  |
| 5.2 Radar Settings.....                            | 97  |
| 5.2.1 Configuring Radar.....                       | 97  |
| 5.2.2 Configuring Radar and Video Calibration..... | 98  |
| 6 Security.....                                    | 101 |
| 6.1 Security Status.....                           | 101 |
| 6.2 System Service.....                            | 102 |
| 6.2.1 802.1x.....                                  | 102 |
| 6.2.2 HTTPS.....                                   | 103 |
| 6.3 Attack Defense.....                            | 104 |
| 6.3.1 Firewall.....                                | 104 |
| 6.3.2 Account Lockout.....                         | 105 |
| 6.3.3 Anti-DoS Attack.....                         | 105 |
| 6.4 CA Certificate.....                            | 105 |
| 6.4.1 Installing Device Certificate.....           | 105 |
| 6.4.2 Installing Trusted CA Certificate.....       | 108 |
| 6.5 A/V Encryption.....                            | 109 |
| 6.6 Security Warning.....                          | 110 |
| 6.6.1 Security Exception.....                      | 110 |
| 6.6.2 Illegal Login.....                           | 111 |

|                                         |     |
|-----------------------------------------|-----|
| 6.7 Security Authentication.....        | 111 |
| 7 Maintenance Center.....               | 112 |
| 7.1 One-Click Diagnosis.....            | 112 |
| 7.2 System Information.....             | 113 |
| 7.2.1 Version Information.....          | 113 |
| 7.2.2 Online User.....                  | 113 |
| 7.2.3 Running Status.....               | 113 |
| 7.2.4 Legal Information.....            | 113 |
| 7.2.5 Device Location.....              | 113 |
| 7.3 Log.....                            | 114 |
| 7.3.1 System Log.....                   | 114 |
| 7.3.2 Remote Log.....                   | 114 |
| 7.4 Maintenance Management.....         | 115 |
| 7.4.1 Maintenance.....                  | 115 |
| 7.4.2 Import/Export.....                | 116 |
| 7.4.3 Default.....                      | 116 |
| 7.5 Update.....                         | 117 |
| 7.6 Advanced Maintenance.....           | 117 |
| 7.6.1 Export.....                       | 118 |
| 7.6.2 Packet Capture.....               | 118 |
| 7.6.3 Running Logs.....                 | 119 |
| Appendix 1 Security Recommendation..... | 120 |

# 1 Product Introduction

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

## 2 Initializing the Device

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

### Procedure

**Step 1** Connect the Camera to the network.

1. Connect the Camera to computer over the Ethernet cable.
2. Keep the IP address of the computer and the camera on the same network segment.

The network segment can be set to 192.168.1.X, but cannot be the same as the factory default IP of the Camera (192.168.1.108).

3. Execute ping `***.***.***.***` (device IP) command on computer to check the network connection.

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

**Step 3** On the **Region Setting** page, configure **Language** and **Video Standard**. Then, click **Next**.

Figure 2-1 Region setting

Region Setting   Time Zone Setting   Password Settings   Online Update

Language: English

Video Standard: PAL

Plate Algorithm: Oversea ALG

Next

**Step 4** On the **Time Zone Setting** page, configure date & time parameters, and then click **Next**.

Figure 2-2 Time zone setting

The screenshot shows the 'Time Zone Setting' page. At the top, there is a navigation bar with four items: 'Region Setting' (selected), 'Time Zone Setting', 'Password Settings', and 'Online Update'. The main content area contains the following settings:

- Date Format:** A dropdown menu showing 'YYYY-MM-DD'.
- Time Zone:** A dropdown menu showing '(UTC+00:00) Dublin, Edinburgh, Lisbon, London'.
- System Time:** A text field showing '2023-08-28 11:25:34' with a calendar icon and a 'Sync PC' button.
- Will be modified as:** A text field showing '2023-08-28 03:25:34'.

At the bottom, there are two buttons: 'Back' and 'Next'.

Step 5 On the **Password Settings** page, enter your new password.

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

Step 7 Click **Next**.

Figure 2-3 Password setting

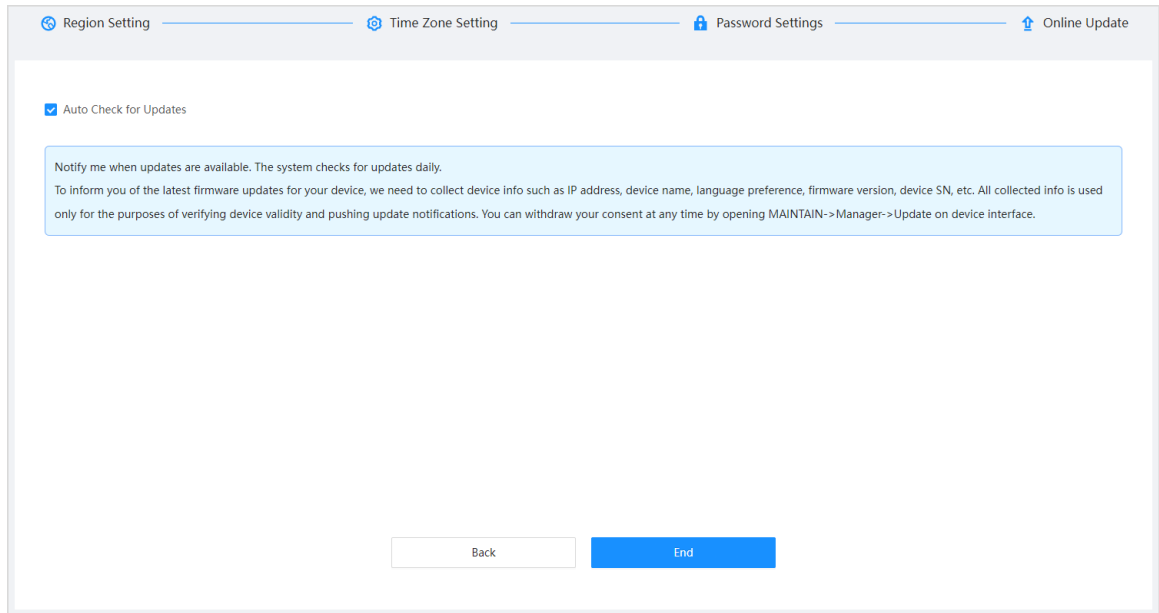
The screenshot shows the 'Password Settings' page. At the top, there is a navigation bar with four items: 'Region Setting', 'Time Zone Setting', 'Password Settings' (selected), and 'Online Update'. The main content area contains the following settings:

- Username:** A text field showing 'admin'.
- Password:** A text field with masked characters (dots) and a strength indicator bar.
- Confirm Password:** A text field with masked characters (dots).
- Email Address:** A checkbox labeled 'Email Address' is checked, followed by a text field showing '2023-08-28 11:25:34@qq.com'.

At the bottom, there are two buttons: 'Back' and 'Next'.

Step 8 On the **Online Upgrade** page, select **Auto Check for Updates** and click **End**.

Figure 2-4 Online upgrade



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

## 2.1 Device Login

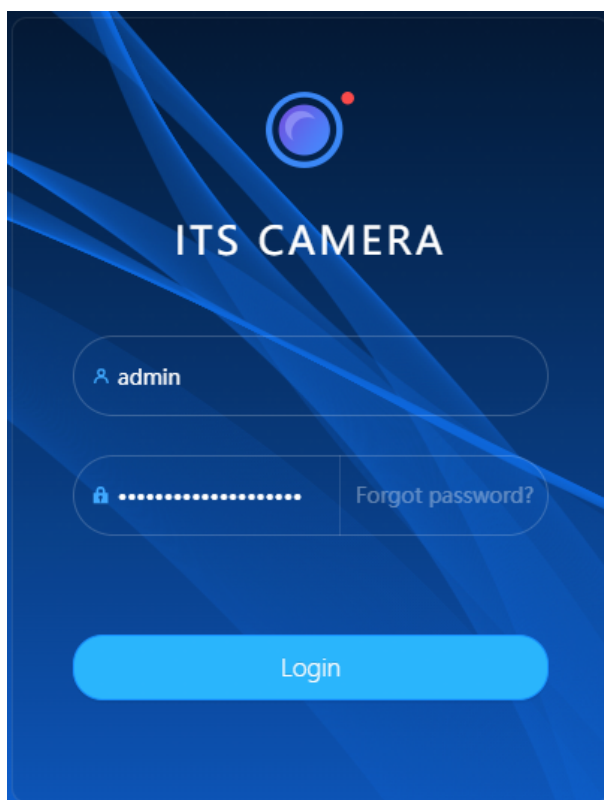
### Prerequisites

For the first login, you must initialize the Camera. For details, see "2 Initializing the Device".

### Procedure

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

Figure 2-5 Login



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

## Related Operations

If you forget password, click **Forgot password?**, and you can reset the password through the email address that is set during the initialization. For details, see "2.2 Resetting Password".

## 2.2 Resetting Password

You can reset your password through email when it is lost or forgotten. Make sure that your email is correctly entered during initialization.

### Procedure

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



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

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

Figure 2-6 Reset password

1 Security Code 2 Password Reset

QR code

Please scan QR code.

SN: 2\*\*\*@qq.com

Note (For admin only):

Option 1. Please download and use EasyViewer, go to Me -> Password Security -> Reset Device Password and scan the left QR code.

Option 2. Please use any APP with scanning and recognition function, scan the left QR code to get encryption strings. And then send the strings to support\_gpwd@htmlmicrochip.com.

Email Address: 2\*\*\*@qq.com

11111111 Next

Step 6 Click **Next**.

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



- The new password must contain 8–32 characters, and consist of at least 2 of the following types of characters: upper and lower cases letters, numbers and special characters (excluding ' " ; : & ).
- The new password must be the same as the **Confirm Password**. Follow the password security notice to set a high-security password.

Step 8 Click **OK**.

## 2.3 Logout

Click **Admin** at the upper-right corner of the webpage, and then click **Logout** to log out the webpage.

You can enter the username and password to log in again.

## 3 Webpage Introduction

Introduces the buttons and functions of the Camera on the webpage.



The parameters might vary slightly across different devices. Please refer to the actual interface.

Figure 3-1 Webpage introduction

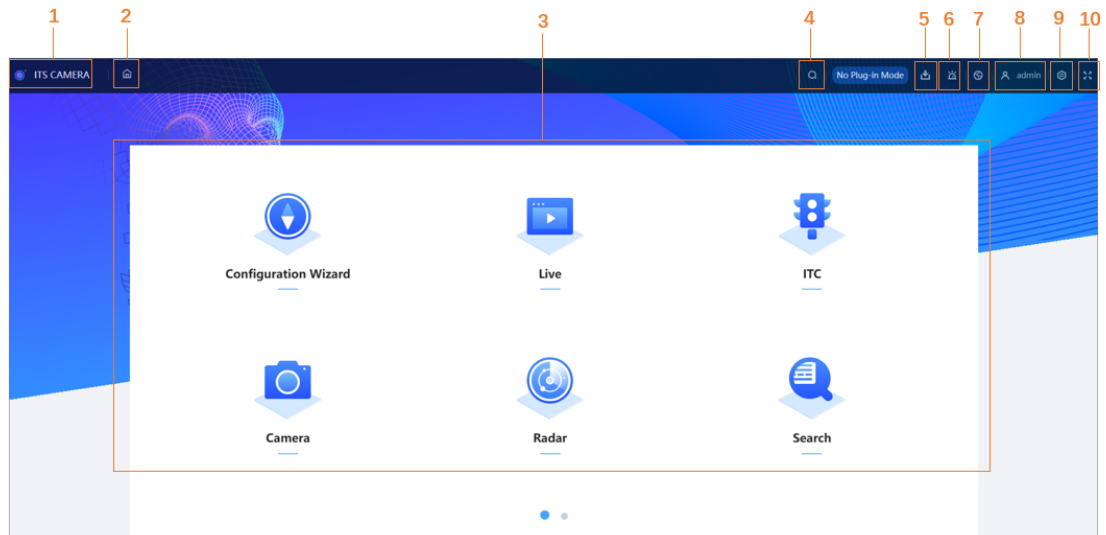


Table 3-1 Webpage introduction description

| Number | Description                                                                              |
|--------|------------------------------------------------------------------------------------------|
| 1      | The name of the device.                                                                  |
| 2      | Home.                                                                                    |
| 3      | Function module.                                                                         |
| 4      | Search for the menu, function module, and more.                                          |
| 5      | Download the plugin.                                                                     |
| 6      | Alarm subscription. You can enable alarm function, and select events that trigger alarm. |
| 7      | Language. You can change the language of the webpage.                                    |
| 8      | Account. You can restart the Camera and log out the webpage.                             |
| 9      | Function settings. You can view all functions of the Camera.                             |
| 10     | Enter or exit full screen mode.                                                          |

## 4 Basic Functions

Introduces the basic functions of the Camera, including configuration wizard, live view, picture and video search, recording playback, camera settings, networking settings, and more.

### 4.1 Local Settings

Local parameters include image naming, local record path and snapshot path.

#### Procedure

- Step 1** Click  and select **Local**.
- Step 2** (Optional) Click the input box to customize naming format for images. You can click **Help** to see the details of naming rules.
- Step 3** Click **Browse** to change the paths of records and snapshots.

Figure 4-1 Local settings

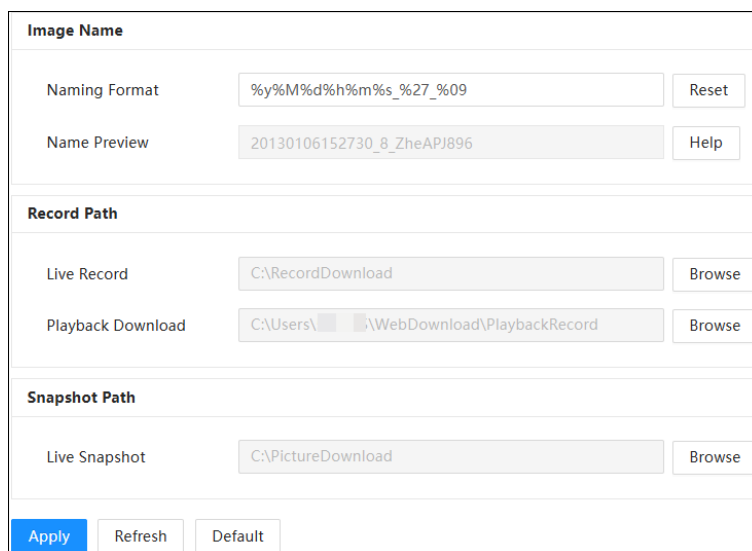


Table 4-1 Description of local parameters

| Parameter         | Description                                                                                                                                                                                                                                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Live Record       | Video records captured on the live page.<br>The default path for live records is C:\RecordDownload.                                                                                                                                                                                                             |
| Playback Download | Downloaded video records on the playback page.<br>The default path for playback download is C:\Users\admin\Downloads\WebDownload\PlaybackRecord.<br><br>admin in the path refers to the PC account logged in to the webpage. |





When the software version is not what you need but the device type is what you need, you can upgrade the software.

**Step 4** Configure the date and time format and system time of the Camera, and then click **Next**.

Figure 4-3 Configure basic parameters

|                 |                     |         |
|-----------------|---------------------|---------|
| Language        | English             | ▼       |
| Plate Algorithm | Oversea ALG         | ▼       |
| Date Format     | YYYY-MM-DD          | ▼       |
| Time Format     | 24-Hour             | ▼       |
| Time Zone       | (UTC+03:00)Beijing  | ▼       |
| System Time     | 2025-01-10 11:53:19 | Sync PC |

Back

Next

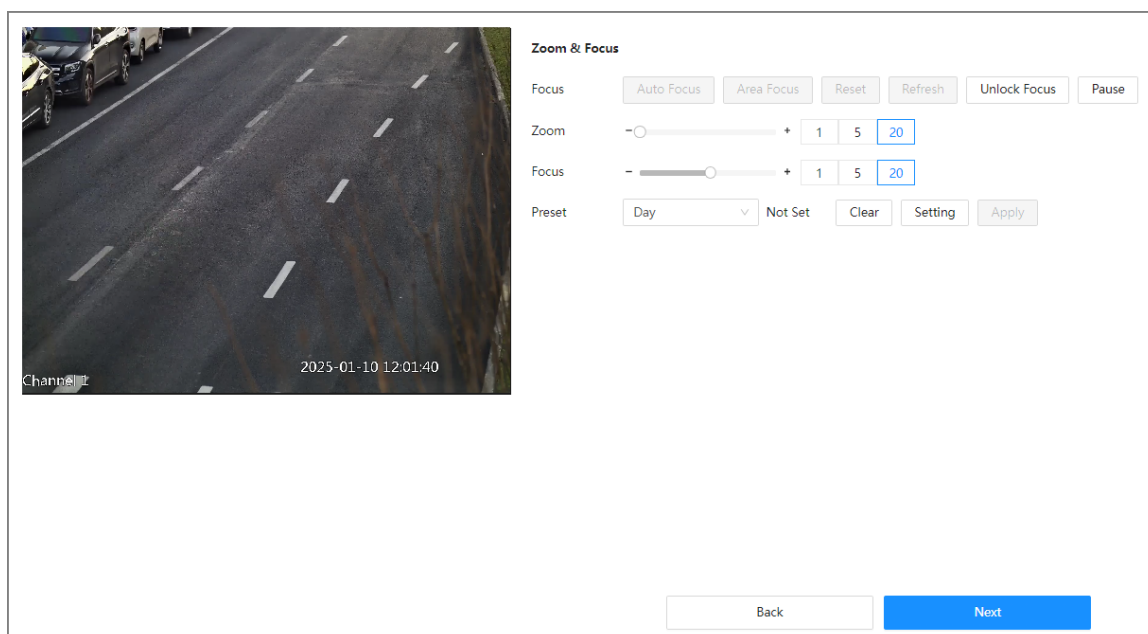
- You can manually enter the time, or click **Sync PC** to synchronize time from the server.
- Set **Plate Algorithm** to your country to get better results.

**Step 5** Select the intelligent scheme for the Camera.

The default scheme is **ANPR**. We commend leaving the parameters as default if **ANPR** is selected.

**Step 6** Check whether the video image is properly zoomed, and focused by the plate pixel.

Figure 4-4 Adjust the video for recognition



1. Click **Unlock Focus**, and then configure the focus mode.

- **Auto Focus** : Adjusts video clarity automatically.
- **Area Focus** : Draw a detection zone and adjust the clarity of the detection zone.
- **Reset** : Reset all focus and zoom parameters to the default settings.
- **Refresh** : Update the page content.
- **Unlock Focus** : Unlock the focus setting.



The focus configuration will be locked without any operations within 60 s.

- **Pause /Play**: Click **Pause** to stop playing the live video, and then click **Play** to start playing the live video.

2. Drag the zoom and focus bars to adjust the video image until the image is clear.
3. Configure the presets.

You can select **Day** or **Night** presets.

4. Click **Setting** to configure presets, and then click **Apply**.
5. Click **Next**.

#### Step 7 Configure scene validation.

1. When the target enters the green box, click **Manual Snapshot** to capture a picture of plate.
2. the Camera compares the pixel of the snapshots with the pixel range.

If the pixel of the snapshot is within the given pixel range, the results display **Normal** . Otherwise the results will display **Too Small**, and then you need to click **Back** to configure the parameter of zoom and focus again.

Figure 4-5 Scene validation

Manual Snapshot

Reference Pixel Range

Reference Wide Pixel R... 50 - 360 Pixel

Output Result

Actual Plate Width 216 Pixel

Results Normal

Back Next

3. Click **Next**.

**Step 8** Draw the lines.

Figure 4-6 Draw the lines

Total Lanes 2

Manual Draw Delete Clear Hide Lines

Line Drawing Requirements

Lane1 Solid White Line

Lane2 Solid White Line

Lane Boundary Solid White Line

Detection Line(2/2)

> Advanced Settings

Apply Refresh

Back Next

1. Click **Delete** to delete the lines, click **Clear** to clear all lines, or click **Hide Lines** to hide the lines.
2. Draw lane line and lane boundary and select different line type, including **Solid White Line**, **Broken White Line** and **Solid Yellow Line**. You can also draw detection line for each lane.
3. (Optional) Click **Advanced Settings** to configure **Area Line** and **Snapshot Area for Traffic Flow**.
  - **Area Line** : The detection area. Click any four points on the live view to form a area.

- **Snapshot Area for Traffic Flow** : The area for the detection of traffic flow. Click and drag on the live view to form a detection area.

**Step 9** Configure AI detection for lanes.

Figure 4-7 AI configuration

1. Select a lane.
2. Click **Add Event** to select events to the lane.
3. Click **OK**.
4. Configure the parameters of every event you add. For detailed information on configuring the parameters, see "5.1.1 Configuring Smart Plan".
5. Click **Next**.

**Step 10** Configure the radar, radar & video calibration and external lights.

- For detailed information on configuring the radar and radar & video calibration, see "5.2.1 Configuring Radar".
- For detailed information on configuring external lights, see "4.10 Peripheral".

**Step 11** Click **Next**, and then click **Go to Home Page**.

## 4.3 Live

On this page, you can view the live video, snapshots, image details, and perform other operations.

Figure 4-8 Live page (ANPR mode)

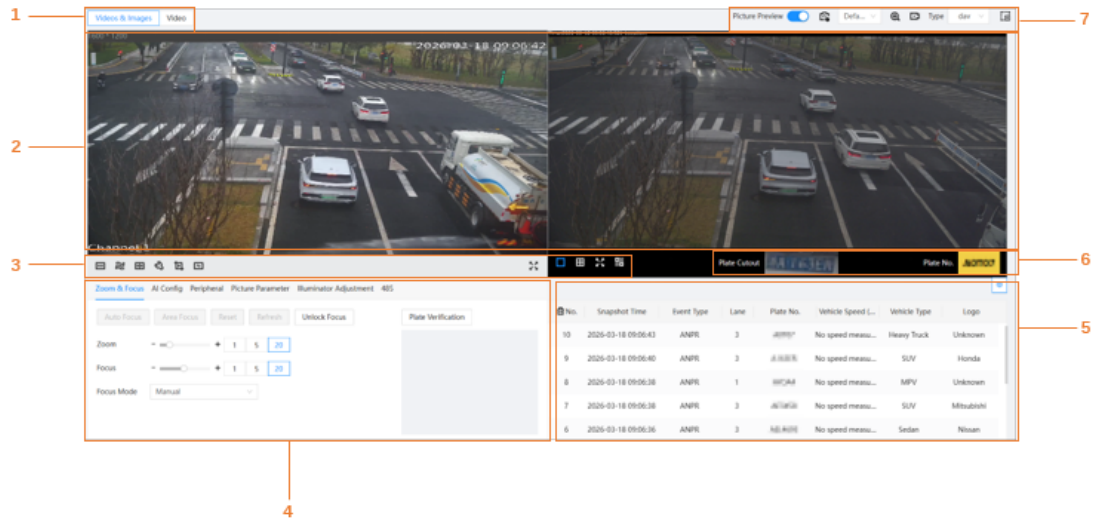


Figure 4-9 Live page (E-police mode)

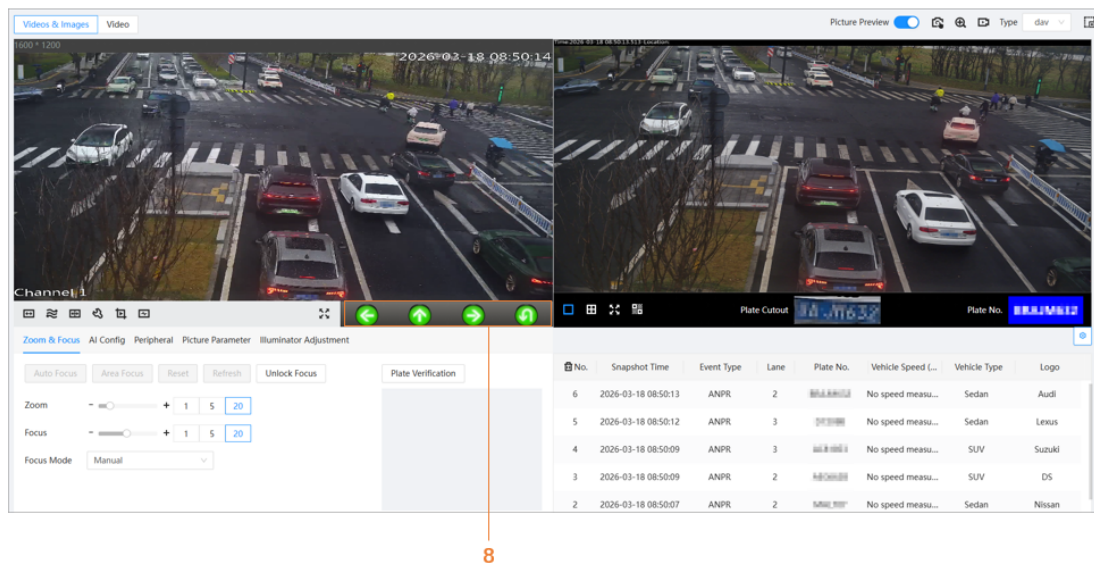


Table 4-2 Description of the live page

| No. | Function                  | Description                                                                                                                                                      |
|-----|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Display mode              | The display modes include <b>Videos &amp; Images</b> and <b>Video</b> .                                                                                          |
| 2   | Live view                 | Displays the real-time video and image captured.                                                                                                                 |
| 3   | Video adjustment          | Adjustment operations in live view.                                                                                                                              |
| 4   | Frequently used functions | These functions are frequently used when viewing live videos, including zoom and focus, AI detection, PTZ adjustment, picture parameters, illuminator, and more. |
| 5   | Snapshot details          | Displays the details of the vehicle that is captured.                                                                                                            |

| No. | Function                      | Description                                                                                                       |
|-----|-------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 6   | Plate cutout and plate number | Displays plate snapshots and recognized plate numbers.                                                            |
| 7   | Live view function bar        | Functions and operations in live viewing include manual snapshot and record, digital zoom and file type changing. |
| 8   | Traffic light                 | Displays the real-time statuses of traffic lights at intersections.                                               |

### 4.3.1 Live View

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

Figure 4-10 Videos & Images view

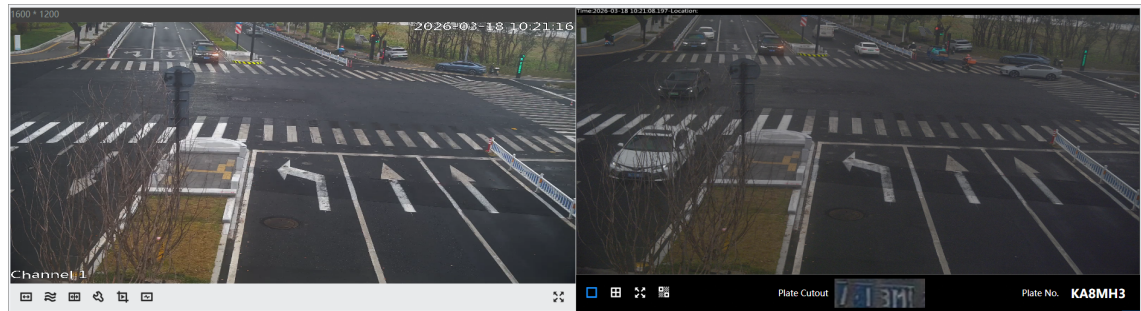


Figure 4-11 Video view



Table 4-3 Icon description of live view

| Icon | Function | Description                                                           |
|------|----------|-----------------------------------------------------------------------|
|      | W:H      | Click the icon to select <b>Original</b> or <b>Adaptive</b> playback. |

| Icon                                                                                | Function               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Smoothness Adjustment  | <p>Change the fluency of the video. Select one based on your network bandwidth.</p> <p></p> <p>Download and install the plug-in before using the function.</p> <ul style="list-style-type: none"> <li>● <b>Realtime</b> : Guarantees the real time of the video. When the network bandwidth is not enough, the video might not be smooth.</li> <li>● <b>General</b> : It is between <b>Realtime</b> and <b>Fluent</b>.</li> <li>● <b>Fluent</b> : Guarantees the fluency of the video but the video might not be real-time.</li> </ul> |
|    | Intelligent Track      | Click the icon to enable smart track detection. Number plate, vehicle bounding box, and other smart tracking information will be displayed on the video image.                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|    | 23-Meter Snapshot Line | In ANPR mode, adjust this line to 23 m on the actual road surface (23 m from the pole).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|    | Take Screenshot        | Click the icon, and then it will take a snapshot from current videos.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|  | Main Stream Sub Stream | <p>Select a video stream based on your network bandwidth.</p> <ul style="list-style-type: none"> <li>● Main stream: Displays video with high resolution, but requires large bandwidth. This option can be used for storage and monitoring.</li> <li>● Sub stream: Displays the video in lower resolution but smoothly. It requires less bandwidth. This option is normally used to replace main stream when the network bandwidth is not enough.</li> </ul>                                                                                                                                                             |
|  | Full Screen            | Click the icon to view in full screen. Double-click or press <b>Esc</b> to exit full-screen mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|  | View Mode              | Click this icon to select the display mode of the image captured. From left to right, it will display single view, quad view and full screen.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|  | Pixel Measurement      | Click the icon, and then draw a rectangular area on the image to show the pixel size of that area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  | Traffic Light          | Displays the real-time statuses of traffic lights at intersections. This is only applicable to the E-police mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# 4.3.2 Frequently Used Functions

## 4.3.2.1 Zoom and Focus

Adjust the zoom and focus of the Camera. For details, see "4.6.1.3 Configuring Focus".

