HIKVISION

Network Traffic Camera (Multi-lens LPR 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.

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Symbol Conventions

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

Symbol	Description
<u> </u>	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.
iNote	Provides additional information to emphasize or supplement important points of the main text.

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Chapter 1 Introduction

1.1 Product Introduction

Multi-lens LPR camera realizes the complete rendering of vehicle images through captured picture stitching and supports license plate recognition, axle quantity recognition, truck classification, etc. It is widely applied to highway toll stations.

1.2 Key Feature

- · With 3 built-in cameras.
- Supports detecting quantities of vehicle axles, wheels, etc.
- Supports capturing pictures and forming complete side views for long vehicles.
- · Supports capturing vehicle heads and tails.
- Supports vehicle capture, license plate recognition, vehicle feature recognition, etc.

1.3 Channel Description

Channel 1 is for image stitching. Channel 2 and 3 are for license plate recognition.

Chapter 2 Activation and Login

2.1 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.



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

2.1.1 Default Information

The device default information is shown as below.

- Channel 1: 192.168.1.64. You can map ports 8090 and 8091 to visit Channel 2 and 3 respectively.
- Default user name: admin

2.1.2 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.



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.

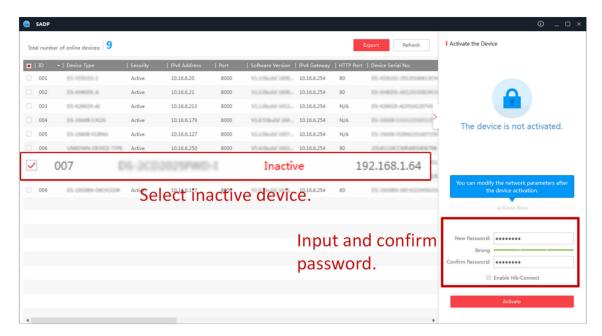


Figure 2-1 Activate via SADP

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.

2.1.3 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.



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.

2.2 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 3 Capture Configuration

3.1 Set Application Mode

3.1.1 Set License Plate Recognition

Set license plate recognition system when you need to recognize and capture the license plates of the passing vehicles.

Steps

- 1. Go to Configuration → Device Configuration → Application Mode .
- 2. Set Application Mode as License Plate Recognition System.
- 3. Select a channel.



It is only available between channel 2 and channel 3. Channel 1 is a fixed channel by default and cannot be adjusted.

4. Select Trigger Type.

Video Detection

The passing vehicles will be recognized via videos. The capture mode is recommended as **Strobe Light Mode**.

RS485

Select it when the vehicle detector is connected to the device via the RS-485 port.

5. Select Picture Mode.

Scene Picture

Only one passing vehicle picture will be output (including all objects in the field of view).

6. Select Detected Position.

Vehicle Tail

The license plate on the vehicle tail is detected.

Vehicle Head

The license plate on the vehicle head is detected. In this mode, you can enable **Recording** and set **Pre-record** and **Timeout**.

- 7. Set Total Lanes according to actual needs.
- 8. Draw license plate recognition area.
 - 1) Click Draw LPR Area.
 - 2) Draw lane line, lane right limit, and trigger line according to the actual scene.

 $\bigcap_{\mathbf{i}}_{\mathsf{Note}}$

When the detection position is vehicle head, the lane line should be drawn from the bottom along with the lane, allowing the license plate to occupy 100 pixels (for reference only). It should be ensured that 0.5 s is kept for the license plate of a large vehicle to enter the license plate recognition area and fall properly within the area. The top of the license plate recognition area should not be too high so that the area will not be too big.

- 3) Click OK.
- 9. Set lane parameters according to the actual scene.
- 10. Click Save.

3.1.2 Set Stitching Capture

Set stitching capture when you need to stitch captured images.

Steps

- 1. Go to Configuration → Device Configuration → Application Mode .
- 2. Set Application Mode as Stitching Capture.

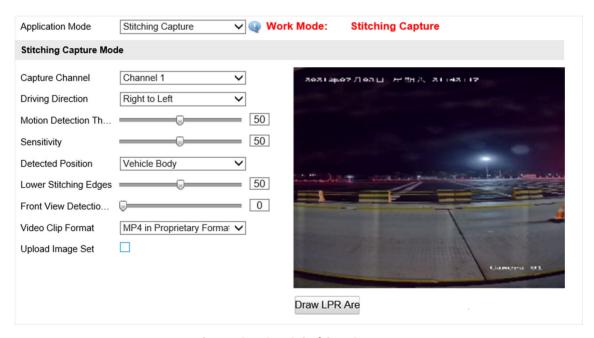


Figure 3-1 Set Stitching Capture

- 3. Select **Driving Direction** according to actual conditions.
- 4. Select Detected Position.

i Note

Motion Detection Threshold, Sensitivity, Lower Stitching Edges, and Front View Detection Mode are for professional personnel debugging only.

