# HIKVISION

# **Fisheye Parking Camera**

**User Manual** 

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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

The fisheye parking camera (hereinafter referred to as device) is applied in the parking guidance and find my car system to detect whether the parking space is occupied. It is integrated with the parking space status indicator which can indicates different colors. Different colors stand for different parking space status. The device can be widely applied in the environment with dark light, such as road, warehouse, underground garage, bar, garden, etc. to provide HD display.

# 1.2 Key Feature

- HD camera, applied in environment with low illumination such as underground garage.
- Ultra-wide lens to display 360° panoramic image without blind areas.
- Supports various display modes, including the fisheye mode, two-image calibration mode, four-image calibration mode, two-image panorama mode, and four-image panorama mode.
- Multiple video compression modes. Supports video quality and encoding complexity settings.
- · Abundant interfaces.
- Detection of the parking space status, and smart analysis of crossing over line in two-image and four-image calibration modes.
- Supports motion detection.

# **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

Device default information are as follows.

Default IP address: 192.168.1.64

Default user name: admin

#### 2.1.2 Activate via SADP

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

#### **Before You Start**

- Get the SADP software from the supplied disk or the official website ( <a href="https://www.hikvision.com/">https://www.hikvision.com/</a>), 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.

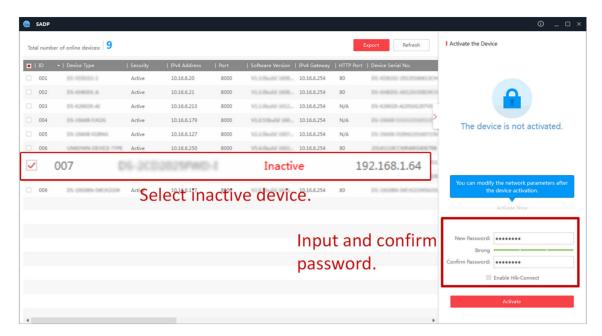


Figure 2-1 Activate via SADP

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**.
  - 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 connect to the same LAN.

#### 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.

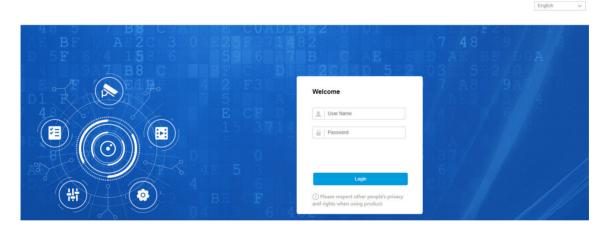


Figure 2-2 Login

- **2. Optional:** Select the other languages from the drop-down list on the upper right corner of the interface to switch the language.
- 3. Enter User Name and Password.
- 4. Click Login.
- **5.** Click **Plugin Download** on the upper right corner of the interface to download and install the plugin for your web browser. Follow the installation prompts to install the plugin.
- **6.** Reopen the web browser after the installation of the plugin and repeat steps 1 to 3 to log in.
- **7. Optional:** Click **Logout** on the upper right corner of the interface to log out of the device.

# **Chapter 3 Parking Space Detection**

# **i**Note

- Parking space detection is only supported in two-image calibration mode ( ☐ ) or four-image calibration mode ( ☐ ). If the device is in fisheye mode ( ☐ ), two-image panorama mode ( ☐ ), or four-image panorama mode ( ☐ ), parking space detection is not supported.
- After the device is activated, you will enter the fisheye mode by default. Click **Live View**, and click ☐ to switch to the two-image calibration mode, or click ☐ to switch to the four-image calibration mode for parking space detection. Reboot the device to take the settings into effect.

#### 3.1 Set Detection Rules

To detect the parking spaces, you should enable the smart analysis and set the parameters of parking spaces.

#### **Steps**

1. Go to Configuration → Capture → Smart Analysis → Analytics Parameters .



Figure 3-1 Smart Analysis

2. Enable the channel(s) to detect parking spaces.



Up to two channels can be enabled.

- 3. Select a channel to set parameters.
- 4. Select the number of Recognized Parking Space(s).



The number may vary with different models.

According to the number of spaces you set, the quadrilateral(s) of the parking space area(s) will appear in the image.

- 5. Click the tab of the parking space No. to set the parameters.
  - 1) Enter Parking Space Tag.



You're recommended to set different tags for different parking spaces to distinguish them.

- 2) Click **Yes** if the parking space is a special parking space.
- 6. Adjust the parking space areas.
  - 1) Select a quadrilateral, and drag the vertices of the quadrilateral to adjust its shape, or drag the quadrilateral to adjust the position.
  - 2) Repeat the step above to adjust other areas.
- 7. Click Save.

# 3.2 Set Parking Space Indicator

The indicator indicates the parking space status. Different colors stand for different status. You can set the indicator colors and flashing status for different parking space status.