## 4.3.2.2 AI Configuration

Draw detection line for every lane, and then click **Save**. For details, see "5.1.1 Configuring Smart Plan".

Figure 4-12 AI configuration

Total Lanes

3

▼

Pause

Smart Draw

Auto Drawing

We recommend you use auto draw when the lane line does not have any obstacles.

Manual Draw

Delete

Clear

Hide

Hide or Show Optional Lines

Line Drawing Requirements

Lane1

Solid White Line

▼

Detection Line(3/3)

Lane2

Solid White Line

▼

Save

Refresh

## 4.3.2.3 Peripheral

Click **Peripheral**.

Drag the slider to adjust the speed of PTZ rotating and click the arrow keys to adjust the PTZ of the camera, and then configure other parameters.

Figure 4-13 Peripheral

Zoom & Focus

AI Config

Peripheral

Picture Parameter

Illuminator Adjustment

485

Unlock

SPEED

PTZ

←

↑

→

↓

MIN

MAX

Protocol

PELCOD

▼

Address

1

Baud Rate

9600

▼

Data Bit

8

▼

Stop Bit

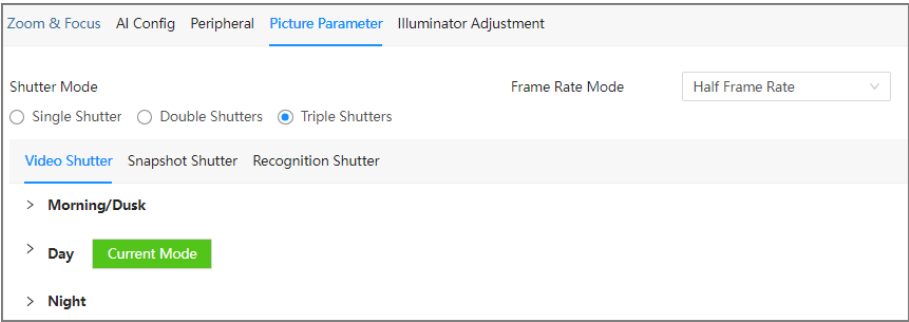
1

▼

### 4.3.2.4 Picture Parameter

You can adjust the picture parameters of the Camera to obtain clear images. For details, see "4.6.1.2 Configuring Shutter".

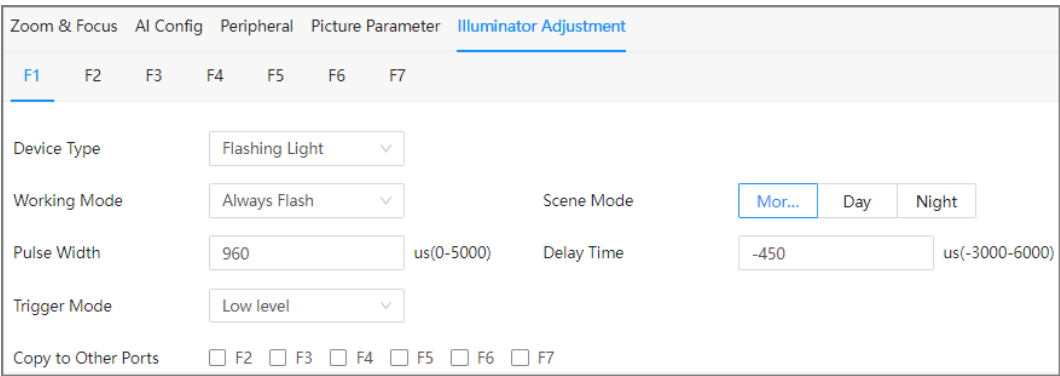
Figure 4-14 Picture parameters



### 4.3.2.5 Illuminator Adjustment

Click **Illuminator Adjustment** to configure device type, working mode, pulse width and other parameters. For details, see "4.10 Peripheral".

Figure 4-15 Flashing light



### 4.3.2.6 RS-485 External Light

Click **485** to configure the parameters of the RS-485 external light. For details, see "4.10 Peripheral".

## 4.3.3 Live View Function Bar

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

Figure 4-16 Live view function bar

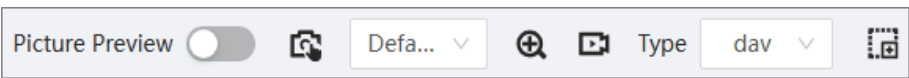
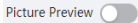


Table 4-4 Function description of the function bar

| Icon                                                                                | Name            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Picture Preview | <ul style="list-style-type: none"> <li>Click  to enable the function, and then 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 in the window below.</li> <li>The snapshots are saved either in the download path of the browser with the plug-in uninstalled or in the local snapshot path pre-defined in <b>Local</b> settings with the plug-in installed.</li> </ul>                         |
|    | Manual Snapshot | <p>Click the icon, and then Camera takes 1 snapshot. The snapshot is saved in the storage path. This function is usually used when a vehicle passes.</p> <p></p> <p>Enable <b>Picture Preview</b> first.</p>                                                                                                                                                                                                                                                                                                                        |
|    | Digital Zoom    | <p>Use this function to zoom in on any area of the video.</p> <p>Click the icon and drag to select any area in the video, and then the Camera will zoom in on the area you selected.</p>                                                                                                                                                                                                                                                                                                                                                                                                                             |
|  | Record          | Click the icon to start recording. Click again to save the recording to your local computer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Type <input type="text" value="dav"/>                                               | Type            | Select the format of the video recording ( <b>dav</b> ) by default.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|  | Aux Focus       | <p>Click the icon to start auxiliary focus and AF Peak (Auto Focus Peak) and AF Max (Auto Focus Max) will be displayed on the live view.</p> <ul style="list-style-type: none"> <li>AF Peak: A key value that indicates image sharpness, shown in real time throughout the focusing process.</li> <li>AF Max: The optimal value that represents image clarity.</li> <li>The closer AF Peak and AF Max is, the higher the focus effect is.</li> </ul> <p></p> <p>Aux focus will turn off automatically after 5 minutes of use.</p> |

## 4.3.4 Plate Number Recognition

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

## 4.3.5 Vehicle Snapshot

Click  to enable the picture preview function, and then snapshots will be displayed when vehicles pass. You can double click to preview the image captured.

Figure 4-17 Vehicle snapshot



## 4.3.6 Event List

Click ☐ **Picture Preview** ☐ to enable the **Picture Preview** function, and the event information will be displayed, including number, snapshot time, event type, lane, plate number, vehicle speed, vehicle type, and logo.

Figure 4-18 Event list

| No. | Snapshot Time       | Event Type | Lane | Plate No. | Vehicle Spe... | Vehicle Type | Logo   |
|-----|---------------------|------------|------|-----------|----------------|--------------|--------|
| 28  | 2025-01-07 10:25:14 | Speeding   | 1    |           | 49             | SUV          | Benz   |
| 27  | 2025-01-07 10:25:14 | ANPR       | 1    |           | 49             | SUV          | Benz   |
| 26  | 2025-01-07 10:25:00 | Speeding   | 1    |           | 16             | SUV          | Nissan |
| 25  | 2025-01-07 10:25:00 | ANPR       | 1    |           | 16             | SUV          | Nissan |
| 24  | 2025-01-07 10:24:41 | ANPR       | 2    |           | 36             | SUV          | Honda  |

## 4.4 Search

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

Figure 4-19 Search

The screenshot shows the 'Memory Card Image' search interface. On the left, there's a sidebar with 'Picture Query' and 'Search Video'. The main area has a 'Search Condition' panel with filters for 'Search Time Range' (2026-03-18 00:00:00 to 2026-03-18 23:59:59), 'Event Type' (All), 'Logo' (All), 'Lane' (All), 'Extract Linked Video Length' (10s), 'Speed Range' (0-350 km/h), and 'Plate No.'. A 'Search' button is at the bottom of the filters. To the right, there's a table with columns: No., Lane, Size(KB), Snapshot TL..., Plate No., Plate Color, Vehicle Color, Logo, Speed(km/h), Event Type, and Vehicle Type. The table is empty, showing 'No data'.

## 4.4.1 Picture Query

### 4.4.1.1 Searching for Memory Card Image

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



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

### Procedure

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

Figure 4-20 Memory card image

This screenshot is identical to Figure 4-19, showing the 'Memory Card Image' search interface with the same filters and empty table.

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

Table 4-5 Parameter description

| Parameter                   | Description                                                                                                                                                                                                                                                   |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Search Time Range           | Configure the start time and the end time to define a period, and then you can search for images stored on the TF card within this period.                                                                                                                    |
| Event Type                  | <ul style="list-style-type: none"> <li>● <b>All</b> : Search for all snapshots.</li> <li>● Search for snapshots related to events, which include but are not limited to <b>ANPR</b> , <b>Cross Solid White Line</b>, and <b>Wrong-way Driving</b>.</li> </ul> |
| Logo                        | Select vehicle logo.                                                                                                                                                                                                                                          |
| Lane                        | Select the capture lane.                                                                                                                                                                                                                                      |
| Speed Range                 | Select the <b>Speed Range</b> checkbox, and set the speed range to search for images of vehicles within the defined speed range.                                                                                                                              |
| Extract Linked Video Length | The length of a recorded video associated with the snapshot that you want to save.                                                                                                                                                                            |
| Plate No.                   | Select the <b>Plate No.</b> checkbox, and then enter the plate number to search for images related to this plate.                                                                                                                                             |

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



To open the image, you need to download and install the plug-in.

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

Step 5 Select the items, and then click **Export** to export the information on captured passed vehicles to your computer.

## Related Operations

Click **Download All** to download all images to your computer.

### 4.4.1.2 Searching for local Images

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

## Prerequisites

To use the function, you need to download and install the plug-in first.

## Procedure

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

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

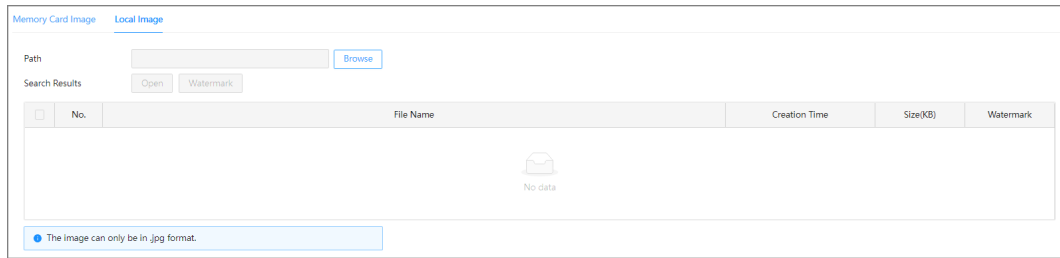
Step 3 Click **Watermark** , and view result under **Watermark**.

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



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

Figure 4-21 Local images



## 4.4.2 Flow Query

You can search for traffic flow within the defined period.

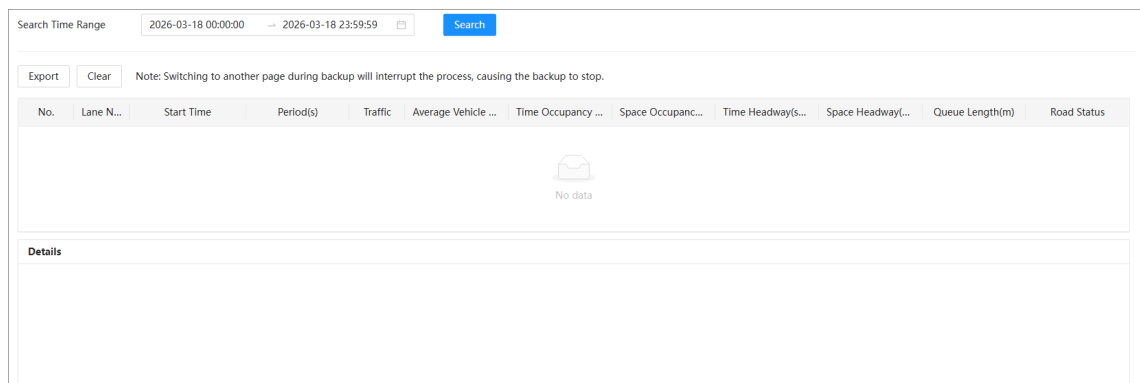


The function is available on select models, and might differ from the actual product.

### Procedure

- Step 1 Select **Search** > **Flow Query**.
- Step 2 Configure **Search Time Range**.
- Step 3 Click **Search**.
- Step 4 Select search results as needed.

Figure 4-22 Flow search



### Related Operations

- Click **Export** to export the results to your computer.
- Click **Clear** to delete all results.

## 4.4.3 Search Video

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

### 4.4.3.1 Recording

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



- Click  on the **Live** page, and the Camera starts recording. The recorded video is saved on the path defined in **Local** > **Record Path** > **Live Record**.

- The function is available on selected models, and might differ from the actual product.

## Procedure

- Step 1 Select **Search** > **Search Video** > **Record**.
- Step 2 Click **Select File** to select the recorded video on your computer, and then you can play back the video.

Figure 4-23 Record

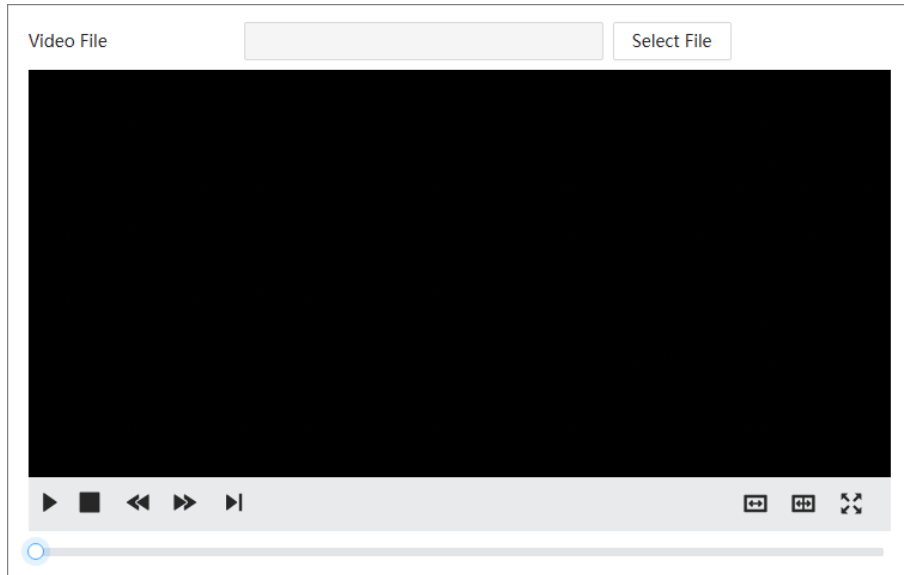


Table 4-6 Description of record parameters

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

### 4.4.3.2 Watermark

#### Prerequisites

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



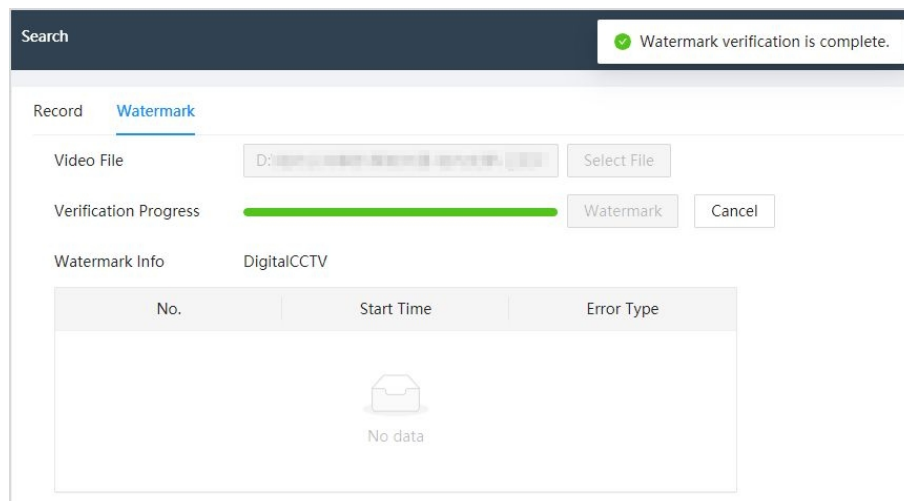
The watermark character is **DigitalCCTV** by default.

#### Procedure

- Step 1 Select **Search** > **Search Video** > **Watermark**.
- Step 2 Click **Select File** to select a recording.
- Step 3 Click **Watermark**. The system will display the verification progress and normal watermark information.

If the video is verified to be authentic, the watermark you set is displayed next to **Watermark Info**.

Figure 4-24 Watermark



## 4.5 Playback

You can search for and download video recordings.

1. Select  > **Playback**.

Figure 4-25 Playback

| Search Condition        |  | Type                                                                                  |                                                                                      |
|-------------------------|--|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 2026-03-17 16:55:03     |  | <input checked="" type="checkbox"/> All                                               | <input checked="" type="checkbox"/> Manual <input checked="" type="checkbox"/> Alarm |
| 2026-03-18 16:55:03     |  |                                                                                       |                                                                                      |
| File Type               |  | Total 0 records <input type="checkbox"/> Select All <button>Download by File</button> |                                                                                      |
| dav                     |  |                                                                                       |                                                                                      |
| Data Src                |  |                                                                                       |                                                                                      |
| Memory Card             |  |                                                                                       |                                                                                      |
| <button>Search</button> |  |                                                                                       |                                                                                      |
| <button>Reset</button>  |  |                                                                                       |                                                                                      |

2. Select the record time, **File Type** and data source **Data Src**.
3. Select the type of the video.
4. Click **Download by File** to download files to your local computer.

## 4.6 Camera

You can configure camera attributes such as brightness, contrast, saturation, shutter, metering zone, and focus. Besides, you can also configure encoding parameters such as video stream, video OSD and ROI (region of interest).

### 4.6.1 Configuring Camera Attributes

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

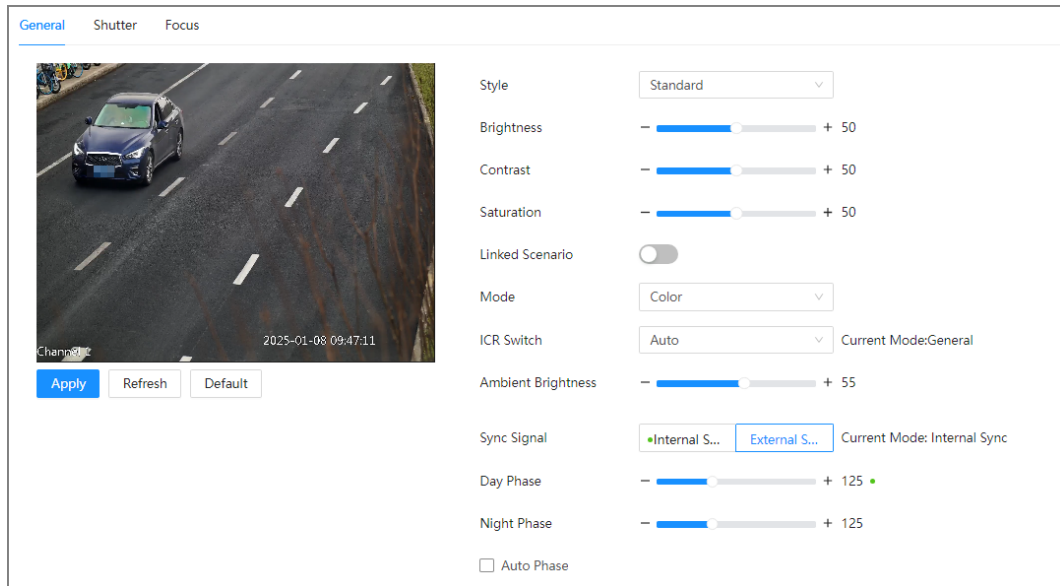
#### 4.6.1.1 Configuring General Parameters

You can configure the general parameters of the Camera, including style, brightness, contrast and more.

#### Procedure

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

Figure 4-26 General



**Step 2** Configure the parameters.

Table 4-7 Description of general parameters

| Parameter  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Style      | <p>Set the style of the image, including <b>Soft</b> , <b>Standard</b>, and <b>Vivid</b>.</p> <ul style="list-style-type: none"> <li>● <b>Soft</b> : The screen is weaker in tone than the real scene, with low contrast between light and dark.</li> <li>● <b>Standard</b> : The default image style. It displays the true colors of the image.</li> <li>● <b>Vivid</b> : The colors on the image are more vivid than those in the real scene.</li> </ul> |
| Brightness | <ul style="list-style-type: none"> <li>● Both the darker areas and the brighter areas will be changed together when adjusting the brightness. The image might become blurry when the value gets bigger. The recommended range is 40–60, and the available range is 0–100.</li> <li>● It is 50 by default. The larger the value, the brighter the image.</li> </ul>                                                                                         |
| Contrast   | <ul style="list-style-type: none"> <li>● The larger the value, the darker the dark area, and the more exposed the bright area.</li> <li>● The image might become blurry when the value gets smaller. The recommended range is 40–60, and the available range is 0–100.</li> <li>● It is 50 by default. The larger the value, the stronger the contrast.</li> </ul>                                                                                         |
| Saturation | <ul style="list-style-type: none"> <li>● The saturation value does not change the overall image brightness.</li> <li>● The larger the value, the more saturated the image.</li> <li>● It is 50 by default. The smaller the value, the more unsaturated the image. The recommended range is 40–60, and the available range is 0–100.</li> </ul>                                                                                                             |

| Parameter          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Linked Scenario    | <p>Click  to enable the function.</p> <ul style="list-style-type: none"> <li>When the function is disabled, the mode of <b>ICR Switch</b> is adjusted based on the <b>Ambient Brightness</b>.</li> <li>When the function is enabled, the mode of <b>ICR Switch</b> is adjusted based on the scenarios such as <b>Day, Night</b> and <b>Morning/Dusk</b>.</li> </ul> |
| Mode               | <ul style="list-style-type: none"> <li><b>Color</b> : The image is always colored.</li> <li><b>Auto</b> : When the brightness is higher than the threshold, the image automatically changes to color. When it is below the threshold, the image changes to black and white.</li> <li><b>B/W</b> : The image is always black and white.</li> </ul>                                                                                                    |
| ICR Switch         | <ul style="list-style-type: none"> <li><b>Auto</b> : You need to pre-set the brightness in this mode. When the ambient brightness is higher than the pre-set value, the IR bandpass will start to work.</li> <li><b>General</b> : The IR bandpass is always running. Applicable to scenarios with high brightness.</li> <li><b>IR</b> : Applicable to scenarios with low brightness.</li> </ul>                                                      |
| Ambient Brightness | The filter adjusts its brightness according to the ambient brightness.                                                                                                                                                                                                                                                                                                                                                                               |
| Sync Signal        | Includes <b>Internal Sync</b> and <b>External Sync</b> . When <b>External Sync</b> is selected, a fixed synchronization phase value can be set for daytime and nighttime respectively by dragging the slider to adjust the brightness of the red light in different scenes.                                                                                                                                                                          |
| Day Phase          | Manually adjust the phase value of the synchronization signal during the day.                                                                                                                                                                                                                                                                                                                                                                        |
| Night Phase        | Manually adjust the phase value of the synchronization signal at night.                                                                                                                                                                                                                                                                                                                                                                              |

Step 3 Click **Apply**.

#### 4.6.1.2 Configuring Shutter

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

##### Procedure

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

Figure 4-27 Shutter

**Step 2** Configure the parameters.

Table 4-8 Description of shutter parameters

| Module       | Parameter   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shutter Mode |             | <ul style="list-style-type: none"> <li>Single Shutter: Video and snapshot share the same exposure mode.</li> <li>Double Shutters: Video and snapshot have different exposure modes.</li> <li>Triple Shutters: Video and snapshot have different exposure modes, and an electronic shutter can provide more precise control.</li> <li>Frame Rate Mode: Supports selecting <b>Full Frame Rate</b> and <b>Half Frame Rate</b> <ul style="list-style-type: none"> <li><b>Half Frame Rate</b> : Video and snapshot take half of the frame respectively.</li> <li><b>Full Frame Rate</b> : Snapshot takes 1 frame, and video takes the rest of the frames.</li> </ul> </li> </ul> <p> <b>Triple Shutters</b> mode is available only when <b>General Mode</b> is selected as <b>Capture and Flash Linkage</b> from <b>Setting &gt; Event &gt; E-Police &gt; Other Config</b>.</p> |
| 3D NR        | Spatial NR  | When it is <b>Enable</b> , 3D NR is enabled to reduce noise of video/image, thereby balancing image quality and real-time performance of images and videos. You can move the slider to adjust the value. The higher the value, the less the noise.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|              | Temporal NR |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Image        | Scene       | You can change the scene and adjust the sharpness of the corresponding scene. Available scenes include <b>Morning/ Dusk</b> , <b>Day</b> , and <b>Night</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| Module     | Parameter                     | Description                                                                                                                                                                                                                                                                                                                                                                                            |
|------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | Sharpness                     | You can set the sharpness of the corresponding scene.<br>The higher the value, the clearer the image. But there will be noise if the sharpness is too high.                                                                                                                                                                                                                                            |
|            | WDR                           | Click  to enable WDR (wide dynamic range), which helps provide clear video images in bright and dark light.                                                                                                                                                                                                           |
| Exposure   | Reference Signal Level        | Adjusts the reference signal strength.                                                                                                                                                                                                                                                                                                                                                                 |
|            | Mode                          | <ul style="list-style-type: none"> <li>● In <b>Auto</b> mode, the iris type is recognized by the Camera automatically.</li> <li>● In <b>Force</b> mode, several iris types are available, and you also need to configure <b>Iris</b>, which includes <b>Auto</b> and <b>Manual</b>. If <b>Manual</b> is selected, you can adjust the aperture ring on the lens to change the aperture size.</li> </ul> |
|            | Iris Type                     | Displays the detected iris type.                                                                                                                                                                                                                                                                                                                                                                       |
|            | Iris                          | Select the way of adjusting the aperture size. You can select from <b>Manual</b> and <b>Auto</b> .                                                                                                                                                                                                                                                                                                     |
|            | Shutter                       | <p>You can select the shutter value, or select <b>Custom</b>, and then set the shutter range.</p>  <p>You need to configure shutter when <b>Mode</b> is set to <b>Manual</b>.</p>                                                                                                                                   |
|            | Shutter Range                 | Set the range of the shutter.                                                                                                                                                                                                                                                                                                                                                                          |
|            | Gain                          | <p>Set the value range of gain.</p>  <p>You need to configure gain scope when <b>Mode</b> is set to <b>Manual</b>.</p>                                                                                                                                                                                              |
| WB         | Mode                          | Set scene mode to adjust the image to its best status.                                                                                                                                                                                                                                                                                                                                                 |
| Defog Mode | Mode                          | <ul style="list-style-type: none"> <li>● <b>Off</b> : The defog mode is off, keeping the image in its original state.</li> <li>● <b>Auto</b> : The Camera automatically detects the presence of fog or haze and applies defogging processing as required.</li> <li>● <b>Manual</b> : You can manually adjust the defogging intensity to achieve the desired effect.</li> </ul>                         |
| Metering   | Plate Brightness Compensation | Click  to enable this function, and then you can select <b>Backlighting Compensation</b> and <b>Frontlighting Compensation</b> according to scene requirements to improve the backlight and frontlight image brightness.                                                                                            |

| Module | Parameter     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | Metering Mode | <ul style="list-style-type: none"> <li>● <b>Global Metering</b> : Measure the brightness of the whole image area and intelligently adjust the overall image brightness.</li> <li>● <b>Partial Metering</b> : Measure the brightness of sensitive areas and intelligently adjust the overall image brightness. If the measured area becomes bright, then the whole area becomes dark, and vice versa. Click <b>Draw</b>, and then drag the mouse to draw measured areas and yellow boxes display over the video image.</li></ul>  <div> <div>◇ Click <b>Clear</b> to redraw partial metering areas.</div> <div>◇ Click  to delete a partial metering area.</div> </div> |

Step 3 Click **Apply**.

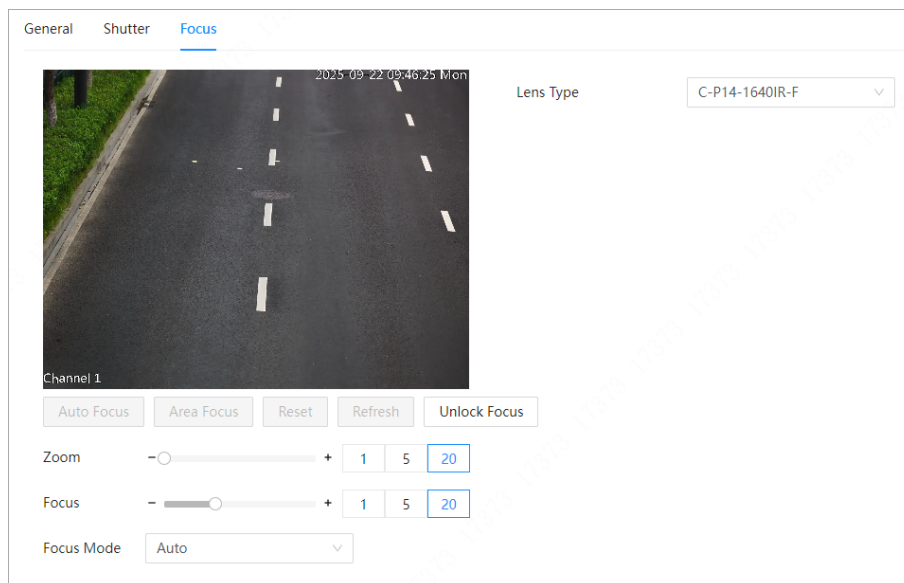
### 4.6.1.3 Configuring Focus

Adjust the focus of the Camera.