5. Set Video Clip Format.

MP4 in Proprietary Format

Videos in this format can only be played via VSPlayer. Please download VSPlayer at Hikvision's official website.

Standard MP4

Videos in this format can be played via both the included player of Windows and VSPlayer. For the VSPlayer, you can download it at Hikvision's official website.

- 6. Optional: Check Upload Image Set according actual needs.
- 7. Draw license plate recognition area.
 - 1) Click Draw LPR Area.
 - 2) Align the red box to the lane and adjust the it to suit the lane.
 - 3) Click OK.
- 8. Click Save.

3.2 Set Capture Parameters

3.2.1 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 → Device Configuration → Capture Parameters → License Parameters .



Figure 3-2 Set License Plate Recognition Parameters

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

3.2.2 Set Supplement Light Parameters

Supplement light can enhance the image stabilization and adjust the brightness and color temperature. You can use supplement light to supplement light at night or when the light is dim.

Steps



- Only when the solid light is connected, can the set parameters take effect.
- The supported parameters vary with different models. The actual device prevails.
- 1. Go to Configuration → Device Configuration → Capture Parameters → Supplement Light .

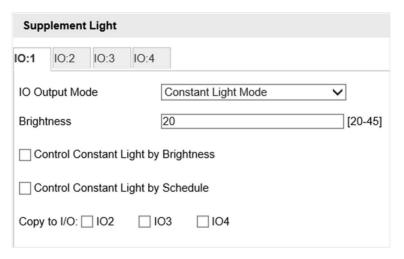


Figure 3-3 Set Supplement Light Parameters

- 2. Select the I/O.
- 3. Set Brightness.

Brightness

A higher value stands for a brighter image.

- 4. Set the constant light mode.
 - Check **Control Constant Light by Brightness** when you want the constant light to be controlled by detecting the surroundings brightness automatically. Set **Brightness Threshold**. The higher the threshold is, the harder the constant light can be enabled.
 - Check **Control Constant Light by Schedule** when you want the constant light to be enabled during a fixed time period. Set the start time and end time.



These two modes conflict with each other.

- **5. Optional:** Check other IO(s) to copy the same settings.
- 6. Click Save.

3.2.3 Set Image Composition

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

Steps



The function is available only for Channel 1.

- 1. Go to Configuration → Device Configuration → Capture Parameters → Image Composition .
- 2. Check Enable Composition.

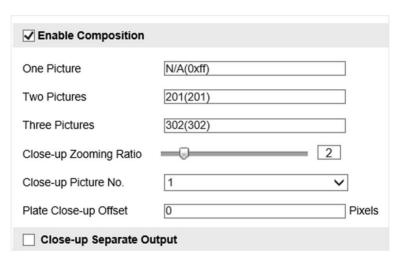


Figure 3-4 Set Image Composition

- 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 device can capture close-up pictures according to the set offset when no license plate is recognized.

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



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

6. Click Save.

3.2.4 Set Capture Overlay

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

Steps



The supported parameters vary with different channels. The actual interface prevails.

- 1. Go to Configuration → Device Configuration → Text Overlay → Capture Overlay Configuration .
- 2. Select a channel.
- 3. Check Capture Picture Overlay.



Figure 3-5 Set Capture Overlay

4. Set the percentage, font size, color, 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.

Overlay Number Zeroizing

When the overlaid number digits are smaller than the fixed digits, 0 will be overlaid before the overlaid number. For example, the fixed digits for lane No. is 2. If the lane No. is 1, 01 will be overlaid on the 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 select **Overlay on the Picture**, you can check it. Then the

current information will be displayed from a new line.

Set Space Edit the number of spaces between the current information and the

next one from 0 to 255. 0 means there is no space.

Set Line Break Edit the number of characters from 0 to 100 between the current Characters

information line and the previous information line. 0 means no line

Adjust overlay Click / / _ to adjust the display sequence of the overlay

information. sequence

7. Click Save.

3.2.5 Set Composite Picture Overlay

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

Steps

 $\mathbf{\tilde{i}}_{\mathsf{Note}}$

The function is only available for Channel 1.

- 1. Go to Configuration → Device Configuration → Text Overlay → Composite Picture Overlay Configuration .
- 2. Check Picture Overlay Text.

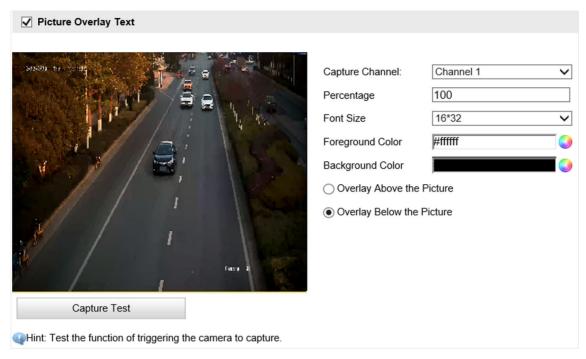


Figure 3-6 Set Composite Picture Overlay

3. 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.

