# Radar-Assisted Smart Monitoring Camera

## User Manual

# Initiatives on the Use of Video Products

## Thank you for choosing Hikvision products.

Technology affects every aspect of our life. As a high-tech company, we are increasingly aware of the role technology plays in improving business efficiency and quality of life, but at the same time, the potential harm of its improper usage. For example, video products are capable of recording real, complete and clear images. This provides a high value in retrospect and preserving real-time facts. However, it may also result in the infringement of a third party's legitimate rights and interests if improper distribution, use and/or processing of video data takes place. With the philosophy of "Technology for the Good", Hikvision requests that every end user of video technology and video products shall comply with all the applicable laws and regulations, as well as ethical customs, aiming to jointly create a better community.

## Please read the following initiatives carefully:

- Everyone has a reasonable expectation of privacy, and the installation of video products should not be in conflict with this reasonable expectation. Therefore, a warning notice shall be given in a reasonable and effective manner and clarify the monitoring range, when installing video products in public areas. For non-public areas, a third party's rights and interests shall be evaluated when installing video products, including but not limited to, installing video products only after obtaining the consent of the stakeholders, and not installing highly-invisible video products.
- The purpose of video products is to record real activities within a specific time and space and under specific conditions. Therefore, every user shall first reasonably define his/her own rights in such specific scope, in order to avoid infringing on a third party's portraits, privacy or other legitimate rights.
- During the use of video products, video image data derived from real scenes will continue to be generated, including a large amount of biological data (such as facial images), and the data could be further applied or reprocessed. Video products themselves could not distinguish good from bad regarding how to use the data based solely on the images captured by the video products. The result of data usage depends on the method and purpose of use of the data controllers. Therefore, data controllers shall not only comply with all the applicable laws and regulations and other normative requirements, but also respect international norms, social morality, good morals, common practices and other non-mandatory requirements, and respect individual privacy, portrait and other rights and interests.
- The rights, values and other demands of various stakeholders should always be considered when processing video data that is continuously generated by video products. In this regard, product security and data security are extremely crucial. Therefore, every end user and data controller, shall undertake all reasonable and necessary measures to ensure data security and avoid data leakage, improper disclosure and improper use, including but not limited to, setting up access

control, selecting a suitable network environment (the Internet or Intranet) where video products are connected, establishing and constantly optimizing network security.

- Video products have made great contributions to the improvement of social security around the world, and we believe that these products will also play an active role in more aspects of social life. Any abuse of video products in violation of human rights or leading to criminal activities are contrary to the original intent of technological innovation and product development. Therefore, each user shall establish an evaluation and tracking mechanism of their product application to ensure that every product is used in a proper and reasonable manner and with good faith.

# Legal Information



## About this Manual

The Manual includes instructions for using and managing the Product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version of this Manual at the Hikvision website ( ***https://www.hikvision.com/*** ).
Please use this Manual with the guidance and assistance of professionals trained in supporting the Product.

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# Symbol Conventions

The symbols that may be found in this document are defined as follows.

| Symbol | Description |
| --- | --- |
| **Danger** | Indicates a hazardous situation which, if not avoided, will or could result in death or serious injury. |
| **Caution** | Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results. |
| **Note** | Provides additional information to emphasize or supplement important points of the main text. |

# Contents

# Chapter 1 Activation and Login

## 1.1 Activation

For the first-time access, you need to activate the device by setting an admin password. No operation is allowed before activation. The device supports multiple activation methods, such as activation via SADP software, web browser, and iVMS-4200 Client.

**Note**

Refer to the user manual of iVMS-4200 Client for the activation via client software.

### 1.1.1 Default Information

The device default information is shown as below.

- Default IP address: 192.168.1.64
- Default user name: admin

### 1.1.2 Activate via SADP

SADP is a tool to detect, activate, and modify the IP address of the device over the LAN.

**Before You Start**

- Get the SADP software from the supplied disk or the official website ( ***http://www.hikvision.com/*** ), and install it according to the prompts.
- The device and the computer that runs the SADP tool should belong to the same network segment.

The following steps show how to activate one device and modify its IP address. For batch activation and IP address modification, refer to *User Manual of SADP* for details.

**Steps**

1. Run the SADP software and search the online devices.
2. Find and select your device in online device list.
3. Enter a new password (admin password) and confirm the password.

   **Caution**

   STRONG PASSWORD RECOMMENDED-We highly recommend you create a strong password of your own choosing (using a minimum of 8 characters, including upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. And we recommend you reset your password regularly, especially in the high security system, resetting the password monthly or weekly can better protect your product.
4. Click **Activate** to start activation.

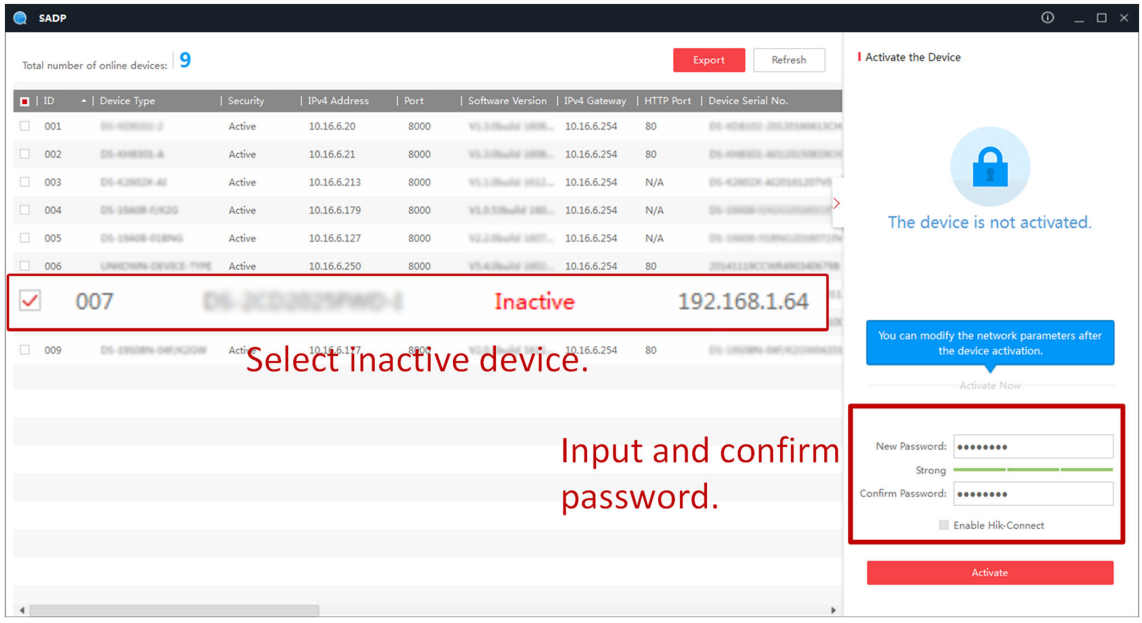


**Figure 1-1 Activate via SADP**

Status of the device becomes **Active** after successful activation.

5. Modify IP address of the device.
   1) Select the device.
   2) Change the device IP address to the same network segment as your computer by either modifying the IP address manually or checking **Enable DHCP** (Dynamic Host Configuration Protocol).
   3) Enter the admin password and click **Modify** to activate your IP address modification.

### 1.1.3 Activate via Web Browser

Use web browser to activate the device. For the device with the DHCP enabled by default, use SADP software or client software to activate the device.

**Before You Start**

Ensure the device and the computer are in the LAN with the same network segment.

**Steps**

1. Change the IP address of your computer to the same network segment as the device.
2. Open the web browser, and enter the default IP address of the device to enter the activation interface.
3. Create and confirm the admin password.

**Caution**

STRONG PASSWORD RECOMMENDED-We highly recommend you create a strong password of your own choosing (using a minimum of 8 characters, including upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. And we recommend you reset your password regularly, especially in the high security system, resetting the password monthly or weekly can better protect your product.

4. Click **OK** to complete activation.
5. Go to the network settings interface to modify IP address of the device.

## 1.2 Login

You can log in to the device via web browser for further operations such as live view and local configuration.

**Before You Start**

Connect the device to the network directly, or via a switch or a router.

**Steps**

1. Open the web browser, and enter the IP address of the device to enter the login interface.
2. Enter **User Name** and **Password**.
3. Click **Login**.
4. Download and install appropriate plug-in for your web browser. Follow the installation prompts to install the plug-in.
5. Reopen the web browser after the installation of the plug-in and repeat steps 1 to 3 to login.
6. **Optional:** Click **Logout** on the upper right corner of the interface to log out of the device.

# Chapter 2 Capture Configuration

## 2.1 Set Smart Monitoring Capture

The smart monitoring mode supports capturing motor vehicles, non-motor vehicles, and pedestrians via video triggering.

**Steps**

1. Go to **Configuration → Capture → Application Mode** .
2. Select **Application Mode** as **Smart Mode**.

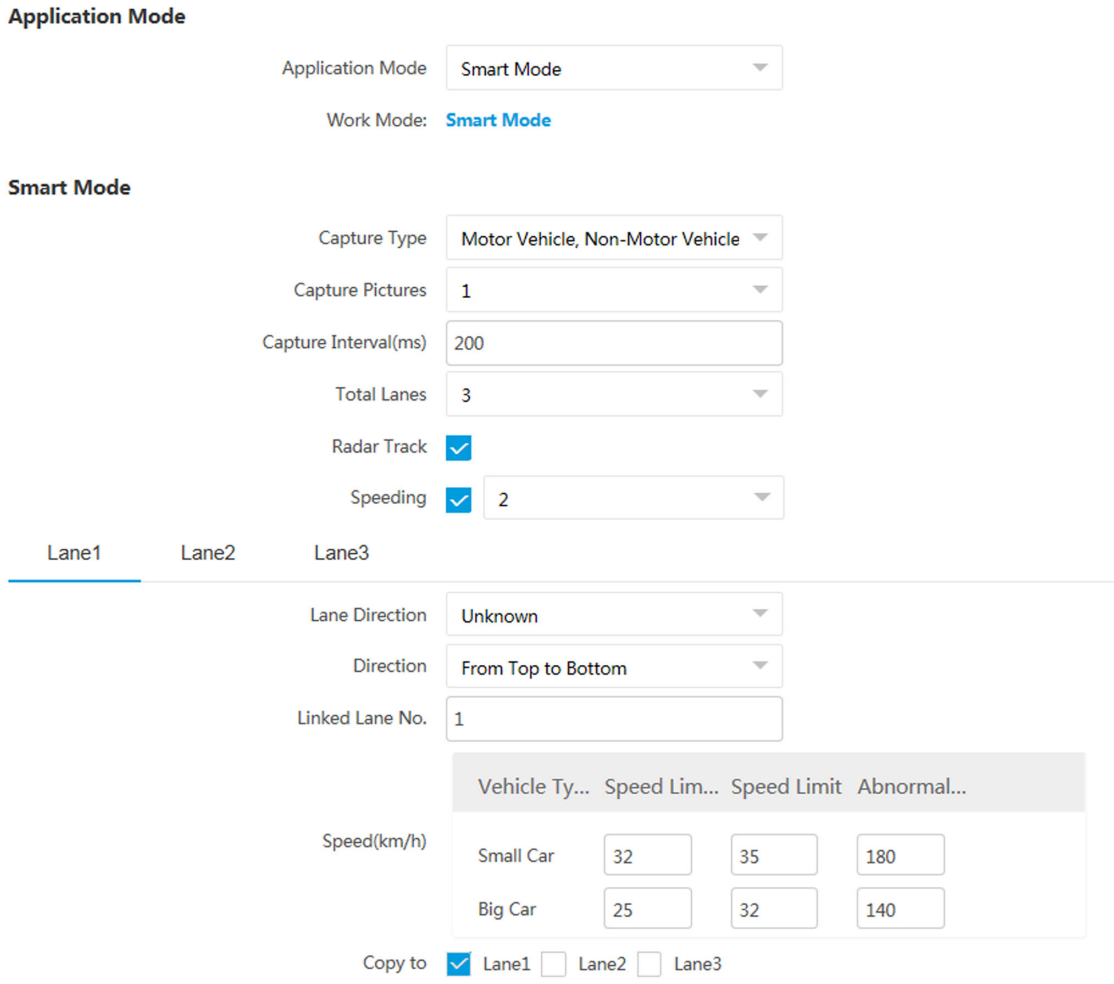


**Figure 2-1 Set Smart Monitoring Capture**

3. Set smart mode parameters.

**Capture Type**

**Motor Vehicle, Non-Motor Vehicle, and Pedestrian**

The motor vehicles, non-motor vehicles, and pedestrians in the scene will be recognized and captured.

**Motor Vehicle**

Only the motor vehicles in the scene will be recognized and captured.

**Non-Motor Vehicle**

Only the non-motor vehicles in the scene will be recognized and captured.

**Pedestrian**

Only the pedestrians in the scene will be recognized and captured.

**Capture Pictures**

The number of captured picture(s).

**Capture Interval**

The time between the adjacent captures.

**Total Lanes**

The sum of the linked lane(s) under the current application mode.

**Radar Track**

Check it to enable radar track, and the target track will be displayed.

**Speeding**

The motor vehicle is driven in the speed larger than the max. speed limit of the lane. Check it and select the number of captured picture(s).

4. Select a lane, and set the lane parameters.

**Lane Direction**

The guidance direction of the lane.

**Direction**

The driving direction of the vehicle. If you set the direction as **From Top to Bottom**, then the vehicle will be judged as wrong-way driving if it comes from bottom to top, and vice versa.

**Linked Lane No.**

The corresponding lane No. linked with the current lane. The lane No. will be overlaid on the captured picture.

5. **Optional:** If you have enabled speeding detection, set the lane speed limit parameters for small-sized and large-sized vehicles.

**Speed Limit Sign**

The speed limit on the sign for the vehicles. The value will be overlaid on the captured pictures.

**Speed Limit**

The actual speed limit for the vehicles. When the vehicle speed exceeds the value, speeding capture will be triggered.

**Note**

The speed limit of large-sized vehicles should be smaller than that of the small-sized vehicles.

**Abnormal Speed Threshold**

When the detected speed of the vehicle exceeds the value, the detection is regarded as abnormal, and a normal speed will be provided randomly.

6. **Optional:** Check the other lane(s) to copy the same settings.
7. Draw lane lines.
   1) Click **Draw Lane Line**.
   2) Select the default lane lines, trigger line, and right border line, and drag the two end points of the line or drag the whole line to adjust its position according to the actual scene.
   3) **Optional:** Click **Redraw Lane Line** to redraw the lines.
   4) Click **OK**.

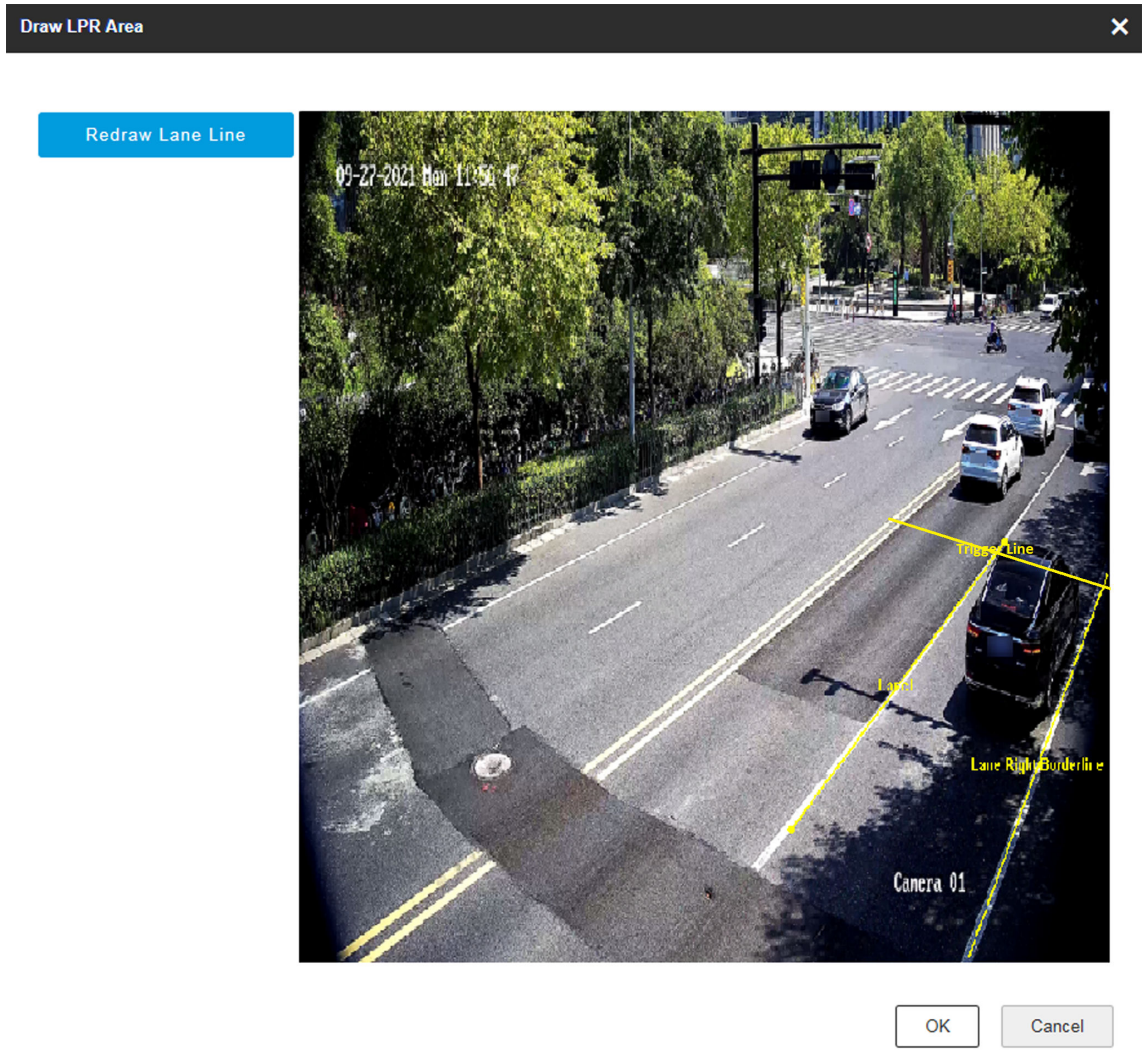


**Figure 2-2 Draw Lane Line**

8. Click **Save**.

## 2.2 Set Capture Parameters

### 2.2.1 Set Captured Image Parameters

Set the parameters of captured images to raise the image quality.