#### Procedure

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

Figure 4-28 Focus



Step 2 Click **Unlock Focus**.

Step 3 Configure the parameters.

Table 4-9 Description of focus parameters

| Parameter  | Description                                                 |
|------------|-------------------------------------------------------------|
| Lens Type  | Keep it as default.                                         |
| Auto Focus | Automatically adjusts the camera focus to get clear images. |

| Parameter  | Description                                                                                                                                                                                                                                                                                                                                                                                      |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Area Focus | Click the button to enable the function and draw an area on the window. The area will then be focused automatically.                                                                                                                                                                                                                                                                             |
| Reset      | Reset all focus and zoom parameters to the default settings.                                                                                                                                                                                                                                                                                                                                     |
| Refresh    | Update the page content.                                                                                                                                                                                                                                                                                                                                                                         |
| Zoom       | Drag the slider to zoom in or zoom out the video.                                                                                                                                                                                                                                                                                                                                                |
| Focus      | Drag the slider to adjust the focus.                                                                                                                                                                                                                                                                                                                                                             |
| Focus Mode | <p>Supports selecting <b>Auto</b> and <b>Semi-Auto</b>.</p> <ul style="list-style-type: none"> <li>• Semi-Auto: Quickly adjusts to a roughly clear position during zooming. It can respond quickly, but must perform precise focus after the zooming is completed.</li> <li>• Auto: Directly focus on the clearest position during zooming. It takes longer to adjust the scene size.</li> </ul> |

**Step 4** Click **Refresh**.

## 4.6.2 Configuring Encode Parameters

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

### 4.6.2.1 Configuring Video Parameters

Configure the parameters of video streams.

#### Procedure

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

Figure 4-29 Video stream

The screenshot displays the 'Video Stream' configuration page with two tabs: 'Video OSD' and 'ROI'. The 'Main Stream' tab is active, showing the following settings:

- Encoding Mode: H.264H
- Resolution: 4096\*2336(4096x2336)
- Frame Rate (FPS): 15
- Bit Rate Type: CBR
- Bit Rate: Custom (4915 Kb/S)
- I Frame Interval: 30 (15-150)
- Smooth Stream: Slider from - to + 100 [Smooth<->Clear]
- Watermark: Enabled (toggle)
- Watermark String: DigitalCCTV

The 'Sub Stream' tab is also visible, showing the following settings:

- Enable: Enabled (toggle)
- Encoding Mode: H.264M
- Resolution: 1600\*1200(UXGA)
- Frame Rate (FPS): 15
- Bit Rate Type: VBR
- Quality: 5
- Max Bit Rate: Custom (1229 Kb/S)
- I Frame Interval: 30 (15-150)
- Smooth Stream: Slider from - to + 100 [Smooth<->Clear]

At the bottom of the interface are three buttons: 'Apply', 'Refresh', and 'Default'.

**Step 2** Configure the parameters.

Table 4-10 Description of video stream parameters

| Parameter        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Encode Mode      | Modes of H.264M, H.264H, MJPEG, and H.265 can be selected.                                                                                                                                                                                                                                                                                                                                                                                                   |
| Resolution       | <p>The higher the value, the clearer the overall image. For each resolution, the recommended bit stream value is different.</p>  <p>The resolution of sub stream cannot be greater than that of main stream.</p>                                                                                                                                                            |
| Frame Rate (FPS) | The higher the value, the smoother the video image. The frame rate might vary due to different resolutions.                                                                                                                                                                                                                                                                                                                                                  |
| Bit Rate Type    | <p>You can select from <b>VBR</b> (variable bitrate) and <b>CBR</b> (constant bitrate).</p> <ul style="list-style-type: none"> <li>• <b>VBR</b> : Gives the best balance between quality and file size as the bitrate can be altered depending on the video.</li> <li>• <b>CBR</b> keeps the bitrate the same during encoding, and it is more advantageous to use when the network connection is limited to performing at, for example, 320 Kbps.</li> </ul> |
| Quality          | <p>6 quality levels are available. The higher the value, the better the quality.</p>  <p>You need to configure the image quality when <b>VBR</b> is set to <b>Bit Rate Type</b>.</p>                                                                                                                                                                                       |
| Bit Rate         | <p>Higher bit rate signifies greater image or video quality, but also occupies more storage space.</p>  <p>You need to configure the bit rate when <b>CBR</b> is set to <b>Bit Rate Type</b>.</p>                                                                                                                                                                         |
| Max Bit Rate     | It is the upper limit of stream in VBR. In CBR, the value is fixed.                                                                                                                                                                                                                                                                                                                                                                                          |
| I Frame Interval | The number of P-frame between two I-frames. The number varies according to the bit rate. The range is 25-150. We recommend configuring the value to be twice the amount of the bit rate.                                                                                                                                                                                                                                                                     |
| Smooth Stream    | The higher the value, the smoother the video and the less the clarity.                                                                                                                                                                                                                                                                                                                                                                                       |
| Watermark        | <p>You can verify the watermark to check whether the video has been tampered.</p> <p>Select the <b>Watermark</b> checkbox to enable watermark verification. The watermark character is <b>DigitalCCTV</b> by default.</p> <p>Watermark character consists of up to 85 characters with numbers, letters and underlines.</p>                                                                                                                                   |
| Enable           | Enable sub stream when your network bandwidth is insufficient or other conditions that influence the video smoothness in main stream.                                                                                                                                                                                                                                                                                                                        |

Step 3 Click **Apply**.

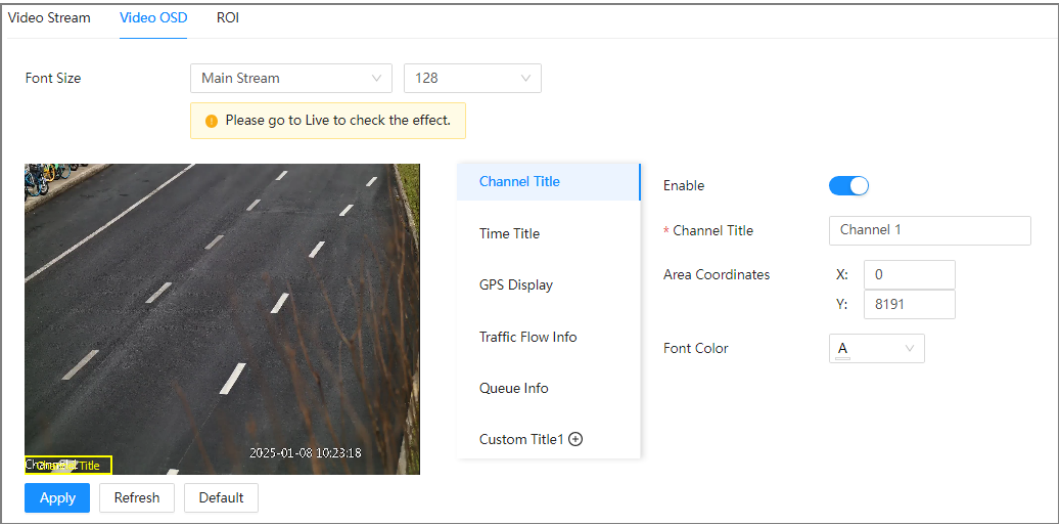
### 4.6.2.2 Configuring Video OSD

Configure the OSD information of videos.

#### Procedure

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

Figure 4-30 Video OSD



**Step 2** Configure the parameters.

Table 4-11 Description of video OSD parameters

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

**Step 3** Click **Apply**.

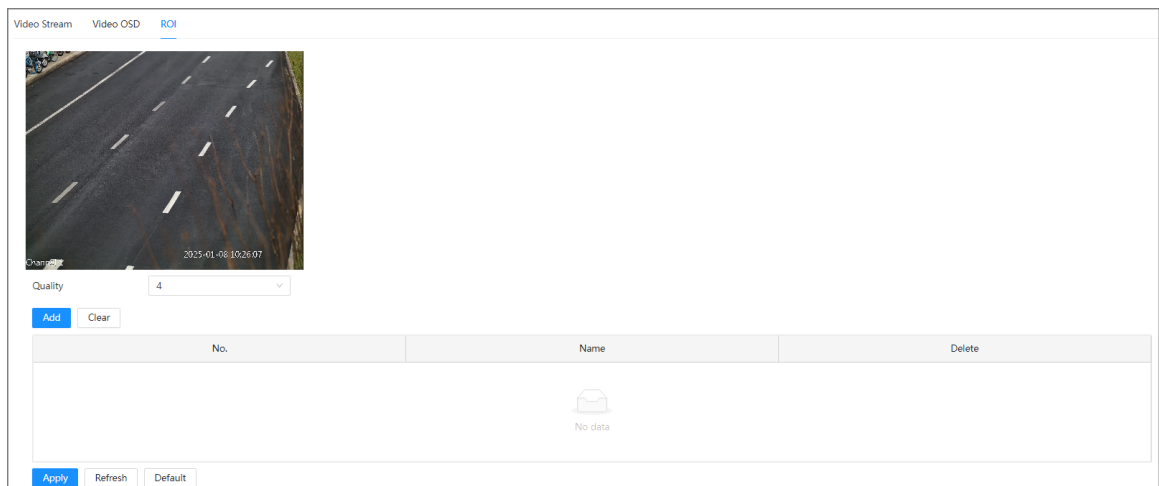
### 4.6.2.3 Configuring ROI

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

#### Procedure

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

Figure 4-31 ROI



**Step 2** Click **Add**, and drag anywhere in the video image to draw the region of interest. You can draw more than one region when necessary.



- You can add up to 3 regions of interest.
- The higher the value, the better the quality will be.
- Large regions may influence the smoothness of the video.

**Step 3** Configure the image quality of the regions of interest.

6 quality levels are available. The higher the value, the better the quality.

**Step 4** Click **Apply**.

#### Related Operations

- Click **Clear** to delete all the regions of interest.
- Click  to delete the corresponding area.

## 4.7 Network Settings

You can configure network parameters such as TCP/IP, port, auto registration, and basic services.

### 4.7.1 Configuring TCP/IP

You can configure IP address, DNS (Domain Name System) server and parameters according to network planning.

#### Prerequisites

The Camera has connected to the network.

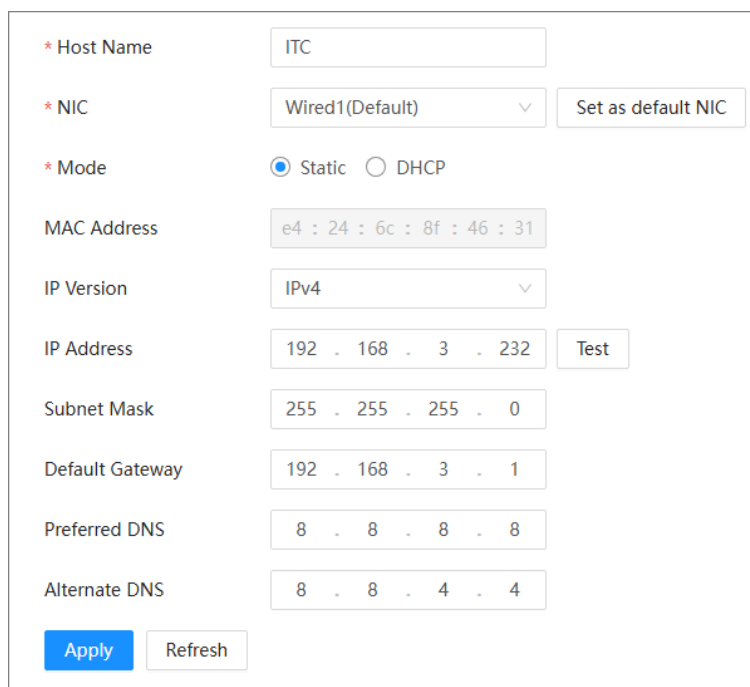


Some models are designed with two network ports. Do not configure the ports to be on the same network segment. Otherwise, the network might fail.

## Procedure

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

Figure 4-32 TCP/IP



**Step 2** Configure the parameters.

Table 4-12 Description of TCP/IP parameters

| Parameter   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Host Name   | Enter the host name, and the maximum length is 15 characters.                                                                                                                                                                                                                                                                                                                                                                                                       |
| NIC         | Supports wired network only. You can click <b>Set as default NIC</b> to set the default NIC.                                                                                                                                                                                                                                                                                                                                                                        |
| Mode        | The mode that the Camera gets IP: <ul style="list-style-type: none"><li>● <b>Static</b> : Configure <b>IP Address</b>, <b>Subnet Mask</b>, and <b>Default Gateway</b> manually, and then click <b>Apply</b>, the login page with the configured IP address is displayed.</li><li>● <b>DHCP</b> : The Camera automatically assigns IP addresses. In this case, the <b>IP Address</b>, <b>Subnet Mask</b>, and <b>Default Gateway</b> cannot be configured.</li></ul> |
| MAC Address | Displays host MAC address.                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| IP Version  | <b>IPv4</b> and <b>IPv6</b> are available. Both IP version can be accessed.                                                                                                                                                                                                                                                                                                                                                                                         |

| Parameter       | Description                                                                                                                                                               |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP Address      | When you select <b>Static</b> in <b>Mode</b> , you can enter the IP address and subnet mask that you need. Click <b>Test</b> to test whether the IP address is available. |
| Subnet Mask     |                                                                                                                                                                           |
| Default Gateway | <ul style="list-style-type: none"> <li>IPv6 does not have subnet mask.</li> <li>The default gateway must be in the same network segment with the IP address.</li> </ul>   |
| Preferred DNS   | IP address of the preferred DNS.                                                                                                                                          |
| Alternate DNS   | IP address of the alternate DNS.                                                                                                                                          |

Step 3 Click **Apply**.

## 4.7.2 Port

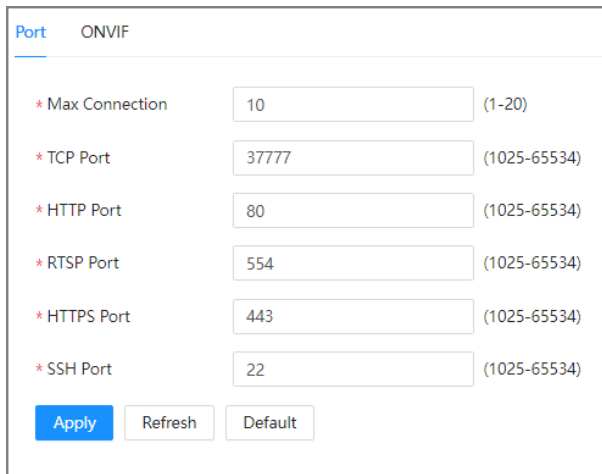
### 4.7.2.1 Configuring Port

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

#### Procedure

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

Figure 4-33 Port



| Parameter        | Value | Range        |
|------------------|-------|--------------|
| * Max Connection | 10    | (1-20)       |
| * TCP Port       | 37777 | (1025-65534) |
| * HTTP Port      | 80    | (1025-65534) |
| * RTSP Port      | 554   | (1025-65534) |
| * HTTPS Port     | 443   | (1025-65534) |
| * SSH Port       | 22    | (1025-65534) |

Buttons: Apply, Refresh, Default

Step 2 Configure port parameters.

Table 4-13 Description of port parameters

| Parameter      | Description                                                                                                                                             |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Max Connection | The max number of users (web client, platform client or mobile phone client) that can connect to the device simultaneously. The value is 10 by default. |
| TCP Port       | TCP protocol communication port. It is 37777 by default.                                                                                                |
| HTTP Port      | HTTP communication port. It is 80 by default.                                                                                                           |
| RTSP Port      | Media streaming control port. It is 554 by default.                                                                                                     |

| Parameter  | Description                                     |
|------------|-------------------------------------------------|
| HTTPS Port | HTTPS communication port. It is 443 by default. |
| SSH Port   | SSH communication port. It is 22 by default.    |

Step 3 Click **Apply**.

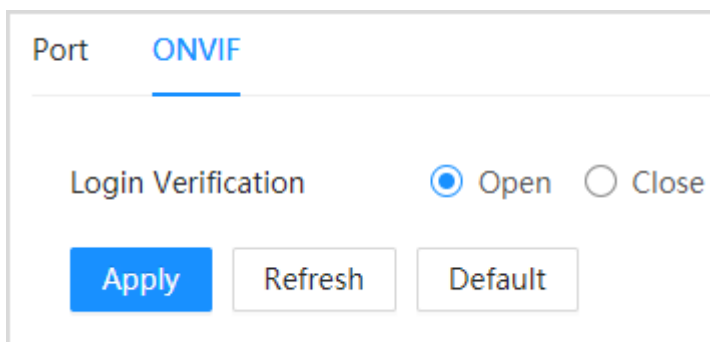
### 4.7.2.2 Configuring ONVIF

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

Select  > **Network Settings** > **Port** > **ONVIF**.

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

Figure 4-34 Configure ONVIF



### 4.7.3 Configuring Auto Registration

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

#### Procedure

Step 1  > **Network Settings** > **Auto Registration**.

Figure 4-35 Auto registration

**Step 2** Click to enable the function, and then configure the parameters.

Table 4-14 Parameter description

| Parameter     | Description                                                   |
|---------------|---------------------------------------------------------------|
| Address       | The IP address or domain name of the server to be registered. |
| Port          | The port for registration.                                    |
| Sub-Device ID | The custom ID for the Camera.                                 |

**Step 3** Click **Apply**.

## 4.7.4 Configuring Routing Settings

Supports configuring routings for NIC and accessing gateways of target network segments.

### Procedure

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

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

**Step 3** Click **Add**.

When **Save Succeeded** appears at the bottom, the routing is added to the list.



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

Figure 4-36 Routing settings

| No. | NIC  | IP Segment | Subnet Mask | Default Gateway | Operation |
|-----|------|------------|-------------|-----------------|-----------|
| 1   | NIC1 | 10.34.0.0  | 255.255.0.0 | 172.24.0.1      |           |
| 2   | NIC2 | 10.36.0.0  | 255.255.0.0 | 172.24.0.1      |           |

## 4.7.5 Configuring Multicast

When multiple users are viewing the device video image simultaneously through network, it might fail due to limited bandwidth. You can solve this problem by setting up a multicast IP (224.0.1.0–238.255.255.255) for the Camera and adopt the multicast protocol.

### Procedure

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

**Step 2** Click , and then configure the parameters.

Table 4-15 Parameters description of multicast

| Parameter         | Description                                                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Multicast Address | The multicast IP address of <b>Main Stream /Sub Stream</b> is 224.1.2.4 by default, and the range is 224.0.0.0–239.255.255.255. |
| Port              | The multicast port of corresponding stream: <b>Main Stream</b> : 10000; <b>Sub Stream</b> : 10016. All the range is 1025–65534. |

**Step 3** Click **Apply**.

## 4.7.6 Configuring 3G/4G

Supports 3G/4G cellular data connectivity for platform registration via mobile networks.



Only select devices support this feature.

### 4.7.6.1 Cellular Network

Supports configuring the cellular network parameters, and displaying wireless network status, and more.

### Procedure

**Step 1** Select > **Network Settings** > **3G/4G** > **Cellular Network**.

**Step 2** Configure the parameters.



After configuring the cellular network parameters, you can verify the configuration by checking the wireless network status and signal strength.

Figure 4-37 Configure cellular network

Switch Network

Enable for the device to prioritize connecting to the Internet through the wired network. If the network cable is disconnected or the device is not connected to the Internet, it will use the cellular NIC for dial-up.

NIC In Use

Wired NIC

Re-register

Wireless Network Mode

Auto

For better service when the network is unstable, we recommend enabling Ping in Re connected.

APN

Activate by Dial-up/SMS

Authentication Mode

Dial-up No.

Username

Password

Keepalive settings

30

sec (0-7200)

MTU

1500

(600-1500)

Reconnected

Helps detect the cellular status and automatically reconnects when the network is unstable.

Enable

Detection Scheme

☒ SMART DETECTION

☐ Ping

Wireless Network Status

Dial-up Status

SIM Status

Working Mode

Frequency Band

IMSI

Signal Strength

IP Address

Subnet Mask

Default Gateway

IMEI

ICCID

Network Signal

RSRP

SINR

-

Apply

Refresh

Default

Table 4-16 Parameters description of cellular network

| Parameter             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Switch Network        | <p>Click  to enable the function. Then the Camera will prioritize connecting to the public internet via a wired network. If the network cable is disconnected or not connected to the public internet, it will use the cellular network to dial up.</p> <p></p> <p>If you click <b>Re-register</b>, the device will disconnect for a short time, but will reconnect to the network in about 2 minutes.</p> |
| NIC In Use            | <p>It is <b>Wired NIC</b> by default.</p> <p></p> <p>If you click <b>Re-register</b>, the device will disconnect for a short time, but will reconnect to the network in about 2 minutes.</p>                                                                                                                                                                                                                                                                                                  |
| Wireless Network Mode | <p>Select the wireless network mode as needed. Click  to enable the wireless network function.</p>                                                                                                                                                                                                                                                                                                                                                                                          |

| Parameter               |                  | Description                                                                                                                                                                   |
|-------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| APN                     |                  | Enter the name of the APN connection. Click  to enable "Activate by Dial-up/SMS" function. |
| Authentication Mode     |                  | Select the mode of the network authentication.                                                                                                                                |
| Dial-up No.             |                  | Set the number of dial-up connection.                                                                                                                                         |
| Username                |                  | Set the user name, password, keepalive time, and maximum transmission unit (MTU).                                                                                             |
| Password                |                  |                                                                                                                                                                               |
| Keepalive settings      |                  |                                                                                                                                                                               |
| MTU                     |                  |                                                                                                                                                                               |
| Reconnected             | Enable           | Click <b>Enable</b> to enable the reconnected function.                                                                                                                       |
|                         | Detection Scheme | Select the reconnected mode from <b>SMART DETECTION</b> , and <b>Ping</b> .                                                                                                   |
| Wireless Network Status |                  | Displays the the wireless network status, including dial-up status, SIM status, and more.                                                                                     |
| Network Signal          |                  | Displays the network signal.                                                                                                                                                  |

Step 3 Click **Apply**.

### 4.7.6.2 Advanced Parameters

Supports diagnosing and optimizing the network. The feature is designed for use by the technical personnel.

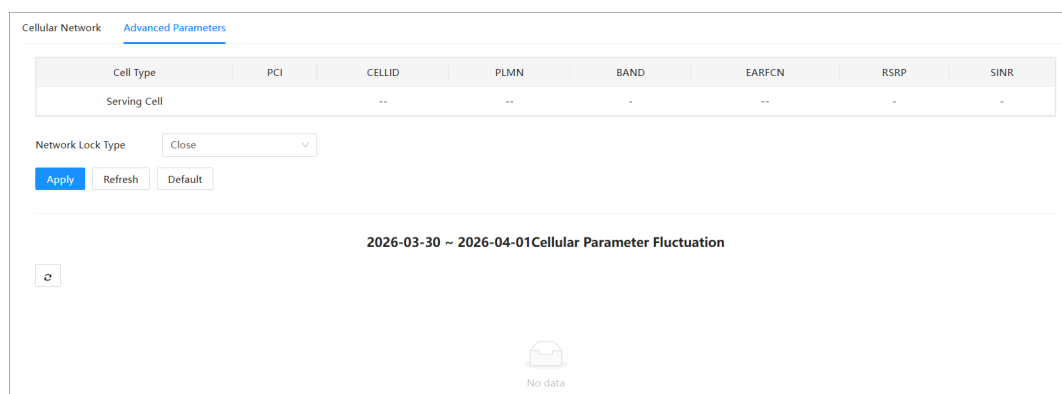
#### Procedure

Step 1 Select  > **Network Settings** > **3G/4G** > **Advanced Parameters**.

Step 2 Select the network lock type.

Step 3 Click **Apply**.

Figure 4-38 Configure cellular network



## 4.7.7 Configuring Platform Access

### 4.7.7.1 P2P

P2P (peer-to-peer) technology enables users to manage devices easily without requiring DDNS, port mapping or transiting server. Scan the QR code with your smartphone, and then you can add and manage more devices on the mobile phone client.

#### Procedure

- Step 1    Select  > **Network Settings** > **Platform Access** > **P2P**.
- Step 2    Click  to enable the function.
- Step 3    Log in to mobile phone client and tap **Device management**.
- Step 4    Tap + on the upper-right corner.
- Step 5    Scan the QR code on the **P2P** page.
- Step 6    Follow the instructions to finish the settings.

### 4.7.7.2 ITSAPI

You can configure this function 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  > **Network Settings** > **ITSAPI**.
- Step 2    Click  next to **Enable** to enable the function.

Figure 4-39 ITSAPI

P2P ITSAPI

Enable ☐

**Basic**

Platform Server  Device ID

Keep Alive Interval  (0-300000)

Authentication ☐

Max Keep-alive Request  (0-300000) Protocol Version

Heartbeat Interface  Need Response

Function ☐ Basic Info ☐ ANPR

Upload Info ☐ Plate No. ☐ Vehicle Color ☐ Logo ☐ Vehicle Type ☐ Vehicle Speed ☐ Direction ☐ Accuracy ☐ Snapshot Time

**Image Config**

Image Type ☒ Original Image ☐ Plate Cutout ☐ Vehicle Body Cutout

Filter Condition ☐ Unlicensed Vehicle

Uploading Info  Encoding Format

**Step 3** Configure the parameters.

Table 4-17 Parameters description of ITSAPI

| Section             | Parameter              | Description                                                                                                                                                                                                                 |
|---------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic Configuration | Platform Server        | Enter the platform server address.                                                                                                                                                                                          |
|                     | Device ID              | Enter the device ID.                                                                                                                                                                                                        |
|                     | Keep Alive Interval    | Update interval of the connection between the server and the device.                                                                                                                                                        |
|                     | Authentication         | Click <input type="checkbox"/> to enable the function, and then enter the username and authentication password.                                                                                                             |
|                     | Max Keep-alive Request | Set the maximum number of heartbeats of the connection between the server and the device. When the defined number is exceeded, the device has disconnected.                                                                 |
|                     | Protocol Version       | Setting is not supported and subject to actuality.                                                                                                                                                                          |
|                     | Heartbreak Interface   | Set the interface according to the data type.                                                                                                                                                                               |
|                     | Need Response          | Select <b>Yes</b> or <b>No</b> . <ul style="list-style-type: none"> <li>Yes: Suitable for scenarios that require real-time feedback.</li> <li>No: Suitable for scenarios that do not require real-time feedback.</li> </ul> |
|                     | Function               | Select the <b>Basic Info</b> or <b>ANPR</b> be uploaded.                                                                                                                                                                    |
|                     | Uploading Info         | Select the specific information to be uploaded.                                                                                                                                                                             |

| Section             | Parameter        | Description                                                                                                                              |
|---------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Image Configuration | Image Type       | Select the type of images to be uploaded.                                                                                                |
|                     | Filter Condition | Select whether to upload information of unlicensed vehicles. When selected, the information of unlicensed vehicles will not be uploaded. |
|                     | Uploading Info   | Select the specific information to be uploaded.                                                                                          |
|                     | Encoding Format  | Select the license plate encoding. <b>UTF-8</b> supports many languages and it is selected by default.                                   |

Step 4 Click **Apply**.

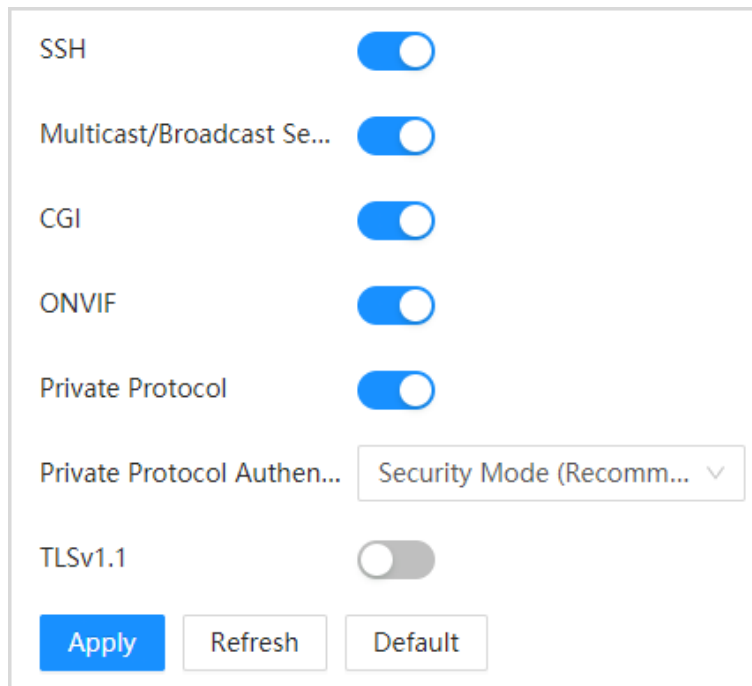
## 4.7.8 Configuring Basic Service

Configure the IP hosts (devices with IP address) that are allowed to visit the device. Only the hosts in the trusted sites list can log in to the webpage. This is to enhance network and data security.

### Procedure

Step 1 Select  > **Network Settings** > **Basic Service**.

Figure 4-40 Basic service



SSH ☒

Multicast/Broadcast Se... ☒

CGI ☒

ONVIF ☒

Private Protocol ☒

Private Protocol Authen... Security Mode (Recomm... ▼)

TLSv1.1 ☐

**Apply** Refresh Default

Step 2 Enable the basic service according to the actual needs.