#### Steps

1. Go to Configuration → Capture → Capture Parameters → Parking Space Indicator.

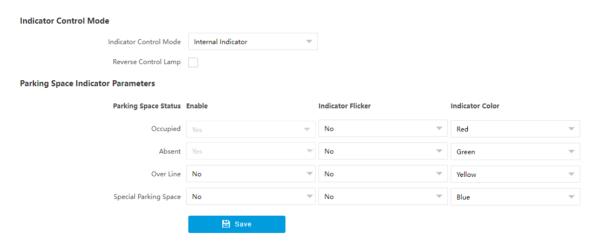


Figure 3-2 Set Parking Space Indicator

#### 2. Select Indicator Control Mode.

#### **Internal Indicator**

The parking space status is informed via the internal indicator of the device.

#### **External Indicator**

The parking space status is informed via the external indicator connected to the device. After the connection, power up the device and the external indicator will start the self-test by indicating different colors.

3.	<b>Optional:</b> For the scene with symmetric parking spaces on both sides, and the device is installed on the middle lane top to detect the parking spaces on both sides and the two indicators of the device is used to indicate the status of the parking spaces on both sides respectively, if the visual angle of the device is rotated, which causes that the left indicator indicates the status of the right channel actually, you can check <b>Reverse Control Lamp</b> to adjust the indicators in 180° so that the indicators can indicate the parking status of both sides correctly.		
iNote			
	Only internal indicator supports reverse control lamp.		
4.	Set the indicator parameters for different parking space status.  1) Enable or disable the indication for different parking space status.		
	Occupied		
	The parking space is occupied by a vehicle.		
	i Note		
	Occupied status means all the detected parking spaces are occupied, and absent status means not all the detected parking spaces are occupied. E.g., three parking spaces are detected. When the three spaces are all occupied, the indicator will display the color you set for the occupied status. When two spaces are occupied and one space is absent, the indicator remains the color you set for the absent status.		
Absent			
	The parking space is free.		
	Over Line		
	A vehicle occupied two parking spaces.		
	Special Parking Space		
	The parking space is specified to a certain vehicle.  2) Select Indicator Flicker and Indicator Color for different parking space status.		
	iNote		
	For external indicator, only red, green, and blue colors are supported. For internal indicator, multiple colors are supported.		
5.	Click Save.		

# **3.3 View Parking Space Status**

You can view the occupancy status, license plate number, indicator color, etc. of the detected parking spaces.

# Steps

- 1. Go to Configuration  $\rightarrow$  System  $\rightarrow$  System Settings  $\rightarrow$  Parking Space Status.
- 2. View the parking space status.

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**Figure 3-3 Parking Space Status** 

# **Chapter 4 Capture Configuration**

# 4.1 Set Capture Overlay

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

#### Steps

- 1. Go to Configuration → Capture → Capture Parameters → Text Overlay.
- 2. Check Capture Picture Overlay.

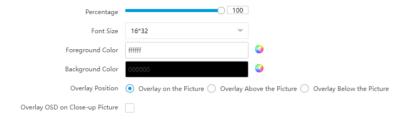


Figure 4-1 Set Capture Overlay

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

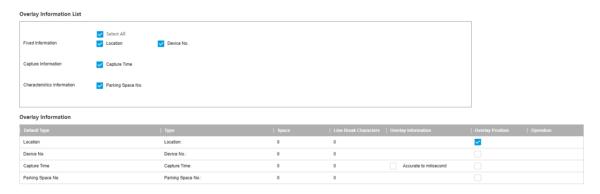
#### **Percentage**

It is the percentage that the overlaid information occupies on the picture.

### **Overlay OSD on Close-up Picture**

Check it, and the text will be overlaid on license plate close-up pictures.

4. Select the overlay information from the list.



**Figure 4-2 Overlay Information** 



The overlay information may vary with different models. The actual device prevails.

5. Set the overlay information.

Type

You can edit the type.

**Overlay Information** For some information types, you can edit the detailed information.

Check it, and the current information will be displayed from a new line. **Overlay Position** 

Edit the number of space between the current information and the **Space** 

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

**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

break.

^ / v Adjust the display sequence of the overlay information.

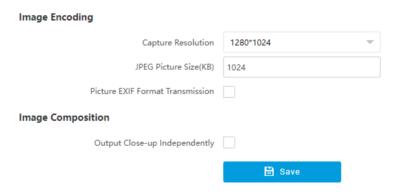
6. Click Save.

# 4.2 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 → Image Encoding and Composition.



**Figure 4-3 Set Image Encoding Parameters** 

- 2. Select Capture Resolution.
- 3. Set other parameters.

#### **JPEG Picture Size**

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

#### **Picture EXIF Format Transmission**

The captured pictures will be transmitted in the EXIF format.

#### **Output Close-up Independently**

Check it to output close-up capture pictures independently.

4. Click Save.

# 4.3 Debug Device

You can enable the function 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 image.