**Steps**

**Note**

The function varies with different models. The actual device prevails.

1. Go to **Configuration → Capture → Capture Images → Image Parameters** .

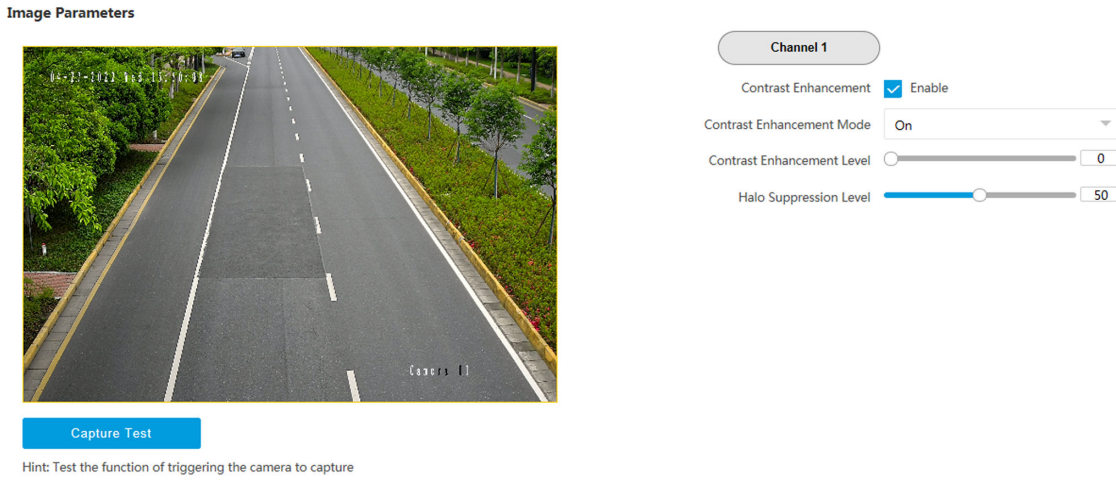


**Figure 2-3 Set Captured Image Parameters**

2. Set the captured image parameters.

**Contrast Enhancement**

Check **Enable** to capture clearer images. Select **Contrast Enhancement Mode**, and set corresponding parameters.

| Contrast Enhancement Mode | Description |
|---|---|
| On | The contrast enhancement mode is always enabled. |
| Time | The contrast enhancement mode is enabled during the set start time and end time. In other time, it is disabled. |
| Brightness | The contrast enhancement mode is enabled according to the brightness of the surroundings. In this case, you can set **Brightness Level**. |

**Contrast Enhancement Level**

The higher the level is, the more the contrast is enhanced.

**Halo Suppression Level**

Halo suppression is to suppress the halo of the vehicle headlights. The higher the level is, the more the halo is suppressed.

## 2.2.2 Set License Plate Recognition Parameters

When there are vehicles of different types passing from different directions, set the license plate recognition parameters.

**Steps**

1. Go to **Configuration → Capture → Capture Parameters → License Parameters** .

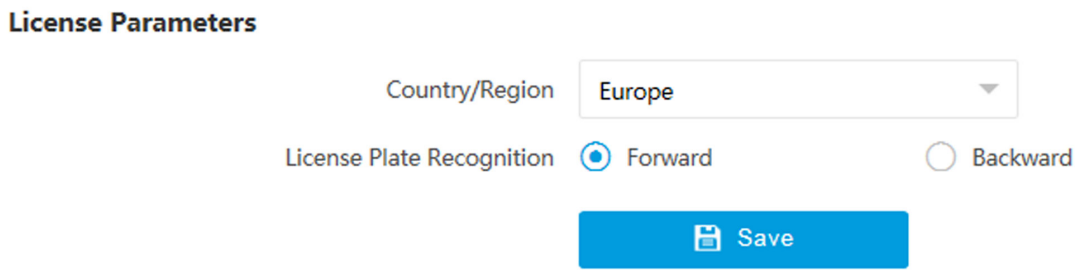


**Figure 2-4 Set License Plate Recognition Parameters**

2. Set **Country/Region** according to the actual needs.
3. Select **License Plate Recognition**.
   - Select **Forward** when license plates of vehicles from the approaching direction need to be recognized.
   - Select **Backward** when license plates of vehicles from the leaving direction need to be recognized.
4. Click **Save**.

## 2.2.3 Set Supplement Light Parameters

Supplement light can enhance the image stabilization and adjust the brightness and color temperature.

**Steps**

1. Go to **Configuration → Capture → Capture Parameters → Supplement Light Parameters** .

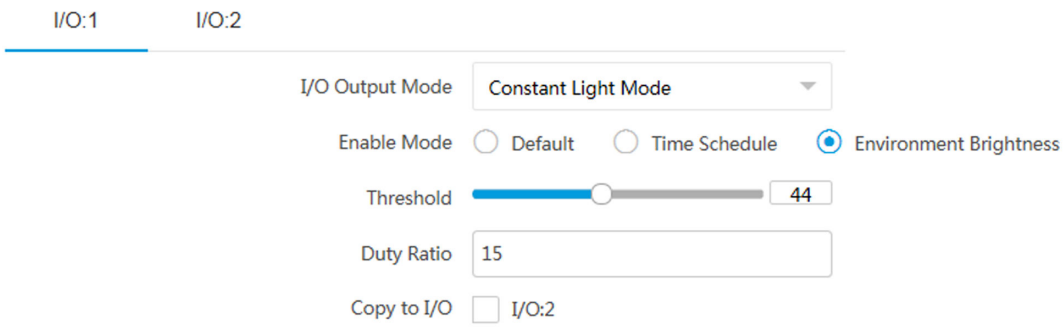


**Figure 2-5 Set Supplement Light Parameters**

2. Select the I/O and set the supplement light parameters.

**I/O Output Mode**

**Constant Light Mode**

The constant light supplements light for the scene.

**Duty Ratio**

It is the time occupation of the high level in a certain period. The higher the duty ratio, the brighter the solid light. High duty ratio will cut life span of the solid light.

3. Set the supplement light control mode.
   - Select **Default** to disable the supplement light.
   - Select **Time Schedule** when you want the supplement light to be enabled during a fixed time period. Set the start time and end time.
   - Select **Environment Brightness** when you want the supplement light to be controlled by detecting the surroundings brightness automatically. Set the brightness threshold. The higher the threshold is, the harder the supplement light can be enabled.

**Note**

The modes conflict with each other. You can only enable one mode.

4. **Optional:** Select other I/O(s) to copy the same settings.
5. Click **Save**.

## 2.2.4 Set Picture Composition

You can enable the picture composition to composite several pictures into one to make it convenient to view the violation captured pictures.

**Steps**

1. Go to **Configuration → Capture → Capture Parameters → Picture Encoding and Composition → Image Composition** .

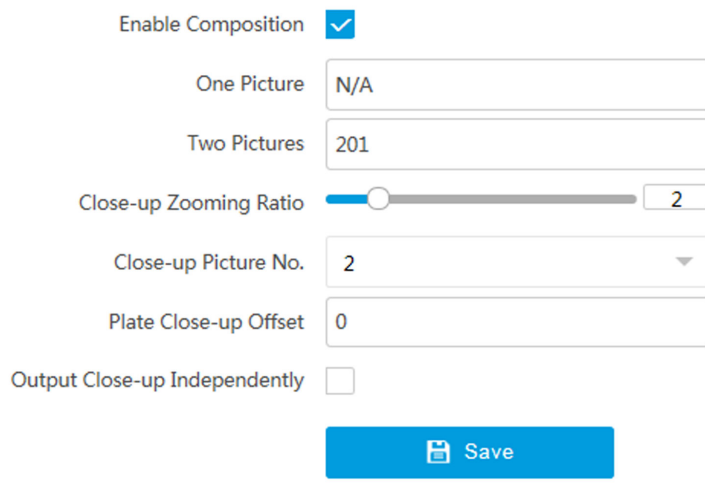


**Figure 2-6 Set Picture Composition**

2. Check **Enable Composition**.
3. Set composition types for different picture quantities.
4. Set other composition parameters.

**Close-up Zooming Ratio**

The higher the value is, the larger the close-up is.

**Close-up Picture No.**

It is the picture where the close-up comes from.

**Plate Close-up Offset**

The default value is 0, which is recommended to be adopted. The device can capture close-up pictures according to the set offset when no license plate is recognized.

5. **Optional:** Check **Output Close-up Independently** to output close-up pictures independently when the picture composition is not enabled.

**Note**

Enabling composition and outputting close-up independently functions conflict with each other. You can only enable one.

6. Click **Save**.

### 2.2.5 Set Information Overlay

### Set Single Picture Overlay

If you want to overlay information on the captured single pictures, set capture overlay.

**Steps**

**Note**

The supported parameters vary with different models. The actual device prevails.

1. Go to **Configuration → Capture → Capture Parameters → Text Overlay** .
2. Select single picture channel.
3. Check **Capture Picture Overlay**.

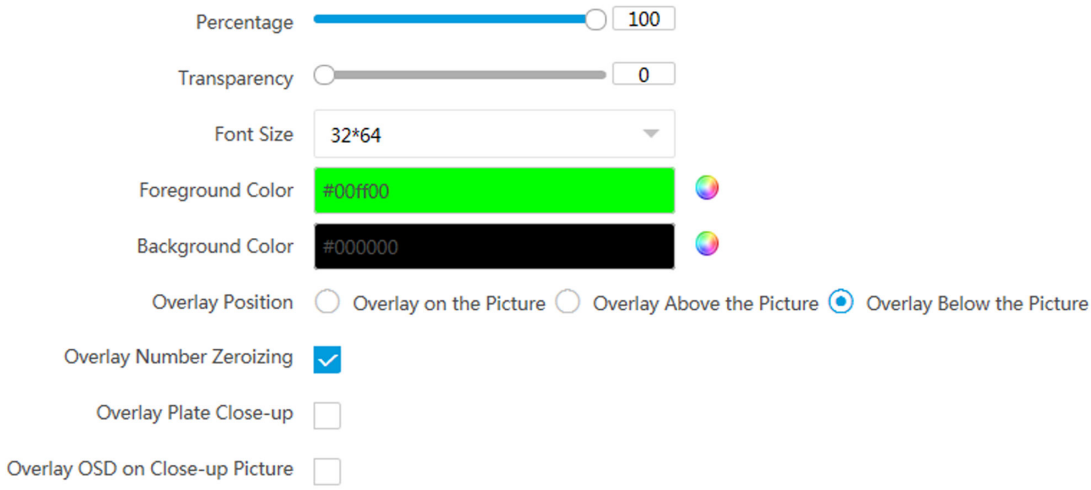


**Figure 2-7 Set Single Picture Overlay**

4. Set the percentage, front size, color, overlay position, etc.

   **Percentage**

   It is the percentage that the overlaid information occupies on the picture. For example, if you set the percentage to 50, the overlaid information in a row will occupy up to half of the image width, and the excess content will be overlaid from a new line.

   **Transparency**

   It is the condition of viewing the live view image through the overlaid information.

   **Overlay Number Zeroizing**

   When the overlaid number digits are smaller than the fixed digits, 0 will be overlaid before the overlaid number. E.g., the fixed digits for lane No. is 2. If the lane No. is 1, 01 will be overlaid on the picture.

   **Overlay Plate Close-up**

   Check it to overlay license plate close-up pictures on the captured pictures.

   **Overlay OSD on Close-up Picture**

   Check it to overlay the OSD information on the close-up pictures.

5. Select the overlay information from the list.

**Note**

The overlay information varies with different models. The actual device prevails.

6. Set the overlay information.

| | |
|---|---|
| **Set Type** | You can edit the type. |
| **Set Overlay Information** | For some information types, you can edit the detailed information. |

| | |
|---|---|
| **Set Overlay Position** | If you check it, the current information will be displayed from a new line. |
| **Set Space** | Edit the number of space between the current information and the next one from 0 to 255. 0 means there is no space. |
| **Set Line Break Characters** | Edit the number of characters from 0 to 100 between the current information line and the previous information line. 0 means no line break. |
| **Adjust overlay sequence** | Click ^ / v to adjust the display sequence of the overlay information. |

7. Click **Save**.

## Set Composite Picture Overlay

If you want to overlay information on the composite pictures, set composite picture overlay.

**Steps**

**Note**

The supported parameters vary with different models. The actual device prevails.

1. Go to **Configuration → Capture → Capture Parameters → Text Overlay** .
2. Select composite picture channel.
3. Check **Capture Picture Overlay**.

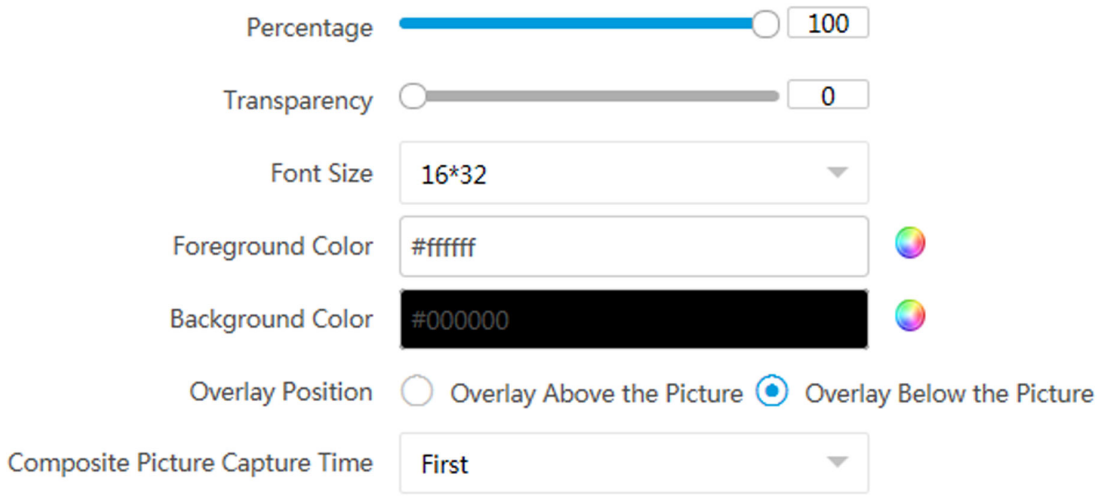


**Figure 2-8 Set Composite Picture Overlay**

4. Set the font size, color, overlay position, etc.

**Percentage**

It is the percentage that the overlaid information occupies on the picture. For example, if you set the percentage to 50, the overlaid information in a row will occupy up to half of the image width, and the excess content will be overlaid from a new line.

**Transparency**

It is the condition of viewing the live view image through the overlaid information.

**Composite Picture Capture Time**

The capture time of the selected picture sequence will be overlaid on the composite picture.

5. Select the overlay information from the list.

**Note**

The overlay information varies with different models. The actual device prevails.