Table 4-18 Description of basic service parameters

| Function | Description                                                     |
|----------|-----------------------------------------------------------------|
| SSH      | You can enable SSH authentication to perform safety management. |

| Function                             | Description                                                                                                                                                                                                                                         |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Multicast/Broadcast Search           | Enable this function, and then when multiple users are viewing the device video image simultaneously through network, they can find your device with multicast/broadcast protocol.                                                                  |
| 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.                                                                                                                                                 |
| Private Protocol                     | Enable this function to transmit data through private protocols.                                                                                                                                                                                    |
| Private Protocol Authentication Mode | Select the authentication mode from <b>Security Mode</b> and <b>Compatible Mode</b> . Security mode is recommended.                                                                                                                                 |
| TLSv1.1                              | <p>Enable this function so that you can access the webpage with TLSv1.1.</p>  <p>There might be security risks if you enable this function. Please be advised.</p> |

Step 3 Click **Apply**.

## 4.7.9 Configuring Network Proxy

Configure the network proxy for the device.

### Procedure

- Step 1 Select  > **Network Settings** > **Network Proxy**.
- Step 2 Click  to enable network proxy.
- Step 3 Click **Add**, and then configure local port, remote IP address, and remote port.
- Step 4 Click **Apply**.

## 4.8 Event

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

### 4.8.1 Alarm

#### 4.8.1.1 Enabling Alarm-in and Alarm-out Ports

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

### Procedure

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

Figure 4-41 Alarm

**Alarm**    Alarm-out Port

Enable

☐

Alarm-in Port

IN1

Schedule

Setting

Anti-dither

0

s (0-100)

Sensor Type

NO

Alarm-out Port

☒

Alarm Channel

NO1

NO2

Post-alarm

10

s (10-300)

Apply

Refresh

Default

Step 2    Click ☐ next to **Enable** to enable alarm input for the current channel.

Step 3    Select an alarm input channel and schedule.



If there are no suitable schedules, you can follow the steps below to add a new one.

1. Click **Settings**.
2. Drag on the timeline to set the arming periods. Alarms will be triggered in the green period.
3. Click **OK**.

Figure 4-42 Drag to set periods

The interface shows a 24-hour timeline at the top. Below it, a table lists the days of the week. Each day has a green bar representing the active period and a 'Copy' button. At the bottom right, there are 'OK' and 'Cancel' buttons. At the top right, there are 'Refresh', 'Clear', and 'Delete' buttons.

- Click **Copy** next to a day, select the days that you want to copy to in the prompt page, and then you can copy the configuration to the selected days. Select the **All**.
- You can set 6 periods per day.

Step 4 Configure the parameters.

Table 4-19 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. <ul style="list-style-type: none"> <li>● <b>NO</b> : Normally open.</li> <li>● <b>NC</b> : Normally closed.</li> </ul> |
| Alarm-out Port | Click <input type="checkbox"/> , and then select one or more alarm output channels. The corresponding device will be activated when alarms are triggered.                                  |
| Alarm Channel  |                                                                                                                                                                                            |
| Post-alarm     | The alarm linkage keeps running for the defined time after alarm ends. The time range is 10 s–300 s.                                                                                       |

Step 5 Click **Apply**.

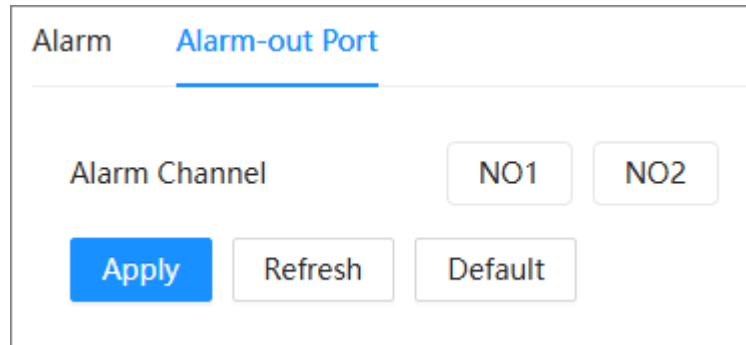
### 4.8.1.2 Alarm-out Ports

This function is used to check if alarm-out ports are working properly.

#### Procedure

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

Figure 4-43 Alarm-out port



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

Step 3 Click **Apply** to send alarm signals to the selected ports.

For example, if the Camera is connected to a buzzer, the buzzer will produce a sound. This means the alarm-out port is working properly.

## 4.8.2 Exception

Abnormality includes SD card, network, and traffic light error.

### Prerequisites

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

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

- **SD Card Exception** : Alarm will be triggered when there is **No SD card**, **Low SD card space**, or **SD card error**.
- **Network Exception** : Alarm will be triggered when there is **Offline** (the Camera is offline) or **IP Conflict**.
- **Traffic Light Error** : Alarm will be triggered when the Camera detects traffic light fault.



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

### 4.8.2.1 Setting SD Card Exception

In case of SD card exception, the system performs alarm linkage. The event types include **No SD Card**, **Low SD Card Space**, and **SD Card Error**. Functions might vary with different models.

### Procedure

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

Step 2 Click  to enable detection of one or more events.

Figure 4-44 SD card exception

SD Card Exception
Network Exception

No SD card
☒

Alarm Channel

Post-alarm
 s (10-300)

Low SD card space
☒

Free Space
 %(0-99)

Alarm Channel

Post-alarm
 s (10-300)

SD card error
☒

Alarm Channel

Post-alarm
 s (10-300)

Step 3    Configure the parameters.

Table 4-20 Parameter description

| Parameter     | Description                                                                                                                                                                                                |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alarm Channel | Click  , and then select an alarm output channel. The corresponding device will be activated when alarms are triggered. |
| Post-alarm    | When an alarm is triggered, it will continue for the defined period after it ends.                                                                                                                         |
| Free Space    | When enabling <b>Low SD Card Space</b> , set a value for <b>Free Space</b> . When the remaining space of SD card is less than this value, an alarm is triggered.                                           |

Step 4    Click **Apply**.

### 4.8.2.2 Setting Network Exception

In case of network abnormality, the system performs alarm linkage. The event types include **Offline** and **IP Conflict**.

#### Procedure

- Step 1    Select  > **Event** > **Exception** > **Network error**.
- Step 2    Click  to enable detection of one or more events.
- Step 3    Configure the parameters.

Figure 4-45 Set network error

**Offline**

☒ NIC1 ☐ NIC2

Alarm-out Port 

Alarm Channel 

NO1NO2

Post-alarm 

10

 s (10-300)

**IP Conflict**

☒ NIC1 ☐ NIC2

Alarm-out Port 

Alarm Channel 

NO1NO2

Post-alarm 

10

 s (10-300)

Apply

Refresh

Default

Table 4-21 Parameter description

| Parameter      | Description                                                                                                                                                                                                |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NIC1           | Select the network interface card as needed.                                                                                                                                                               |
| NIC2           |                                                                                                                                                                                                            |
| Alarm-out Port | Click  , and then select an alarm output channel. The corresponding device will be activated when alarms are triggered. |
| Post-alarm     | When an alarm is triggered, it will continue for the defined period after it ends.                                                                                                                         |

- Step 4    Click **Apply**.

### 4.8.2.3 Setting Traffic Light Error

In case of any traffic light error, the system performs alarm linkage in E-police mode.

#### Procedure

**Step 1** Select  > **Event** > **Exception** > **Traffic Light Error**.

**Step 2** Click  to enable the function.

**Step 3** Set the parameters.

Figure 4-46 Set alarm linkage for traffic light error

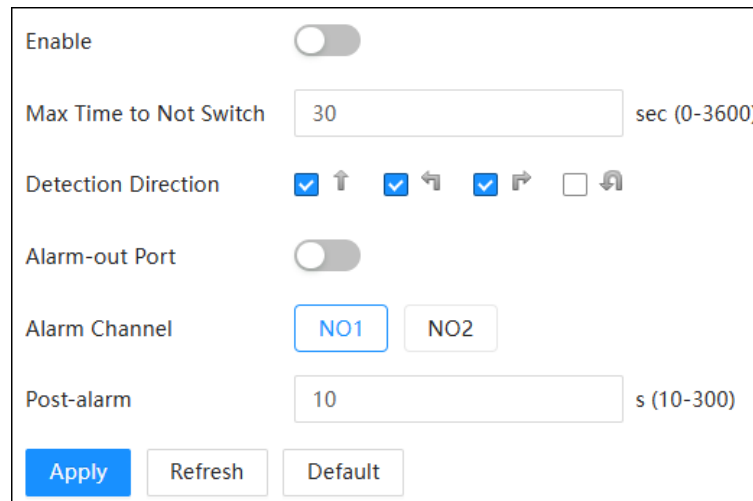


Table 4-22 Description of parameters of traffic light error

| Parameter              | Description                                                                      |
|------------------------|----------------------------------------------------------------------------------|
| Max Time to Not Switch | The maximum duration for which traffic light signals can stay static.            |
| Detection Direction    | You can select going straight, turning left, turning right, and making a U-turn. |
| Alarm-out Port         | The same as network exception.                                                   |
| Post-alarm             | The same as network exception.                                                   |

**Step 4** Click **Apply**.

### 4.8.2.4 Setting IVS

Supports detecting and identifying the intelligent event type. Once the event is detected, it will trigger an alarm.

#### Procedure

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

**Step 2** Click  to enable the event type as needed.



In E-police mode, only wrong-way driving event is supported.

**Step 3** Configure the parameters.

Figure 4-47 Set IVS

SD Card Exception
Network error
IVS

Traffic Congestion
☒

Alarm Channel

NO1

NO2

Post-alarm

10

s (10-300)

Illegal Parking
☒

Alarm Channel

NO1

NO2

Post-alarm

10

s (10-300)

Wrong-way Driving
☒

Alarm Channel

NO1

NO2

Post-alarm

10

s (10-300)

Apply

Refresh

Default

Table 4-23 Parameter description

| Parameter     | Description                                                                        |
|---------------|------------------------------------------------------------------------------------|
| Alarm channel | Select the alarm channel as needed.                                                |
| Post-alarm    | When an alarm is triggered, it will continue for the defined period after it ends. |

Step 4 Click **Apply**.

## 4.9 Remote Configuration

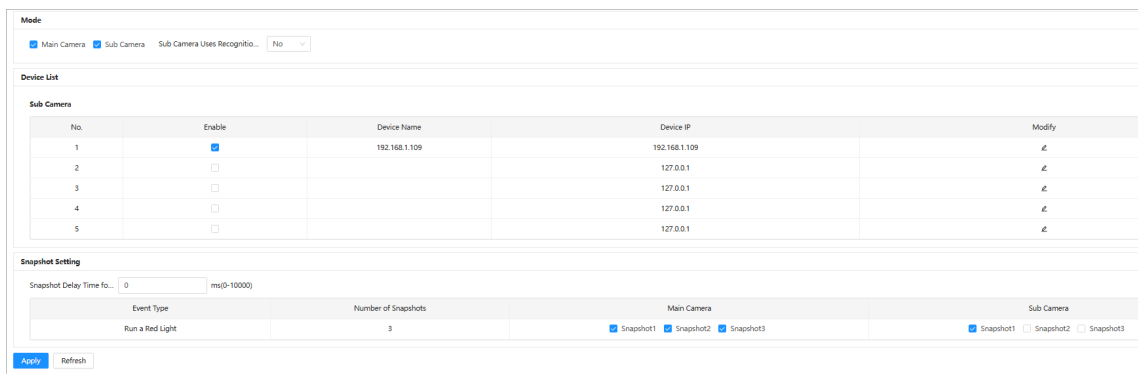
You can enable the remote device to work with the Camera to capture events in E-police mode. Currently, only events of crossing the stop line and running a red light can be captured by combining the Camera and remote device.

### Procedure

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

**Step 2** Configure the parameters.

Figure 4-48 Remote configuration



| No. | Enable                              | Device Name   | Device IP     | Modify                                                                              |
|-----|-------------------------------------|---------------|---------------|-------------------------------------------------------------------------------------|
| 1   | <input checked="" type="checkbox"/> | 192.168.1.109 | 192.168.1.109 |  |
| 2   | <input type="checkbox"/>            |               | 127.0.0.1     |  |
| 3   | <input type="checkbox"/>            |               | 127.0.0.1     |  |
| 4   | <input type="checkbox"/>            |               | 127.0.0.1     |  |
| 5   | <input type="checkbox"/>            |               | 127.0.0.1     |  |

| Event Type      | Number of Snapshots | Main Camera                                                                                                                               | Sub Camera                                                                                                          |
|-----------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Run a Red Light | 3                   | <input checked="" type="checkbox"/> Snapshot1 <input checked="" type="checkbox"/> Snapshot2 <input checked="" type="checkbox"/> Snapshot3 | <input checked="" type="checkbox"/> Snapshot1 <input type="checkbox"/> Snapshot2 <input type="checkbox"/> Snapshot3 |

Table 4-24 Description of date & time parameters

| Parameter                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mode                               | <ul style="list-style-type: none"><li>● <b>Main Camera</b> : When selecting <b>Main Camera</b>, you can set and modify the parameters of the sub camera.</li><li>● <b>Sub Camera</b> : When selecting <b>Sub Camera</b>, you can set the <b>Sub Camera Uses Recognition Results of Main Camera</b>. If <b>Yes</b>, the sub camera is allowed to use the recognition results of main camera. If not, the recognition results of main camera will not be applied to the sub camera</li></ul> |
| Device List                        | Displays the information of the sub camera, including device name, device IP, and more. You can also click  to modify the information of the device.                                                                                                                                                                                                                                                  |
| Snapshot Delay Time for Sub Camera | Set the snapshot delay time of the sub camera.                                                                                                                                                                                                                                                                                                                                                                                                                                             |

**Step 3** Click **Apply**.

## 4.10 Peripheral

You can view the status of the device, configure the work mode of the illuminator and the serial port of radar, positioning method, external light, transparent, signal detector and traffic light signal detector. Select  > **Peripheral** > **Peripheral**.



When you have all-in-one enforcement cameras in hand, parameter configuration for radars can be performed on **Peripheral** page.

# Device Status

Figure 4-49 Device status (ANPR mode for radar video cameras)

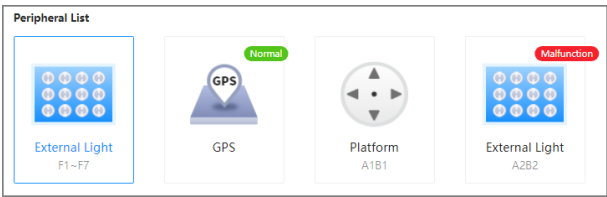
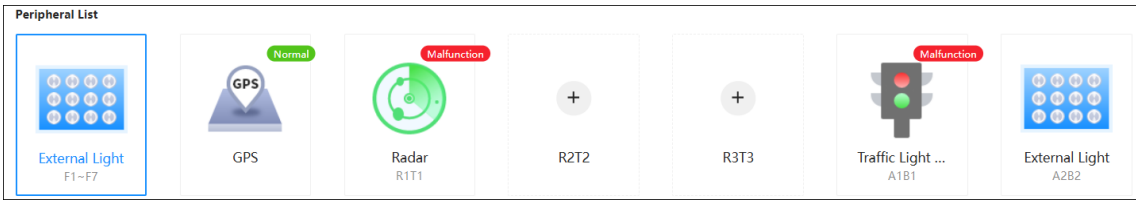


Figure 4-50 Device status (E-police mode for all-in-one enforcement cameras)



## External Light (F1–F7)

Figure 4-51 External light (F1–F7)

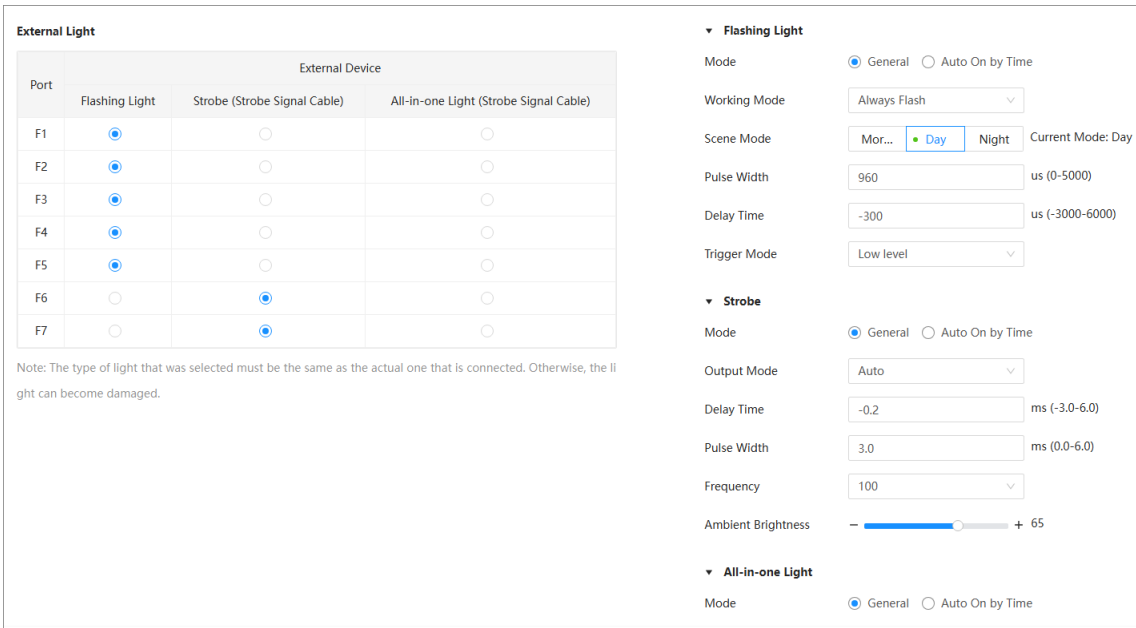


Table 4-25 Parameter description of external F1–F7

| Module         | Parameter | Description                                                                                                         |
|----------------|-----------|---------------------------------------------------------------------------------------------------------------------|
| Flashing Light | Mode      | <b>Auto On by Time</b> : The flashing light automatically adjusts the working mode according to the set time range. |

| Module           | Parameter           | Description                                                                                                                                                                                                                                                                                                                                                                            |
|------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | Working Mode        | <p>Select the working mode of flashing light.</p> <ul style="list-style-type: none"> <li>● <b>No Flash</b> : The flashing light is always off.</li> <li>● <b>Always Flash</b> : The flashing light is always on.</li> <li>● <b>Auto Flash</b> : The flashing light turns off according to the ambient brightness.</li> </ul>                                                           |
|                  | Scene Mode          | Includes <b>Morning</b> , <b>Day</b> and <b>Night</b> . Please select each of them and configure the parameters below.                                                                                                                                                                                                                                                                 |
|                  | Pulse Width         | The higher the value, the brighter the light.                                                                                                                                                                                                                                                                                                                                          |
|                  | Delay Time          | The delay time can be set from -3000 to 6000 microseconds, allowing for both pre-trigger and post-trigger control of the flashing light. For example, -450 microseconds indicates that the flashing light is already on 450 microseconds before the trigger signal is received.                                                                                                        |
|                  | Trigger Mode        | The default trigger mode is <b>Low level</b> , indicating that the flashing light will turn on when the trigger input detects a low voltage signal.                                                                                                                                                                                                                                    |
|                  | Copy to other ports | You can copy the configuration to other flashing light.                                                                                                                                                                                                                                                                                                                                |
| Strobe           | Mode                | <b>Auto On by Time</b> : The strobe automatically adjusts the working mode according the set time range.                                                                                                                                                                                                                                                                               |
|                  | Output Mode         | <p>Select the output mode of the strobe.</p> <ul style="list-style-type: none"> <li>● <b>Strobe Off</b> : The strobe is off.</li> <li>● <b>Strobe On</b> : The strobe is on.</li> <li>● <b>Auto Flash</b> : The strobe turns off according to the ambient brightness.</li> </ul>                                                                                                       |
|                  | Delay Time          | Keep it as default.                                                                                                                                                                                                                                                                                                                                                                    |
|                  | Pulse Width         | The higher the pulse width value, the brighter the strobe light.                                                                                                                                                                                                                                                                                                                       |
|                  | Frequency           | The default frequency is 120.                                                                                                                                                                                                                                                                                                                                                          |
|                  | Ambient Brightness  | Drag the slider to adjust the ambient brightness.                                                                                                                                                                                                                                                                                                                                      |
| All-in-one Light | Mode                | <b>Auto On by Time</b> : The all-in-one light automatically adjusts the working mode according the set time range.                                                                                                                                                                                                                                                                     |
|                  | Delay Time          | Keep it as default.                                                                                                                                                                                                                                                                                                                                                                    |
|                  | Scene Mode          | The configuration is the same as that of the flashing light.                                                                                                                                                                                                                                                                                                                           |
|                  | Working Mode        | <ul style="list-style-type: none"> <li>● <b>White Light Flashes</b> : Provides a natural light effect, making colors of the subject appear more vivid.</li> <li>● <b>IR Flashes+Normal Strobe</b> : The normal strobe provides visible light to ensure that the image is bright, while the infrared light provides auxiliary lighting, reducing disturbance to the subject.</li> </ul> |

GPS

Figure 4-52 GPS

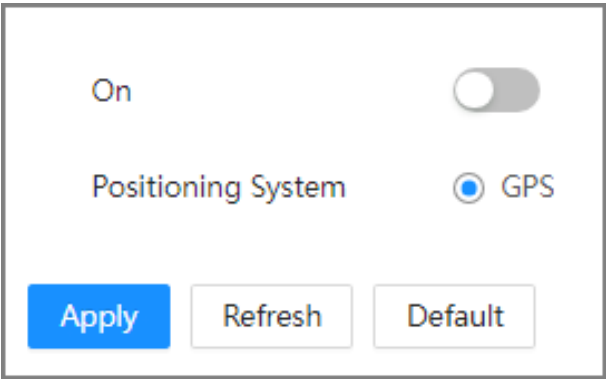


Table 4-26 Parameter description of GPS

| Parameter          | Description                                            |
|--------------------|--------------------------------------------------------|
| On                 | Click <input type="checkbox"/> to enable GPS function. |
| Positioning System | This function is enabled by default.                   |

PTZ (A1B1, A2B2)

Figure 4-53 PTZ

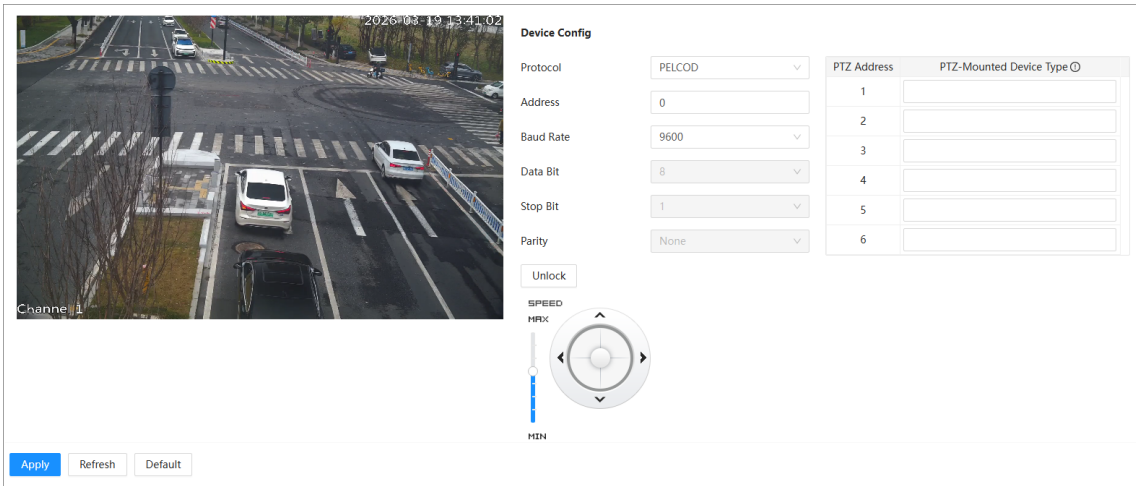


Table 4-27 Parameter description of PTZ

| Parameter | Description                                                                                          |
|-----------|------------------------------------------------------------------------------------------------------|
| Protocol  | Select the protocol as required.                                                                     |
| Address   | The default address is 1. Before communication, you need to configure the actual address of the PTZ. |
| Baud Rate | Select the baud rate as required.                                                                    |
| Data Bit  | The default address is 8.                                                                            |
| Stop Bit  | The default address is 1.                                                                            |

| Parameter               | Description                                                                     |
|-------------------------|---------------------------------------------------------------------------------|
| Parity                  | Select the parity type as required.                                             |
| PTZ-Mounted Device Type | Enter the device type mounted on PTZ.                                           |
| Unlock                  | Click <b>Unlock</b> to adjust PTZ. It will display <b>Unlocked</b> on the page. |

### Transparent (A1B1, A2B2)

Figure 4-54 Transparent

Serial Port

Type

RS-485

Protocol

Transparent

Data Bit

8

Stop Bit

1

Baud Rate

9600

Verification Type

None

Transparent Serial Port ...

☒ Enable

Port ...

6001

(6001-6010)

Apply

Refresh

Default

Table 4-28 Parameter description of transparent

| Parameter               | Description                                                                                                                                                                                                         |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                    | Only RS-485 ports are supported. <ul style="list-style-type: none"> <li>You cannot enable single lane and multiple lanes at the same time.</li> <li>One serial port can only enable one external device.</li> </ul> |
| Protocol                | Keep it as default.                                                                                                                                                                                                 |
| Baud Rate               | Keep it as default.                                                                                                                                                                                                 |
| Transparent Serial Port | Click <input type="checkbox"/> to enable the function, and then you can configure the serial port from 6001 to 6010.                                                                                                |

### External light (A1B1, A2B2)



Click [A1B1](#) / [A2B2](#) and select **External light** as the device type.  
Select the protocol from the drop-down menu.

Figure 4-55 External light (flashing light / all-in-one light)

| Serial Port                           |                                 | Device Config            |                                                                                                                                       |
|---------------------------------------|---------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Type                                  | RS-485                          | Select Device No.        | <div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>6</div> <div>7</div> </div> <div>Initialize Address</div> |
| Protocol                              | Flashing Light / All-in-on... ▾ | 1                        |                                                                                                                                       |
| Data Bit                              | 8                               | Detect Status            | <input type="radio"/> Yes <input checked="" type="radio"/> No                                                                         |
| Stop Bit                              | 1                               | Device Status            | -                                                                                                                                     |
| Baud Rate                             | 9600                            |                          | <div>Day</div> <div>Back to Strong Sunlight</div> <div>Facing Strong Sunlight</div> <div>Night</div> <div>Morning/Dusk</div>          |
| Verification Type                     | None                            |                          | <div>Enable IR Flashes</div> <div> <input checked="" type="radio"/> Yes           <input type="radio"/> No         </div>             |
| <b>Illuminator Working Parameters</b> |                                 |                          | <div>HID Flashing Brightness</div> <div>15 (1-16)</div>                                                                               |
| LED Flashing Times                    | -                               | LED Flashing Brightness  | 210 (1-255)                                                                                                                           |
| HID Flashing Times                    | -                               | Strobe LED Brightness    | 1 (1-20)                                                                                                                              |
| Light On Duration                     | -                               | Flashing LED Pulse Width | 1.8 ms(0.0-5.0)                                                                                                                       |
|                                       |                                 | Working Mode             | Auto ▾                                                                                                                                |
|                                       |                                 | Copy to Other Ports      | Copy                                                                                                                                  |
| <div>Apply Refresh Default</div>      |                                 |                          |                                                                                                                                       |

Figure 4-56 External light (strobe)

| Serial Port                           |          | Device Config           |                                                                                                                                                         |
|---------------------------------------|----------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                  | RS-485   | Select Device No.       | <div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>6</div> <div>7</div> <div>8</div> </div> <div>Auto Address Assignment</div> |
| Protocol                              | Strobe ▾ | 1                       |                                                                                                                                                         |
| Data Bit                              | 8        | Address                 | 2 (2-32)                                                                                                                                                |
| Stop Bit                              | 1        | Detect Status           | <input type="radio"/> Yes <input checked="" type="radio"/> No                                                                                           |
| Baud Rate                             | 9600     | Device Status           | -                                                                                                                                                       |
| Verification Type                     | None     | Light Brightness        | 20 (0-20)                                                                                                                                               |
|                                       |          | Connected Device Qua... | 2 (1-8)                                                                                                                                                 |
| <b>Illuminator Working Parameters</b> |          |                         |                                                                                                                                                         |
| Light On Duration                     | -        |                         |                                                                                                                                                         |
| <div>Apply Refresh Default</div>      |          |                         |                                                                                                                                                         |

Figure 4-57 External light (continuous light)

| Serial Port       |                  | Device Config                      |                                                                                                                                   |
|-------------------|------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Type              | RS-485           | Select Device No.                  | <div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>6</div> <div>7</div> <div>8</div> </div> <div>1</div> |
| Protocol          | Continuous Light | <div>Auto Address Assignment</div> |                                                                                                                                   |
| Data Bit          | 8                | Address                            | 2 (2-32)                                                                                                                          |
| Stop Bit          | 1                | Detect Status                      | <input type="radio"/> Yes <input checked="" type="radio"/> No                                                                     |
| Baud Rate         | 9600             | Device Status                      | -                                                                                                                                 |
| Verification Type | None             | Working Mode                       | Auto                                                                                                                              |
|                   |                  | Auto Mode                          | <input type="radio"/> Time <input checked="" type="radio"/> Brightness                                                            |
|                   |                  | Default Environment Bri...         | 30 (0-100)                                                                                                                        |
|                   |                  | Light Brightness                   | 20 (0-20)                                                                                                                         |
|                   |                  | Connected Device Qua...            | 2 (1-8)                                                                                                                           |

Table 4-29 Parameter description of external light

| Parameter     |                           | Description                                                                                                                         |
|---------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Serial Port   | Protocol                  | Flashing light/all-in-one light, strobe and continuous light are available.                                                         |
|               | Data Bit                  | Keep it as default.                                                                                                                 |
|               | Stop Bit                  | Keep it as default.                                                                                                                 |
|               | Baud Rate                 | Keep it as default.                                                                                                                 |
|               | Verification Type         | Keep it as default.                                                                                                                 |
| Device Config | Select Device No.         | Select the device No. as needed.                                                                                                    |
|               | Device No.                | Match the external light to the device No..                                                                                         |
|               | Detect Status             | Enable it to detect the status of external lights.                                                                                  |
|               | Scene mode                | You can choose from <b>Day</b> , <b>Back to Strong Sunlight</b> , <b>Night</b> and <b>Morning/Dusk</b> .                            |
|               | HID Flashing Brightness   | Set the parameters according to the actual situation.                                                                               |
|               | LED Flashing Brightness   |                                                                                                                                     |
|               | Strobe LED Brightness     |                                                                                                                                     |
|               | Flashing LED Pulse Width  |                                                                                                                                     |
|               | Working Mode              | You can select from <b>Auto</b> , <b>Force Set IR</b> and <b>Force Set White</b> to adjust the working environments.                |
|               | Auto Mode                 | Select auto mode by <b>Time</b> and <b>Brightness</b> . When selecting <b>Time</b> , you can click <b>Time</b> to add the schedule. |
|               | Connected Device Quantity | You can set the number of lights connected to the device.                                                                           |
|               | Copy to Other Ports       | Click <b>Copy</b> to copy the settings to other ports.                                                                              |

| Parameter |                    | Description                                                                                             |
|-----------|--------------------|---------------------------------------------------------------------------------------------------------|
|           | Initialize Address | Click <b>Initialize Address</b> to initialize the 485 addresses of flashing light and all-in-one light. |

After completing the setting of external lights, click **Apply**.