4. Select the overlay information from the list.



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

5. 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 spaces 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
information.

Click / \to adjust the display sequence of the overlay
information.

3.2.6 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 → Device Configuration → Encoding and Storage → Image Encoding.

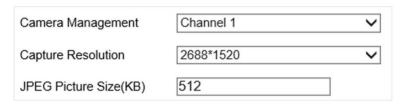


Figure 3-7 Set Image Encoding Parameters

- 2. Select a channel.
- 3. Select Capture Resolution.
- 4. Enter the picture size.

JPEG Picture Size

The size of the captured picture.

5. Click Save.

3.3 View Picture

The device supports viewing pictures saved on the memory card.

Before You Start

The memory card has been installed and the pictures have been captured.

Steps

- 1. Click Picture.
- 2. Set searching conditions.



The searching conditions vary with different models. The actual interface prevails.

3. Click Search.

The qualified picture information will be displayed in list.

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

Export data

Click **Export** to export the data searched to the local computer.

Download picture

- a. Check the pictures to be downloaded to the local computer.
- b. Click Export Picture.
- c. Go to Configuration → Local Configuration → Picture and Clip Settings → Save downloaded pictures to to view the saving path of the pictures downloaded.

3.4 View Real-Time Picture

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

Steps

- 1. Go to Live View → Real-Time Status and Traffic Flow Statistics.
- **2.** Select an item from the list, and you can view the capture scene picture and license plate picture.



Figure 3-8 Real-Time Picture

- 3. You can do the following operations.
 - Select the arming mode. **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 **Capture** to enable manual capture. The captured pictures will be saved in the set local path. Or you can click **Open Folder** to view the pictures.
- Click **Measuring license plate/Ruler On** to measure the license plate pixel. After the measurement, click **Closing measurement/Ruler Off**.
- Click ▼ after Continuous Capture to set the burst parameters.

Capture Times

Up to five pictures can be captured per burst.

Continuous Capture Intervals

Up to four intervals can be set, and the default interval is 100 ms.

Click **Continuous Capture**, and the device will capture pictures according to the set intervals.

3.5 View Traffic Flow Statistics

The device supports counting and uploading traffic flow data.

Steps

- 1. Go to Configuration → Device Configuration → System Configuration → Traffic Parameters .
- 2. Check Enable.
- 3. Set Interval.
- 4. Click Save.

Chapter 4 Live View and Local Configuration

4.1 Live View



Click to start live view. Click to stop live view.

4.1.2 Select Channel

Double click **Channel 1** to enable the image stitching channel, and double click **Channel 2/Channel 3** to enable the license plate recognition channel.



Only devices with no less than 2 channels support channel selection.

4.1.3 Select Image Display Mode

Click click to display the image in 4:3/16:9/original/self-adaptive display mode.

4.1.4 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.

4.1.5 Capture Picture Manually

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

Steps

- 1. Click to start live view.
- 2. Click o to capture a picture.
- **3. Optional:** Click **Configuration** → **Local Configuration** to view the saving path of snapshots in live view.

4.1.6 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 is to start recording.
- 3. Click at to stop recording.
- **4. Optional:** Click **Configuration** → **Local Configuration** to view the saving path of record files.

4.1.7 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 a 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 quality to disable digital zoom.

4.1.8 Enable Regional Exposure

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

Steps

- 1. Click 🐹 .
- 2. Drag the cursor downwards and rightwards to select an area in the live view image.

The selected area can be exposed.

3. Click **to** disable regional exposure.

4.2 PTZ Control Panel

Click 2 do show/hide the PTZ control panel.

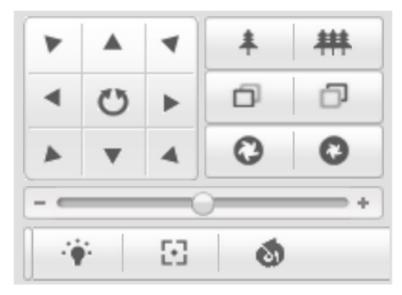


Figure 4-1 PTZ Control Panel

i 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 button descriptions are as follows:

Table 4-1 Button Description

Button	Description
	Hold the direction buttons to pan/tilt the device. Click , and the device keeps panning. Click it again to stop panning.
4 ***	 Zoom + and Zoom – Hold to zoom in the scene. Hold to zoom out the scene.
0 0	 Focus + and Focus – Hold under the manual focus mode to make near objects become clear and distant objects become vague. Hold to make distant objects become clear and near objects become vague.
0 0	Iris + and Iris –

Button	Description
	 Hold to increase the iris diameter when in a dark environment. Hold to decrease the iris diameter when in a bright environment.
+	Drag the slider to adjust the speed of pan/tilt movement.
* 3	Auxiliary buttons: light, one-touch focus, and lens initialization. Note Auxiliary buttons are reserved for Channel 1
	Auxiliary buttons are reserved for Channel 1.