6. Set the overlay information.

| | |
|---|---|
| **Set Type** | You can edit the type. |
| **Set Overlay Information** | For some information types, you can edit the detailed information. |
| **Set Overlay Position** | If you check it, the current information will be displayed from a new line. |
| **Set Space** | Edit the number of space between the current information and the next one from 0 to 255. 0 means there is no space. |
| **Set Line Break Characters** | Edit the number of characters from 0 to 100 between the current information line and the previous information line. 0 means no line break. |
| **Adjust overlay sequence** | Click ^ / v to adjust the display sequence of the overlay information. |

7. Click **Save**.

## 2.2.6 Set Body Picture Matting

Set body picture matting first if you need to upload body and vehicle pictures to the platform.

**Steps**

**Note**

The function varies with different models. The actual device prevails.

1. Go to **Configuration → Capture → Capture Parameters → Vehicle Feature → Body Picture Matting** .
2. Check **Enable Body Picture Matting**.

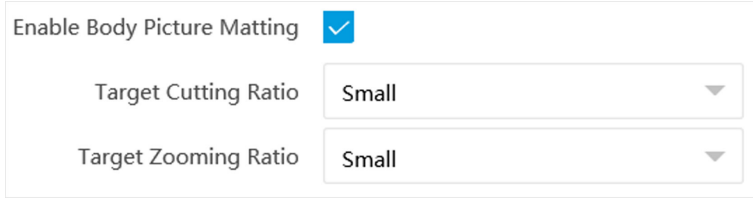


**Figure 2-9 Set Body Picture Matting**

3. Set body picture matting parameters according to the actual needs.
4. Click **Save**.

**Result**

If the device is level 1 armed, the matting pictures will be uploaded to this device directly. If the device is level 2 armed, the matting pictures will be saved to the SD/TF card and uploaded to a level 2 armed device.

## 2.2.7 Set Vehicle Feature Parameters

Set vehicle feature parameters if you need to detect the vehicle features of the passing vehicle.

**Steps**

**Note**

The parameters vary with different models. The actual device prevails.

1. Go to **Configuration → Capture → Capture Parameters → Vehicle Feature → Vehicle Feature** .
2. Check **Vehicle Color Recognition** if you want to recognize the vehicle color.
3. Click **Save**.

## 2.2.8 Set Image Encoding Parameters

If the captured pictures are not clear, set the resolution of the captured pictures and the picture size.

**Steps**

1. Go to **Configuration → Capture → Capture Parameters → Picture Encoding and Composition → Image Encoding** .


**Figure 2-10 Set Image Encoding Parameters**

2. Select **Capture Resolution**.
3. Enter the picture size.

   **JPEG Picture Size**

   The size of the compressed captured picture. The actual size is related to the scene complexity.

   **Composite Picture Size**

   The size of the compressed composite picture. The actual size is related to the scene complexity.

   **Note**

   Only the device supporting picture composition supports composite picture size settings. The actual device prevails.
4. Click **Save**.

# Chapter 3 Radar Detection

Radar is used to detect the target and link the capture. Set radar detection parameters before capturing vehicle pictures.

**Note**

The function varies with different models. The actual device prevails.

## 3.1 Set Detection Parameters

Radar is used to detect the target and link the capture. Set radar detection parameters before capturing vehicle pictures.

**Steps**

**Note**

The function varies with different models. The actual device prevails.

1. Click **Radar**.

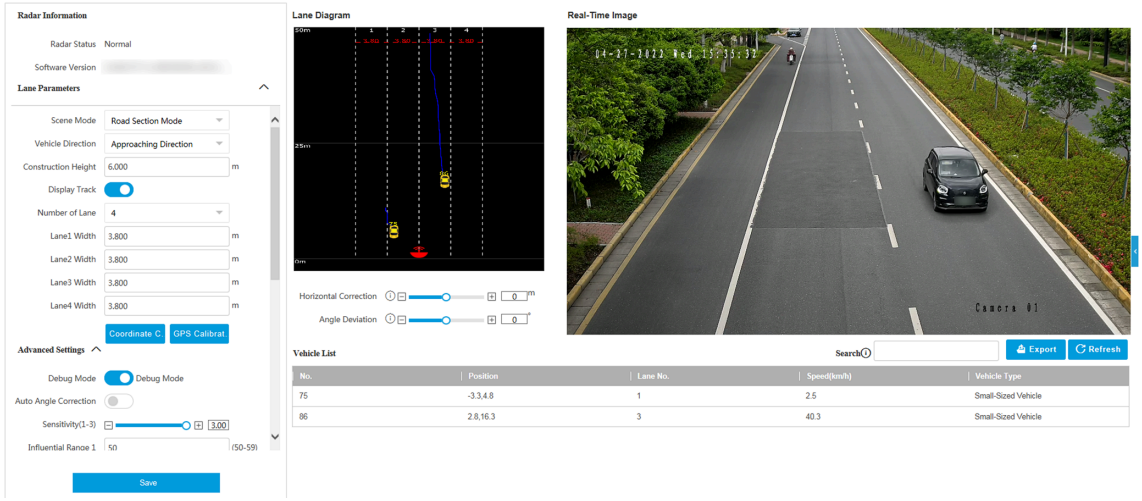


**Figure 3-1 Set Radar Parameters**

2. View the radar information.

**Software Version**

The software version of the radar.

**Radar Status**

The current radar status. The radar can be normally used in normal status. If the radar is in upgrading status, do not reboot the device. Refresh the interface every one minute, and the status can be restored to normal.

3. Click on the right of the interface and follow the wizard to set the parameters.
   1) Set **Number of Lane** and the width of each lane.
   2) Set **Scene Mode** according to the actual condition.
   3) Set **Vehicle Direction**.

      **Approaching Direction**

      The vehicles are driven towards the construction position of the camera.

      **Leaving Direction**

      The vehicles are driven far away from the construction position of the camera.

      **Bidirection**

      There are vehicles driven both towards and far away from the construction position of the camera.
   4) Set **Construction Height**, **Horizontal Correction**, and **Angle Deviation**.

      **Construction Height**

      The construction height of the camera.

      **Horizontal Correction**

      It is the horizontal position deviation between the radar detected lane and the actual lane. You can set it in two ways.

      - Method 1: Move the detected lane in the diagram leftwards or rightwards to overlap it with the actual lane to correct the difference.
      - Method 2: Enter the horizontal distance (m) from the radar installation position to the middle line of the actual lane to correct the difference.

      **Angle Deviation**

      It is the angle deviation between the radar detected lane and the actual lane. Rotate the angle of the detected lane in the diagram to overlap it with the actual lane to correct the difference.
   5) Set the coordinate calibration and GPS calibration.

   **Note**

   Refer to ***Set Radar Calibration*** for details.

4. Set the other parameters.

   **Display Track**

   Enable the function, and the target track will be displayed on the interface according to the detected coordinates.

   **Advanced Settings**

   Click **Advanced Settings** to set the advanced parameters.

**Debug Mode**

Enable the radar debug mode. In this mode, the vehicles outside the drawn area will be displayed, to make it convenient to debug the radar.

**Auto Angle Correction**

Enable the function, and the radar will adjust the angle deviation automatically according to the target track.

**Sensitivity**

The lower the sensitivity is, the more sensitive the detection will be. For the detection which is too sensitive (e.g., some fixed facilities, such as the bus station on the lane, are detected as vehicles), you can adjust the sensitivity higher.

**Influential Range X**

If you do not want to adjust the total sensitivity, enter the vertical distance from the possible mistakenly recognized area (such as the bus station) to the camera.

**Note**

The influential range of the sensitivity can be set every 50 m, and up to four areas can be set.

**Range X Sensitivity**

You can adjust the sensitivity of each influential range independently.

**Target Dwell Time**

The dwell time of the vehicle. Set it as 0 when measuring the queue length.

**Radar Prediction**

Enable the function, and the radar will predict the target track which can be displayed on the interface according to the detected coordinates.

**Radar Port Mapping**

Enable the function, and if you have enabled SSH, the debug commands including the radar settings information will be sent to the camera.

**Radar Detection Distance**

It is the range of the radar track. The default value is 200 m. You can select the value to adjust the radar track range.

**Distance to Stop Line**

It is the distance from the point on the ground just below the installed radar to the stop line at the intersection. The targets detected in this range will be filtered.

**Wave Band ID**

0 to 4 stand for five frequencies. Set different wave bands for different radars in the same scene to prevent the radars in the same wave band from influencing each other.

5. Click **Save**.

**What to do next**

After setting the construction and lane parameters, observe the real-time vehicle condition in the middle window of the interface. The target track should be straight. The initial position of the target should be larger than the trigger distance, or the vehicle targets may be missed. For example, if the trigger distance is 28 m from the approaching direction, the initial position of the target should be approximately 35 m. The target track should correspond to the actual lane, or the lane No. cannot be corresponded to when the data is uploaded. Adjust **Angle Deviation** and **Horizontal Deviation** to guarantee the vehicle target is on the corresponding lane. After the debug, enable **Normal Mode** to enter the normal working status.

## 3.2 Set Radar Calibration

Calibrate radar after the radar detection parameters are set to display the targets detected by the radar on the video.

**Before You Start**

Enable **Rules Information** in **Configuration → Local** .

**Steps**

1. Click **Radar**.
2. Click **Coordinate Calibration** or **GPS Calibration**.
3. Set the radar calibration.
   - Set manual calibration. Refer to ***Manual Calibration*** for details.
   - Set auto calibration. Refer to ***Auto Calibration*** for details.
   - Set GPS calibration. Refer to ***GPS Coordinate Calibration*** for details.

**Note**

The supported calibration modes vary with different models. The actual device prevails.

### 3.2.1 Manual Calibration

**Steps**

1. Click **Coordinate Calibration**.
2. Select **Calibration Mode** as **Manual Calibration**.

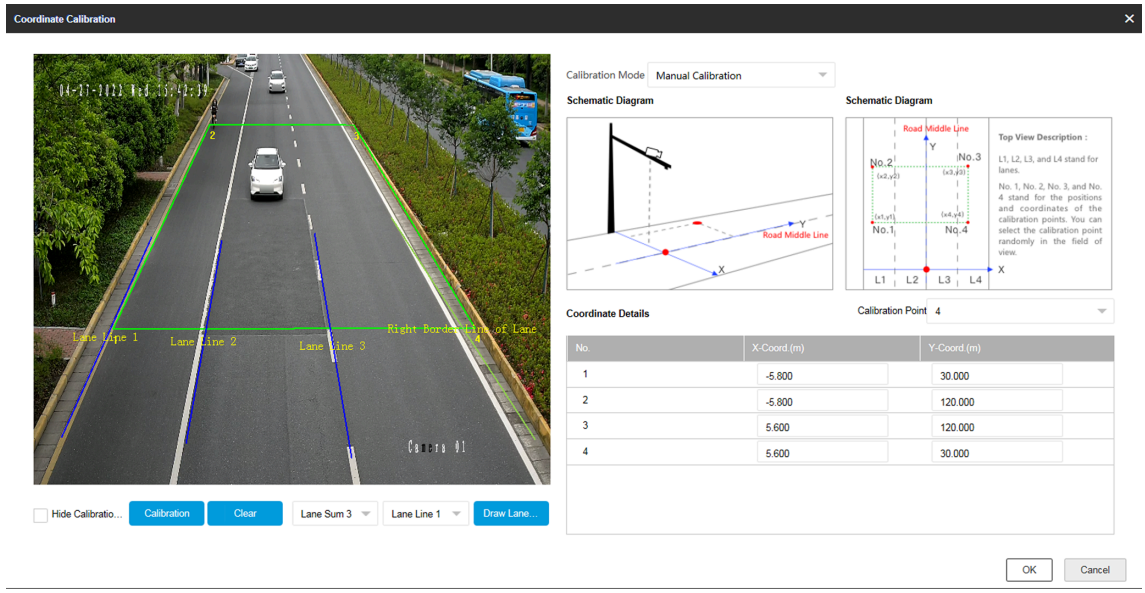


**Figure 3-2 Manual Calibration**

**3.** Draw the lane lines.

1) Select the lane sum.
2) Select the lane line No.
3) Click **Draw Lane Line**.

   The selected lane line will be displayed on the live view picture.
4) Drag the two end points of the line or drag the whole line to adjust its position according to the actual scene.
5) Repeat the steps above to draw more lane lines.

**4.** Draw the calibration area.

1) Select **Calibration Point**.
2) Click **Calibration**.
3) Click the left button of the mouse to locate the vertexes of the calibration area on the live view image, and click the right button of the mouse to finish the drawing.

**Note**

The number of vertexes should be consistent with the selected number of **Calibration Point**.

4) Drag the vertexes of the calibration area to align it to the lanes.

**Note**

- If the lanes cannot be aligned, ensure the calibration area can contain the detection area.
- You can refer to the schematic diagram and top view description to draw the calibration area.

5) **Optional:** Click **Clear** to clear the drawn calibration area.

**5.** Measure the world coordinates of the vertexes, and enter the values in the corresponding coordinate text fields.

**Note**

The origin (0, 0) of the world coordinates locates in the middle of the whole lanes detected by the radar. You can refer to the top view of the diagram for the positions.

6. Adjust the radar in two ways if the coordinates fed back from the radar cannot be matched with the measured coordinates when the vehicle passes the calibration position.
   - Adjust the radar until it can feed back the correct position.
   - Adjust the X-coordinates of the calibration points to make them adapt to the coordinates fed back from the radar. The method is to enter the X-coordinates fed back from the radar into the corresponding text fields when the vehicle passes the far left or far right. Adjust finely if there is small deviation to guarantee the radar frames and the video frames can be matched in the field of view.
7. **Optional:** Check **Hide Calibration Lines** to hide the lines on the live view image.
8. Click **OK**.

### 3.2.2 Auto Calibration

**Steps**

1. Click **Coordinate Calibration**.
2. Select **Calibration Mode** as **Auto Calibration**.

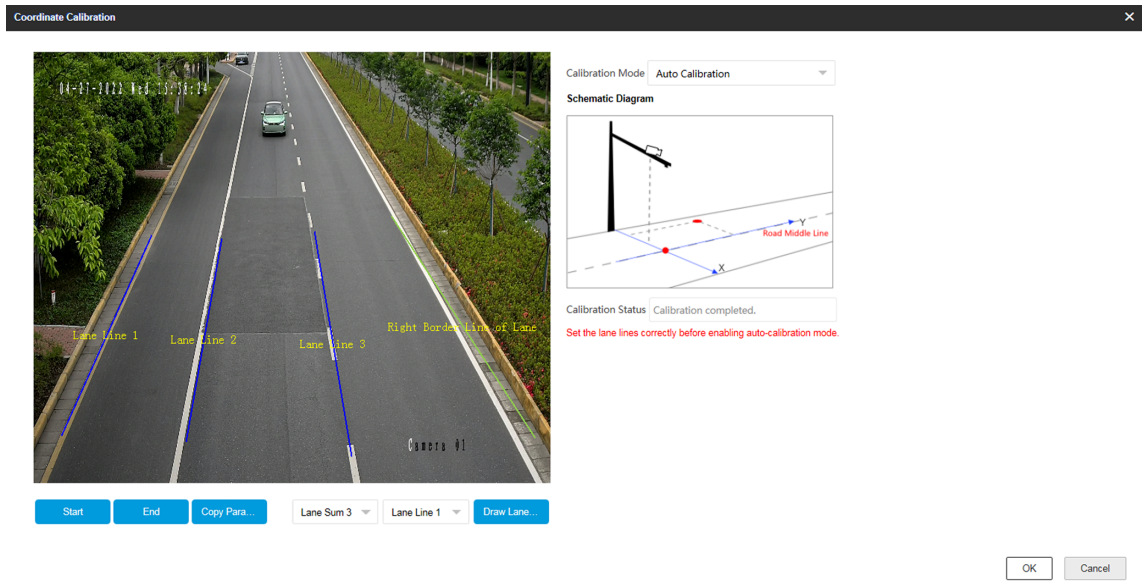


**Figure 3-3 Auto Calibration**

3. Draw the lane lines.
   1) Select the lane sum.
   2) Select the lane line No.
   3) Click **Draw Lane Line**.

   The selected lane line will be displayed on the live view picture.

4) Drag the two end points of the line or drag the whole line to adjust its position according to the actual scene.
5) Repeat the steps above to draw more lane lines.

4. Click **Start**.

   The auto calibration starts, and you can view the calibration status and progress. 100% means the auto calibration is finished.
5. **Optional:** Click **End** if the calibration effect has met the requirement during the process.
6. **Optional:** Click **Copy Parameters to Coordinate Mode** to copy the auto calibrated coordinates to the coordinate mode.
7. Click **OK**.

### 3.2.3 GPS Coordinate Calibration

The coordinates of vehicle positions can be converted to GPS coordinates to satisfy the requirements of third party or other platforms.