## Radar (RXTX, A1B1, A2B2)

- 
1. Click **A1B1 / A2B2** and select **Radar** as the device type.
  2. Select the protocol specific to the type of radars.
  3. Configure the radar parameters.

Figure 4-58 Radar parameters

| Serial Port                                                                                                        |                                                                                                                                                                         | Protocol          |                |
|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|
| Type                                                                                                               | RS-232                                                                                                                                                                  | Protocol          | ITARD-024SA-ST |
| Data Bit                                                                                                           | 8                                                                                                                                                                       | Stop Bit          | 1              |
| Baud Rate                                                                                                          | 9600                                                                                                                                                                    | Verification Type | None           |
| Device Config                                                                                                      |                                                                                                                                                                         |                   |                |
| Enabled Lanes                                                                                                      | <input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 |                   |                |
| Working Mode                                                                                                       | Send Beams by Vehicle                                                                                                                                                   |                   |                |
| Detection Direction                                                                                                | Approaching                                                                                                                                                             |                   |                |
| Angle                                                                                                              | 0 ° (0-45)                                                                                                                                                              |                   |                |
| Distance to Trigger Sna...                                                                                         | 23 m (18-28)                                                                                                                                                            |                   |                |
| Altitude                                                                                                           | 6 m (5-8)                                                                                                                                                               |                   |                |
| Wait Time After Capture                                                                                            | 1000 ms (0-10000)                                                                                                                                                       |                   |                |
| Radar SN                                                                                                           |                                                                                                                                                                         |                   |                |
| Starts Monitoring from ...                                                                                         | 1 (1-5)                                                                                                                                                                 |                   |                |
| Distinguish Target Inter...                                                                                        | 200 ms (30-2000)                                                                                                                                                        |                   |                |
| Sensitivity                                                                                                        | 3                                                                                                                                                                       |                   |                |
| Radar No.                                                                                                          | 2 (0-9)                                                                                                                                                                 |                   |                |
| The same radar number cannot be used at the same intersection.                                                     |                                                                                                                                                                         |                   |                |
| Wait Time Before Captu...                                                                                          | 3000 ms (0-10000)                                                                                                                                                       |                   |                |
| <input type="button" value="Apply"/> <input type="button" value="Refresh"/> <input type="button" value="Default"/> |                                                                                                                                                                         |                   |                |

Table 4-30 Parameter description of radar

| Parameter                    | Description                                                                                                                                                                                                                                            |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Radar protocol               | <p>The protocols vary from serial ports.</p> <ul style="list-style-type: none"> <li>• RS-232: Supports traffic light signal detector and traffic light signal detector 2.</li> <li>• RS-485: Supports External Light, Transparent, and PTZ.</li> </ul> |
| Working mode                 | You can select send beams by vehicle, send continuous beams and manually send beams.                                                                                                                                                                   |
| Detection direction          | You can select approaching, departing and both ways.                                                                                                                                                                                                   |
| Angle                        | You can adjust the angle of radar from 0° to 45°.                                                                                                                                                                                                      |
| Distance to Trigger Snapshot | Select the distance to trigger the snapshot.                                                                                                                                                                                                           |

| Parameter                    | Description                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Radar No.                    | <p>Select the ID of radar.</p>  <ul style="list-style-type: none"> <li>• Adjacent IPs generate distinct radar ID codes by default, preventing conflicts with identical radar IPs.</li> <li>• The radar numbers at the same intersection cannot be the same.</li> </ul>                  |
| Altitude                     | Set the altitude of the radar.                                                                                                                                                                                                                                                                                                                                           |
| Wait time before capture     | <p>You can set the duration between wait time before camera capturing and wait time after camera capturing.</p> <ul style="list-style-type: none"> <li>• If the radar detects the velocity of a vehicle within the duration, the velocity detected will be shown in the snapshot.</li> <li>• If not, there will be no vehicle velocity shown in the snapshot.</li> </ul> |
| Wait time after capture      |                                                                                                                                                                                                                                                                                                                                                                          |
| Starts monitoring from lane  | Set the lane No. as the starting point at which the radar starts detecting.                                                                                                                                                                                                                                                                                              |
| Distinguish target intervals | Targets will only be distinguished by the radar when they are detected separately over the interval.                                                                                                                                                                                                                                                                     |
| Sensitivity                  | The sensitivity of radar detecting targets. The bigger the value, the higher the sensitivity.                                                                                                                                                                                                                                                                            |
| Distance to trigger snapshot | The distance between the vehicle and the radar that triggers a snapshot by the Camera.                                                                                                                                                                                                                                                                                   |

## Traffic Light Signal Detector (A1B1)

+

1. Click **A1B1**, and then select **Traffic Light Signal Detector** as the device type.



Only in E-police mode, **Traffic Light Signal Detector** can be connected through A1B1.

2. Select the type of protocol. RS-485 is recommended.
3. Keep the default baud rate.

## 4.11 Storage

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

### 4.11.1 Storage Spot Configuration

Configure the storage path of snapshots and records.

#### Procedure

**Step 1** Select  > **Storage** > **Storage**.

**Step 2** Configure the storage parameters.

- Storage spot configuration

You can select storage path as needed.

- ◇ **Local Storage** : Store in the TF card, which has a limited capacity but offers continuous access to its storage, even during network failure. Videos can only be stored in TF card.
- ◇ **FTP** : Store in the FTP server, which offers a greater capacity but it will stop storing when the network fails.
- Record
  1. Select the checkbox to next to **Enable** to enable the record mode.
    - ◇ **Auto** : Record videos only when a traffic violation event is detected.
    - ◇ **Manual** : Record videos continuously.
  2. Select the record stream. You can select from **Main Stream** and **Sub Stream**.
- Local Storage
 

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

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

Figure 4-59 Storage spot configuration

**Step 3** Click **Apply**.

## 4.11.2 Local Storage

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

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

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

Figure 4-60 Local storage

## 4.11.3 FTP

FTP function can be enabled only when FTP is selected on "4.11.1 Storage Spot Configuration" page as snapshot storage spot. Only snapshots can be saved to the FTP server.

### Procedure

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

Figure 4-61 FTP

**Step 2** Configure the parameters.

Table 4-31 FTP parameters

| Parameter     | Description                                                                                                                                                                                                                                                                                              |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANR           | <p>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.</p> <p>Make sure that TF card is inserted in the Camera; otherwise, the offline transfer function cannot be enabled.</p> |
| Name Each FTP | Click  to enable this function, and then the parameters of <b>FTP Naming</b> can be different.                                                                                                                                                                                                           |
| Enable        | Enable FTP server storage.                                                                                                                                                                                                                                                                               |

| Parameter                 | Description                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protocol                  | <ul style="list-style-type: none"> <li>● <b>SFTP(Recommended)</b> : Secure File Transfer Protocol, a network protocol allows file access, and transfer over a secure data stream.</li> <li>● <b>FTP</b> : 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.</li> </ul> |
| Server IP                 | The IP address of FTP server.                                                                                                                                                                                                                                                                                                                                                       |
| Encode Mode               | Refers to the encode mode of Chinese characters when naming images. Only <b>UTF-8</b> is supported. After configuring <b>Server IP</b> and <b>Port</b> , click <b>test</b> to check whether the FTP server works.                                                                                                                                                                   |
| Picture Name Settings     | Set the naming rule of snapshots to be saved in FTP server. You can click <b>Help</b> to view the <b>Image Naming Rules</b> , or click <b>Reset</b> to restore the default naming rule.                                                                                                                                                                                             |
| Server1, Server2, Server3 | Supports uploading to multiple servers. You can save different types of snapshots to different servers. Select the snapshot types from <b>Upload Picture</b> .                                                                                                                                                                                                                      |
| Server IP                 | The IP address of FTP server.                                                                                                                                                                                                                                                                                                                                                       |
| Port                      | The port number of FTP server.                                                                                                                                                                                                                                                                                                                                                      |
| Username                  | The username and password of FTP server.                                                                                                                                                                                                                                                                                                                                            |
| Password                  |                                                                                                                                                                                                                                                                                                                                                                                     |
| Upload Picture            | Select event(s) and picture type(s) to be uploaded to each FTP server. Different modes support different events, and might differ from the actual page.                                                                                                                                                                                                                             |
| FTP Naming                | Configure the naming rule of snapshots to be saved in FTP server. You can click <b>Help</b> to view the naming rule, or click <b>Reset</b> to restore the default naming rule.                                                                                                                                                                                                      |

Step 3 Click **Apply**.

## 4.11.4 Platform Server

You can set the parameters of storing to the client, which generally refers to the platform.

### Prerequisites

You need to install and log in to platform first before you can store snapshots to platform server.

### Procedure

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

Figure 4-62 Platform server

**Step 2** Configure the parameters.

Table 4-32 Parameter description

| Parameter     | Description                                                                                                                                                                                                                                                                                                                                                                 |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANR           | <p>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.</p> <p></p> <p>Make sure that TF card is inserted to the Camera; otherwise, the function cannot be enabled.</p> |
| Mode          | <p>Select how the Camera will connect to the platform.</p> <ul style="list-style-type: none"> <li>● <b>IP</b> : Connect to platform server through an IP address.</li> <li>● <b>MAC</b> : Connect to platform server through a MAC address.</li> </ul>                                                                                                                      |
| Server        | Configure the IP address or MAC address of the platform server.                                                                                                                                                                                                                                                                                                             |
| Manual Upload | <p>You can manually upload images within the specified period to the server.</p> <p>Select a server you want to upload images to, configure the time, and then click <b>Upload</b>.</p>                                                                                                                                                                                     |

**Step 3** Click **Apply**.

## 4.12 System

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

### 4.12.1 General

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

### 4.12.1.1 General Settings

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

#### Procedure

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

Step 2 Configure the parameters.

Figure 4-63 General

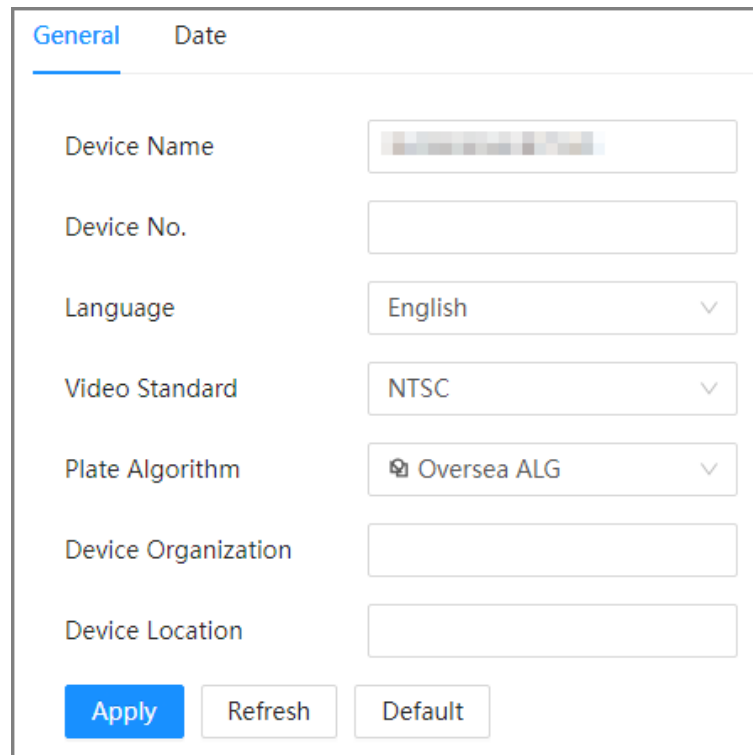


Table 4-33 Description of general parameters

| Parameter           | Description                                                                                                                                                                                                                                                                                                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device Name         | The device serial number consisting of letters, numbers, underlines and strikethroughs.                                                                                                                                                                                                                                                    |
| Device No.          | No. of the Camera. The device code cannot be overlaid with OSD information.                                                                                                                                                                                                                                                                |
| Language            | Language of the webpage. You need to log in again when switching to another language.                                                                                                                                                                                                                                                      |
| Video Standard      | <b>PAL</b> and <b>NTSC</b> are available. <ul style="list-style-type: none"><li>● <b>PAL</b> : Much more common around the world, and can be found in most of Western Europe, Australia, China, and elsewhere.</li><li>● <b>NTSC</b> : Mostly limited to North America, parts of South America, Japan, the Philippines and more.</li></ul> |
| Plate Algorithm     | Select the algorithm as required.                                                                                                                                                                                                                                                                                                          |
| Device Organization | The group or entity that uses the Camera.                                                                                                                                                                                                                                                                                                  |
| Device Location     | The locations where snapshots were taken by the Camera.                                                                                                                                                                                                                                                                                    |

Step 3 Click **Apply**.

### 4.12.1.2 Date Settings

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

#### Procedure

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

Step 2 Configure the parameters.

Figure 4-64 Date settings

Table 4-34 Description of date parameters

| Parameter            | Description                                                                                                                                                                                                                                                                           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date Format          | Select the date format. Three formats are available: <b>YYYY-MM-DD</b> , <b>MM-DD-YYYY</b> and <b>DD-MM-YYYY</b> .                                                                                                                                                                    |
| Time Format          | Select the time format. Two formats are available: <b>24-Hour</b> and <b>12-Hour</b> .                                                                                                                                                                                                |
| Time Zone            | The time zone where the Camera is located.                                                                                                                                                                                                                                            |
| System Time          | The current time of the Camera.<br>Click <b>Sync PC</b> to synchronize the time of the Camera to that of the computer.                                                                                                                                                                |
| DST                  | Click  to enable the <b>DST</b> (means daylight saving time) function, set the <b>Type</b> by <b>Date</b> or by <b>Week</b> , and then configure the <b>Start Time</b> and <b>End Time</b> of DST. |
| Time Synchronization | Time synchronization mode. You can select <b>NTP</b> (network time protocol) or <b>Positioning System Time Synchronization</b> .                                                                                                                                                      |

| Parameter           | Description                                                                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Server              | The IP address and the port number of NTP server.<br>Required when <b>NTP</b> is set to <b>Time Synchronization</b> .                                    |
| Port                |                                                                                                                                                          |
| Interval            | The time synchronization interval of the Camera and the NTP or satellite.                                                                                |
| Sync Time-Allowlist | Click <input type="checkbox"/> to enable <b>Sync Time-Allowlist</b> , and then only the added IP and devices can synchronize the time with the computer. |

Step 3 Click **Apply**.

## 4.12.2 Account Management

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

### 4.12.2.1 User

#### 4.12.2.1.1 Adding Users

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

#### Procedure

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

Figure 4-65 User



| User   Group   Clear User   ONVIF User                                   |     |          |       |                   |                 |                                                                                                                                                                               |
|--------------------------------------------------------------------------|-----|----------|-------|-------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="button" value="Add"/> <input type="button" value="Delete"/> |     |          |       |                   |                 |                                                                                                                                                                               |
| <input type="checkbox"/>                                                 | No. | Username | Group | Password Strength | Remarks         | Restricted Login   Operation                                                                                                                                                  |
| <input type="checkbox"/>                                                 | 1   | admin    | admin | Medium            | admin's account | /   |

Step 2 Click **Add**.

Figure 4-66 Add user (System)

Add

Username

Password

Confirm Password

Group

admin

Remarks

System

Live

Playback

Restricted Login

☒ All

☒ Account

☒ File Backup

☒ Network

☒ PTZ

☒ Manual Control

☒ System

☒ Storage

☒ Peripheral

☒ Security

☒ Sub Device Management

☒ System Info

☒ Event

☒ Camera

☒ Maintenance

OK

Cancel

Figure 4-67 Set login restriction

Add

Username

Password

Confirm Password

Group

admin

Remarks

System
Live
Playback
[Restricted Login](#)

IP Address
☒

IPv4

IP Address

Validity Peri...
☐

2026-03-20 08:00:00

2026-03-21 08:00:00

Period
☐

Time Plan

OK

Cancel

**Step 3** Configure the parameters.

Table 4-35 Description of parameters

| Parameter        | Description                                                                                                                                                                                         |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Username         | A unique identification of the user. You cannot use existed user name.                                                                                                                              |
| Password         | Enter your password and confirm it again.                                                                                                                                                           |
| Confirm Password | The password must consist of 8 to 32 non-blank characters and contain at least 2 types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).             |
| Group            | The group that users belong to. Each group has different permissions.                                                                                                                               |
| Remarks          | Describe the user.                                                                                                                                                                                  |
| System           | Select permissions as needed.<br><br>We recommend you give fewer permissions to normal users than premium users. |
| Live             | Select the live view authority for the user to be added.                                                                                                                                            |

| Parameter        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Restricted Login | <p>Set the PC address that allows the defined user to log in to the Camera, the validity period and time range. You can log in to the webpage with the defined IP in the defined time range of validity period.</p> <ul style="list-style-type: none"> <li>● IP address: You can log in to webpage through the PC with the set IP or one within the set IP segment.</li> <li>● Validity period: You can log in to webpage in the set validity period.</li> <li>● Period: You can log in to webpage in the set time range.</li> </ul> |

**Step 4** Click **Apply**.

The user is displayed on the username list.

## Related Operations

- Click  to edit the password, remarks, or permissions.  


For the admin account, you can only edit the password.

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

### 4.12.2.1.2 Resetting Password

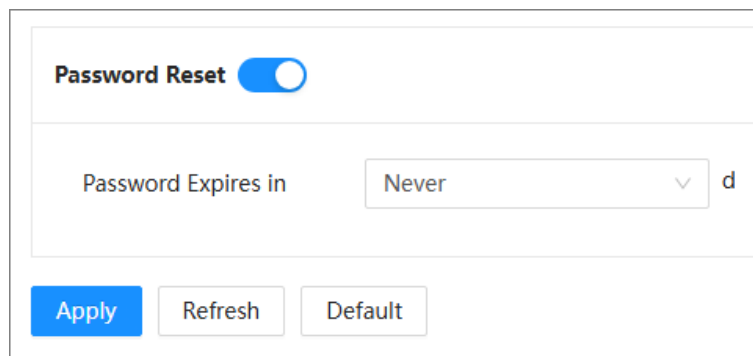
Enable the function, and then you can reset password by clicking **Forgot Password?** on the login page.

#### Procedure

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

**Step 2** Click  next to **Password Reset**.

Figure 4-68 Password reset




If the function is not enabled, you can only reset the password by resetting the Camera.

**Step 3** Configure the validity period of the password.

**Step 4** Click **Apply**.

You can now reset the password of users on the login page by clicking **Forgot Password?**.

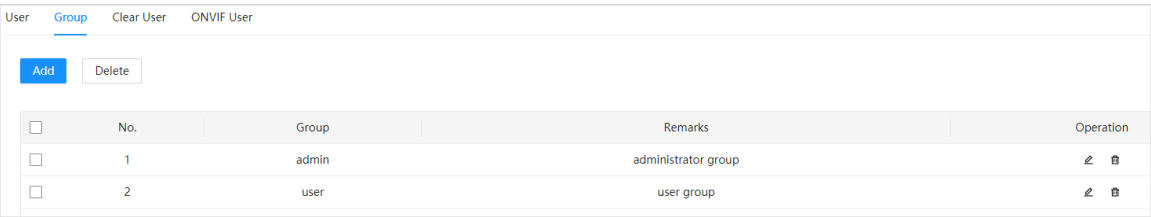
### 4.12.2.2 Adding User Groups

A group is a set of permissions. You can configure different groups to quickly assign permissions to different users. There are 2 groups named **admin** and **user** by default.

#### Procedure

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

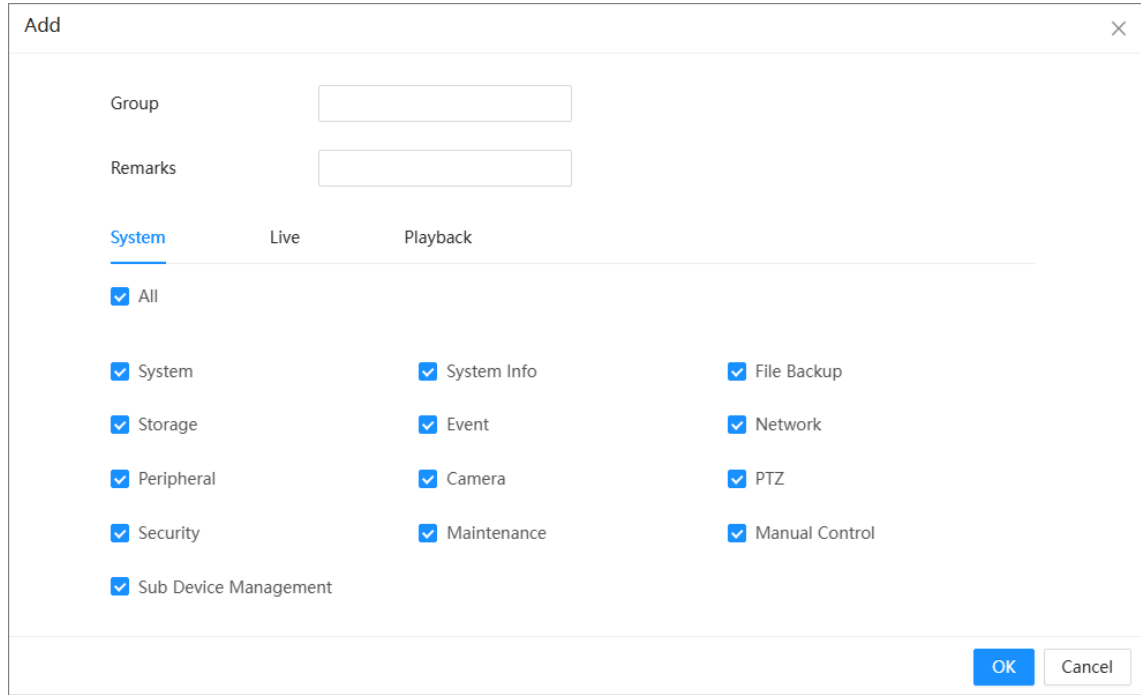
Figure 4-69 Group



| No. | Group | Remarks             | Operation                                                                                                                                                               |
|-----|-------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | admin | administrator group |   |
| 2   | user  | user group          |   |

**Step 2** Click **Add**.

Figure 4-70 Add group



Group:

Remarks:

**System**   Live   Playback

☒ All

☒ System   ☒ System Info   ☒ File Backup

☒ Storage   ☒ Event   ☒ Network

☒ Peripheral   ☒ Camera   ☒ PTZ

☒ Security   ☒ Maintenance   ☒ Manual Control

☒ Sub Device Management

OK Cancel

**Step 3** Enter the group name and remarks, and then select permissions.

**Step 4** Click **Apply**.

The group is displayed on the list.

#### Related Operations

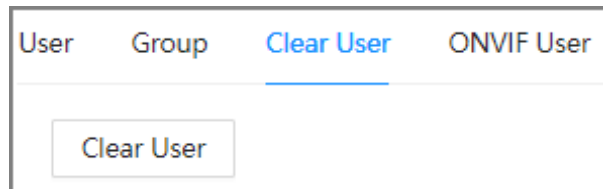
- Click  to edit the remarks and permissions.
- Click  to delete a group. The admin and user groups cannot be deleted.

### 4.12.2.3 Clearing User

#### Procedure

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

Figure 4-71 Clear user



Step 2 Click **Clear User**, and then enter the password to clear all information on custom users.



This operation will clear all information on custom users and restart the device, please be advised.

### 4.12.2.4 ONVIF User

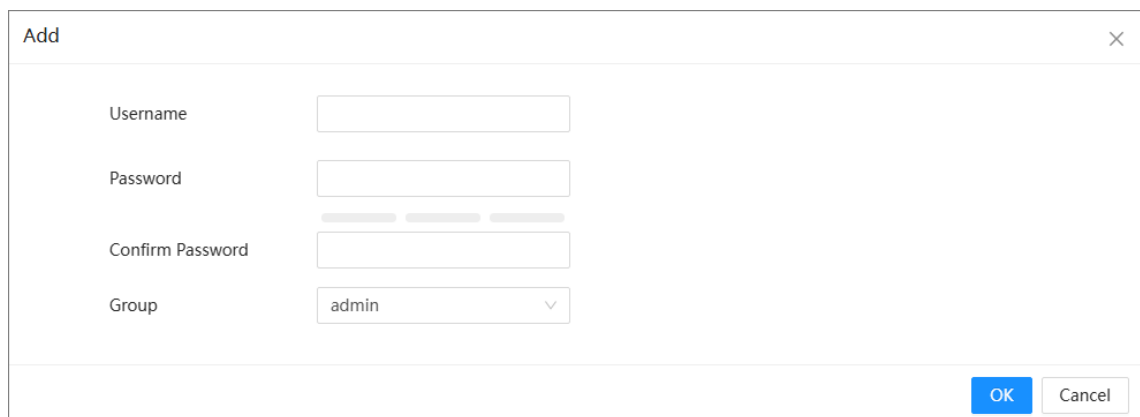
You can add, delete ONVIF users, and change their passwords.

#### Procedure

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

Step 2 Click **Add**.

Figure 4-72 Add user

A screenshot of a web interface showing a dialog box titled 'Add'. The dialog box contains four input fields: 'Username', 'Password', 'Confirm Password', and 'Group'. The 'Group' field is a dropdown menu with 'admin' selected. At the bottom right of the dialog box, there are two buttons: 'OK' and 'Cancel'.

Step 3 Configure the parameters.

Table 4-36 Parameter description

| Parameter        | Description                                                                                                                                                                                        |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Username         | A unique identification of the user. You cannot use existed username.                                                                                                                              |
| Password         | Enter your password and confirm it again.                                                                                                                                                          |
| Confirm Password | The password must contain 8 to 32 characters, and consist of at least 2 of the following types of characters: upper and lower case letters, numbers and special characters (excluding ' " ; : & ). |

| Parameter | Description                                                           |
|-----------|-----------------------------------------------------------------------|
| Group     | The group that users belong to. Each group has different permissions. |

Step 4 Click **OK**.

The user is displayed on the list.

## Related Operations

- Click  to edit the password, group, memo or authorities.



For the admin account, you can only change the password.

- Click  to delete the added user.



The admin account cannot be deleted.

# 5 Intelligent Functions

## 5.1 ITC

Configure smart plan, intelligent analysis, image, OSD, vehicle blocklist and allowlist, and view traffic flow statistics.

### 5.1.1 Configuring Smart Plan

The system presents intelligent schemes including ANPR and E-police.

#### Procedure

**Step 1** On the home page, select **ITC > Smart Plan**.

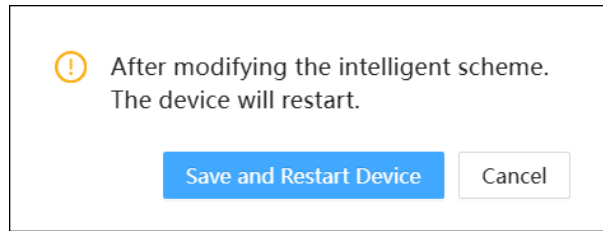
**Step 2** Select **ANPR** or **E-police**.

Table 5-1 Description of intelligent schemes

| Icon                                                                                | Scheme   | Applicable scenario                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Reference to                                                                 |
|-------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
|  | ANPR     | <p>It focuses on road monitoring by identifying and collecting information about passing vehicles, and it also includes extended functions for detecting vehicle behavior. This system is applicable to standard roads without traffic lights.</p> <p>In ANPR mode, it supports the selection of road types, which include expressways and urban roads. It also allows for the selection of scene types, including <b>General</b>, <b>No Flashing Light</b>, <b>New Industry Standard Mode 1</b>, and <b>New Industry Standard Mode 2</b>.</p> <ul style="list-style-type: none"><li>• General: using LED flashing lights at night;</li><li>• No Flashing Light: no flashing lights at night;</li><li>• New Industry Standard Mode 1: using 80 lux LED flashing lights;</li><li>• New Industry Standard Mode 1: using 200 lux LED flashing lights.</li></ul> | You can configure ANPR with reference to "5.1.1.1 Configuring ANPR".         |
|  | E-police | <p>The camera is installed at the intersection and works in conjunction with road features such as lane markings and traffic lights to detect violations such as running a red light, and more in single or multiple lanes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | You can configure E-police with reference to "5.1.1.2 Configuring E-police". |

**Step 3** Click **Apply** and then click **Save and Restart Device** when the prompt pops up to complete switching schemes.