4.3 Local Configuration

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

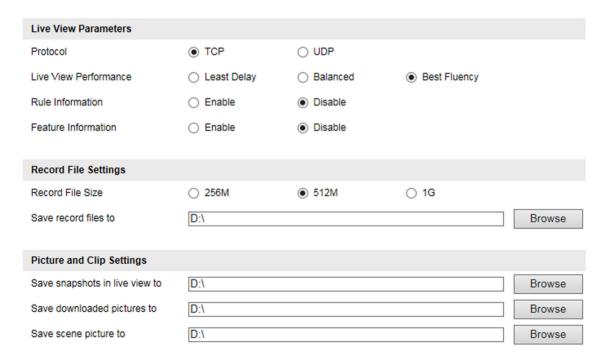


Figure 4-2 Local Configuration

Protocol

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.

Live View Performance

Least Delay

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

Balanced

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

Best Fluency

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

Rule Information

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

Feature Information

If you enable the feature information, information of the lane, traffic flow, speed, etc. will be displayed on the live view interface.

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 snapshots in live view to

Set the saving path of 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 the **Real-Time Status and Traffic Flow Statistics** interface.



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

Chapter 5 Record and Capture

5.1 Set Storage Path

5.1.1 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 → Device Configuration → Encoding and Storage → Storage Management.

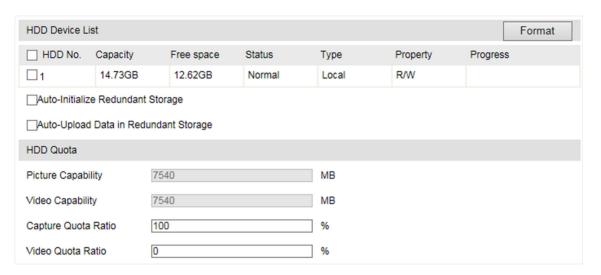


Figure 5-1 Set Storage Card

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



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

5.1.2 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 \rightarrow Device Configuration \rightarrow Encoding and Storage \rightarrow FTP.

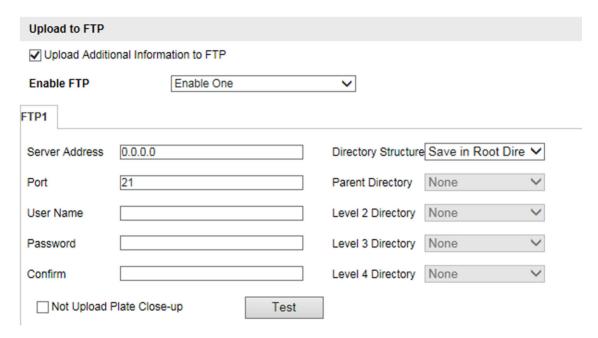


Figure 5-2 Set FTP

- **2. Optional:** Check **Upload Additional Information to FTP**, and then the related information can be attached when uploading.
- 3. Enable the FTP server.
- 4. Set FTP parameters.
 - 1) Enter Server Address and Port.
 - 2) Enter **User Name** and **Password**, and confirm the password.
 - 3) Select **Directory Structure**.



If multiple directories are needed, you can customize the directory name.

- **5. Optional:** Check **Not Upload Plate Close-up** if the license plate close-up pictures are not needed to upload.
- **6.** Set the name rule and separator according to the actual needs.
- **7. 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.
- 8. Optional: Click Test to test the FTP server connection.

iNote

The test is single-use. You cannot test the connection repeatedly.

9. Click Save.

5.1.3 Set Listening Host

The listening host 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 listening host, and the network communication with the device is normal.

Steps

1. Go to Configuration → Device Configuration → System Configuration → Network Parameters .

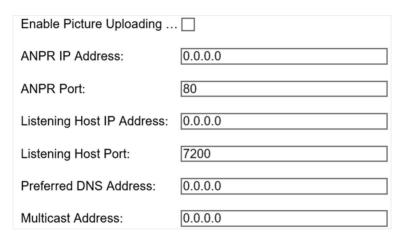


Figure 5-3 Set Listening Host

- 2. Set ANPR IP Address and ANPR Port if you need to upload the alarm information.
- 3. Set Listening Host IP Address and Listening Host Port, and check Enable Picture Uploading Listening if you need to upload pictures.

 \square_{Note}

ANPR and listening conflict with each other. When you enable listening host, pictures will be uploaded via listening host in priority. When you disable listening and have set ANPR IP address and port, pictures will be uploaded via ANPR protocol.