**Steps**

1. Click **GPS Calibration**.

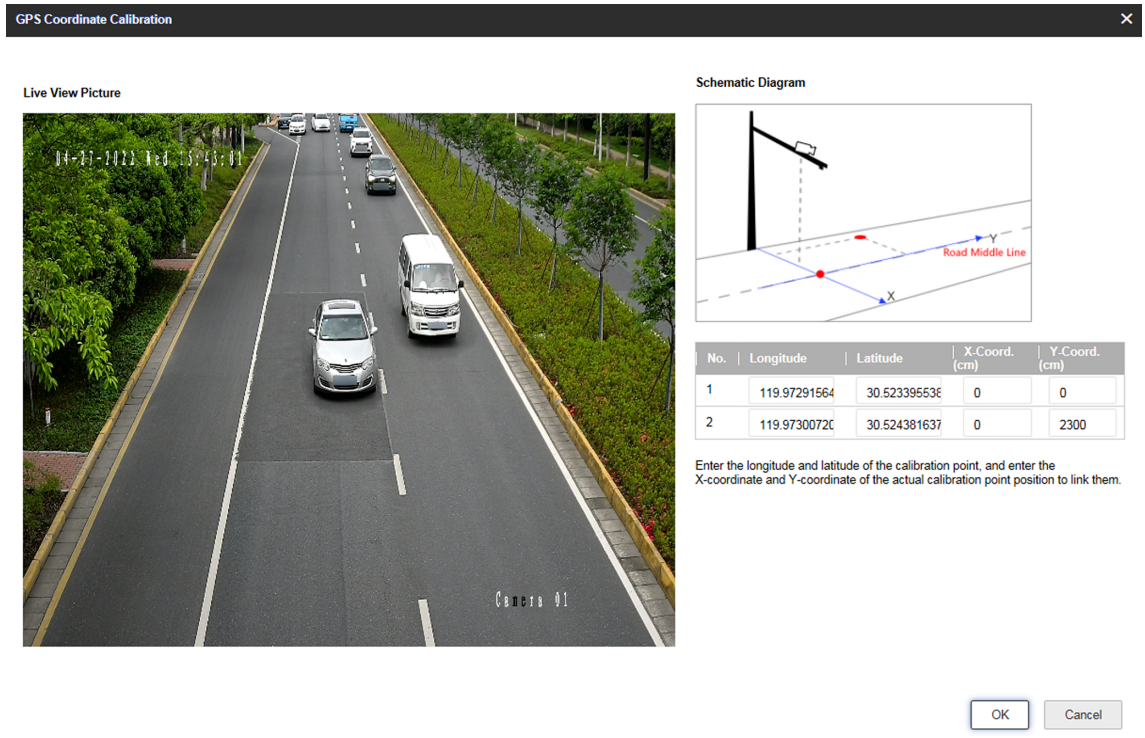


**Figure 3-4 GPS Coordinate Calibration**

2. Enter the longitudes and latitudes of the two calibration points far away from the road middle line.
3. Enter the coordinates of the two calibration points.

4. Click **OK**.

## 3.3 Search Detected Vehicles

You can search the radar detected vehicles and export the information.

**Steps**

1. Click **Radar**.
2. View the vehicle information in the vehicle list.
3. Enter the vehicle No. in the text field, and press **Enter** to search the vehicle information.
4. **Optional:** Export the vehicle information.
   - Search the vehicle first, and click **Export** to export the searched vehicle information to the computer.
   - Click **Export** directly to export the information of all the detected vehicles to the computer.

# Chapter 4 View Traffic Statistics

## 4.1 Search Picture

You can search the captured pictures stored in the storage card and export the pictures you need.

**Before You Start**
Install the storage card, and ensure the storage status is normal.

**Steps**
1. Click **Picture**.
2. Set search conditions.

   **Note**

   Search conditions vary with different models. The actual device prevails.
3. Click **Search**.

   The searched pictures information will be displayed in the picture list.

   **Note**

   If you have set level 1 arming for the device, the captured pictures will not be saved in the storage card. Go to the saving path of scene pictures to view them. You can go to **Configuration → Local** to check the saving path.
4. **Optional:** Check picture(s) and click **Download** to save them to local.

   The downloaded picture(s) will be marked as "Downloaded". You can go to **Configuration → Local** to check the saving path.

## 4.2 View Real-Time Picture

You can view the real-time captured pictures and license plate information.

**Steps**
1. Go to **Live View → Real-Time Capture** .
2. Click **Arming**.
3. Select an item from the list, and you can view the capture scene picture and license plate picture.


**Figure 4-1 Real-Time Picture**

4. **Optional:** You can also do the following operations.

/ / 
- **Level 1 Arming** can only connect one client or web. The uploaded pictures will not be stored in the storage card. The pictures in the storage card will be uploaded to the level 1 arming.
- **Level 2 Arming** can connect three clients or webs. The pictures will be uploaded to the client/web, and stored in the storage card.
- **Disarming** is to cancel the alarm status or real-time picture.

Click it to measure the license plate pixel. Click it again to disable the measurement.

Click it to enable the ruler to measure the license plate.

| | |
|---|---|
|  | Click it to enable manual capture. |
|  | Click it to set continuous capture parameters and the device will capture pictures according to the set interval.<br>• **Capture Times**: Up to five pictures can be captured per continuous capture.<br>• **Interval**: Up to four intervals can be set, and the default interval is 100 ms. |
|  | Display the images in full screen mode. |
| **Capture All** | Open the saving path of captured pictures. |

## 4.3 View Real-Time Traffic Statistics

You can view the real-time traffic statistics if the device supports this function.

**Steps**

1. Go to **Configuration → Capture → Advanced → Traffic Parameters → Traffic Parameters** .
2. Check **Enable**.
3. Set **Interval**.
4. Go to **Live View → Traffic Statistics** to view real-time data.

# Chapter 5 Live View and Local Configuration

## 5.1 Live View

### 5.1.1 Start/Stop Live View

Click ▶ to start live view. Click ■ to stop live view.

### 5.1.2 Select Image Display Mode

Click ▣ to select an image display mode.

### 5.1.3 Select Window Division Mode

Click ▣ to select a window division mode.

### 5.1.4 Select Stream Type

Click ⇄ to select the stream type. It is recommended to select the main stream to get the high-quality image when the network condition is good, and select the sub-stream to get the fluent image when the network condition is not good enough. The third stream is custom.

**Note**

The third stream varies with different models. The actual device prevails.

### 5.1.5 Capture Picture Manually

You can capture pictures manually on the live view image and save them to the computer.

**Steps**

1. Click 📷 to capture a picture.
2. **Optional:** Click **Configuration → Local → Live View Parameters** and select **Image Format**.
3. **Optional:** Click **Configuration → Local → Picture and Clip Settings** to view the saving path of snapshots in live view.

### 5.1.6 Record Manually

You can record videos manually on the live view image and save them to the computer.

**Steps**

1. Click to start live view.
2. Click to start recording.
3. Click to stop recording.
4. **Optional:** Click **Configuration → Local → Record File Settings** to view the saving path of record files.

### 5.1.7 Start/Stop Two-Way Audio

The device supports two-way audio with terminals, such as computers.

**Before You Start**

The device is equipped with an audio input interface and audio output interface, which support connecting with the corresponding devices, such as microphones and loudspeakers.

**Steps**

**Note**

The function varies with different models. The actual device prevails.

1. Select a window to start two-way audio.
2. Click to start live view.
3. Click to start two-way audio.

   When speaking at the PC end, you can hear the voice at the device end and vice versa.
4. Click to stop two-way audio.

### 5.1.8 Enable/Disable Audio

Enable the audio if necessary after connecting an audio input device under the audio & video stream. Click to enable and adjust it. Click again to disable this function.

**Note**

The function varies with different models. The actual device prevails.

### 5.1.9 Enable Digital Zoom

You can enable digital zoom to zoom in a certain part of the live view image.

**Steps**

1. Click to start live view.
2. Click to enable digital zoom.
3. Place the cursor on the live view image position which needs to be zoomed in. Drag the mouse rightwards and downwards to draw an area.

The area will be zoomed in.

4. Click any position of the image to restore to normal image.
5. Click to disable digital zoom.

### 5.1.10 Enable Regional Focus

**Steps**

**Note**

The function varies with different models. The actual device prevails.

1. Click .
2. Drag the cursor from the upper left corner to the lower right corner to select the area that needs to be focused.

**Result**

The selected area is focused.

### 5.1.11 Enable Regional Exposure

Enable regional exposure to expose partial area of the live view image.

**Steps**

**Note**

The function varies with different models. The actual device prevails.

1. Click .
2. Click to enable regional exposure.
3. Drag the cursor to select an area.

   The selected area will be exposed.
4. Click to disable regional exposure.
5. **Optional:** You can also do the following operations.

   To display the drawn regional area.

   To hide the drawn regional area.

### 5.1.12 Select Video Mode

Set the video mode when adjusting the device focus during construction.

Click and select when the device is running normally.

## 5.2 PTZ Operation

Click **Live View**. Click and click to show the PTZ control panel.

**Note**

- The PTZ supports power-off memory. When the device is suddenly cut off power or restarted normally, it can automatically return to the position before the power cut or reboot.
- The PTZ function varies with different models. The actual device prevails.
- Other unmentioned buttons are reserved buttons.

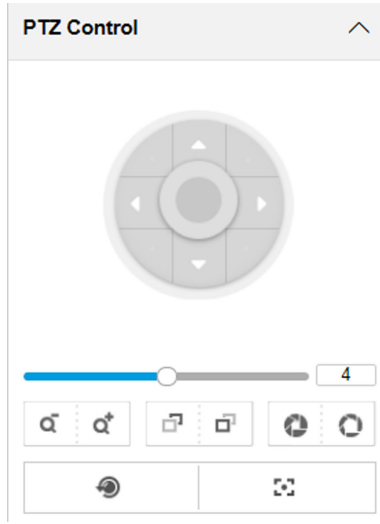


**Figure 5-1 PTZ Control Panel**

**Table 5-1 Button Description**

| Button | Description |
|---|---|
| 4 | Adjust the PTZ speed. |
| / | Zoom + and Zoom -<br>• Hold to zoom out the scene.<br>• Hold to zoom in the scene. |
| / | Focus + and Focus -<br>• Hold under the manual focus mode to make near objects become clear and distant objects become vague.<br>• Hold to make distant objects become clear and near objects become vague. |
| / | Iris + and Iris – |

| Button | Description |
| --- | --- |
| | • Hold to increase the iris diameter when in a dark environment.<br>• Hold to decrease the iris diameter when in a bright environment. |
| | Lens Initialization<br>It is applicable to devices with motorized lenses. You can use this function when overcoming image blurs caused by overtime zooming or focusing. |
| | Auxiliary Focus<br>It is applicable to devices with motorized lenses. Use this function to focus the lens automatically and make images become clear. |

## 5.3 Local Configuration

Go to **Configuration → Local** to set the live view parameters and change the saving paths of videos, captured pictures, scene pictures, etc.

**Note**

The parameters vary with different models. The actual device prevails.

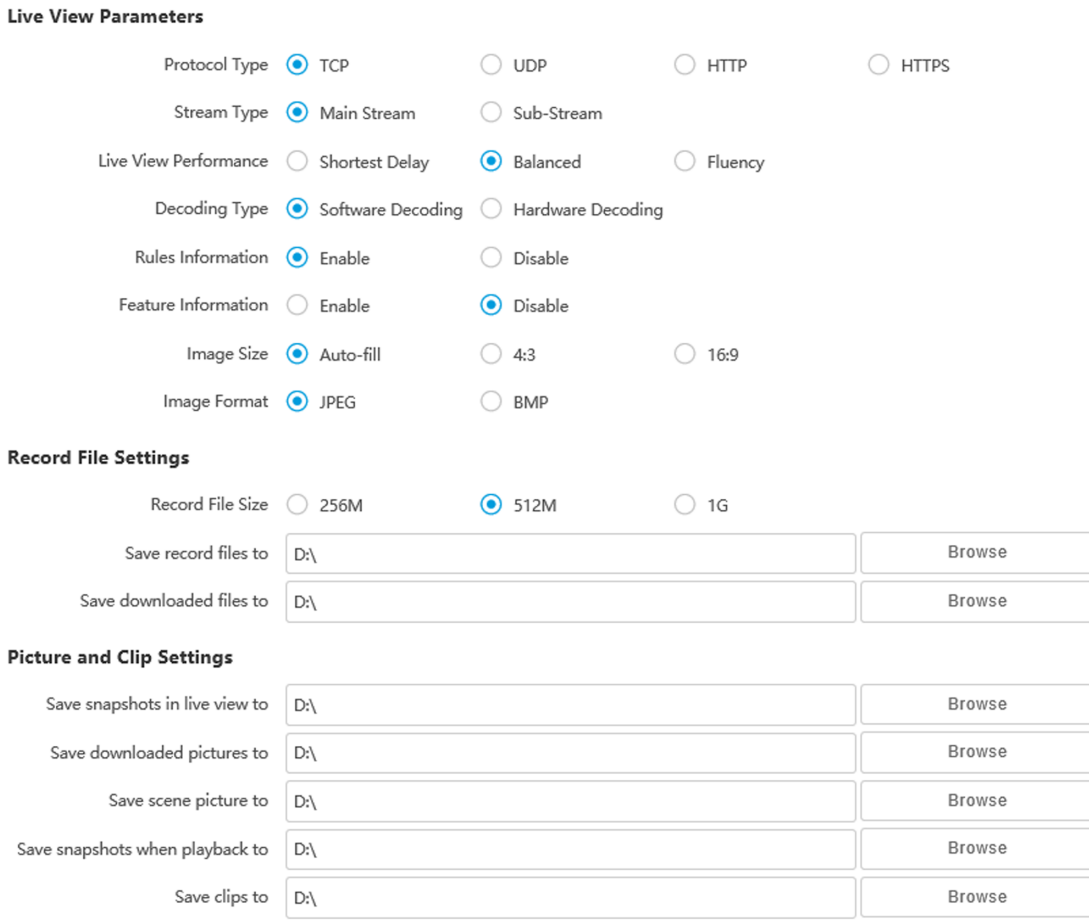


**Figure 5-2 Local Configuration**

**Protocol Type**

Select the network transmission protocol according to the actual needs.

**TCP**

Ensures complete delivery of streaming data and better video quality, yet the real-time transmission will be affected.

**UDP**

Provides real-time audio and video streams.

**HTTP**

Gets streams from the device by a third party client.

**HTTPS**

Gets streams in https format.

**Stream Type**

**Main Stream**

Select it to get the high-quality image when the network condition is good.

**Sub-Stream**

Select it to get the fluent image when the network condition is not good enough.

**Live View Performance**

**Shortest Delay**

The video is real-time, but its fluency may be affected.

**Balanced**

Balanced mode considers both the real time and fluency of the video.

**Fluency**

When the network condition is good, the video is fluent.

**Decoding Type**

**Software Decoding**

Decode via software. It takes up more CPU resources but provides images with better quality when it compares to the hardware decoding.

**Hardware Decoding**

Decode via GPU. It takes up less CPU resources but provides images with worse quality when it compares to the software decoding.

**Rules Information**

If you enable the rule information, tracking frames will be displayed on the live view interface when there are vehicles passing.

**Feature Information**

Enable it to display feature information of the target in the live view image.

**Image Size**

The display ratio of live view.

**Image Format**

The saving format of manually captured images.

**Record File Size**

Select the packed size of the manually recorded video files. After the selection, the max. record file size is the value you selected.

**Save record files to**

Set the saving path for the manually recorded video files.

**Save downloaded files to**

Set the saving path for the download files.

**Save snapshots in live view to**

Set the saving path for the manually captured pictures in live view mode.

**Save downloaded pictures to**

Set the saving path for the downloaded pictures.

**Save scene picture to**

Set the saving path of the captured pictures in **Live View → Real-Time Capture** .

**Save snapshots when playback to**

Set the saving path for the manually captured pictures in playback mode.

**Save clips to**

Set the saving path for the clips.

# Chapter 6 Playback

You can search, play back, and download videos that stored on the storage card.

**Steps**

1. Click **Playback**.
2. Select a channel.
3. Select a date.
4. Click **Search**.
5. Click to start playback.
6. **Optional:** You can also do the following operations.

| | |
|---|---|
| **Set playback time** | • Drag the time bar to the target time and click to play the video.<br>• Click the current time point showed above the time bar and enter the target time point in the popup window. Click **OK** and click to play the video. |
| **Capture image** | Click to capture an image. |
| **Clip record** | Click / to start/stop clipping the record. |
| **Play back in single frame** | Click once to play back the video in one frame. |
| **Download record** | a. Click .<br>b. Select the start time and end time.<br>c. Click **Search**.<br>d. Check record files that need to be downloaded.<br>e. Click **Download**. |
| **Stop playback** | Click to stop playback. |
| **Slow forward** | Click to slow down the playback. |
| **Fast forward** | Click to speed up the playback. |
| **Digital zoom** | Click to enable digital zoom.<br>Click to disable digital zoom. |
| **Adjust volume** | Click to enable volume. |

# Chapter 7 Record and Capture

## 7.1 Set Storage Path

### 7.1.1 Set Storage Card

If you want to store the files to the storage card, make sure you insert and format the storage card in advance.