Figure 5-1 Switch intelligent schemes



### 5.1.1.1 Configuring ANPR

Configure lines, lanes, events and detection rules in ANPR mode.

#### Procedure

**Step 1** On the home page, select **ITC** > **Smart Plan**.

**Step 2** Select intelligent scheme.

The default scheme is **ANPR**.

**Step 3** Click **AI Config**.

**Step 4** Configure the parameters.

1. Configure the lines.

Figure 5-2 Configure the lines (ANPR)

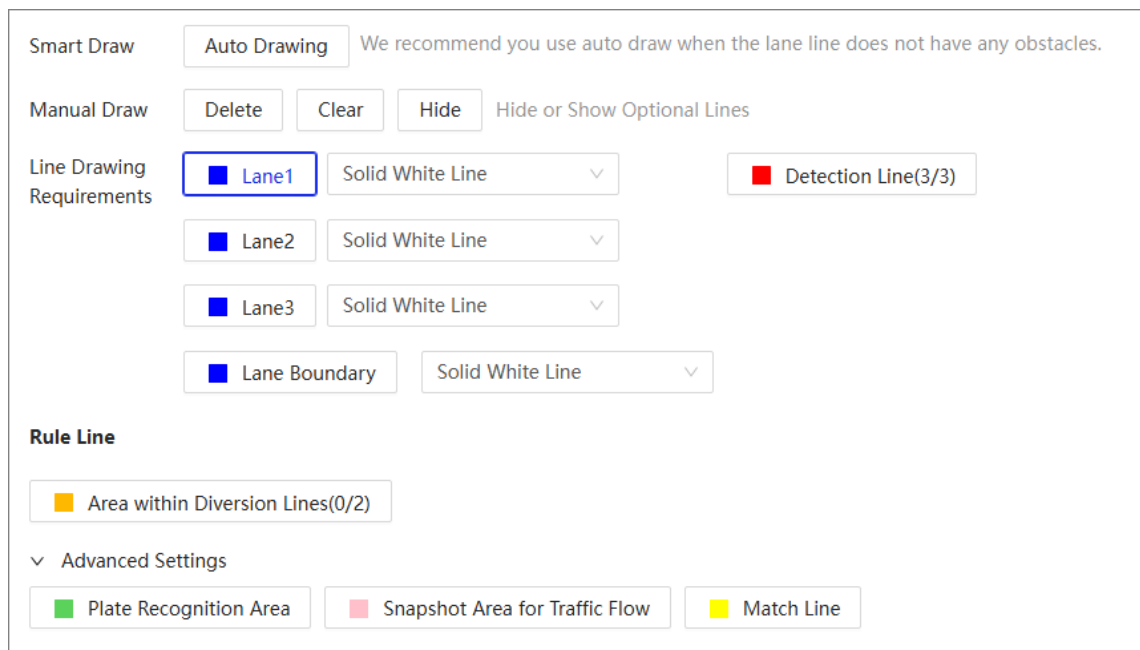


Figure 5-3 Configure the lines (E-police)

Smart Draw

Auto Drawing
We recommend you use auto draw when the lane line does not have any obstacles.

Manual Draw

Delete
Clear
Hide
Hide or Show Optional Lines

Line Drawing Requirements

Lane1
Solid White Line

Stop Line(3/3)
Back Line(3/3)
Front Line(3/3)

Lane2
Solid White Line

Left Turn Division Line
Right Turn Division Line

Lane3
Solid White Line

Lane Boundary
Solid White Line

Rule Line

Illegal U-Turn

Advanced Settings

Plate Recognition Area
Snapshot Area for Traffic Flow
Middle Line(0/3)
Waiting Area Boundaries(0/3)

Table 5-2 Line parameter description

| Parameter                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Smart Draw                | Click <b>Auto Drawing</b> , it will draw detection lines and areas for each lane.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Manual Draw               | You can click <b>Delete</b> to delete the lines, click <b>Clear</b> to clear all lines, or click <b>Hide</b> to hide unnecessary lines.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Line Drawing Requirements | <p>You can draw lane line and lane boundary, and then select different line type, including <b>Solid White Line</b>, <b>Broken White Line</b> and <b>Solid Yellow Line</b>. You can also draw detection lines for each lane.</p> <ul style="list-style-type: none"> <li>● <b>Detection Line</b> : When a vehicle crosses or passes over the line, the system will determine that the vehicle has entered the detection zone, and then start tracking and analyzing it.</li> <li>● <b>Stop Line</b> : The stop line for vehicles on an actual road.</li> <li>● <b>Front Line</b> : The capture line for the first image in red-light running and lane violation enforcement.</li> <li>● <b>Back Line</b> : Determines whether a vehicle is going straight, providing the third capture position for straight-direction red-light running and straight lane violations (in composite lanes).</li> <li>● <b>Left Turn Division Line</b> : Determines whether a vehicle is turning left, providing the third capture position for left-turn lane violations and left-turn red-light running (in composite lanes).</li> <li>● <b>Right Turn Division Line</b> : Determines whether a vehicle is turning right, providing the third capture position for right-turn lane violations and right-turn red-light running (in composite lanes).</li> </ul> |
| Rule Line                 | You can click <b>Area with Division Lines (0/2)</b> or <b>Illegal U-Turn</b> to draw the area. Then the system will judge whether the vehicle is illegally parked within the area with division lines.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |



| Parameter               | Description                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Passing Direction       | Select the passing direction of the vehicle from the drop-down box according to the actual situation.                                                                                                                                                                                                                                                                                               |
| Vehicle Min Speed Limit | The low speed limit that when reached, triggers the Camera to take snapshots.                                                                                                                                                                                                                                                                                                                       |
| Highest Speed Limit     | The high speed limit that when reached, causes a signal to be sent to the Camera to take snapshots.                                                                                                                                                                                                                                                                                                 |
| Flashing Light Mode     | Supports flash activation based on rules or lanes. <ul style="list-style-type: none"> <li>● By Rule: Each rule and snapshot can be independently configured with specific flash numbers. It is flexible but time-consuming.</li> <li>● By Lane: All rules for the same lane are configured with the same flash number. It is applicable for most of scenarios and simplifies operations.</li> </ul> |



- Small vehicles: All other vehicles excluding large vehicles, including vehicles with blue license plates, and gradient green license plates.
- Large vehicles: Vehicles with yellow license plates or yellow-green dual-color license plates.

### 3. Configure events for lanes.

Figure 5-5 Event configuration

#### Rule Parameter

Vehicle Priority
☒

Close-up Image
☒

Capture Direction
☐ Positive
☐ Reverse
☒ Both Ways

Vehicles that Trigger Sn...
☒ Non-Motor Vehicle
☒ Unlicensed Motor Vehicle
☒ Motorcycle

Number of Snapshots

Schedule

#### Trigger Source

☐ Radar
☒ Video Analysis

Note: The trigger sources are prioritized in descending order. When a source becomes ineffective, the one after it is used.

- Click **Add Event**.
- Select the event that you want to configure, and then click **OK**.



Click **Select All** to select all events.

- Configure the parameters of the added events. **ANPR** is used as an example.

Table 5-4 Parameter description of events added

| Parameter Category | Parameter Name                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rule Parameter     | Vehicle Priority               | Click  to enable the function. If the license plate of the vehicle does not appear when the vehicle crosses the detection line, another snapshot will be taken when the plate appears.                                                                                                                                                                                                                |
|                    | Close-up Image                 | The close-up of the violation vehicle.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                    | Capture Direction              | Vehicle driving direction to the Camera.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                    | Vehicle that Trigger Snapshots | Select the vehicle type to take snapshots.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                    | Number of Snapshots            | The number of snapshots.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                    | Schedule                       | <p>The period during which alarms will be triggered. To set a time, click <b>Setting</b>, and then drag the slider over the time table to configure the time.</p>  <ul style="list-style-type: none"> <li>Click <b>Clear</b> to reset time.</li> <li>Click <b>Refresh</b> to refresh time.</li> <li>Click <b>Copy</b> to copy the defined time to other days, and then click <b>Apply</b>.</li> </ul> |
|                    | Sensitivity                    | Set the sensitivity for capture. The higher the value, the higher the sensitivity.                                                                                                                                                                                                                                                                                                                                                                                                     |
|                    | Filter Parked Vehicles         | When selecting the speeding event, the parked vehicles will be filtered.                                                                                                                                                                                                                                                                                                                                                                                                               |
|                    | Illegal Flashing Light         | Click  to enable the illegal flashing light function. It will take effect when the video triggers snapshots and the radar measures the radar.                                                                                                                                                                                                                                                       |
|                    | Time Triggered                 | Set the time to trigger an alarm event. An alarm will be generated when the event duration exceeds the trigger time.                                                                                                                                                                                                                                                                                                                                                                   |
|                    | Interval                       | The interval between two alarm events. The time ranges from 10 to 21,600 seconds.                                                                                                                                                                                                                                                                                                                                                                                                      |
|                    | Confidence Level               | Set the confidence level for violation capture.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                    | Snapshot Setting               | Selects the hand position for holding the mobile phone.                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                    | Alarm Time                     | An alarm will be triggered when the duration of an event exceeds the set time. The time range is 90 to 21,600 seconds.                                                                                                                                                                                                                                                                                                                                                                 |
|                    | Threshold                      | An alarm is generated when the detected value exceeds the set threshold.                                                                                                                                                                                                                                                                                                                                                                                                               |
|                    | Judgement Standard             | Set the standard that a non-motorized vehicle is overloaded. When exceeding a certain threshold, it will be considered overloaded.                                                                                                                                                                                                                                                                                                                                                     |

| Parameter Category                                | Parameter Name   | Description                                                                                                                                                                                                                                                       |
|---------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recording Parameters<br>(Memory Card is Required) | Record Linkage   | Click  to enable the record linkage. Supports recording vehicles captured and linking the capture and recording.                                                                 |
|                                                   | Record Duration  | Set the total recording time for violation capture. The time range is 5 to 20 seconds.                                                                                                                                                                            |
|                                                   | Pre-event Record | Set the pre-recording time before capturing. The time range is 0 seconds to 5 seconds.<br><br>The recording duration exceeds the pre-event recording time by at least 3 seconds. |
| Trigger Source                                    | Video Analysis   | Set the trigger source as <b>Radar</b> and <b>Video Analysis</b> .<br>                                                                                                           |
|                                                   | Radar            | The trigger sources are prioritized in descending order. When a source becomes ineffective, the one after it is used.                                                                                                                                             |



- The system supports configuring the events, including **Driver Not Wearing Seatbelt , Front Seat Passenger Not Wearing Seatbelt, Cross Division Line, Short distance driving, Speeding**, and more.
- For details on configuring other events, you can refer to ANPR event.

4. (Optional) Configure the global parameters.

### Figure 5-6 Global configuration

▼

Global Config

Max Speed

350

km/h (0-350)

Speed Verification

Spacing between Vehicle...

2000

cm (0-25500)

Violation Priority

All Violations

▼

Capture Interval Mode (Supports checkpoint scene and loop mode)

☐

I Frame Interval

☒

Self-adaptive

0km/h ≤ Low Speed <

30

≤ Medium ≤

120

< High Speed ≤ 350km/h

Frame Interval for Low-Speed

3

▼

Frame Interval for Medium-Speed

2

▼

Frame Interval for High-Speed

1

▼

Apply

Refresh

### Table 5-5 Parameter description of global configuration

| Parameter                | Description                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Max Speed                | Maximum speed detection limit. If the vehicle is detected exceeding the speed limit, the system will automatically intervene to reduce and maintain the speed within the limit.                                                                                                                                                                                                           |
| Spacing between Vehicles | Set the minimum spacing between two consecutive vehicles. When the system detects that the vehicle spacing falls below this value, it might trigger the determination or recording of specific events.                                                                                                                                                                                    |
| Violation Priority       | <p>Selects <b>All Violations</b> and <b>Violations with Highest Priority</b></p> <ul style="list-style-type: none"> <li>● All Violations: Capture and report all illegal events of vehicles in the lane.</li> <li>● Violations with Highest Priority: When a passing vehicle triggers multiple illegal events simultaneously, only report the event with the highest priority.</li> </ul> |
| I Frame Interval         | Set the time interval between two consecutive captured images to a fixed number of frames.                                                                                                                                                                                                                                                                                                |

| Parameter                               | Description                                                                                                                              |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Self-adaptive                           | Set different capture frame intervals based on the vehicle speed. Supports configuring frame intervals for low, medium, and high speeds. |
| Frame Interval for Low-speed Capture    | Set the frame interval for low-, medium-, and high-speed capture.                                                                        |
| Frame Interval for Medium-speed Capture |                                                                                                                                          |
| Frame Interval for High-speed Capture   |                                                                                                                                          |

Step 5 Click **Apply**.

### 5.1.1.2 Configuring E-police

Configure lines and detection rules for lanes.

#### Procedure

Step 1 On the home page, select **ITC > Smart Plan**.

Step 2 Select **E-police**, and then click **Apply**.

Step 3 You can select **General Mode** or **Snapshot Line Mode**.

- General Mode: The Camera will capture vehicles and video capture will be linked to the flashing light.
- Snapshot Line Mode: The Camera will capture vehicles at the snapshot line and video capture will not be linked to the flashing light.

Step 4 Click **AI Config**. The setting of AI config in E-police mode is the same as that in ANPR mode. For details, see "5.1.1.1 Configuring ANPR".

Step 5 Click **Traffic Light Config**, and then adjust the image color according to the color of the traffic light to avoid abnormalities in the snapshots captured at traffic lights.

1. Click **Digital Zoom**, and then drag your mouse to draw a frame around the traffic lights on the image, and then the traffic lights are zoomed into.
2. Click **Draw Light Group Area** and drag your mouse on the image to draw the traffic lights frame.
3. Click  to configure parameters.

Figure 5-7 Configure light groups

Light Group Config

Name: Traffic Light1

Running-Red-Light Trig...: ☒ Red Light On ☐ Green Light Off

Direction: ☒ ↑ ☐ ↖ ☐ ↗ ☐ ↘

Light Type: ☒ ☒ ☒ ☒ ☒ ☒

Shape: ☐ Number ☒ Arrow ☐ Round ☐ Aux ☐ Other

Top-left Corner Coordin...: 1360, 5296 (0-8191)

Bottom-right Corner Co...: 1779, 5683 (0-8191)

Cancel OK

4. Configure other parameters.

Table 5-6 Description of traffic lights

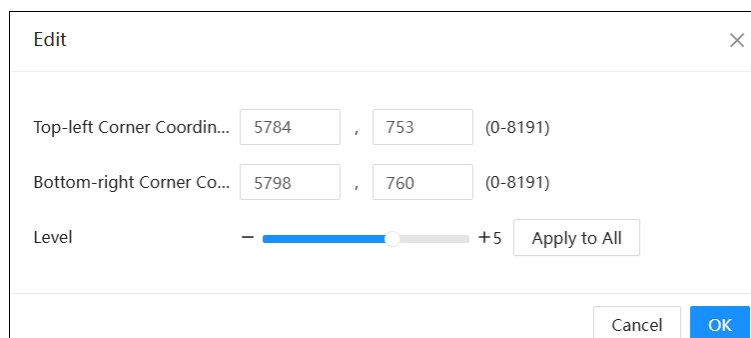
| Parameter                      | Description                                                                                                                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Correction Mode                | <ul style="list-style-type: none"> <li>Red light correction: Correct the image color according to the red light signal.</li> <li>Force correction: Correct the image color directly.</li> </ul> |
| Correction Config              | You can enable the image and video correction individually and adjust the day and night level, sensitivity and brightness threshold.                                                            |
| Signal Source of Light Group   | The signal source can be selected from video detection mode 1, video detection mode 1, RS-485 traffic signal detector, and wired traffic signal detector.                                       |
| Standard for Running-Red-Light | You can set the standards for determining whether a vehicle runs the red light including lane direction, driving direction and lane or driving direction.                                       |
| Green Light Delay              | You can set the delay time for green light from 0 seconds to 30 seconds.                                                                                                                        |
| Force Red Light                | Select one or more directions and click the icon to force the traffic light of the corresponding direction to red.                                                                              |

5. Click **Apply**.

**Step 6** Click **Lens Flare Reduction** to configure parameters so as to reduce the influence of other light sources and improve the recognition rate.

1. Enable **Night On**.
2. Click **Digital Zoom**, and then select the region for lens flare control on the image.
3. Click **Draw Light Group Area**, and then click and drag to select the light source with lens flare on the image.
4. Click  to configure parameters.

Figure 5-8 Edit the parameters of light



The 'Edit' dialog box contains the following fields and controls:

- Top-left Corner Coordin...:** Input fields for 5784 and 753, with a range indicator (0-8191).
- Bottom-right Corner Co...:** Input fields for 5798 and 760, with a range indicator (0-8191).
- Level:** A slider control ranging from - to +5, currently set at 0.
- Buttons:** 'Apply to All', 'Cancel', and 'OK'.

5. Click **Apply**.

## 5.1.2 Intelligent Analysis

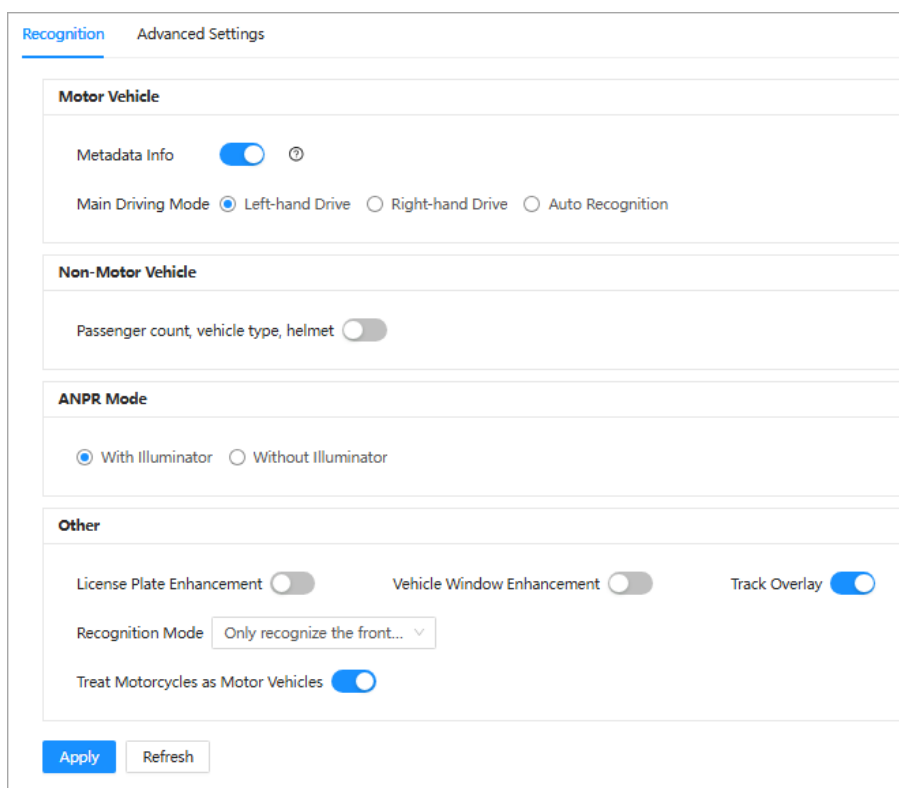
Configure the intelligent functions of the Camera.

### 5.1.2.1 Recognition

#### Procedure

Step 1 On the home page, select **ITC > Intelligent Analysis > Recognition**.

Figure 5-9 Recognition



The 'Recognition' Advanced Settings page includes the following sections and controls:

- Motor Vehicle**
  - Metadata Info:** Toggle switch (ON).
  - Main Driving Mode:** Radio buttons for Left-hand Drive (selected), Right-hand Drive, and Auto Recognition.
- Non-Motor Vehicle**
  - Passenger count, vehicle type, helmet:** Toggle switch (OFF).
- ANPR Mode**
  - With Illuminator / Without Illuminator:** Radio buttons (With Illuminator selected).
- Other**
  - License Plate Enhancement:** Toggle switch (OFF).
  - Vehicle Window Enhancement:** Toggle switch (OFF).
  - Track Overlay:** Toggle switch (ON).
  - Recognition Mode:** Dropdown menu (Only recognize the front...).
  - Treat Motorcycles as Motor Vehicles:** Toggle switch (ON).
- Buttons:** 'Apply' and 'Refresh'.

Table 5-7 Parameter description of recognition

| Parameter         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Motor Vehicle     | <ul style="list-style-type: none"> <li>Click  to enable structure information of motor vehicle, including vehicle logo, vehicle type, smoking, calling and more. Hover the mouse over  to view the detailed information of structure information.</li> <li>Supports 3 driving modes: Left-hand drive, right-hand drive, and auto recognition. The system sets <b>Auto Recognition</b> by default.</li> </ul>                                                                      |
| Non-motor Vehicle | Identifies non-motor vehicle attributes, including passenger count, vehicle type and helmet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ANPR Mode         | You can select <b>With Illuminator</b> or <b>Without Illuminator</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Other             | <ul style="list-style-type: none"> <li><b>License Plate Enhancement</b> : Enhances number plate image effect (function reserved).</li> <li><b>Vehicle Window Enhancement</b> : Enhances vehicle window image effect.</li> <li><b>Track Overlay</b> : Enable track overlay, and then you can see each vehicle is covered by a green frame on <b>Live</b> page, which means each vehicle is tracked.</li> <li><b>Recognition Mode</b> : Select the recognition mode for the plate number as required.</li> <li><b>Treat Motorcycles as Motor Vehicle</b> : When the function enabled, the Camera recognizes motorcycles as motor vehicles.</li> </ul> |

Step 2 Click **Apply**.

### 5.1.2.2 Advanced Settings

You can make a custom algorithm.

#### Procedure

Step 1 On the home page, select **ITC > Intelligent Analysis > Advanced Settings**.

Step 2 Configure a custom algorithm.



You can hover the mouse over  to view the detailed information on the algorithm expressions.

Step 3 Click **Apply**.

## 5.1.3 Configuring Image

### 5.1.3.1 Configuring Picture Parameters

You can configure the parameters of the image of the captured vehicle.

#### Procedure

Step 1 On the home page, select **ITC > Image Config > Picture Parameter**.

Figure 5-10 Picture parameters

Picture Parameter

Snapshot Composition

Cutout Config

Original Image

☐ Quality

6 (Best)

▼

☒ Size

1536

KB(500-2048)

Composite Picture

Image Resolution

Normal Proportion

▼

☒ Quality

3

▼

☐ Size

2048

KB(1024-5120)

Close-up Image

☐ Quality

6 (Best)

▼

☒ Size

1024

KB(200-2048)

Accurate Encoding

☐

Apply

Refresh

Default

**Step 2** Configure the parameters.

Table 5-8 Parameter description of image

| Parameter         | Description                                                                                                                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Original Image    | The original picture of the vehicle that is violating traffic rules.                                                                                                                                             |
| Composite Picture | The composite picture of multiple images. You can set the resolution of the composite picture as <b>Normal Proportion</b> or <b>1/4 Size</b> .                                                                   |
| Close-up Image    | The close-up image of the vehicle at the intersection.                                                                                                                                                           |
| Quality           | Select the level of picture quality.                                                                                                                                                                             |
| Size              | Limit the size of the picture.                                                                                                                                                                                   |
| Accurate Encoding | The system prioritizes encoding critical regions. You can adjust the encoding size by moving the slider left or right, thus achieving optimal encoding quality for user-defined critical regions in the picture. |

**Step 3** Click **Apply**.

### 5.1.3.2 Configuring Snapshot Composition

Select event types and set the combination mode, combination sequence and picture size to form an image combined with the information you set.

#### Procedure

- Step 1** On the home page, select **ITC > Image Config > Snapshot Composition**.
- Step 2** Click ☐ next to **Composite Picture**, and then select the event type as required.
- Step 3** (Optional) Click **Upload All**, and then select the event type as required to upload the original and composite pictures.
- Step 4** Configure the parameters.

Figure 5-11 Snapshot composition

Picture Parameter

Snapshot Composition

Cutout Config

Composite Picture

☒

ANPR

☒

Violation

Upload All

☒

ANPR

☒

Violation

OSD Time for Composit...

First Picture

▼

Combination Mode for ...

☒

12

34

☐

13

24

Combination Mode for ...

☒

12

3S

☐

1S

32

☐

S1

23

☐

S3

12

☐

1

23

☐

123

☐

2

13

☐

13

2

Combination Mode for ...

☐

1

2

☒

12

☐

12

S

☐

S

12

Composite Sequence of...

☐

S

1

☐

1

S

☒

S

1

☐

1

S

Feature Picture No.

Auto

▼

Close-up Area

Customized Width

5040

Altitude

5040

(600-8192)

Apply

Refresh

Default

Table 5-9 Parameter description of snapshot composition

| Parameter                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Combination Mode for X Pictures | <div>The method of combining composite images: Arrange the original images in order according to their sequence numbers to form a new composite image.</div> <div></div> <div><ul style="list-style-type: none"><li>S means that there is a feature in the composite pictures, and it is the enlarged feature of a snapshot.</li><li>Supports selecting the serial number of original pictures that require feature from the drop-down list.</li></ul></div> |
| OSD Time for Composite Image    | Select the OSD time for the first picture or last violation picture.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| Parameter                         | Description                                                                                                                                                                                |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Composite Sequence of One Picture | The composition order of one picture.  means that the composite picture is arranged from top to bottom. |
| Close-up Area                     | Set the width and altitude of the close-up area.                                                                                                                                           |

Step 5 Click **Apply**.

### 5.1.3.3 Configuring Cutout

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

#### Procedure

Step 1 On the home page, select **ITC > Image Config > Cutout Config**.

Step 2 Configure the parameters.

Figure 5-12 Configure cutout

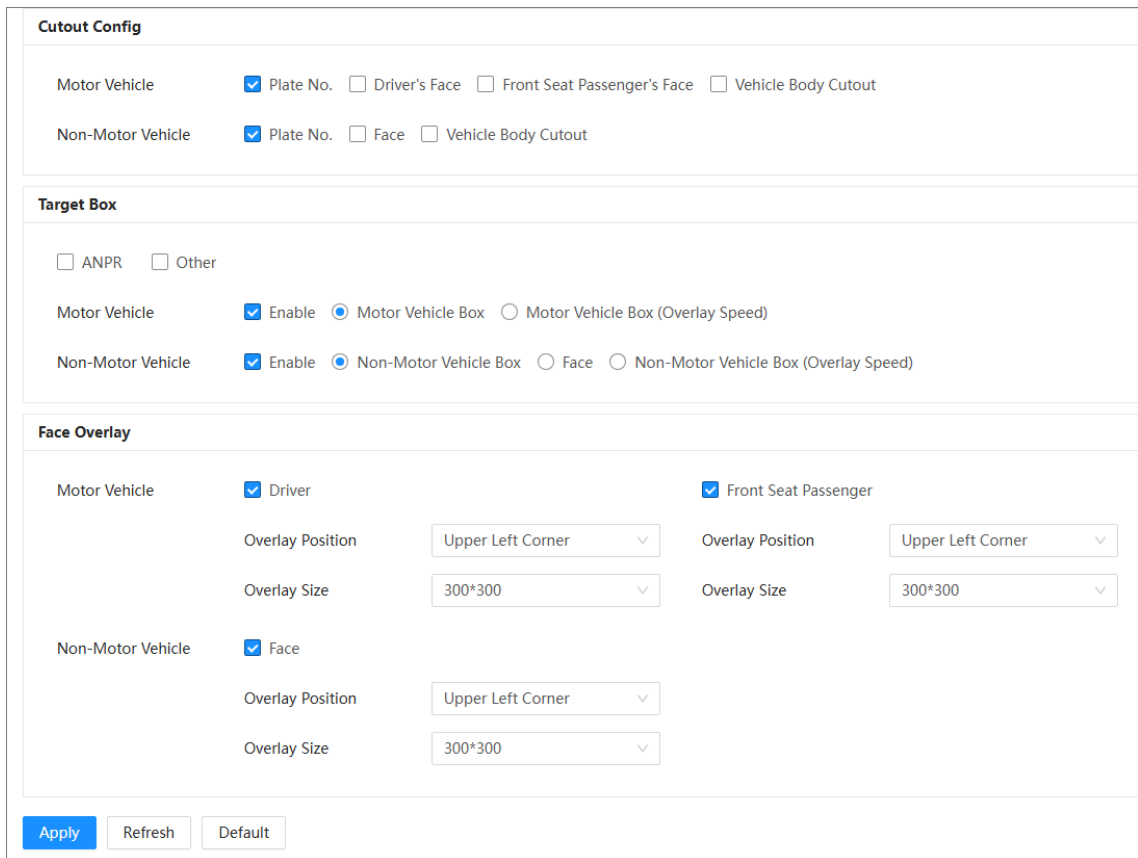


Table 5-10 Parameter description of cutouts

| Parameter     | Description                                                                                    |
|---------------|------------------------------------------------------------------------------------------------|
| Cutout Config | Select the cutout type for motor vehicles and non-motor vehicles.                              |
| Target Box    | Configure the overlay track box on the driver of motor vehicles and non-motor vehicles.        |
| Face Overlay  | Configure the position and size of the face picture for motor vehicles and non-motor vehicles. |

Step 3 Click **Apply**.