- 4. Set Preferred DNS Address if you need to visit the device with domain name.
- 5. Set Multicast Address if you need to preview the picture via the multicast group.
- 6. Click Save.

5.1.4 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 arm in Real-Time Status and Traffic Flow Statistics.



The real-time status and traffic flow statistics should be used with dedicated platform.

Steps

1. Go to Configuration \rightarrow Device Configuration \rightarrow Encoding and Storage \rightarrow Cloud Storage .

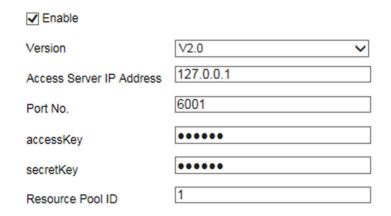


Figure 5-4 Set Cloud Storage

- 2. Check Enable.
- 3. Select Version.
- **4.** Set the server parameters.
 - 1) Enter Access Server IP Address and Port No.
 - 2) If you select **V2.0**, enter **accessKey** and **secretKey** of the resource pool.



If you select **V1.0**, enter **User Name** and **Password**.

- 3) Enter the ID according to the storage area No. of the server.
- 5. Click Save.

5.2 Set Quota

Set the video and picture ratio in the storage.

Before You Start

Install the storage card.

Steps

- 1. Go to Configuration → Device Configuration → Encoding and Storage → Storage Management.
- 2. Set Capture Quota Ratio and Video Quota Ratio according to the actual needs.

i

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.

5.3 Set Record Schedule

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

Before You Start

Install the storage card, and the video quota ratio is not 0.

Steps

1. Go to Configuration → Device Configuration → Encoding and Storage → Record Schedule.

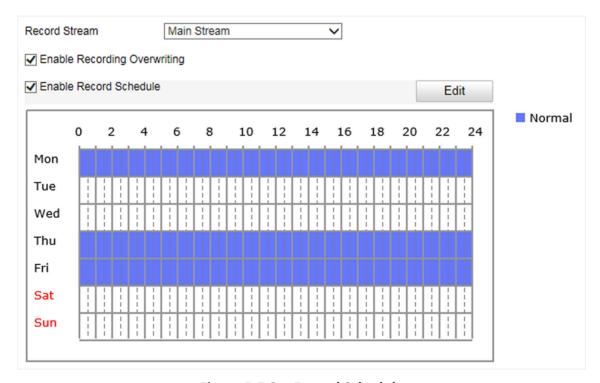


Figure 5-5 Set Record Schedule

2. Optional: Check Enable Recording Overwriting.

When the storage is full, the earliest videos will be overwritten.

- 3. Check Enable Record Schedule.
- 4. Click Edit to edit the record schedule.
 - 1) Select Customize.
 - 2) Set the start time and end time.
 - 3) **Optional:** Select the other days and click **Copy** to copy the settings to other days.
 - 4) Click OK.
- 5. Click Save.

Chapter 6 Encoding and Display

6.1 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

- 1. Go to Configuration → Device Configuration → Encoding and Storage → Video Encoding.
- 2. Set the parameters for different streams.

Stream Type

Only video stream is available.

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.

6.2 Set Image Parameters

You can adjust the image parameters to get clear image.

Steps



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

1. Go to Configuration → Device Configuration → Image Parameters → General Parameter / Configuration → Device Configuration → Image Parameters → Video .



Figure 6-1 Set General Parameters

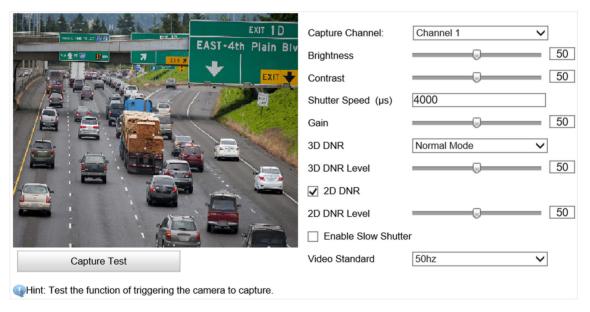


Figure 6-2 Set Video Image Parameters

2. Adjust the parameters.

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.

Select WDR Switch and set corresponding parameters according to your needs.

On

Set **WDR Level**. The higher the level is, the higher the WDR strength is.

Time

Enable WDR according to the set time period and level.

Brightness

Set **Light Threshold** and **WDR Level**. When the brightness reaches the threshold, WDR will be enabled.

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.

Image Rotation

The image can be rotated in the set degree.



Changes to the image rotation degree will take effect after you reboot the unit.

Light Compensation on License Plate

Check it to realize light compensation on license plates. 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.

Brightness

It refers to the max. brightness of 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.