**Before You Start**
Insert the storage card to the device.

**Steps**
1. Go to **Configuration → Storage → Storage Management → HDD Management → HDD Storage** .

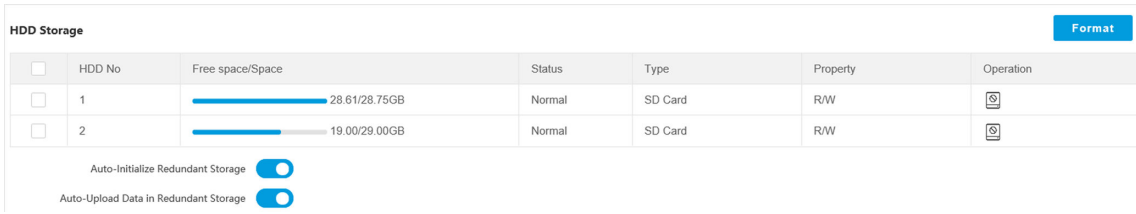


**Figure 7-1 Set Storage Card**

2. Format the storage card in two ways.
   - Check the storage card, and click **Format** to format it manually.

     **Note**

     For the newly installed storage card, you need to format it manually before using it normally.
   - If you want to format the storage card automatically when the card is abnormal, enable **Auto-Initialize Redundant Storage**.

     **Note**

     If you enable **Auto-Initialize Redundant Storage**, reboot the device to take the settings into effect.
3. **Optional:** If the device has been connected to the platform, and you want to upload the storage card information automatically, enable **Auto-Upload Data in Redundant Storage**.
4. Click **Save**.

### 7.1.2 Set FTP

Set FTP parameters if you want to upload the captured pictures to the FTP server.

**Before You Start**

Set the FTP server, and ensure the device can communicate normally with the server.

**Steps**

1. Go to **Configuration → Network → Data Connection → FTP** .

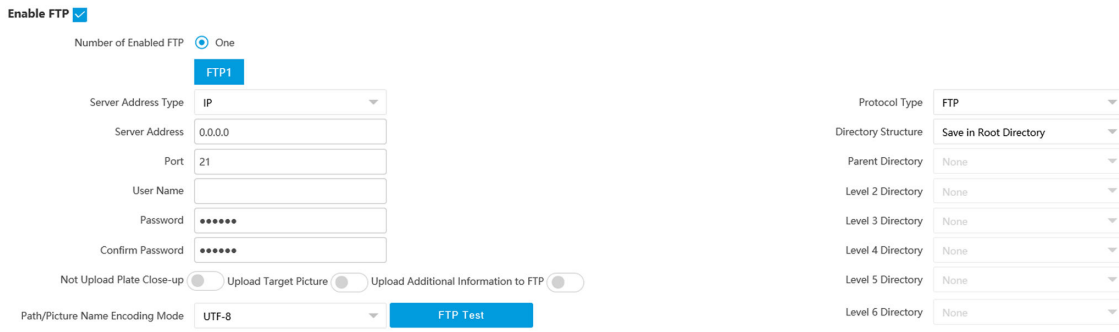


**Figure 7-2 Set FTP**

2. Check **Enable FTP**.
3. Select **Number of Enabled FTP**.

**Note**

You can only enable one FTP if the device does not support the violation capture, or you should set different uploaded data for each FTP respectively.

**Example**

If you select FTP 1 as **Upload Checkpoint Data**, FTP 2 will be selected as **Upload Violation Data** by default.

4. Set FTP Parameters.
   1) Select **Sever Address Type** and enter corresponding information.
   2) Enter **Port**.
   3) Enter **User Name**, **Password**, and confirm the password.
   4) Select **Protocol Type**.
   5) Select **Directory Structure**.

**Note**

You can customize the directory structure according to your needs.

5. **Optional:** Enable upload functions.

**Note**

Supported functions vary with different models. The actual device prevails.

**Not Upload Plate Close-up**

The close-up pictures of a license plate will not be uploaded.

**Upload Target Picture**

Upload the matted pictures of the target detection area to the FTP server.

**Upload Additional Information to FTP**

Add related information when uploading data to the FTP server.

6. Select **Path/Picture Name Encoding Mode**.

**GB2312**

Chinese characters encoding.

**UTF-8**

UNICODE encoding.

7. **Optional:** Click **FTP Test** to check the FTP server.
8. Set naming rules and separators according to the actual needs.
9. **Optional:** Edit **OSD information** which can be uploaded to the FTP server with the pictures to make it convenient to view and distinguish the data.
10. Click **Save**.

### 7.1.3 Set SDK Listening

The SDK listening can be used to receive the uploaded information and pictures of the device arming alarm.

**Before You Start**

The listening service has been enabled for the SDK listening, and the network communication with the device is normal.

**Steps**

1. Go to **Configuration → Network → Data Connection → Alarm Upload** .

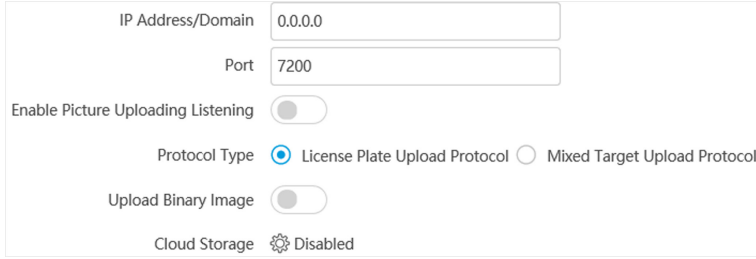


**Figure 7-3 Set SDK Listening**

2. Set **IP Address/Domain** and **Port** if you need to upload the alarm information and pictures.
3. **Optional:** Enable the picture uploading listening if you need to upload image information.
4. Select **Protocol Type**.

**Note**

Supported functions vary with different models. The actual device prevails.

**License Plate Upload Protocol**

Uploads arming alarm images of the license plate. You can enable **Upload Binary Image** if you need to upload images which are full of black or white pixel points. Enable **Output Binary Image in BMP Format** if you want to output images in this format.

**Mixed Target Upload Protocol**

Uploads images of multiple targets such as humans and vehicles. You can enable the body property to recognize clothes, bags, and other properties.

5. **Optional:** If you want to save the alarm information and pictures to the cloud storage, click ⚙ to set **Cloud Storage**. Refer to ***Set Cloud Storage*** for details.
6. Click **Save**.

### 7.1.4 Set Arm Host

The device can upload the captured pictures via the arm host.

**Steps**

**Note**

For level 1 arm, the pictures can be uploaded normally. If uploading failed, the device will upload again. For level 2 arm, the pictures will be uploaded once. No more upload if uploading failed. For level 3 arm, pictures will not be uploaded.

1. Go to **Configuration → Network → Data Connection → Upload Arm** .

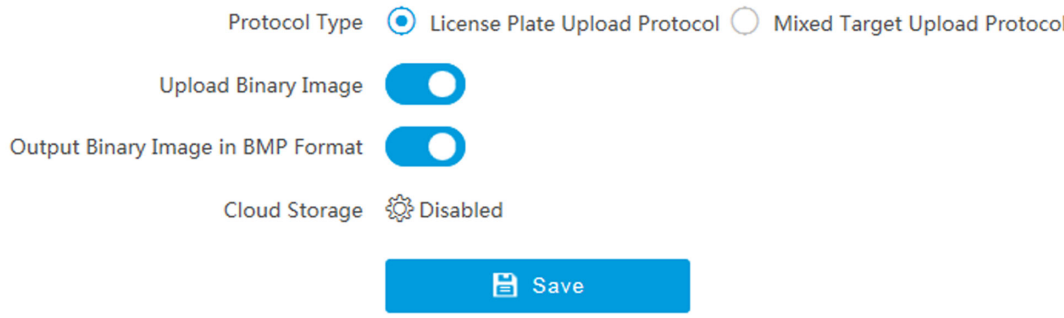


**Figure 7-4 Set Arm Host**

2. Select **Protocol Type**.

**Note**

Supported functions vary with different models. The actual device prevails.

**License Plate Upload Protocol**

Uploads arming alarm images of the license plate. You can enable **Upload Binary Image** if you need to upload binary images full of black or white pixel points. Enable **Output Binary Image in BMP Format** if you want to output images in this format.

**Mixed Target Upload Protocol**

Uploads images of multiple targets such as humans and vehicles. You can enable the body property to recognize clothes, bags, and other properties.

3. **Optional:** If you want to save the alarm information and pictures to the cloud storage, click ⚙ to set **Cloud Storage**. Refer to ***Set Cloud Storage*** for details.
4. Click **Save**.

### 7.1.5 Set ISAPI Listening

ISAPI listening and SDK listening are mutually exclusive protocols. If you enable the picture uploading listening, the device will transmit images via the SDK listening. If not, the device will upload images via ISAPI protocol after the ISAPI parameters are set.

**Before You Start**

The listening service has been enabled for the ISAPI host, and the network communication with the device is normal.

**Steps**

1. Go to **Configuration → Network → Data Connection → ISAPIListen** .

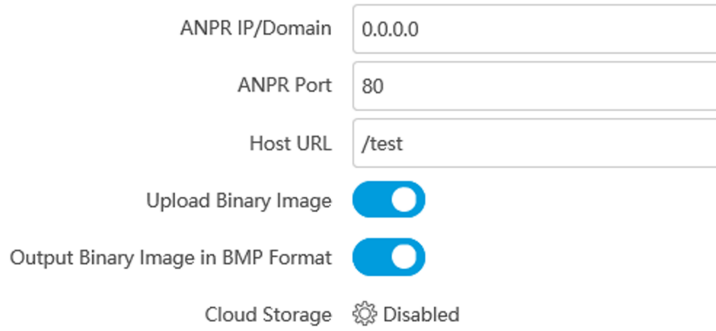


**Figure 7-5 Set ISAPI Listening**

2. Set **ANPR IP/Domain**, **ANPR Port**, and **Host URL**.
3. **Optional:** Enable **Upload Binary Image** if you need to upload images which are full of black or white pixel points.

**Note**

Enable **Output Binary Image in BMP Format** if you want to output images in this format.

4. **Optional:** If you want to save the alarm information and pictures to the cloud storage, click ⚙ to set **Cloud Storage**. Refer to ***Set Cloud Storage*** for details.
5. Click **Save**.

### 7.1.6 Set Cloud Storage

Cloud storage is a kind of network storage. It can be used as the extended storage to save the captured pictures.

**Before You Start**

- Arrange the cloud storage server.
- You have enabled level 1 arming in **Live View → Real-Time Capture** .

**Note**

The real-time capture should be used with dedicated platform.

**Steps**

1. Go to **Configuration → Storage → Storage Management → Cloud Storage** .

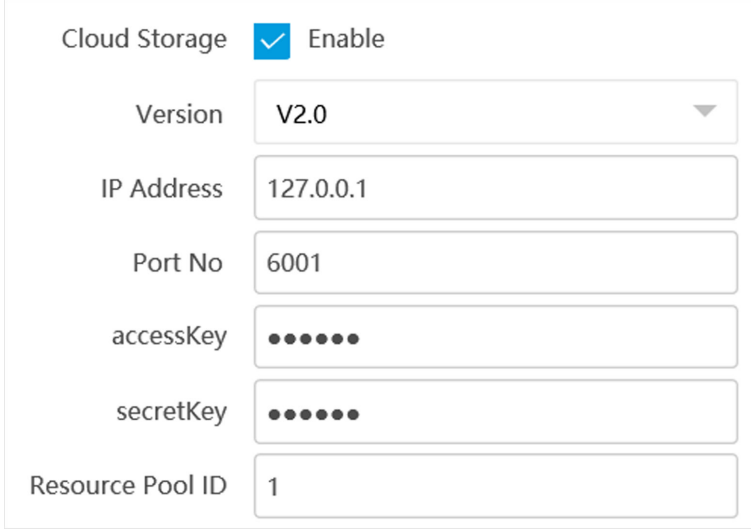


**Figure 7-6 Set Cloud Storage**

2. Check **Enable**.
3. Select **Version**.

**V1.0**
a. Enter **IP Address** and **Port No.**
b. Enter **User Name** and **Password**.
c. Enter **Cloud Storage ID** and **Violation Cloud Storage ID** according to the server storage area No.

**V2.0**
a. Enter **IP Address** and **Port No.**
b. Enter **accessKey** and **secretKey**.
c. Enter **Resource Pool ID** according to the server storage area No. of uploading pictures.

4. Click **Save**.

## 7.2 Set Quota

Set the video and picture ratio in the storage.

**Before You Start**
Install the storage card.

**Steps**
1. Go to **Configuration → Storage → Storage Management → HDD Quota** .

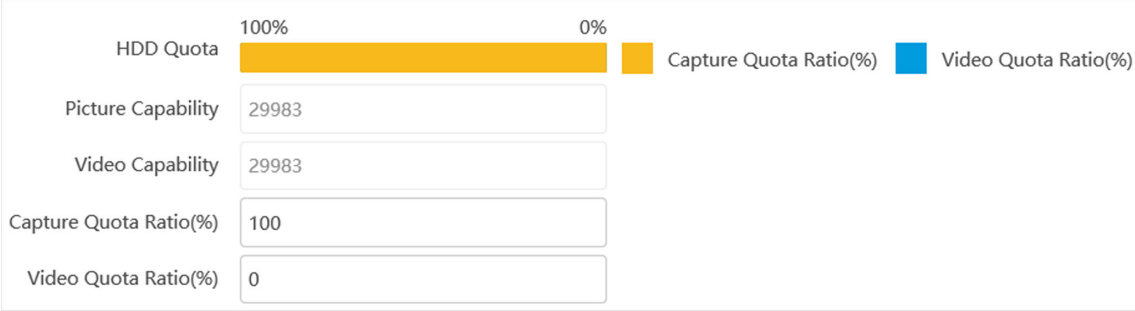


**Figure 7-7 Set Quota**

2. Set **Capture Quota Ratio** and **Video Quota Ratio** according to the actual needs.

**Note**
The percentage sum of the capture and video quota ratio should be 100 %.

3. Click **Save**.

**What to do next**
Format the storage card after the settings.

## 7.3 Set Record Schedule

Set record schedule to record video automatically during configured time periods.

**Before You Start**
Install the storage card.

**Steps**
1. Go to **Configuration → Storage → Schedule Settings → Record Schedule** .
2. **Optional:** Enable the recording overwriting.
   When the storage is full, the earliest videos will be overwritten.
3. Enable the record schedule.

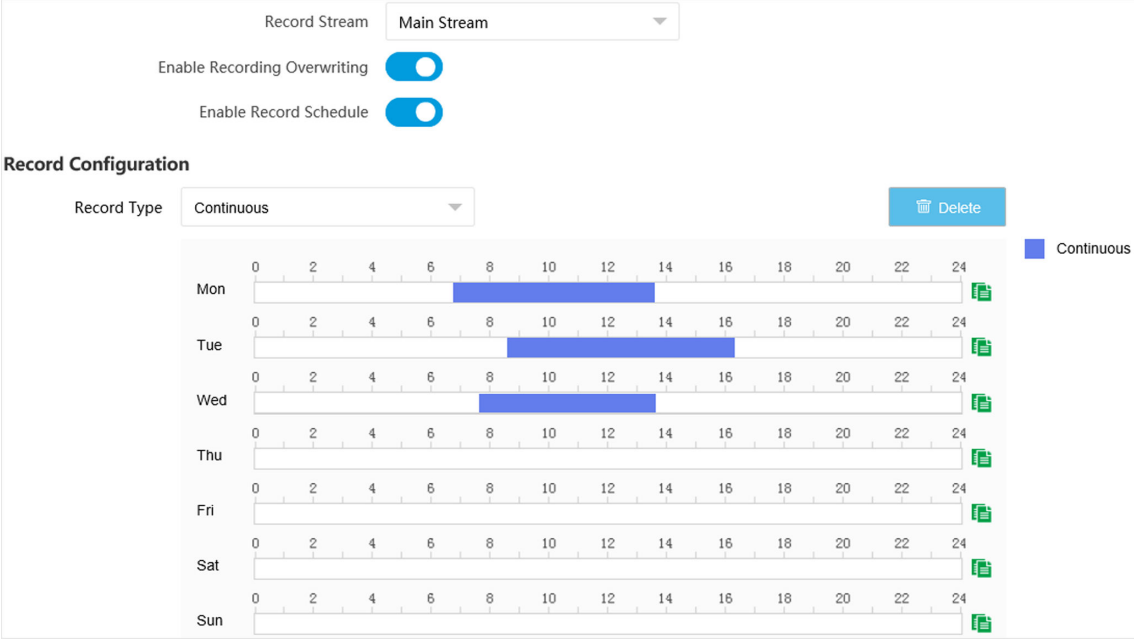


**Figure 7-8 Set Record Schedule**

4. Select **Record Type**.
5. Drag the cursor on the time bar to set a recording time.

**Note**

Up to 8 time periods can be set on a time bar.