## 5.1.4 Traffic Flow Statistics

### 5.1.4.1 Flow Data

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

#### Procedure

Step 1 Select **ITC > Traffic Flow Statistics > Flow Data**.

Figure 5-13 Flow data

Flow Data Traffic Flow

Traffic Flow 1 2 3 4 5 ☐ Include Non-Motor Vehicles

Statistical Cycle 60 s (1-15000)

Flow Upper Limit 10000 (100-10000)

Apply Refresh Default

Step 2 Select the lanes that you want to make flow statistics and click the checkbox for **Include Non-Motor Vehicles** as needed.

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

Step 4 Click **Apply**.

### 5.1.4.2 Traffic Flow

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

Figure 5-14 Traffic flow

Flow Data Traffic Flow

Export All Clear All

Current Lane 1 Clear Export

| No. | Start Time          | Period... | Traffic | Average Speed(km/h) | Time Occupancy Rate | Space Occupancy Rate | Time Headway(s/vehic... | Space Headway(m/vehic... | Queue Length(m) | Road Status |
|-----|---------------------|-----------|---------|---------------------|---------------------|----------------------|-------------------------|--------------------------|-----------------|-------------|
| 3   | 2025-01-10 05:36:00 | 60        | 0       | 30.22               | 0.00%               | 0.00%                | 0.00                    | 0.00                     | 0.00            | Clear       |
| 2   | 2025-01-10 05:35:00 | 60        | 0       | 24.70               | 0.00%               | 0.00%                | 0.00                    | 0.00                     | 0.00            | Clear       |
| 1   | 2025-01-10 05:34:00 | 60        | 0       | 43.39               | 0.00%               | 0.00%                | 0.00                    | 0.00                     | 0.00            | Clear       |

< 1 > 100 / page

Details

|               |                |                |                            |
|---------------|----------------|----------------|----------------------------|
| Unknown: 0    | Large Bus: 0   | Heavy Truck: 0 | Medium Truck: 0            |
| Sedan: 0      | Van: 0         | Light Truck: 0 | Tricycle: 0                |
| Motorcycle: 0 | Pedestrian: 0  | Medium Bus: 0  | Dangerous Goods Vehicle: 0 |
| SUV: 0        | MPV: 0         | Bus: 0         | Pickup: 0                  |
| Minicar: 0    | Fuel Tanker: 0 | Tank Truck: 0  | Refrigerated Truck: 0      |

- Click **Clear All** to clear flow information.

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

## 5.1.5 OSD Configuration

### 5.1.5.1 Configuring Original Picture OSD

#### Procedure

**Step 1** On the home page, select **ITC > OSD Config > Original Picture OSD**.

Figure 5-15 Original picture OSD

**Step 2** Configure the OSD black edge location, OSD separator and close-up image OSD.

**Step 3** Configure OSD parameters.

- **Line Feed** : To start a new line after a certain OSD option, click the OSD option, and then click **Line Feed**.
- **Clear** : Delete all the selected OSD options.
- Hover the mouse over the selected OSD options, and then click  to delete the option.
- Click a selected OSD option, and then configure the prefix, suffix and delimiter quantity of the OSD option.
- Click **Apply to All** to apply the OSD option to the selected rule.

**Step 4** Configure the display settings.

Figure 5-16 Display settings

Display Settings

Font Color

A

▼

Font Size

56

▼

OSD Location

X

0

Y

0

- **Font Color** : Custom font color of the OSD.
- **Font Size** : Custom font size of the OSD.
- **OSD Location** : Configure the display position of the OSD.

Step 5 Click **Apply**.

### 5.1.5.2 Configuring Combination Picture OSD

#### Procedure

Step 1 Select **ITC > OSD Config > Combination Picture OSD**.

Figure 5-17 Combination picture of OSD

Original Picture OSD

Combination Picture OSD

Area1

+

Rule

ANPR

▼

Apply to All

OSD Option

Clear

Line Feed

Time

Location

Day

Lane No.

Plate No.

Vehicle Color

Vehicle Speed

Smoking

Calling

Event Name

Display Settings

Font Color

A

▼

Font Size

56

▼

OSD Location

X

0

Y

0

Apply

Refresh

Default

Global Config

Black Edge Location

Above

▼

OSD Separator

☐ Blank
 ☐ Vertical Bar
 ☒ Custom

-

Snapshot Info

Time

Location

Day

Device No.

GPS Info

Lane No.

Plate No.

Plate Color

Plate Type

Logo

Vehicle Type

Vehicle Color

Vehicle Size

Vehicle Speed

Trigger Source

Seatbelt

Smoking

Calling

Event Name

Speeding Ratio

Underspeed Ra...

Region

Province

Highest Speed ...

- Step 2    Configure the parameters. For details, see "5.1.5.1 Configuring Original Picture OSD".
- Step 3    Click **Apply**.

# 5.1.6 Configuring Blocklist and Allowlist

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

## 5.1.6.1 Allowlist Search

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

### Procedure

- Step 1    On the home page, select **ITC > Vehicle Blocklist/Allowlist > Allowlist**.

Figure 5-18 Allowlist

| No.     | Plate No. | Plate Color | Plate Type | Owner Name | Vehicle Type | Vehicle Color | Start Time | End Time | Operation |
|---------|-----------|-------------|------------|------------|--------------|---------------|------------|----------|-----------|
| No data |           |             |            |            |              |               |            |          |           |

- Step 2    Add a plate.
1. Click **Add**.

Figure 5-19 Add

The 'Add' dialog box contains the following fields and controls:

- \* Plate No.:** Text input field containing 'ZF123456'.
- Owner Name:** Text input field containing 'Lee'.
- Plate Type:** Dropdown menu with 'Military Vehicle' selected.
- Plate Color:** Dropdown menu with 'Yellow Background with ...' selected.
- Vehicle Type:** Dropdown menu with 'Large-sized' selected.
- Vehicle Color:** Dropdown menu with 'White' selected.
- Start Time:** Date picker showing '2023-08-22'.
- End Time:** Date picker showing '2023-08-22'.
- Add More:** A checkbox that is checked, followed by the text 'Add More'.
- Buttons:** 'Cancel' and 'OK' buttons at the bottom right.

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

## Related Operations

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

Figure 5-20 Encrypt configuration (1)

The dialog box is titled "Export". It contains a section labeled "Encryption" with two radio buttons: "Close" (which is selected) and "Open". Below this, a red warning message states: "Please keep unencrypted files well to avoid data leakage." At the bottom right, there are two buttons: "Cancel" and "OK".

Figure 5-21 Encrypt configuration (2)

The dialog box is titled "Import". It features a large rectangular area in the center with a blue icon of a document with a checkmark and the text "Select File" below it. Below this area is a button labeled "Download Template". At the bottom right, there is a "Cancel" button.

### 5.1.6.2 Blocklist Search

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

Select **ITC** > **Vehicle Blocklist/Allowlist** > **Blocklist**, and then click  to enable the blocklist function.

Figure 5-22 Blocklist search

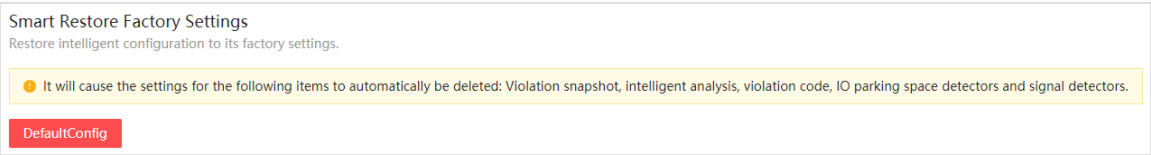
The interface shows two tabs: "Allowlist" and "Blocklist", with "Blocklist" being the active tab. Below the tabs, there is a "Blocklist" label and a toggle switch that is turned on. To the right of the toggle are four buttons: "Add", "Import", "Export", and "Clear". Further right is a search bar with the placeholder text "Search for plate..." and a "Search" button. Below these elements is a table with the following columns: "No.", "Plate No.", "Plate Color", "Plate Type", "Owner Name", "Vehicle Type", "Vehicle Color", "Start Time", "End Time", and "Operation". The table is currently empty, and a "No data" message with a folder icon is displayed in the center.

The search, import, and export of blocklist are similar to that of allowlist. For details, see "5.1.6.1 Allowlist Search".

### 5.1.7 Smart Restore Factory Settings

Select **ITC > Smart Restore Factory Settings**, and then click **DefaultConfig** to restore configurations of the Camera to default settings.

Figure 5-23 Smart restore factory settings



This function will cause violation, snapshot, intelligent analysis, violation code, IO parking space detectors and signal detectors to be deleted, please be advised.

## 5.2 Radar Settings

### 5.2.1 Configuring Radar

Configure radar parameters, including angle correction, horizontal offset, road information, radar information and radar installation settings.

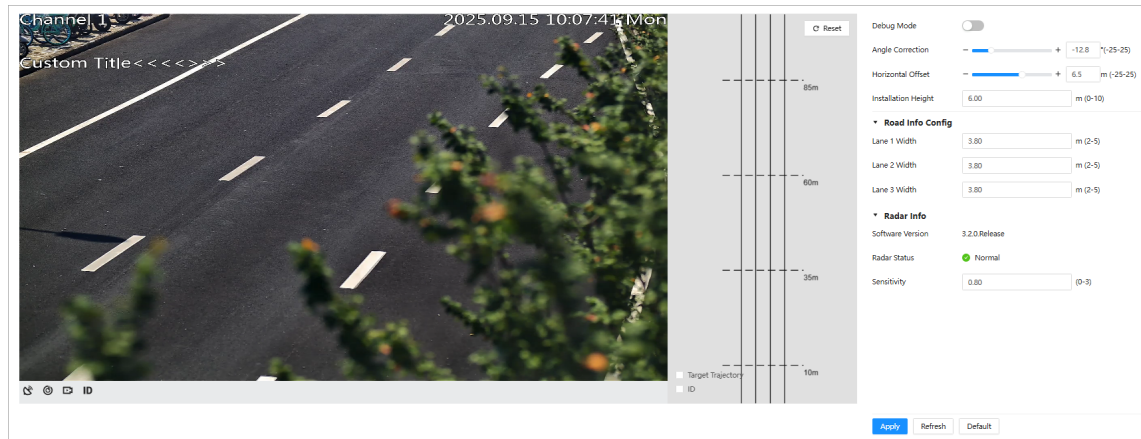
#### Procedure

**Step 1** On the home page, select **Radar > Radar Settings**.



When you have radar video cameras in hand, radar settings can be performed on **Radar** page.

Figure 5-24 Configuring the radar



**Step 2** Configure angle correction, horizontal offset, and installation height.



- We recommend adjusting the angle correction first to ensure that radar trajectories are parallel to lane lines, and then adjusting the horizontal offset to accurately align the radar lane with the video lane.
- You can click **Installation Diagram**, and then click the image to view the correction standards before the setting.

- Angle Correction
  - ◇ If the original vehicle trajectory is biased to the left of the center lane line, increase the angle correction.
  - ◇ If the original vehicle trajectory is biased to the right of the center lane line, decrease the angle correction.
- Horizontal Offset
  - ◇ If the radar lane appears left of the video lane, increase the horizontal offset.
  - ◇ If the radar lane appears right of the video lane, decrease the horizontal offset.
- Installation Height

Set the installation height of the Device according to the actual situation.

Step 3 Configure the parameters of road information, radar information and installation settings.

Table 5-11 Parameter description of radar

| Module           | Parameter        | Description                                                                      |
|------------------|------------------|----------------------------------------------------------------------------------|
| Road Info Config | Lane X Width     | Input the width value for each lane.                                             |
| Radar Info       | Software Version | The radar software version.                                                      |
|                  | Radar Status     | Normal or abnormal.                                                              |
|                  | Sensitivity      | It is recommended to leave the sensitivity as default to avoid false detections. |

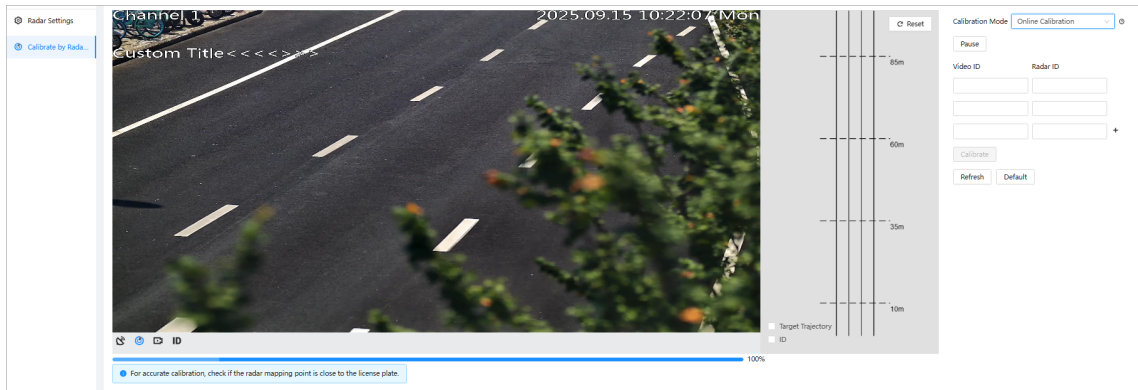
## 5.2.2 Configuring Radar and Video Calibration

### 5.2.2.1 Online Calibration

#### Procedure

Step 1 On the home page, select **Radar** > **Calibrate by Radar & Video**.

Figure 5-25 Configuring the calibration



**Step 2** Select **Online Calibration** as the calibration mode.

**Step 3** Click **Calibration Mode**, click **Pause** when vehicles pass, and then enter the video ID and radar ID.



- It is recommended to collect at least 1 set of IDs for each lane.
- Click + / - to add or delete one set of ID. Supports adding up to 10 sets of IDs.
- Click  to view the radar ID.
- Click **ID** to view the video ID.

**Step 4** Click **Calibrate**.

The system calibrates based on the input data, and displays the calibration progress at the bottom of the page.

## 5.2.2.2 Manual Calibration

### Procedure

**Step 1** On the home page, select **Radar** > **Calibrate by Radar & Video**.

Figure 5-26 Manual calibration



**Step 2** Select **Manual** as the calibration mode, and then adjust the calibration frame on the live view based on the on-site measurement.



- Click  to clear the current calibration frame.
- Click **Calibration Area**, and then click 4 points on the image to create a new frame. We recommend drawing the frame along the lane lines to form a trapezoid.

Step 3 Click **Read Calibration Parameters**.

The coordinates of the calibration frame will be automatically synchronized to the right of the live view.

Step 4 Click **Calibrate**.

The system calibrates based on the input data, and displays the calibration progress at the bottom of the monitoring screen. After the calibration is complete, the system prompts that the calibration is successful.

# 6 Security

## 6.1 Security Status

Detects the user and service, and scans the security modules to check the security status of the Camera, so that when abnormality appears, you can process it timely.

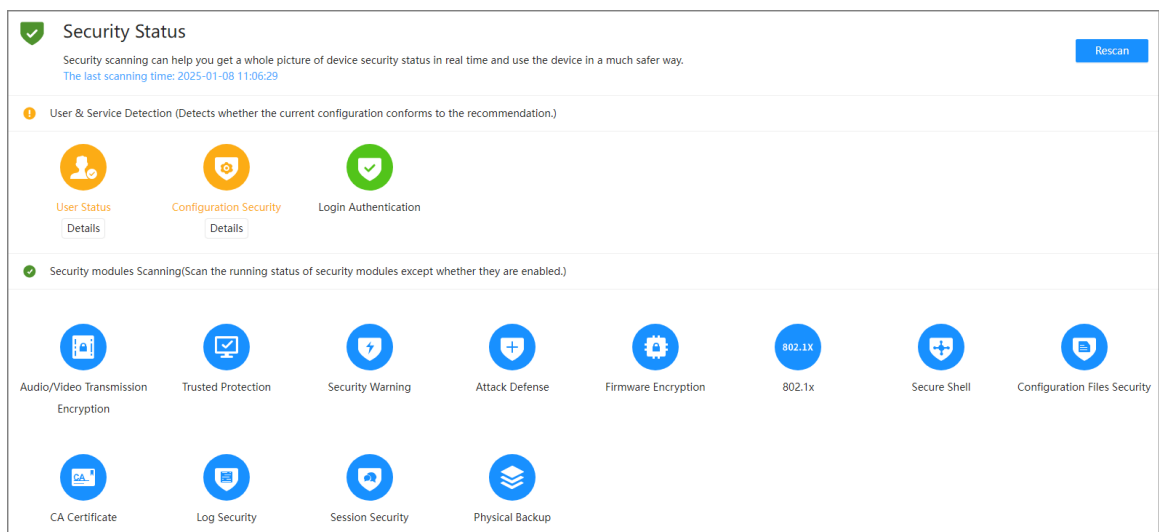
- User and service detection: Detects login authentication, user status, and configuration security to check whether the current configuration conforms to the recommendation.
- Security modules scanning: Scans the running status of security modules, such as audio/video transmission, trusted protection, securing warning and attack defense, not detect whether they are enabled.

### Procedure

**Step 1** Select  > **Security** > **Security Status**.

**Step 2** Click **Rescan** to scan the security status of the Camera.

Figure 6-1 Security status



### Related Operations

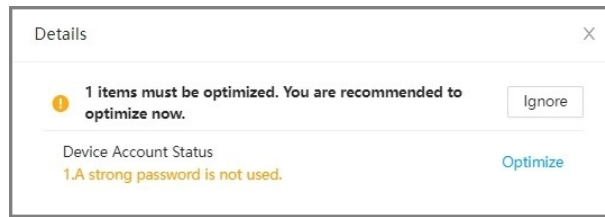
After scanning, different results will be displayed in different colors. Yellow indicates that the security modules are abnormal, and green indicates that the security modules are normal.

1. Click **Details** to view the details of the scanning result.
2. Click **Ignore** to ignore the exception, and it will not be scanned in next scanning.

Click **Rejoin Detection**, and the exception will be scanned in next scanning.

3. Click **Optimize**, and the corresponding page will be displayed, and then you can edit the configuration to clear the exception.

Figure 6-2 Security status



## 6.2 System Service

### 6.2.1 802.1x

The Camera can connect to LAN after passing 802.1x authentication.

#### Procedure

- Step 1** Select > **Security** > **System Service** > **802.1x**.
- Step 2** Select the NIC name as needed, and then click to enable it.
- Step 3** Select the authentication mode, and then configure parameters.
- PEAP: Protected EAP protocol.
    1. Select PEAP as the authentication mode.
    2. Enter the username and password that has been authenticated on the server.
    3. Click next to CA certificate, and then select the trusted CA certificate in list.

If there is no certificate in the list, click **Certificate Management** at the right navigation bar.

Figure 6-3 802.1x (PEAP)

802.1x is a network access control protocol which can effectively prevent access from unauthorized hosts.

NIC Name:

Enable: ☒

Authentication M...:

CA Certificate: ☒

Username:

Password:

Use a trusted CA certificate to verify the validity of peer authentication server (switch or Radius server).

\*Please select a trusted CA certificate.

| No.                                | Custom Name | Certificate Serial Number | Validity Period     | User                   | Issued by              | Used by |
|------------------------------------|-------------|---------------------------|---------------------|------------------------|------------------------|---------|
| <input checked="" type="radio"/> 1 |             | 1c...930                  | 2053-09-07 08:49:53 | General Device ITC CA  | General Device Root CA |         |
| <input type="radio"/> 2            |             | 62...35a                  | 2059-05-23 11:18:27 | General Device Root CA | General Device Root CA |         |

[Certificate Management](#)

- TLS: Transport Layer Security. It is applied in two communication application programs to guarantee the security and integrity of the data.
  1. Select TLS as the authentication mode.
  2. Enter the username.
  3. Click next to CA certificate, and then select the trusted CA certificate in list.



If there is no certificate in the list, click **Certificate Management** at the right navigation bar.

Figure 6-4 802.1x (TLS)

802.1x HTTPS

802.1x is a network access control protocol which can effectively prevent access from unauthorized hosts.

NIC Name: NIC1

Enable: ☒

Authentication M...: TLS

CA Certificate: ☒

Identity:

Use a trusted CA certificate to verify the validity of peer authentication server (switch or Radius server).

Device Certificate Trusted CA Certificates

\*Please select a trusted CA certificate. [Certificate Management](#)

| No.                                | Custom Name | Certificate Serial Number | Validity Period     | User                   | Issued by              | Used by |
|------------------------------------|-------------|---------------------------|---------------------|------------------------|------------------------|---------|
| <input checked="" type="radio"/> 1 |             | 1cf...30                  | 2053-09-07 08:49:53 | General Device ITC CA  | General Device Root CA |         |
| <input type="radio"/> 2            |             | 62...5a                   | 2059-05-23 11:18:27 | General Device Root CA | General Device Root CA |         |

Apply Refresh Default

**Step 4** Click **Apply**.

## 6.2.2 HTTPS

Create a certificate or upload an authenticated certificate, and then you can log in through HTTPS with your PC. The HTTPS can protect page authenticity on all types of websites, secure accounts, and keep user communications, identity, and web browsing private.

### Procedure

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

**Step 2** Click to enable the function.

**Step 3** Select the certificate.



If there is no certificate in the list, click **Certificate Management** to configure one.

Figure 6-5 HTTPS

802.1x HTTPS

Enable: ☒

HTTPS is a service entry based on Transport Layer Security (TLS). HTTPS provides web service, ONVIF access service and RTSP access service.

Auto Redirect to ...: ☐

\*Select a device certificate [Certificate Management](#)

| No.                                | Custom Name | Certificate Serial Number | Validity Period     | User    | Issued by             | Used by              |
|------------------------------------|-------------|---------------------------|---------------------|---------|-----------------------|----------------------|
| <input checked="" type="radio"/> 1 |             | 66...335<br>35...338      | 2054-11-15 19:25:38 | 9LC...D | General Device ITC CA | HTTPS, RTSP over TLS |

Apply Refresh Default

**Step 4** Click **Apply**.

# 6.3 Attack Defense

## 6.3.1 Firewall

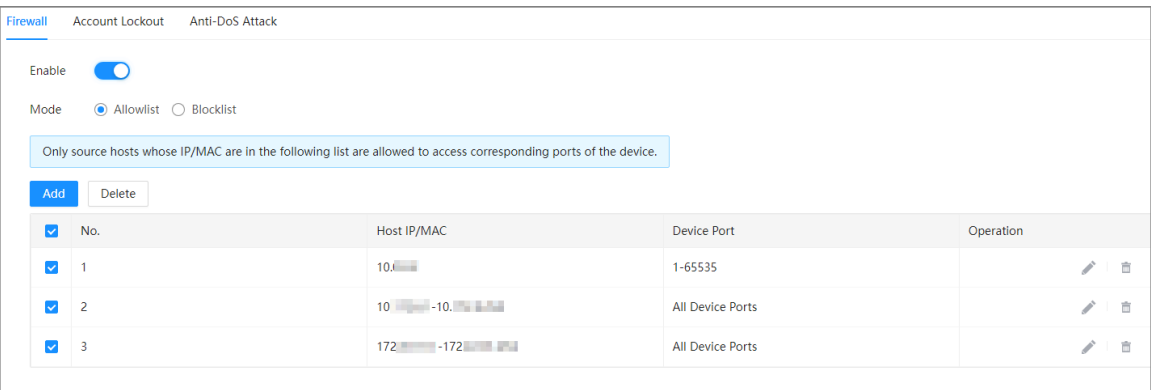
Configure the firewall to limit access to the Camera.

### Procedure

Step 1 Select  > **Security** > **Attack Defense** > **Firewall**.

Step 2 Click  to enable the function.

Figure 6-6 Firewall

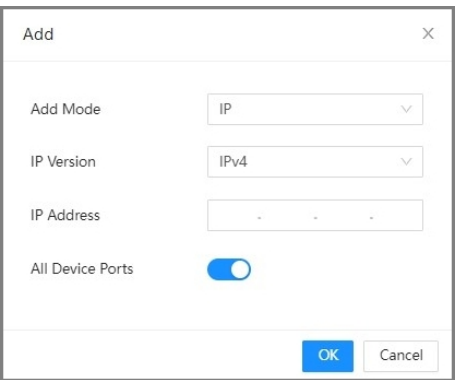


Step 3 Select the mode: **Allowlist** and **Blocklist**.

- **Allowlist** : Only when the IP/MAC of your PC in the allow list, can you access the Camera. Ports are the same.
- **Blocklist** : When the IP/MAC of your PC is in the block list, you cannot access the Camera. Ports are the same.

Step 4 Click **Add** to add the host IP/MAC address to **Allowlist** or **Blocklist**, and then click **OK**.

Figure 6-7 Firewall



Step 5 Click **Apply**.

### Related Operations

- Click  to edit the host information.
- Click  to delete the host information.

## 6.3.2 Account Lockout

If you use a wrong password to log in for more than the configured value, the account will be locked.

### Procedure

- Step 1 Select  > **Security** > **Attack Defense** > **Account Lockout**.
- Step 2 Configure the login attempt and lock time for device account and ONVIF user.
- Login attempt: Upper limit of login attempts. If you consecutively enter a wrong password more than the configured value, the account will be locked.
  - Lock time: The period during which you cannot log in after the login attempts reaches the upper limit.
- Step 3 Click **Apply**.

## 6.3.3 Anti-DoS Attack

You can enable **SYN Flood Attack Defense** and **ICMP Flood Attack Defense** to defend the device against DoS attack.

### Procedure

- Step 1 Select  > **Security** > **Attack Defense** > **Anti-DoS Attack**.
- Step 2 Click  to enable **SYN Flood Attack Defense** or **ICMP Flood Attack Defense**.
- Step 3 Click **Apply**.

## 6.4 CA Certificate

### 6.4.1 Installing Device Certificate

Create a certificate or upload an authenticated certificate, and then you can log in through HTTPS with your computer.

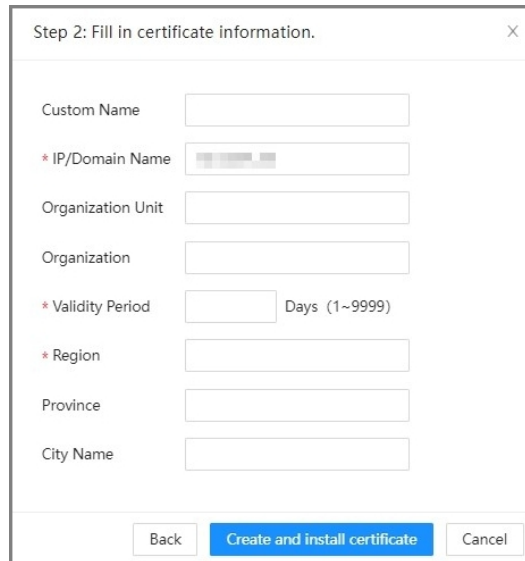
#### 6.4.1.1 Creating Certificate

Create certificate in the device.

### Procedure

- Step 1 Select  > **Security** > **CA Certificate** > **Device Certificate**.
- Step 2 Click **Install Device Certificate**.
- Step 3 Select **Create Certificate**, and click **Next**.
- Step 4 Enter the certificate information.

Figure 6-8 Certificate information (1)



Step 5 Click **Create and install certificate**.

After the certificate is created successfully, you can view the created certificate on the **Device Certificate** page.

## Related Operations

- Click **Enter Edit Mode**, and then you can edit the custom name of the certificate.
- Click  to download the certificate.
- Click  to delete the certificate.

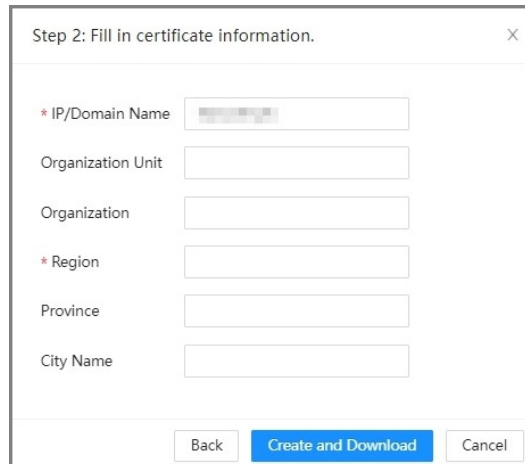
### 6.4.1.2 Applying for and Importing CA Certificate

Import the third-party CA certificate to the Camera.

#### Procedure

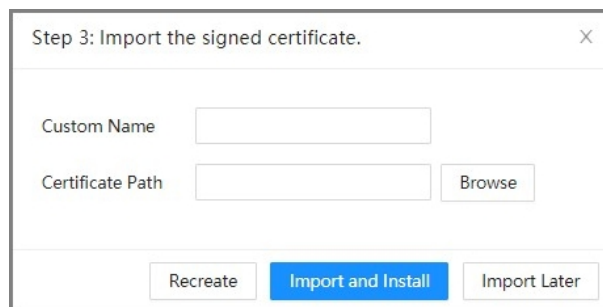
- Step 1 Select  > **Security** > **CA Certificate** > **Device Certificate**.
- Step 2 Click **Install Device Certificate**.
- Step 3 Select **Apply for CA Certificate and Import (Recommended)**, and then click **Next**.
- Step 4 Enter the certificate information.

Figure 6-9 Certificate information (2)

A dialog box titled "Step 2: Fill in certificate information." with a close button (X) in the top right corner. It contains several text input fields: "\* IP/Domain Name", "Organization Unit", "Organization", "\* Region", "Province", and "City Name". The fields for "\* IP/Domain Name" and "\* Region" have a small lock icon on the left. At the bottom, there are three buttons: "Back", "Create and Download" (highlighted in blue), and "Cancel".