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.

Enable Slow Shutter

This function can be used in underexposure condition. It lengthens the shutter time to ensure full exposure. The higher **Slow Shutter Level** is, the slower the shutter speed is.

Video Standard

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

6.3 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 \rightarrow Device Configuration \rightarrow Image Parameters \rightarrow 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.

Scheduled Switch Set day/night mode, start time, and end time to switch to ICR mode only

during the set time period.

3. Click Save.

6.4 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 \rightarrow Device Configuration \rightarrow Encoding and Storage \rightarrow ROI.

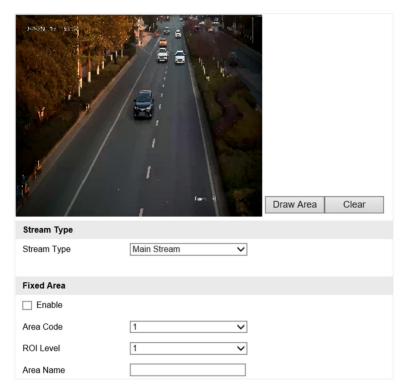


Figure 6-3 Set ROI

- 2. Select a channel.
- 3. Select Stream Type.
- 4. Set ROI region.
 - 1) Check Enable.
 - 2) Select Area Code.
 - 3) Click Draw Area.
 - 4) Drag the cursor to draw a fixed area and adjust the area according to actual needs.
 - 5) Click Stop Drawing.
- 5. Select ROI Level and enter Area Name.



The higher the ROI level is, the clearer the image of the detected area is.

- 6. Click Save
- **7. Optional:** Select other area codes and repeat the steps above if you need to draw multiple fixed areas.

6.5 Set OSD

You can customize OSD information on the live view.

Steps

1. Go to Configuration \rightarrow Device Configuration \rightarrow Text Overlay \rightarrow OSD Settings.

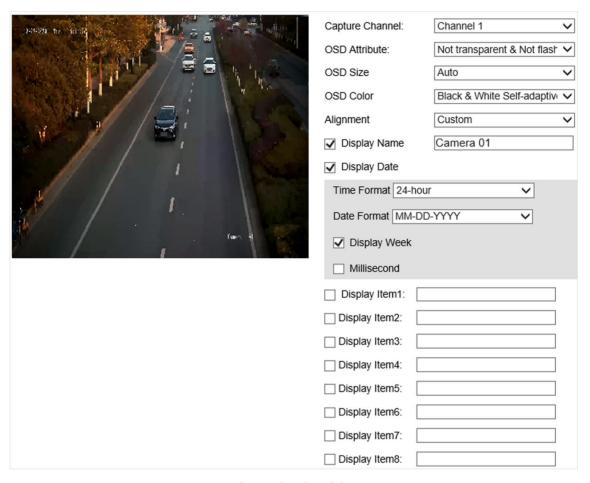


Figure 6-4 Set OSD

- 2. Select a channel.
- 3. Set OSD attribute, size, color, etc.



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

- 4. Set the display content.
 - 1) Enter Display Name.
 - 2) Check **Display Date**, and set the time and date format.
 - 3) Check **Display Week** or **Millisecond** according to your needs.
- **5. Optional:** Check the display item(s) and enter the information in the text field(s).

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

Result

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

Chapter 7 Network Configuration

7.1 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

1. Go to Configuration → Device Configuration → System Configuration → Network Parameters .

Dual-NIC Mode	Multi-Network Isolation	~					
NIC Parameters							
LAN 1		LAN 2					
NIC Type:	10M/100M/1000M Self- ✓	NIC Type:	10M/100M/1000M Self- ✓				
☐ DHCP		☐ DHCP					
IP Address:	92.168.1.64	IP Address:	192.168.0.65				
IPv6 Mode	DHCP V	IPv6 Mode	Route Advertisement 🗸				
IPv6 Address	:	View Route Adve	ertisement				
IPv6 Gateway		IPv6 Gateway	••				
IPv6 Subnet Mask		IPv6 Subnet Mask	0				
Subnet Mask: 2	255.255.255.0	Subnet Mask:	255.255.255.0				
Gateway: 1	92.168.1.1	Gateway:	192.168.0.1				
MTU Size:	500	MTU Size:	1500				
MAC Address: 9	98:df:82:0d:83:48	MAC Address:	98:df:82:0d:83:49				
NIC 2 Router							
Route Address:	0.0.0.0						
Subnet Mask:	0.0.0.0						
Network Parameters							
Enable Picture Uploading							
ANPR IP Address:	0.0.0.0						
ANPR Port:	80						
Listening Host IP Addres	ss: 0.0.0.0						
Listening Host Port:	7200						
Preferred DNS Address:	0.0.0.0						
Multicast Address:	0.0.0.0						