6. Adjust the recording time.
   - Click a set recording period and enter the start time and end time in the pop-up window.
   - Drag two ends of the set recording period bar to adjust the length.
   - Drag the whole set recording period bar and relocate it.
7. **Optional:** Delete recording periods.
   - Click a set recording period and click **Delete** in the pop-up window.
   - Click a set recording period and click **Delete** on the record configuration interface.
8. **Optional:** Click to copy set recordings to other days.
9. Click **Save**.

**Result**

The device will only record at the set periods.

# Chapter 8 Encoding and Display

## 8.1 Set Video Encoding Parameters

Set video encoding parameters to adjust the live view and recording effect.

- When the network signal is good and the speed is fast, you can set high resolution and bitrate to raise the image quality.
- When the network signal is bad and the speed is slow, you can set low resolution, bitrate, and frame rate to guarantee the image fluency.
- When the network signal is bad, but the resolution should be guaranteed, you can set low bitrate and frame rate to guarantee the image fluency.
- Main stream stands for the best stream performance the device supports. It usually offers the best resolution and frame rate the device can do. But high resolution and frame rate usually means larger storage space and higher bandwidth requirements in transmission. Sub-stream usually offers comparatively low resolution options, which consumes less bandwidth and storage space. Third stream is offered for customized usage.

**Steps**

**Note**

The supported parameters vary with different models. The actual device prevails.

1. Go to **Configuration → Video → Video Encoding → Video Encoding** .
2. Set the parameters for different streams.

**Stream Type**

Select the stream type according to your needs.

**Note**

The supported stream types vary with different models. The actual device prevails.

**Bitrate**

Select relatively large bitrate if you need good image quality and effect, but more storage spaces will be consumed. Select relatively small bitrate if storage requirement is in priority.

**Frame Rate**

It is to describe the frequency at which the video stream is updated and it is measured by frames per second (fps). A higher frame rate is advantageous when there is movement in the video stream, as it maintains image quality throughout.

**Resolution**

The higher the resolution is, the clearer the image will be. Meanwhile, the network bandwidth requirement is higher.

**SVC**

Scalable Video Coding (SVC) is an extension of the H.264/AVC and H.265 standard. Enable the function and the device will automatically extract frames from the original video when the network bandwidth is insufficient.

**Bitrate Type**

Select the bitrate type to constant or variable.

**Video Quality**

When bitrate type is variable, 6 levels of video quality are selectable. The higher the video quality is, the higher requirements of the network bandwidth.

**Profile**

When you select H.264 or H.265 as video encoding, you can set the profile. Selectable profiles vary according to device models.

**I Frame Interval**

It refers to the number of frames between two key frames. The larger the I frame interval is, the smaller the stream fluctuation is, but the image quality is not that good.

**Video Encoding**

The device supports multiple video encoding types, such as H.264, H.265, and MJPEG. Supported encoding types for different stream types may differ. H.265 is a new encoding technology. Compared with H.264, it reduces the transmission bitrate under the same resolution, frame rate, and image quality.

3. Click **Save**.

## 8.2 Set Image Parameters

You can adjust the image parameters to get clear image.

**Steps**

**Note**

The supported parameters may vary with different models. The actual device prevails.

1. Go to **Configuration → Video → Camera Parameter → Camera Parameter** .

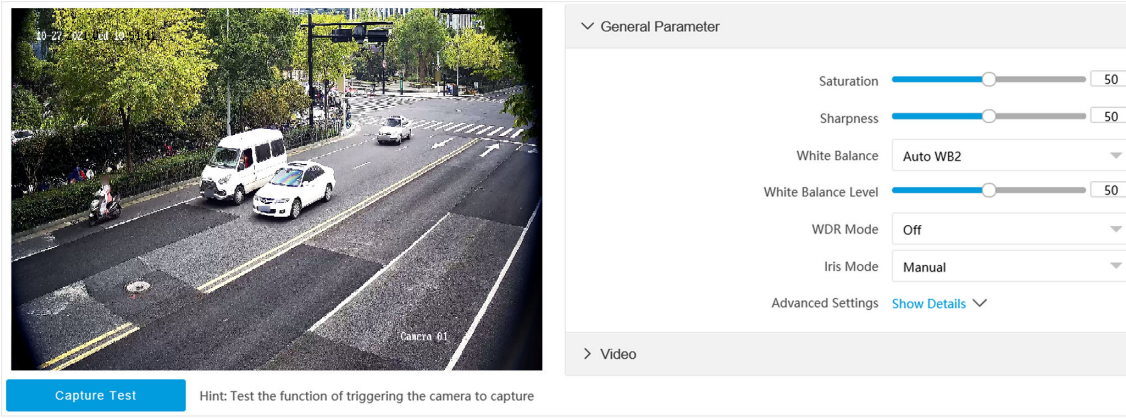


**Figure 8-1 Set Image Parameters**

**2.** Set the camera parameters.

**Note**

The supported parameters vary with different models. The actual device prevails.

**General Parameter**

**Saturation**

It refers to the colorfulness of the image color.

**Sharpness**

It refers to the edge contrast of the image.

**White Balance**

It is the white rendition function of the device used to adjust the color temperature according to the environment.

**WDR Mode**

Wide Dynamic Range (WDR) can be used when there is a high contrast of the bright area and the dark area of the scene.

**WDR Switch**

**On**: Set **WDR Level**. The higher the level is, the higher the WDR strength is. **Time**: Enable WDR according to time. **Brightness**: Set **Light Threshold**. When the brightness reaches the threshold, WDR will be enabled.

**Iris Mode**

Select the iris mode as manual or auto.

**Brightness Enhancement at Night**

The scene brightness will be enhanced at night automatically.

**Enable Defog**

Enable defog to get a clear image in foggy days.

**Light Compensation on License Plate**

Check it. The plate brightness compensation can be realized, and various light supplement conditions can be adapted via setting license plate expectant brightness and supplement light correction coefficient. The higher the sensitivity is, the easier this function can be enabled.

**Enable Gamma Correction**

The higher the gamma correction value is, the stronger the correction strength is.

**Black and White Mode at Night**

When ICR is in night mode, you can check it to keep the video in black and white mode.

**Video**

**Brightness**

It refers to the brightness the image.

**Contrast**

It refers to the contrast of the image. Set it to adjust the levels and permeability of the image.

**Shutter Speed**

If the shutter speed is quick, the details of the moving objects can be displayed better. If the shutter speed is slow, the outline of the moving objects will be fuzzy and trailing will appear.

**Gain**

It refers to the upper limit value of limiting image signal amplification. It is recommended to set a high gain if the illumination is not enough, and set a low gain if the illumination is enough.

**Hue Range**

Select the range to adapt to the display.

**3D DNR**

Digital Noise Reduction (DNR) reduces the noise in the video stream.

In **Normal Mode**, the higher the **3D DNR Level** is, the stronger the noise will be reduced. But if it is too high, the image may become fuzzy.

In **Expert Mode**, set **Spatial Intensity** and **Time Intensity**. If the space domain intensity is too high, the outline of the image may become fuzzy and the details may lose. If the time domain intensity is too high, trailing may appear.

**2D DNR**

The higher the **2D DNR Level** is, the stronger the noise will be reduced. But if it is too high, the image may become fuzzy.

**Slow Shutter**

It increases the exposure time on a single frame, which makes a camera more sensitive to the light so it can produce images even in low lux conditions.

**Video Standard**

Select the video standard according to the actual power supply frequency.

3. **Optional:** Click **Capture Test** to check the image.

## 8.3 Set ICR

ICR adopts mechanical IR filter to filter IR in the day to guarantee the image effect, and to remove the IR filter at night to guarantee full-spectrum rays can get through the device.

**Steps**

1. Go to **Configuration → Capture → Capture Images → ICR** .
2. Select **ICR Mode**.

| | |
|---|---|
| **Auto Switch** | Switches to ICR mode automatically at night or in dark light conditions. |
| **Manual Switch** | Select **Day-night Mode** to switch to the day or night manually. |
| **Schedule Switch** | Set **Day-night Mode**, **Start Time**, and **End Time** to switch to ICR mode only during the set time period. |

3. Click **Save**.

## 8.4 Set ROI

ROI (Region of Interest) encoding helps to assign more encoding resources to the region of interest, thus to increase the quality of the ROI whereas the background information is less focused.

**Before You Start**

Please check the video encoding type. ROI is supported when the video encoding type is H.264 or H.265.

**Steps**

1. Go to **Configuration → Video → Video Encoding → ROI** .

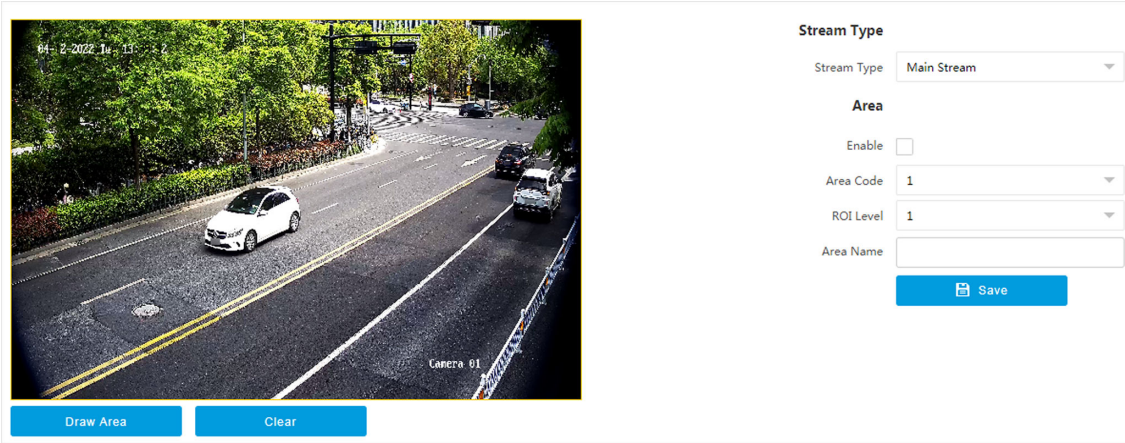


**Figure 8-2 Set ROI**

2. Select **Stream Type**.
3. Set ROI region.
   1) Check **Enable**.
   2) Select **Area Code**.
   3) Click **Draw Area**.
   4) Drag the mouse on the live view image to draw a fixed area.
   5) Select the fixed area that needs to be adjusted and drag the mouse to adjust its position.
4. Select **ROI Level** and enter **Area Name**.

   **Note**

   The higher the ROI level is, the clearer the image of the detected area is.
5. Click **Save**.
6. **Optional:** Select other area codes and repeat the steps above if you need to draw multiple fixed areas.

## 8.5 Set Privacy Mask

The privacy mask can be used to protect personal privacy by concealing parts of the image from view or recording with a masked area.

**Steps**

1. Go to **Configuration → Video → Video Encoding → Privacy Mask** .

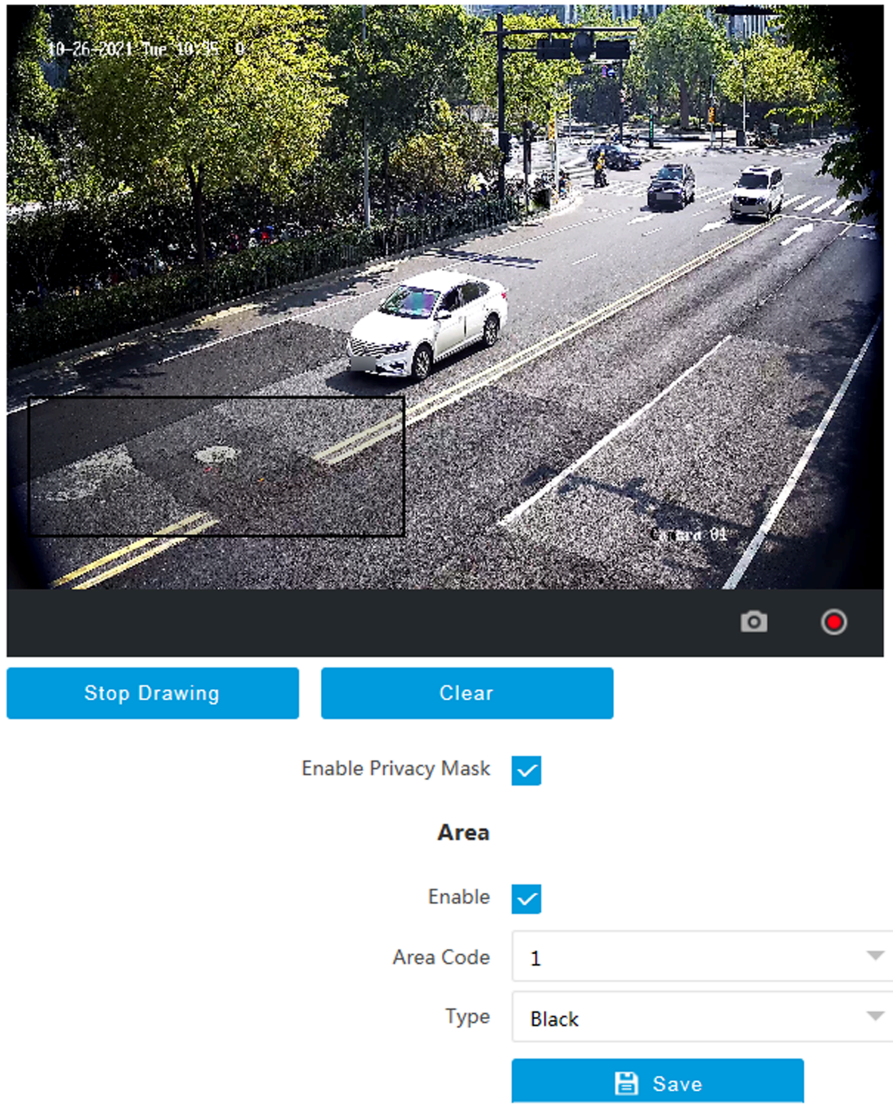


**Figure 8-3 Set Privacy Mask**

2. Check **Enable Privacy Mask**.
3. Enable the privacy mask area(s).
   1) Check **Enable**.
   2) Select **Area Code**.
   3) Select **Type**.
4. Draw the privacy mask area.
   1) Click **Draw Area**.
   2) In the live view image, drag the mouse to draw the privacy mask area of the selected area code.
   3) Click **Stop Drawing**.
   4) **Optional:** Click **Clear** to clear all the drawn areas.

5. **Optional:** Repeat step 3 and 4 to draw more privacy mask areas.

**Note**

Up to four privacy mask areas are supported.

6. Click **Save**.

## 8.6 Set OSD

You can customize OSD information on the live view.

**Steps**

1. Go to **Configuration → Video → Text Overlay on Video → Text Overlay on Video** .

**Note**

The supported functions vary with different models. The actual device prevails.

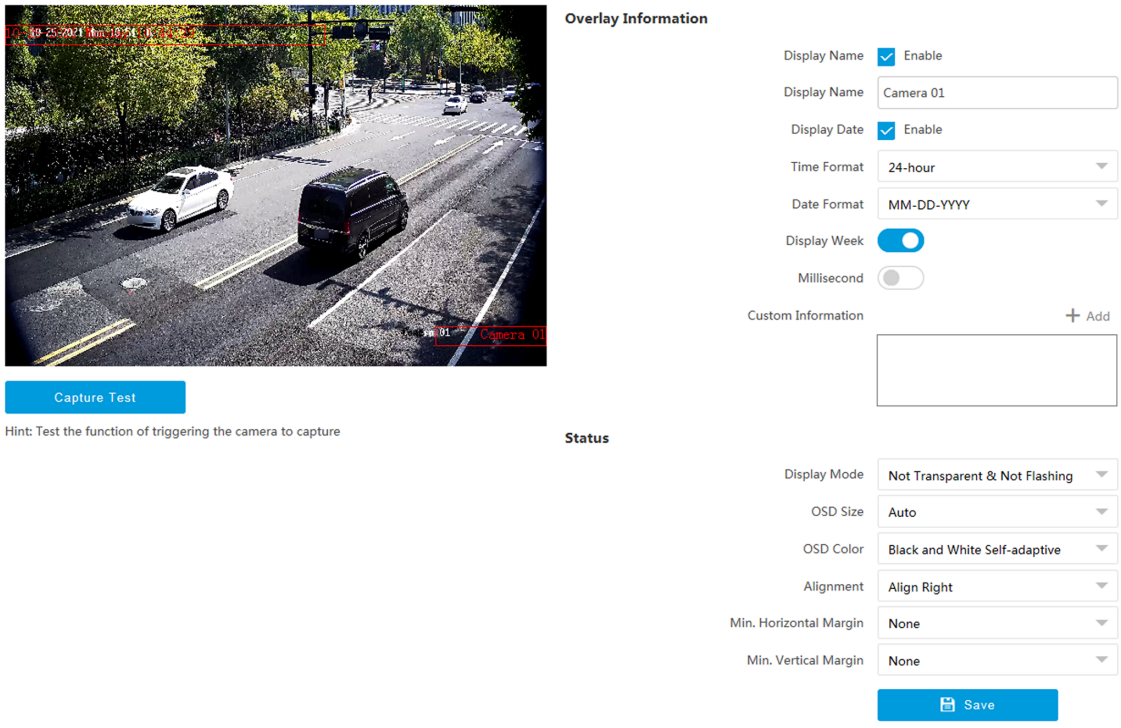


**Figure 8-4 Set OSD**

2. Set display contents.
   1) Check **Display Name**.
   2) Enter **Display Name**.
   3) Check **Display Date**, and set the time and date format.
   4) Enable **Display Week** or **Millisecond** according to your needs.
3. **Optional:** Click **Add** and enter information if you want to add custom information.