- Step 5 Click **Create and Download** and save the request file to your computer.
- Step 6 Use the request file to apply for a CA certificate with a third-party certificate authority.
- Step 7 Click **Browse**, and then open the CA certificate.

Figure 6-10 Import a CA certificate

A dialog box titled "Step 3: Import the signed certificate." with a close button (X) in the top right corner. It contains two text input fields: "Custom Name" and "Certificate Path". To the right of the "Certificate Path" field is a "Browse" button. At the bottom, there are three buttons: "Recreate", "Import and Install" (highlighted in blue), and "Import Later".

- Step 8 Click **Import and Install**.

## Related Operations

- Click **Enter Edit Mode**, and then you can edit the custom name of the certificate.
- Click  to download the certificate.
- Click  to delete the certificate.

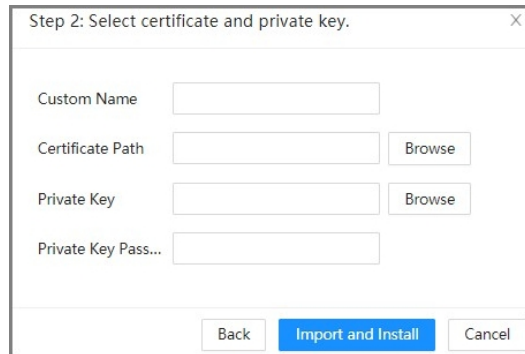
### 6.4.1.3 Installing Existing Certificate

Import the existing third-party certificate to the Camera. When applying for the third-party certificate, you also need to apply for the private key file and private key password.

#### Procedure

- Step 1 Select  > **Security** > **CA Certificate** > **Device Certificate**.
- Step 2 Select **Install Device Certificate**.
- Step 3 Select **Install Existing Certificate**, and then click **Next**.
- Step 4 Click **Browse** to open the CA certificate and private key, and enter the private key password.

Figure 6-11 Certificate and private key



Step 5 Click **Import and Install**.

After the certificate is created successfully, you can view the created certificate on the **Device Certificate** page.

### Related Operations

- Click **Enter Edit Mode** to edit the custom name of the certificate.
- Click  to download the certificate.
- Click  to delete the certificate.

## 6.4.2 Installing Trusted CA Certificate

A CA certificate is a digital certificate for the legal identity of the Camera. For example, when the Camera accesses the LAN through 802.1x, the CA certificate is required.

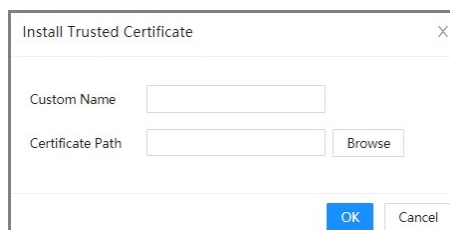
### Procedure

Step 1 Select  > **Security** > **CA Certificate** > **Trusted CA Certificates**.

Step 2 Select **Install Trusted Certificate**.

Step 3 Click **Browse** to open the certificate.

Figure 6-12 Installing trusted certificate



Step 4 Click **OK**.

After the certificate is created successfully, you can view the created certificate on the **Trusted CA Certificate** page.

### Related Operations

- Click **Enter Edit Mode**, and then you can edit the custom name of the certificate.
- Click  to download the certificate.
- Click  to delete the certificate.

# 6.5 A/V Encryption

The device supports encrypting data during audio and video transmission.



We recommend enabling the A/V Encryption function. Otherwise there might be safety risks.

## Procedure

**Step 1** Select  > **Security** > **A/V Encryption**.

**Step 2** Configure the parameters.

Figure 6-13 A/V encryption

Audio/Video Transmission Encryption

Private Protocol

Enable

Stream transmission is encrypted by using private protocol.

\*Please make sure that the corresponding device or software supports video decryption.

Encryption Type

AES256-OFB

Update Period of ...

12

hr (0-720)

RTSP over TLS

Enable

RTSP stream is encrypted by using TLS tunnel before transmission.

\*Please make sure that the corresponding device or software supports video decryption.

\*Select a device certificate

Certificate Management

| No.                                | Custom Name | Certificate Serial Number | Validity Period     | User    | Issued by             | Used by              |
|------------------------------------|-------------|---------------------------|---------------------|---------|-----------------------|----------------------|
| <div><div></div><div>1</div></div> |             | 668<br>53<br>38           | 2054-11-15 19:25:38 | 9L<br>D | General Device ITC CA | HTTPS, RTSP over TLS |

Apply

Refresh

Default

Table 6-1 Parameter description

| Area             | Parameter                   | Description                                                                                                                                                                                                     |
|------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Private Protocol | Enable                      | Enables stream frame encryption by using private protocol.<br><br>There might be safety risk if this service is not enabled. |
|                  | Encryption Type             | Keep the default setting.                                                                                                                                                                                       |
|                  | Update Period of Secret Key | Secret key update period.<br>Value range: 0–720 hours. 0 means never update the secret key.<br>Default value: 12.                                                                                               |

| Area          | Parameter                   | Description                                                                                                                                                                                     |
|---------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RTSP over TLS | Enable                      | Enables RTSP stream encryption by using TLS.<br><br>There might be safety risk if this service is not enabled. |
|               | Select a device certificate | Select a device certificate for RTSP over TLS.                                                                                                                                                  |
|               | Certificate Management      | For details about certificate management, see "6.4 CA Certificate".                                                                                                                             |

Step 3 Click **Apply**.

## 6.6 Security Warning

When a security exception event or illegal login is detected, the Camera sends a warning to remind you to process it timely to avoid security risks.

### 6.6.1 Security Exception

The Camera monitors exceptions and triggers a warning when one occurs.

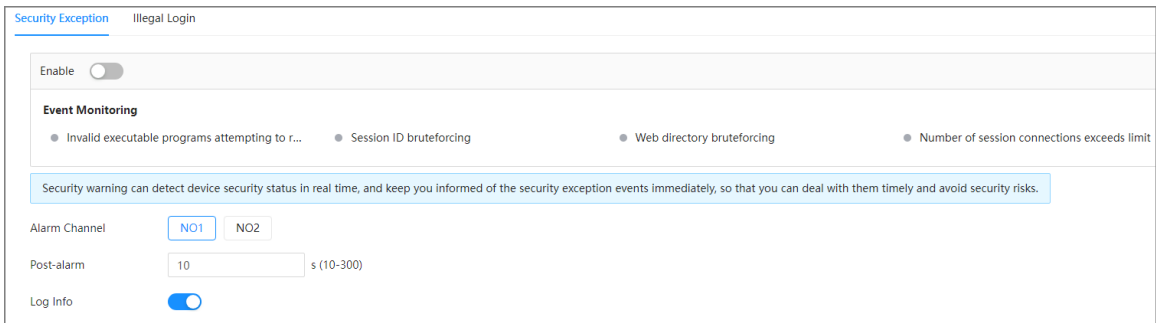
#### Procedure

Step 1 Select  > **Security** > **Security Warning** > **Security Exception**.

Step 2 Click  to enable the function.

Step 3 Configure the parameters.

Figure 6-14 Security warning



- **Alarm Channel** : Select an alarm output channel. The corresponding device will be activated when an event is detected.
- **Post-alarm** : When an alarm is triggered, it will continue for the defined period after it ends.
- **Log Info** : After it is enabled, the Camera will generate a log when an event occurs.

Step 4 Click **Apply**.

## 6.6.2 Illegal Login

The Camera triggers a warning when illegal login is detected.

### Procedure

- Step 1 Select  > **Security** > **Security Warning** > **Illegal Login**.
- Step 2 Click  to enable the function.
- Step 3 Configure the parameters.
- **Alarm Channel** : Select an alarm output channel. The corresponding device will be activated when an event is detected.
  - **Post-alarm** : When an alarm is triggered, it will continue for the defined period after it ends.
  - **Log Info** : After it is enabled, the Camera will generate a log when an event occurs.
- Step 4 Click **Apply**.

## 6.7 Security Authentication

### Procedure

- Step 1 On the home page, click , and then select **Security** > **Security Authentication**.
- Step 2 Configure the parameters.

Figure 6-15 Security authentication



|                                                   |                                         |                                 |
|---------------------------------------------------|-----------------------------------------|---------------------------------|
| Digest Algorithm for User Authentication...       | <input checked="" type="checkbox"/> MD5 | <input type="checkbox"/> SHA256 |
| Digest Algorithm for ONVIF User Authentication... | <input checked="" type="checkbox"/> MD5 | <input type="checkbox"/> SHA256 |

- **Digest Algorithm for User Authentication**  
The user can select **MD5** or **SHA256** for data encryption when logging in via webpage, ConfigTool or other methods.
- **Digest Algorithm for ONVIF Authentication**  
The user can select **MD5** or **SHA256** for data encryption when logging in with the ONVIF protocol.

- Step 3 Click **Apply**.

# 7 Maintenance Center

## 7.1 One-Click Diagnosis

One-click diagnosis detects the configurations and status of your device to improve its performance.

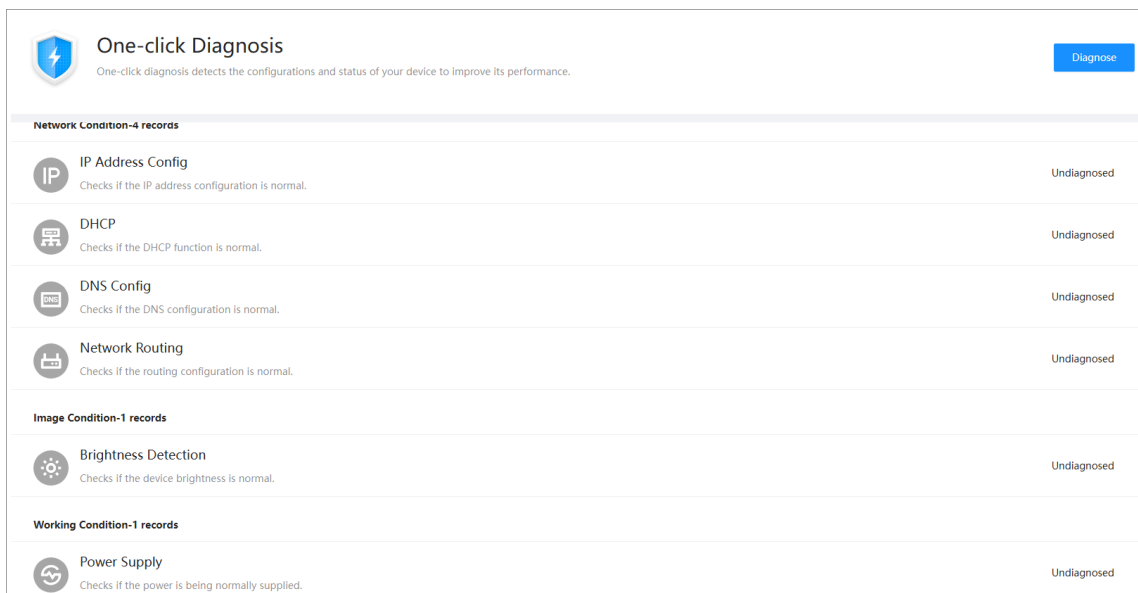
### Procedure

**Step 1** Select  > **Maintenance Center** > **One-click Diagnosis**.

**Step 2** Click **Diagnose**.

If you need to re-diagnose the device, click **Diagnose Again**.

Figure 7-1 One-click diagnosis



### Related Operations

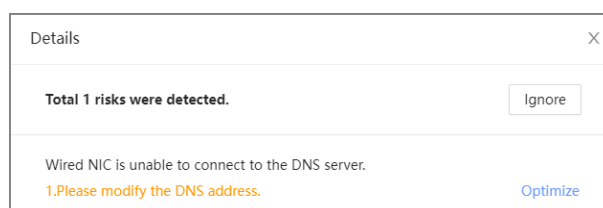
After the diagnosis completes, the page displays the diagnosis results. Yellow indicates that the condition is abnormal, and green indicates that the condition is normal.

- Click **Details** to view the details of the diagnosis result.
- Click **Ignore** to ignore the abnormality, and it will not be detected in next diagnosis.

Click **Rejoin Detection**, and the abnormality will be detected in next diagnosis.

- Click **Processed**, and the corresponding page will be displayed, and you can edit the configuration to clear the abnormality.

Figure 7-2 Details



# 7.2 System Information

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

## 7.2.1 Version Information

Select  > **Maintenance Center** > **System Info** > **Version** to view the version information such as device model, and the version of the hardware, system, software, and peripheral version information such as radar and flashing light.



Version might differ depending on the device model.

## 7.2.2 Online User

Select  > **Maintenance Center** > **System Info** > **Online User**, and then you can view online users' information, such as username, user local group, IP address, and user login time. Click **Refresh** to refresh the online user information.

Figure 7-3 Online user

| <div>Refresh</div> |          |       |            |                     |            |
|--------------------|----------|-------|------------|---------------------|------------|
| No.                | Username | Group | IP Address | User Login Time     | Login Type |
| 1                  | admin    | admin | 10.1.1.1   | 2025-01-08 11:06:50 | DVRIP      |
| 2                  | admin    | admin | 10.1.1.1   | 2025-01-09 05:33:39 | DVRIP      |
| 3                  | admin    | admin | 10.1.1.1   | 2025-01-09 08:36:46 | Web3.0     |
| 4                  | admin    | admin | 10.1.1.1   | 2025-01-09 08:36:51 | DVRIP      |

## 7.2.3 Running Status

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

## 7.2.4 Legal Information

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

## 7.2.5 Device Location

Select  > **Maintenance Center** > **System Info** > **Device Location** to the longitude and latitude of GPS as well as the number of satellites.

## 7.3 Log

### 7.3.1 System Log

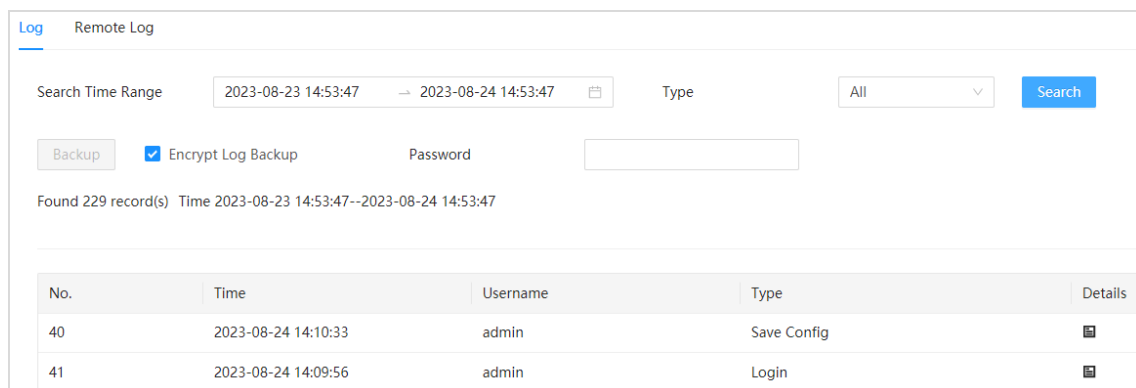
You can search for and view logs by the time and type, and backup the logs. The log type includes **All**, **System**, **Config**, **Storage**, **Event Operation**, **Record**, **Account**, and **Security**.

#### Procedure

- Step 1 Select  > **Maintenance Center** > **Log** > **Log**.
- Step 2 Configure **Search Time Range**, and then select the log type.
- Step 3 Click **Search**.
- Step 4 View and backup the search results.

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

Figure 7-4 Log



The screenshot shows the 'Log' interface with the following elements:

- Search Time Range:** 2023-08-23 14:53:47 → 2023-08-24 14:53:47
- Type:** All
- Search:** Button
- Backup:** Button
- Encrypt Log Backup:** ☒
- Password:** Input field
- Found 229 record(s) Time 2023-08-23 14:53:47--2023-08-24 14:53:47**
- Table:**

| No. | Time                | Username | Type        | Details                                                                               |
|-----|---------------------|----------|-------------|---------------------------------------------------------------------------------------|
| 40  | 2023-08-24 14:10:33 | admin    | Save Config |  |
| 41  | 2023-08-24 14:09:56 | admin    | Login       |  |

#### Related Operations

Click  to view the details.

### 7.3.2 Remote Log

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

#### Procedure

- Step 1 Select  > **Maintenance Center** > **Log** > **Remote Log**.
- Step 2 Select **Enable** to enable the function.
- Step 3 Configure the IP address, port and device number.
- Step 4 Click **Apply**.

Figure 7-5 Remote log

## 7.4 Maintenance Management

### 7.4.1 Maintenance

#### Procedure

**Step 1** Select > **Maintenance Center** > **Maintenance Management** > **Maintenance**.

Figure 7-6 Maintenance

**Step 2** Configure the parameters.

- Click next to **Auto Restart** and configure the restart time. The device will automatically restart at the defined time every week.
- Click next to **Auto Delete** and set the time. The device will automatically delete old files at the defined time. The time range is from 1 to 31 days.



When you enable and confirm the **Auto Delete** function, the deleted files cannot be restored. Please be advised.

- Click to enable **Emergency Maintenance** for easy access to after-sales service.

**Step 3** Click **Apply**.

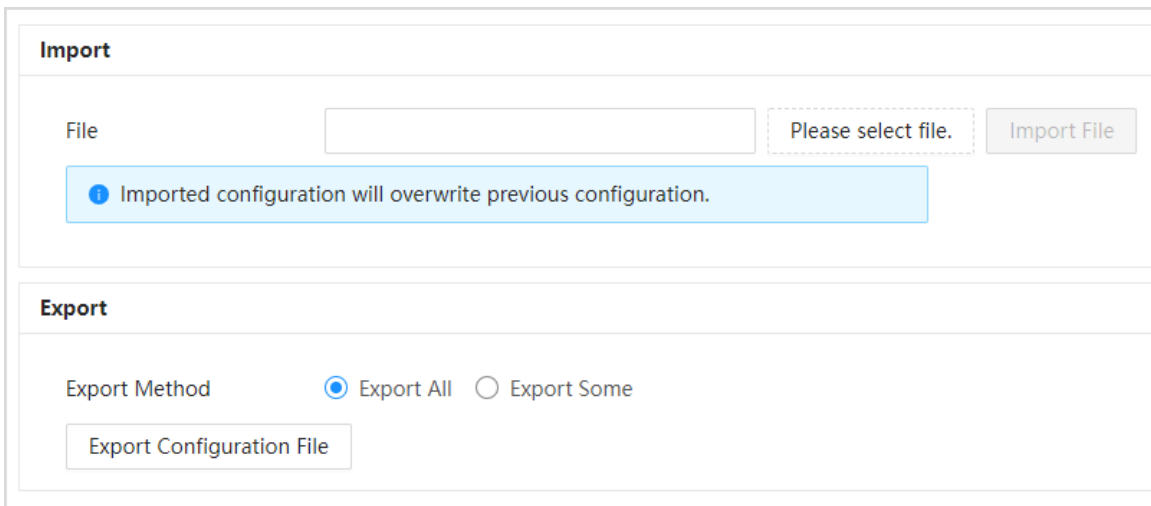
## 7.4.2 Import/Export

- Export the configuration of the Camera in a file to your computer for backup.
- Import a configuration file to quickly configure the Camera.

### Procedure

Step 1    Select  > **Maintenance** > **Maintenance Manager** > **Import/Export**.

Figure 7-7 Import/Export



Step 2    Import or export the file.

- Import: Select the configuration file on your computer, and then click **Import File** to import it to the Camera.
- Export: Click **Export Configuration File** to export the configuration of the Camera in a file to your computer.

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

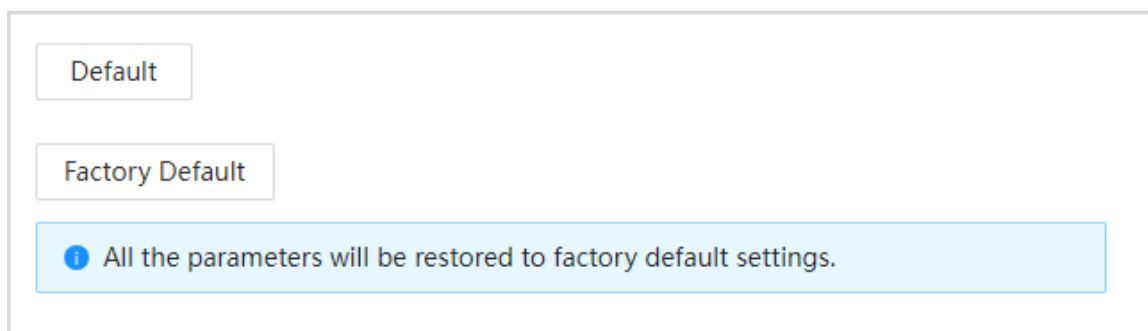
## 7.4.3 Default

Restore all settings of the Camera to the default status.

Select  > **Maintenance Center** > **Maintenance Manager** > **Default**.

- Click **Default**, and then all the configurations, except IP address, automatic registration, port numbers, HTTPS, and multicast, are reset to the default status.
- Click **Factory Default**, and then all the configurations, including IP address, automatic registration, port numbers, HTTPS, and multicast, are reset to factory settings.

Figure 7-8 Default



## 7.5 Update

Update the Camera to the latest version to improve its stability and functions. If wrong update file has been used, restart the device; otherwise some functions might not work properly.

### Procedure

Step 1 Select  > **Maintenance Center** > **Update**.

Step 2 Update the Camera in the following ways.

- Use an update file.
  1. Click **Import**.
  2. Select the update file in .bin format.



If you use an incorrect update file and the update is in progress, restart the device manually. Otherwise, certain functions might not work properly.

3. Click **Update**.
- Update manually.
    1. Click **Manual Check**, and then the Camera will search for new version.
    2. If there is a new version available, follow the on-screen instructions to finish the process.
  - Update online.

Click  next to **Auto Check for Updates** to enable the function. The Camera will regularly check for updates, and automatically update when available.

## 7.6 Advanced Maintenance

It provides maintenance services for tracking and troubleshooting of network connection issues.



It is mainly used by technical support engineers for troubleshooting and other technical support.

## 7.6.1 Export

Supports exporting the serial number, firmware version, device operation logs and configuration information.

### Procedure

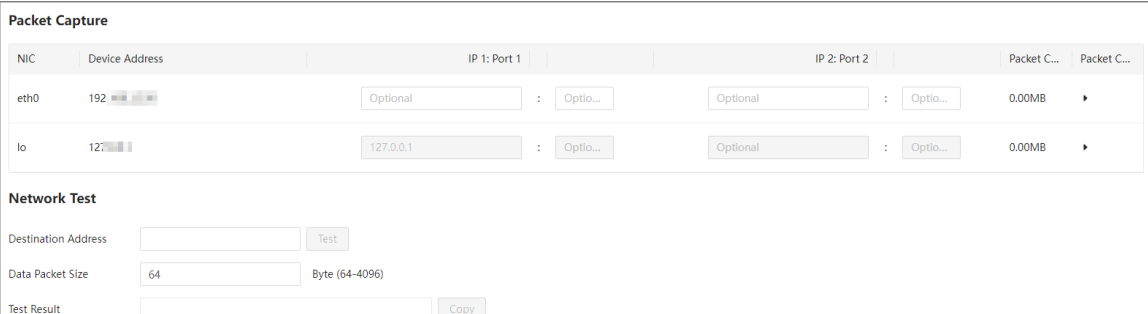
- Step 1 Select  > **Maintenance Center** > **Maintenance Management** > **Maintenance**.
- Step 2 Click **Export**.

## 7.6.2 Packet Capture

### Procedure

- Step 1 Select  > **Maintenance Center** > **Advanced Maintenance**.
- Step 2 You can export device information, test packet capture and network, and view logs.
- Export device information: Click the **Export** tab, and then click **Export** to export the serial number, firmware version, device operation logs and configuration information if necessary.
  - Packet capture: Click the **Packet Capture** tab, and then you can examine network traffic and test the network.

Figure 7-9 Packet capture



| NIC  | Device Address | IP 1: Port 1 | IP 2: Port 2 | Packet C... | Packet C... |
|------|----------------|--------------|--------------|-------------|-------------|
| eth0 | 192.168.1.1    | Optional     | Optional     | 0.00MB      | ▶           |
| lo   | 127.0.0.1      | 127.0.0.1    | Optional     | 0.00MB      | ▶           |

| Network Test                        |                      |
|-------------------------------------|----------------------|
| Destination Address                 | <input type="text"/> |
| Data Packet Size                    | 64 Byte (64-4096)    |
| <input type="button" value="Test"/> |                      |
| Test Result                         | <input type="text"/> |

- ◇ **Packet Capture** : It examines network traffic by capturing IP packets to investigate network issues and detect security threats.
  1. (Optional) Enter the specified IP and port.
  2. Click  to perform a packet capture. A packet sniffer backup will be uploaded automatically after you click  to end the capture.
- ◇ **Network Test**: Test whether the network can be accessed.
  1. Enter the destination address, that is, the address to which a packet of data is sent over a network.
  2. Click **Test** to perform the network test.

Click **Stop**, and then the data packet and round time used will be displayed.
  3. Check the test results in **Test Result** . The following figure shows that the network is normal; if it shows **timeout**, means that the network cannot be accessed.

Figure 7-10 Network test results

The screenshot shows a 'Network Test' interface. At the top, there is a 'Destination Address' input field with a 'Test' button to its right. Below this is the 'Data Packet Size' section, showing '64' in an input field and 'Byte (64-4096)' to its right. The 'Test Result' section contains a text area with the following content: 'PING [redacted] 64(92) bytes of data.', followed by two lines of ping results: '72 bytes from [redacted]: icmp\_seq = 1 ttl = 255 time < 1 ms' and '72 bytes from [redacted]: icmp\_seq = 2 ttl = 255 time < 1 ms'. These two lines are highlighted with an orange border. Below the text area is a 'Copy' button. At the bottom of the interface, there is a summary box with the text 'Data Packet: Sent = 2, Received = 2, Lost = 0 (0.00% Loss Rate)' and 'Round Time Used: Min = 0 ms, Max = 0 ms, Average = 0.000 ms'. Both the summary box and the ping results lines are highlighted with orange borders.

- Click the **Running Logs** tab to view the logs of device abnormality and maintenance.

You can click  to download a log, or select multiple logs, and then click **Export** to export them in batches.

## 7.6.3 Running Logs

View system run logs for troubleshooting.

At the upper right of the home page, select  **Maintenance Center** > **Advanced Maintenance** >

**Running Logs**. You can click  to export a log one by one, or select multiple logs to export logs in batches.

# Appendix 1 Security Recommendation

## Account Management

### 1. Use complex 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: 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 repeating characters, such as 111, aaa, etc.

### 2. Change passwords periodically

It is recommended to periodically change the device password to reduce the risk of being guessed or cracked.

### 3. Allocate accounts and permissions appropriately

Appropriately add users based on service and management requirements and assign minimum permission sets to users.

### 4. Enable account logout function

The account logout function is enabled by default. You are advised to keep it enabled to protect account security. After multiple failed password attempts, the corresponding account and source IP address will be locked.

### 5. Set and update password reset information in a timely manner

The device supports password reset function. To reduce the risk of this function being used by threat actors, if there is any change in the information, please modify it in time. When setting security questions, it is recommended not to use easily guessed answers.

## Service Configuration

### 1. Enable HTTPS

It is recommended that you enable HTTPS to access web services through secure channels.

### 2. Encrypted transmission of audio and video

If your audio and video data contents are very important or sensitive, it is recommended to use encrypted transmission function in order to reduce the risk of your audio and video data being eavesdropped during transmission.

### 3. Turn off non-essential services and use safe mode

If not needed, it is recommended to turn off some services such as SSH, SNMP, SMTP, UPnP, AP hotspot etc., to reduce the attack surfaces.

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

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

### 4. Change HTTP and other default service ports

It is recommended that you change the default port of HTTP and other services to any port between 1024 and 65535 to reduce the risk of being guessed by threat actors.

## Network Configuration

### 1. **Enable Allowlist**

It is recommended that you turn on the allowlist function, and only allow IP in the allowlist to access the device. Therefore, please be sure to add your computer IP address and supporting device IP address to the allowlist.

### 2. **MAC address binding**

It is recommended that you bind the IP address of the gateway to the MAC address on the device to reduce the risk of ARP spoofing.

### 3. **Build a secure network environment**

In order to better ensure the security of devices and reduce potential cyber risks, the following are recommended:

- Disable the port mapping function of the router to avoid direct access to the intranet devices from external network;
- According to the actual network needs, partition the network: if there is no communication demand between the two subnets, it is recommended to use VLAN, gateway and other methods to partition the network to achieve network isolation;
- Establish 802.1x access authentication system to reduce the risk of illegal terminal access to the private network.

## Security Auditing

### 1. **Check online users**

It is recommended to check online users regularly to identify illegal users.

### 2. **Check device log**

By viewing logs, you can learn about the IP addresses that attempt to log in to the device and key operations of the logged users.

### 3. **Configure network log**

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

## Software Security

### 1. **Update firmware in time**

According to the industry standard operating specifications, the firmware of devices needs to be updated to the latest version in time in order to ensure that the device has the latest functions and security. If the device is connected to the public network, it is recommended to enable the online upgrade automatic detection function, so as to obtain the firmware update information released by the manufacturer in a timely manner.

### 2. **Update client software in time**

It is recommended to download and use the latest client software.

## Physical Protection

It is recommended that you carry out physical protection for devices (especially storage devices), such as placing the device in a dedicated machine room and cabinet, and having access control

and key management in place to prevent unauthorized personnel from damaging hardware and other peripheral equipment (e.g. USB flash disk, serial port).