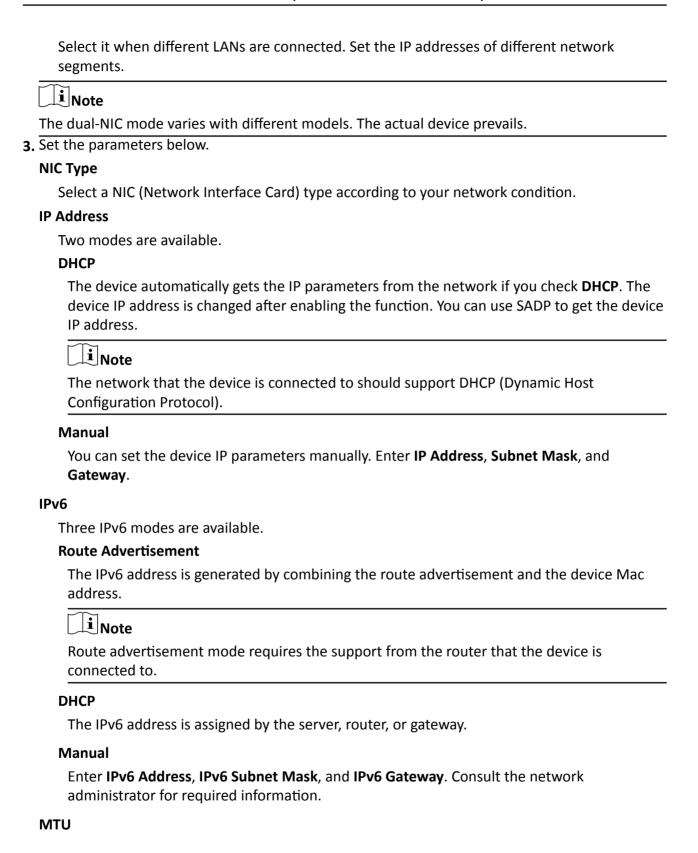
Figure 7-1 Set IP Address

2. Select Dual-NIC Mode.

Dual-Network Backup

Select it when the two network interfaces are connected to two network cables respectively. When one network interface fails, the other network interface will be switched automatically without influencing the data transmission.

Multi-Network Isolation



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

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.

Router

Enter Route Address and Subnet Mask if the device is connected to a router.

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.

4. Click Save.

7.2 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 port is 80, 8000, and 554.

Steps

1. Go to Configuration \rightarrow Device Configuration \rightarrow System Configuration \rightarrow DDNS.

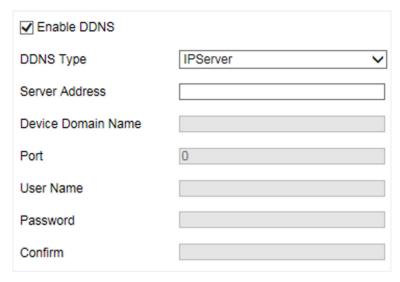


Figure 7-2 Set DDNS

- 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.

7.3 Set Port

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

Go to **Configuration** → **Device Configuration** → **System Configuration** → **Port** for port settings.

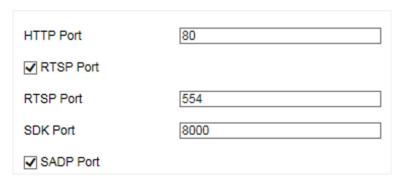


Figure 7-3 Set Port

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.

RTSP Port

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

SDK 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.

iNote

- 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.

Chapter 8 Serial Port Configuration

8.1 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

iNote

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

1. Go to Configuration → Device Configuration → System Configuration → Serial Ports .

RS-485 Parameters						
RS-485 No.	Baud Rate	Data Bit	Stop Bit	Parity	Flow Ctrl	Working Mode
1	38400	8	1	None	None	Application Mode Trigger
2	38400	8	1	None	None	Application Mode Trigger
3	9600	8	1	None	None	Application Mode Trigger

Figure 8-1 Set RS-485

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



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

3. Click Save.

8.2 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 8-2 Set RS-232

i Note	
	ers should be same with those of the connected device.
Select Work N	
Console	
Select it wh	hen you need to debug the device via RS-232 serial port.
Transparent C	Channel
Select it, ar RS-232 seri	nd the network command can be transmitted to RS-232 control command via thial port.
Narrow Band	width Transmission
Reserved.	
I. Click Save .	

Chapter 9 Exception Alarm

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

Steps



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

- 1. Go to Configuration → Device Configuration → Events → Exception Event .
- 2. Select the exception type(s) and the linkage method.
- 3. Click Save.

Chapter 10 Safety Management

10.1 Manage User

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

Steps

- 1. Go to Configuration → Device Configuration → User Management.
- 2. Add a user.
 - 1) Click Add.
 - 2) Enter User Name and select Level.
 - 3) Enter Admin Password, Password, and confirm the password.