**Note**

Up to 6 items of custom information can be added.

4. Set display properties (font, color, etc.).
5. Select **Alignment**.

**Note**

If you select **Align Left** or **Align Right**, set **Min. Horizontal Margin** and **Min. Vertical Margin**.

6. Drag the red frames on the live view image to adjust their positions.
7. Click **Save**.

**Result**

The set OSD will be displayed in live view image and recorded videos.

# Chapter 9 Network Configuration

## 9.1 Set IP Address

IP address must be properly configured before you operate the device over network. IPv4 and IPv6 are both supported. Both versions can be configured simultaneously without conflicting to each other.

**Steps**

**Note**

The supported parameters vary with different models. The actual device prevails.

1. Go to **Configuration → Network → Network Parameters → Network Interface** .

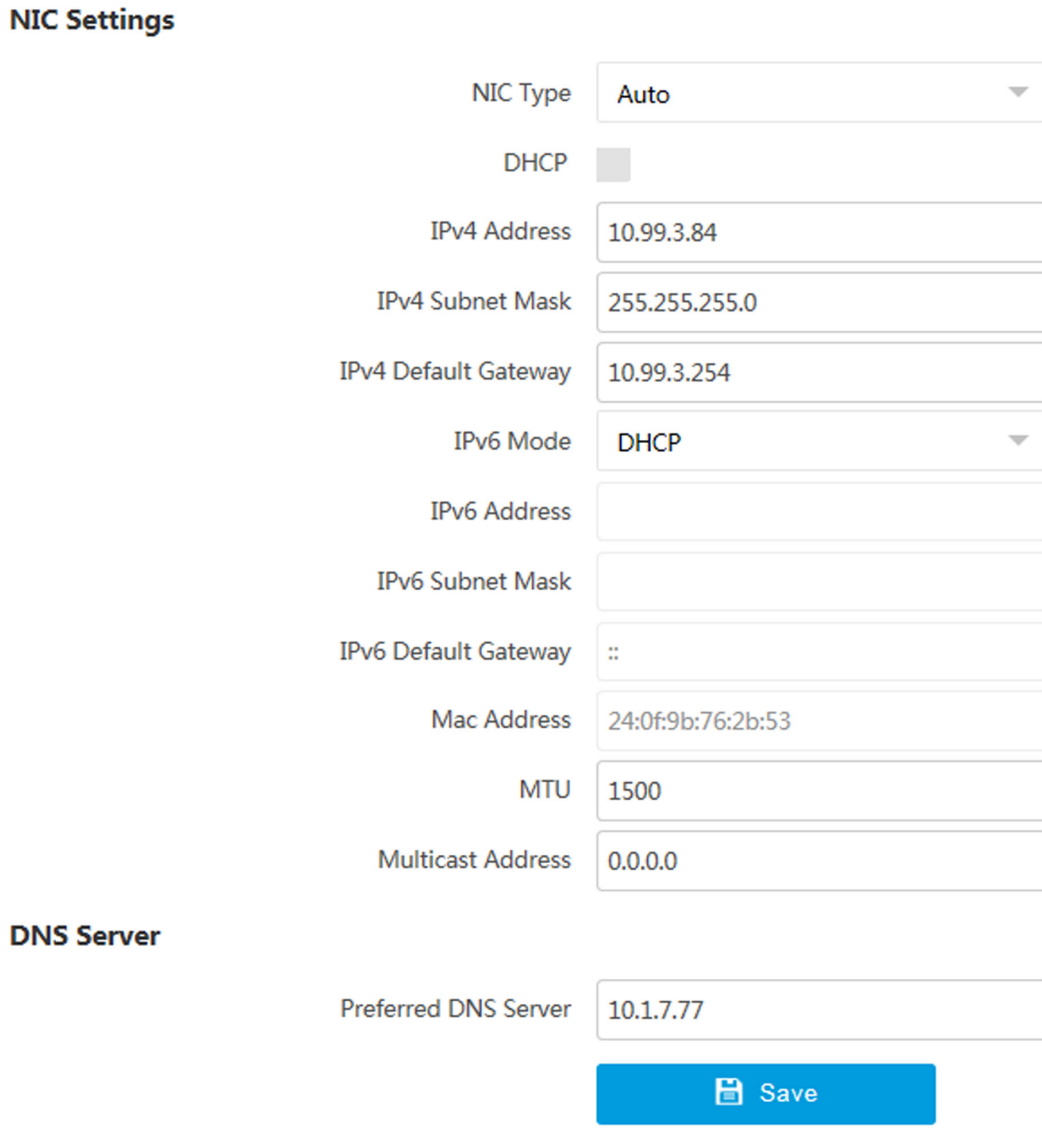


**Figure 9-1 Set IP Address**

**2.** Set network parameters.

**NIC Type**

Select a NIC (Network Interface Card) type according to your network condition.

**IPv4**

Two modes are available.

**DHCP**

The device automatically gets the IP parameters from the network if you check **DHCP**. The device IP address is changed after enabling the function. You can use SADP to get the device IP address.

**Note**

The network that the device is connected to should support DHCP (Dynamic Host Configuration Protocol).

**Manual**

You can set the device IP parameters manually. Enter **IPv4 Address**, **IPv4 Subnet Mask**, and **IPv4 Default Gateway**.

**IPv6**

Three IPv6 modes are available.

**Route Advertisement**

The IPv6 address is generated by combining the route advertisement and the device Mac address.

**Note**

Route advertisement mode requires the support from the router that the device is connected to.

**DHCP**

The IPv6 address is assigned by the server, router, or gateway.

**Manual**

Enter **IPv6 Address**, **IPv6 Subnet Mask**, and **IPv6 Gateway**. Consult the network administrator for required information.

**MTU**

It stands for maximum transmission unit. It is the size of the largest protocol data unit that can be communicated in a single network layer transaction.

The valid value range of MTU is 1280 to 1500.

**Multicast Address**

Multicast is group communication where data transmission is addressed to a group of destination devices simultaneously. After setting the IP address of the multicast host, you can send the source data efficiently to multiple receivers.

**DNS**

It stands for domain name server. It is required if you need to visit the device with domain name. And it is also required for some applications (e.g., sending email). Set **Preferred DNS Address** properly if needed.

3. Click **Save**.

## 9.2 Connect to ISUP Platform

ISUP (EHome) is a platform access protocol. The device can be remotely accessed via this platform.

**Before You Start**

- Create the device ID on ISUP platform.
- Ensure the device can communicate with the platform normally.

**Steps**

1. Go to **Configuration → Network → Data Connection → ISUP** .

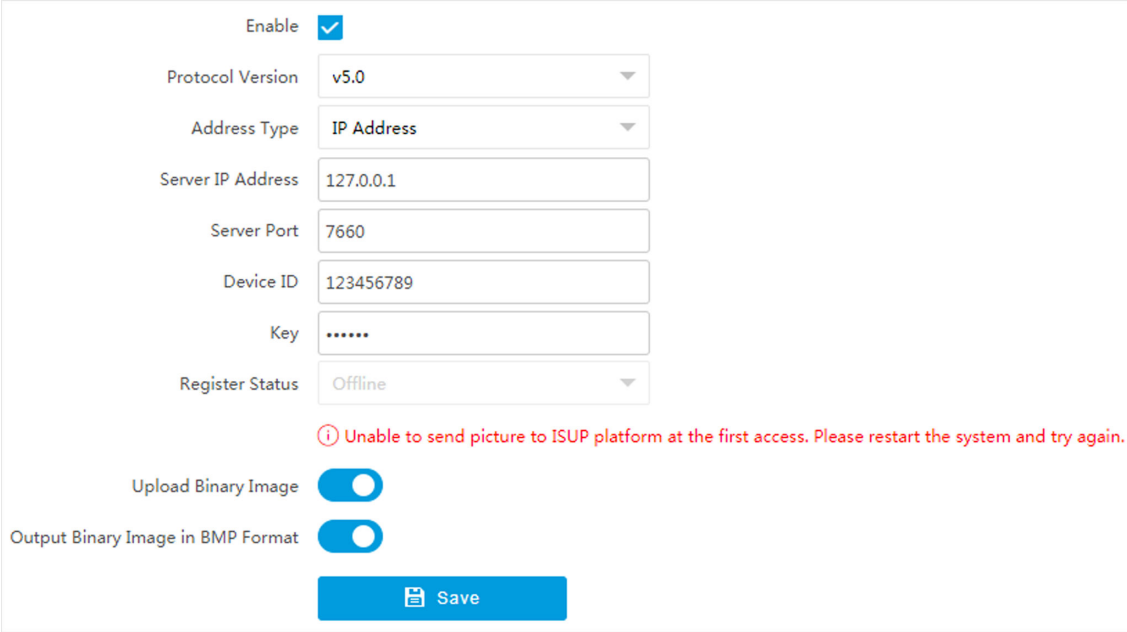


**Figure 9-2 Connect to ISUP Platform**

2. Check **Enable**.
3. Select **Protocol Version**.
4. Select **Address Type**.
5. Enter **Sever IP Address**, **Server Port**, and **Device ID**.

**Note**

You need to enter **Key** if you select **Protocol Version** as **v5.0**.

6. **Optional:** For protocol **v5.0**, you can enable **Upload Binary Image** if you need to upload images which are full of black or white pixel points.

**Note**

Enable **Output Binary Image in BMP Format** if you want to output images in this format.

7. Click **Save**.
8. **Optional:** View **Register Status**.

**Note**

When the registration status shows online, you can add or manage the device via the platform software. Refer to its corresponding manual for details.

## 9.3 Set DDNS

You can use the Dynamic DNS (DDNS) for network access. The dynamic IP address of the device can be mapped to a domain name resolution server to realize the network access via domain name.

**Before You Start**

- Register the domain name on the DDNS server.
- Set the LAN IP address, subnet mask, gateway, and DNS server parameters. Refer to "Set IP Address" for details.
- Complete port mapping. The default ports are 80, 8000, and 554.

**Steps**

1. Go to **Configuration → Network → Network Parameters → DDNS** .

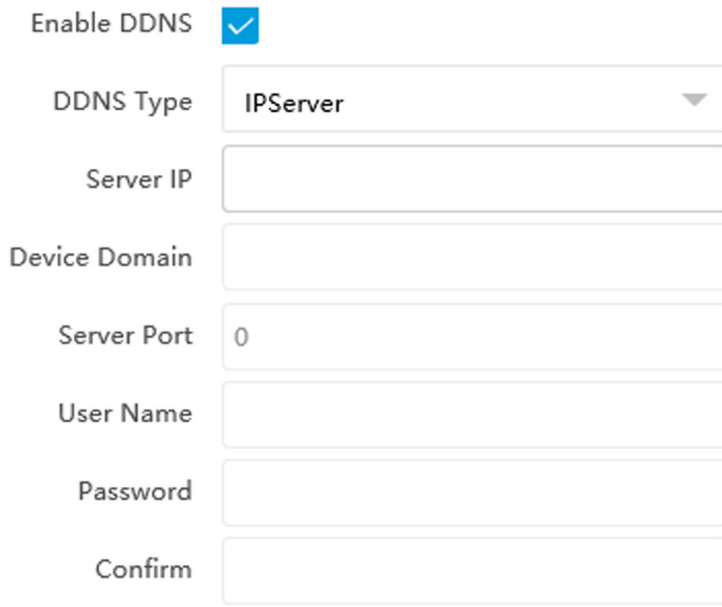


**Figure 9-3 Set DDNS**

2. Check **Enable DDNS**.
3. Enter the server address and other information.
4. Click **Save**.
5. Access the device.

**By Browsers** Enter the domain name in the browser address bar to access the device.

**By Client Software** Add domain name to the client software. Refer to the client software manual for specific adding methods.

## 9.4 Set SNMP

You can set the SNMP network management protocol to get the alarm event and exception messages in network transmission.

**Before You Start**
Download the SNMP software and manage to receive the device information via SNMP port.

**Steps**
1. Go to **Configuration → Network → Network Parameters → SNMP** .
2. Check **Enable SNMPv1**/**Enable SNMP v2c**/**Enable SNMPv3**.

**Note**
- The SNMP version you select should be the same as that of the SNMP software.
- Use different versions according to the security levels required. SNMP v1 is not secure and SNMP v2 requires password for access. SNMP v3 provides encryption and if you use the third version, HTTPS protocol must be enabled.

3. Set the SNMP parameters.
4. Click **Save**.

## 9.5 Set Port

The device port can be modified when the device cannot access the network due to port conflicts.

Go to **Configuration → Network → Network Parameters → Port** for port settings.

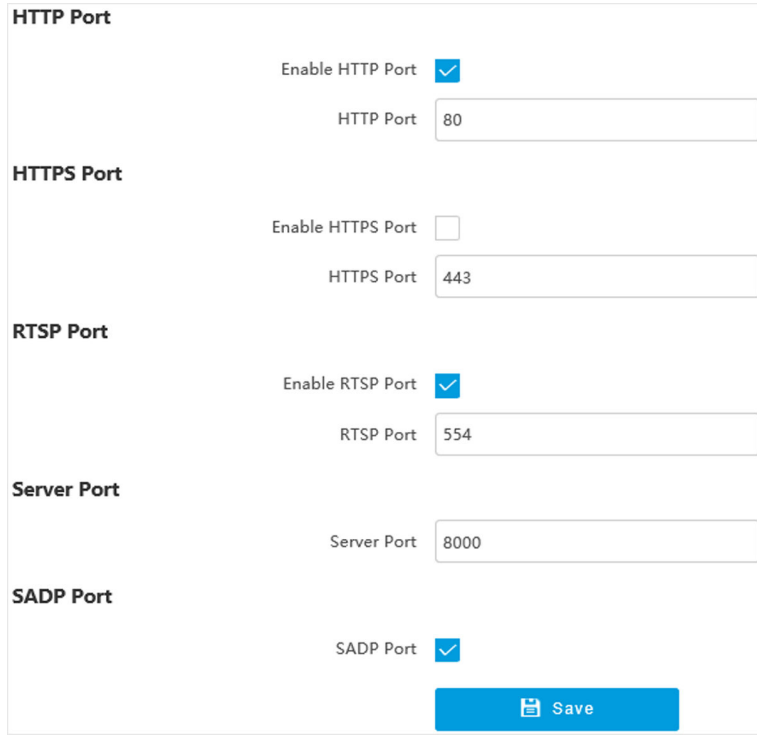


**Figure 9-4 Set Port**

**HTTP Port**

It refers to the port through which the browser accesses the device. For example, when the **HTTP Port** is modified to 81, you need to enter ***http://192.168.1.64:81*** in the browser for login.

**HTTPS Port**

Set the HTTPS for accessing the browser. Certificate is required when accessing.

**RTSP Port**

It refers to the port of real-time streaming protocol.

**Server Port**

It refers to the port through which the client adds the device.

**SADP Port**

It refers to the port through which the SADP software searches the device.

**Note**

- After editing the port, access to the device via new port.
- Reboot the device to take the new settings into effect.
- The supported ports vary with different models. The actual device prevails.

## 9.6 Set Email

When the email is enabled and set, the device will send an email notification to all designated receivers if an alarm event is detected.

**Before You Start**

Set the DNS server before using the email function. Go to **Configuration → Network → Network Parameters → Network Interface** for DNS settings.