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.



The administrator can add up to 31 user accounts.

- 3. You can do the following operations.
 - Select a user and click **Modify** to change the password and permission.
 - Select a user and click **Delete** to delete the user.

10.2 Enable User Lock

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

Steps

- 1. Go to Configuration → Device Configuration → System Configuration → Service.
- 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.

10.3 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 → Device Configuration → System Configuration → HTTPS.
- 2. Select Create the certificate request first and continue the installation.
- Click Create.
- 4. Follow the prompt to enter Country/Region, Hostname/IP, and other parameters.
- 5. Click OK.
- **6.** Click **Download** to download the certificate request and submit it to the trusted authority for signature.
- 7. Import certificate to the device.
 - Select **Signed certificate is available. Start the installation directly.** Click **View** and **Install** to import the certificate to the device.
 - Select Create the certificate request first and continue the installation. Click View and Install to import the certificate to the device.

10.4 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 → Device Configuration → System Configuration → 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.

10.5 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 → Device Configuration → System Configuration → Service .
- 2. Uncheck Enable SSH Service.
- 3. Click Save.

10.6 Set IP Address Filtering

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

Steps

- 1. Go to Configuration → Device Configuration → System Configuration → Service .
- 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. Add an IP address.
 - 1) Click Add.
 - 2) Enter the IP address.
 - 3) Click Add.

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1		
1		
1		Note
1 _	–	11016

The IP address only refers to the IPv4 address.

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

Chapter 11 Maintenance

11.1 View Device Information

Basic Information and Algorithms Library Version

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

11.2 Log

11.2.1 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 → Device Configuration → System Configuration → Service .
- 2. Check 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.

11.2.2 Search Log

Log helps to locate and troubleshoot problems.

Steps

- 1. Click Log.
- 2. Set search conditions.

3. Click Search.

The matched log files will be displayed on the log list.

4. Optional: Click Save Log to save the log files to your computer.

11.3 Upgrade

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

Before You Start

Prepare the upgrade file.

Steps

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



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

Result

The device will reboot automatically after upgrade.

11.4 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 → Device Configuration → System Maintenance → Reboot .
- 2. Click Reboot.
- 3. Click OK to reboot the device.

11.5 Restore Parameters

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

Steps

- 1. Go to Configuration → Device Configuration → System Maintenance → Default .
- 2. Select the restoration mode.
 - Click **Restore** to restore the parameters except the IP parameters and user parameters to the default settings.

- Click **Restore Factory Settings** to restore all the parameters to the factory settings.
- 3. Click OK.

11.6 Synchronize Time

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

Steps

- 1. Go to Configuration → Device Configuration → System Configuration → Time Settings .
- 2. Select Time Zone.
- 3. Select Synchronization Mode.



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

NTP

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

Manual

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

Satellite

Select it to synchronize the device time with the satellite time when the device time is not accurate.

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.

ΑII

Select it, and you can select any mode above.

4. Click Save.

11.7 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 \rightarrow Device Configuration \rightarrow System Configuration \rightarrow DST.
- 2. Check Enable DST.
- 3. Set Start Time, End Time, and DST Bias.
- 4. Click Save.

11.8 Debug



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

11.8.1 Enable Information Overlay

You can overlay the algorithm POS information on the captured pictures or playback images.

Steps

- 1. Go to Configuration → Device Configuration → Advanced Settings → 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.

3. Click Save.

11.8.2 Filter Capture

Set the filter capture information. The filtered conditions will not be captured.

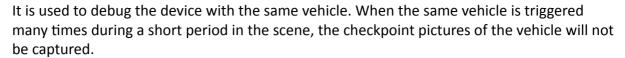
Steps

- 1. Go to Configuration → Device Configuration → Advanced Settings → Capture Service .
- 2. Check the information to be filtered according to your needs.

Filter Checkpoint Capture of No Plate

The vehicles without license plates will not be captured.

Filter Checkpoint Capture of Same Vehicle



 $\bigcap_{\mathbf{i}}$ Note

The supported filtering information varies with different models. The actual device prevails.

3. Click Save.

11.8.3 Set Image Format

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

Steps

- 1. Go to Configuration → Device Configuration → Advanced Settings → Image Service .
- 2. Check smartJPEG.
- 3. Click Save.

11.9 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 → Device Configuration → System Maintenance → Export Parameters .
- 2. Click Export Parameters.
- 3. Set a 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.

11.10 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.





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

- 1. Go to Configuration → Device Configuration → System Maintenance → Import Config. File .
- 2. Select Importing Method.



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

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

Result

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

11.11 Export Debug File

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

Steps

- 1. Go to Configuration → Device Configuration → System Maintenance → Export Debug File .
- 2. Click Export Debug File.
- 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.