**Steps**

1. Go to **Configuration → Network → Data Connection → Email** .

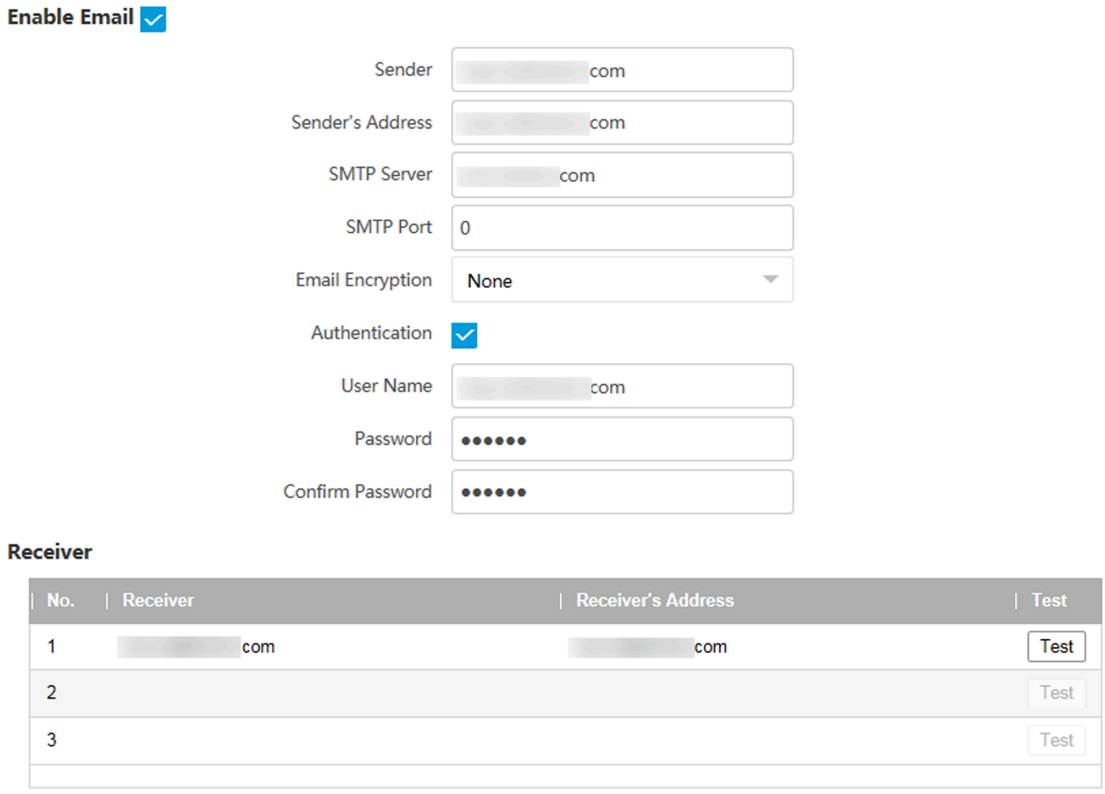


**Figure 9-5 Set Email**

2. Set email parameters.
   1) Enter the sender's email information, including **Sender**, **Sender's Address**, **SMTP Server**, and **SMTP Port**.
   2) Select **Email Encryption**.

   **SSL**

   Emails are sent after encrypted by SSL. The SMTP port should be set as 465.

   **TLS**

   Emails are sent after encrypted by TLS. The SMTP port should be set as 465.

3) **Optional:** If your email server requires authentication, check **Authentication** and enter your user name and password to log in to the server.
4) Enter the receiver's information, including the receiver's name and address.
5) Click **Test** to see if the function is well configured.

3. Click **Save**.

# Chapter 10 Serial Port Configuration

## 10.1 Set RS-485

Set RS-485 parameters if the device needs to be connected to other peripheral devices controlled by RS-485 serial port.

**Before You Start**
The corresponding device has been connected via the RS-485 serial port.

**Steps**

**Note**
The number of available RS-485 serial port varies with different models.

1. Go to **Configuration → System → System Settings → Serial Port → RS-485** .


**Figure 10-1 Set RS-485**

2. Set **Baud Rate**, **Data Bit**, **Stop Bit**, etc.

   **Note**
   The parameters should be same with those of the connected device.

3. Set **Work Mode**.

   **Application Trigger**

   Select it when the signal trigger devices (such as radar) are connected to the RS-485 serial port of the device.

   **Transparent Channel**

   Select it when the other peripheral devices are connected to the RS-485 serial port of the device for communication transmission.

4. Click **Save**.

## 10.2 Set RS-232

Set RS-232 parameters if you need to debug the device via RS-232 serial port.

**Before You Start**
The debugging device has been connected via the RS-232 serial port.

**Steps**

1. Go to **Configuration → System → System Settings → Serial Port → RS-232** .


**Figure 10-2 Set RS-232**

2. Set **Baud Rate**, **Data Bit**, **Stop Bit**, etc.

**Note**

The parameters should be same with those of the connected device.

3. Select **Work Mode**.

**Console**

Select it when you need to debug the device via RS-232 serial port.

**Transparent Channel**

Select it, and the network command can be transmitted to RS-232 control command via the RS-232 serial port.

**Narrow Bandwidth Transmission**

Reserved.

4. Click **Save**.

# Chapter 11 Exception Alarm

Set exception alarm when the network is disconnected, the IP address is conflicted, etc.

**Steps**

**Note**

The supported exception types vary with different models. The actual device prevails.

1. Go to **Configuration → Event → Alarm Linkage → Exception Event** .
2. Select the exception type(s) and the linkage method.
3. Click **Save**.

# Chapter 12 Safety Management

## 12.1 Manage User

The administrator can add, modify, or delete other accounts, and grant different permissions to different user levels.

**Steps**

1. Go to **Configuration → System → User Management → User List** .
2. Select **Password Level**.

   The password level of the added user should conform to the selected level.
3. Add a user.
   1) Click **Add**.
   2) Enter **User Name** and select **Type**.
   3) Enter **Admin Password**, **New Password**, and confirm the password.

   **Caution**

   To increase security of using the device on the network, please change the password of your account regularly. Changing the password every 3 months is recommended. If the device is used in high-risk environment, it is recommended that the password should be changed every month or week.

   4) Assign remote permission to users based on needs.

   **User**

   Users can be assigned permission of viewing live video and changing their own passwords, but no permission for other operations.

   **Operator**

   Operators can be assigned all permission except for operations on the administrator and creating accounts.

   5) Click **OK**.
4. **Optional:** You can do the following operations.

| | |
|---|---|
| **Change the password and permission** | Click ✎ to change the password and permission. |
| **Delete the user** | Click 🗑 to delete the user. |

## 12.2 Set IP Address Filtering

You can set the IP addresses allowable and not allowable to access the device.

**Steps**

1. Go to **Configuration → System → Security → Security Settings** .
2. Check **Enable IP Address Filtering**.

3. Set **Filtering Mode**.

   **Blocklist Mode**

   The added IP addresses are not allowed to access the device.

   **Allowlist Mode**

   The added IP addresses are allowed to access the device.

4. Click **Add**, enter the IP address, and click **OK**.

   **Note**

   The IP address only refers to the IPv4 address.

5. **Optional:** Edit, delete, or clear the added IP addresses.
6. Click **Save**.

## 12.3 Enable User Lock

To raise the data security, you are recommended to lock the current IP address.

**Steps**

1. Go to **Configuration → System → Security → Security Service → Software** .
2. Check **Enable User Lock**.
3. Click **Save**.

**Result**

When the times you entered incorrect passwords have reached the limit, the current IP address will be locked automatically.

## 12.4 Set HTTPS

### 12.4.1 Create and Install Self-signed Certificate

HTTPS is a network protocol that enables encrypted transmission and identity authentication, which improves the security of remote access.

**Steps**

1. Go to **Configuration → Network → Network Parameters → HTTPS** .
2. Select **Create Self-signed Certificate**.
3. Click **Create**.
4. Follow the prompt to enter **Country/Region**, **Hostname/IP**, **Validity**, and other parameters.
5. Click **OK**.

**Result**

The device will install the self-signed certificate by default.

### 12.4.2 Install Authorized Certificate

If the demand for external access security is high, you can create and install authorized certificate via HTTPS protocol to ensure the data transmission security.

**Steps**

1. Go to **Configuration → Network → Network Parameters → HTTPS** .
2. Select **Create certificate request first and continue the installation**.
3. Click **Create**.
4. Follow the prompt to enter **Country/Region**, **Hostname/IP**, **Validity**, and other parameters.
5. Click **Download** to download the certificate request and submit it to the trusted authority for signature.
6. Import certificate to the device.
   - Select **Signed certificate is available, start the installation directly**. Click **Browse** and **Install** to import the certificate to the device.
   - Select **Create the certificate request first and continue the installation**. Click **Browse** and **Install** to import the certificate to the device.
7. Click **Save**.

## 12.5 Set SSH

To raise network security, disable SSH service. The configuration is only used to debug the device for the professionals.

**Steps**

1. Go to **Configuration → System → Security → Security Service → Software** .
2. Disable **SSH Service**.
3. Click **Save**.

## 12.6 Set RTSP Authentication

You can improve network access security by setting RTSP authentication.

**Steps**

1. Go to **Configuration → System → Security → Security Settings** .
2. Select **RTSP Authentication**.

   **digest**

   The device only supports digest authentication.

   **digest/basic**

   The device supports digest or basic authentication.
3. Click **Save**.

## 12.7 Set Timeout Logout

You can improve network access security by setting timeout logout.

**Steps**

1. Go to **Configuration → System → Security → Security Service → Timeout Logout** .
2. Enable timeout logout for static page.
3. Set **Max. Timeout**.
4. Click **Save**.

**Result**

When the page static time exceeds the set time, the device will automatically log out.

## 12.8 Set Password Validity Period

You can improve network access security by setting password validity period.

**Steps**

1. Go to **Configuration → System → Security → Security Service → Password Validity Period** .
2. Select **Validity Type**.
   - Select **Permanent**. The password will be permanently valid.
   - Select **Daily** and set **Password Expiry Time**. It will prompt you that the password is expired according to the set password expiry time, and you need to set the new password.
3. Click **Save**.

# Chapter 13 Maintenance

## 13.1 View Device Information

### Basic Information and Algorithms Library Version

Go to **Configuration → System → System Settings → Basic Information** to view the basic information and algorithms library version of the device.
You can edit **Device Name** and **Device No.** The device No. is used to control the device. It is recommended to reserve the default value.

### Device Status

Go to **Configuration → System → System Settings → Device Status** to view the device status.

## 13.2 Log

### 13.2.1 Enable System Log Service

The security audit logs refer to the security operation logs. You can search and analyze the security log files of the device so as to find out the illegal intrusion and troubleshoot the security events. Security audit logs can be saved on device internal storage. The log will be saved every half hour after device booting. Due to limited storage space, you are recommended to save the logs on a log server.

**Steps**

1. Go to **Configuration → System → Security → Security Service → Log Audit Service** .
2. Enable system log service.
3. Enter **IP Address** and **Port No.** of the log server.
4. Click **Save**.

**Result**

The device will upload the security audit logs to the log server regularly.

### 13.2.2 Search Log

Log helps to locate and troubleshoot problems.

**Steps**

1. Go to **Configuration → System → Maintenance → Log Search** .
2. Set search conditions.

3. Click **Search**.

   The matched log files will be displayed on the log list.
4. **Optional:** Click **Export** to save the log files to your computer.

## 13.3 Upgrade

Upgrade the system when you need to update the device version.

**Before You Start**

Prepare the upgrade file. If the upgrade file is a compressed package, it needs to be decompressed into the .dav format.

**Steps**

1. Go to **Configuration → System → Maintenance → Upgrade & Maintenance → Upgrade** .
2. Click **Browse** to select the upgrade file.
3. Click **Upgrade**.
4. Click **OK** in the popup window.

**Note**

The upgrade process will take 1 to 10 minutes. Do not cut off the power supply.

**Result**

The device will reboot automatically after upgrade.

## 13.4 Reboot

When the device needs to be rebooted, reboot it via the software instead of cutting off the power directly.

**Steps**

1. Go to **Configuration → System → Maintenance → Upgrade & Maintenance → Device Maintenance** .
2. Click **Reboot**.
3. Click **OK** to reboot the device.

**Note**

You can also click **Reboot** on the upper right corner of the page to reboot the device.

## 13.5 Restore Parameters

When the device is abnormal caused by the incorrect set parameters, you can restore the parameters.

**Steps**

1. Go to **Configuration → System → Maintenance → Upgrade & Maintenance → Device Maintenance** .
2. Select the restoration mode.
   - Click **Restore**, and select the parameters to be saved instead of being restored. Click **OK**. Then the parameters except the IP parameters, user parameters, and the saved parameters will be restored to the default settings.
   - Click **Restore Factory Settings** and click **OK** to restore all the parameters to the factory settings.
3. Click **OK**.

## 13.6 Synchronize Time

Synchronize the device time when it is inconsistent with the actual time.

**Steps**

1. Go to **Configuration → System → System Settings → Time Settings** .
2. Select **Time Zone**.
3. Select **Sync Mode**.

   **NTP Synchronization**

   Select it to synchronize the device time with that of the NTP server. Set **Server IP**, **NTP Port**, and **Interval**. Click **NTP Test** to test if the connection between the device and the server is normal.

   **Manual Synchronization**

   Select it to synchronize the device time with that of the computer. Set time manually, or check **Sync. with computer time**.

   **SDK**

   If the remote host has been set for the device, select it to synchronize time via the remote host.

   **ONVIF**

   Select it to synchronize time via the third-party device.

   **No**

   Select it to disable time synchronization.

   **All**

   Select it, and you can select any mode above.

   **Note**

   The time synchronization modes vary with different models. The actual device prevails.

4. Click **Save**.

## 13.7 Set DST

If the region where the device is located adopts Daylight Saving Time (DST), you can set this function.

**Steps**

1. Go to **Configuration → System → System Settings → DST** .
2. Check **Enable DST**.
3. Set **Start Time**, **End Time**, and **DST Bias**.
4. Click **Save**.

## 13.8 Debug

**Note**

The debug configurations below are only provided to debug the device by the professionals.

### 13.8.1 Debug Device

You can enable the functions to debug the device.

**Steps**

1. Go to **Configuration → Capture → Advanced → System Service** .
2. Check the debug information according to your needs.

   **Enable Algorithm POS Information Debug**

   The algorithm POS information will be overlaid on the playback image when you play back the video with the dedicated tool.

   **Enable Positioning Frame Debug**

   The positioning frames of vehicle bodies and license plates will be overlaid on the captured pictures.

   **Enable Closed Positioning Frame**

   The bottom lines of the positioning frames on the captured pictures will display. The frames will be closed.
3. Click **Save**.

### 13.8.2 Vehicle Capture and Recognition Service

Set the vehicle capture and recognition service to debug the device.

**Steps**

1. Go to **Configuration → Capture → Advanced → Vehicle Capture and Recognition Service** .

2. Check the service according to your needs.

   **Filter Checkpoint Capture of Same Vehicle**

   It is used to debug the device with the same vehicle. When the same vehicle is triggered many times during a short period in the scene, the checkpoint pictures of the vehicle will not be captured.

3. Click **Save**.

### 13.8.3 Set Image Format

You can enable smartJPEG which can save the storage space without influencing the resolution.

**Steps**

1. Go to **Configuration → Capture → Advanced → Image Service** .
2. Check **smartJPEG**.
3. Click **Save**.

## 13.9 Export Parameters

You can export the parameters of one device, and import them to another device to set the two devices with the same parameters.

**Steps**

1. Go to **Configuration → System → Maintenance → Upgrade & Maintenance → Data Export** .
2. Click **Export** after **Configuring Parameters**.
3. Set an encryption password, confirm the password, and click **OK**.

   **Note**

   The password is used for importing the configuration file of the current device to other devices.

4. Select the saving path, and enter the file name.
5. Click **Save**.

## 13.10 Import Configuration File

Import the configuration file of another device to the current device to set the same parameters.

**Before You Start**

Save the configuration file to the computer.

**Steps**

**Caution**

Importing configuration file is only available to the devices of the same model and same version.

1. Go to **Configuration → System → Maintenance → Upgrade & Maintenance → Advanced Settings → Data Import** .
2. Select **Importing Method**.

**Note**

If you select **Import Part**, check the parameters to be imported.

3. Click **Browse** to select the configuration file.
4. Click **Import**.
5. Enter the password which is set when the configuration file is exported, and click **OK**.
6. Click **OK** on the popup window.

**Result**

The parameters will be imported, and the device will reboot.

## 13.11 Export Debug File

The technicians can export the debug file to troubleshoot and maintain the device.

**Steps**

1. Go to **Configuration → System → Maintenance → Upgrade & Maintenance → Data Export** .
2. Click **Export** after **Debug File**.
3. Select the saving path, and enter the file name.
4. Click **Save**.

## 13.12 Export Diagnosis Information

The technicians can export the diagnosis information to troubleshoot and maintain the device.

**Steps**

1. Go to **Configuration → System → Maintenance → Upgrade & Maintenance → Data Export** .
2. Click **Export** after **Diagnosis Information**.
3. Select the saving path, and enter the file name.
4. Click **Save**.

# Appendix A. Communication Matrix and Device Command

Scan the QR code below to get the communication matrix of the device.

Scan the QR code below to get the device command.


See Far, Go Further