3. Click Save.

# **Chapter 5 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 recognized license plate information.

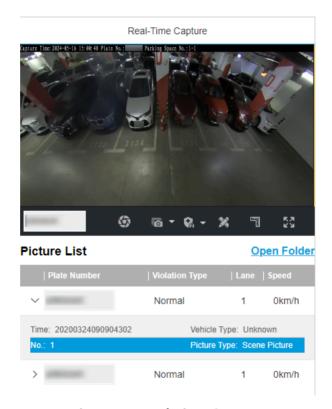


Figure 5-1 Real-Time Capture

**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.

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		Click it to enable the ruler to measure the license plate.
	9	Click it to enable manual capture.
ļ	© <b>→</b>	Click it to set continuous capture parameters and the device will capture pictures according to the set interval.
		<ul> <li>Capture Times: The number of picture(s) to be captured per continuous capture.</li> <li>Interval: Up to four intervals can be set, and the default interval is 100 ms.</li> </ul>
	KA KA	Display the images in full screen mode.
	Open Folder	Open the saving path of captured pictures.

# **Chapter 6 Live View and Local Configuration**

# 6.1 Live View

# 6.1.1 Start/Stop Live View

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

# 6.1.2 Select Image Display Mode

Click to select an image display mode.

# 6.1.3 Display Control

The device supports five different display modes for live view.

**i**Note

Once you switch a display mode, you need to reboot the device to take the settings into effect.

**Table 6-1 Display Control** 

Icon	Display Mode	Description
•	Fisheye mode	In the fisheye mode, the whole wide-angle view of the fisheye camera is displayed. This mode is called fisheye because it approximates the vision of a fish's convex eye. The lens produces curvilinear images of a large area, while distorting the perspective and angles of objects in the image.
	Two-image calibration mode	In two-image calibration mode, the round fisheye image is transformed to two rectangular images by some calibration methods.
	Four-image calibration mode	In four-image calibration mode, the round fisheye image is transformed to four rectangular images by some calibration methods.
	Two-image panorama mode	In two-image panorama mode, the streams of two channels combine to one stream to display one panorama image.
	Four-image panorama mode	In four-image panorama mode, the streams of four channels combine to one stream to display one panorama image.

# 6.1.4 Select Stream Type

Click for 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 the custom stream.

Note

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

### 6.1.5 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 → Picture and Clip Settings to view the saving path of snapshots in live view.

# 6.1.6 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 o to start recording.
- 3. Click to stop recording.
- **4. Optional:** Click **Configuration** → **Local** → **Record File Settings** to view the saving path of record files.

# 6.1.7 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 on to disable digital zoom.

### 6.1.8 Select Video Mode

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

Click and select when the device is running normally.

### 6.2 PT Control

The device supports PT control in two-image or four-image calibration mode.

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



- The PT control 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.
- Other unmentioned functions are not supported.

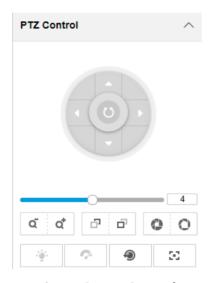


Figure 6-1 PT Control

**Table 6-2 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.

Button	Description
	Note
	For two-image or four-image calibration mode, you can select a live view window, and drag the cursor on the live view image to pan/tilt the device.
4	Adjust the PT speed.

# **6.3 Local Configuration**

Go to **Configuration**  $\Rightarrow$  **Local** to set the live view parameters and change the saving paths of videos, captured pictures, downloaded pictures, etc.

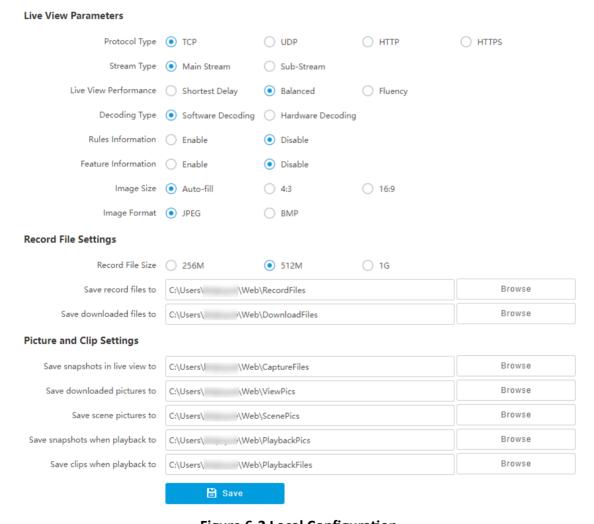


Figure 6-2 Local Configuration

#### **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 in playback.

# **Chapter 7 Encoding and Display**

# 7.1 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.

#### **Steps**

- 1. Go to Configuration → Video → Video Encoding → Video Encoding.
- **2. Optional:** If you have enabled two/four-image calibration mode, select a channel.
- 3. Set the video encoding parameters.

#### **Stream Type**

Video stream is selectable.

#### **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.

#### **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.

#### **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**

Under the same bitrate, the higher the profile is, the higher the image quality is, and the higher the requirement of the network bandwidth is.

#### 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.

4. Click Save.

# 7.2 Set Image Parameters

You can adjust the image parameters to get clear image.

#### **Steps**

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

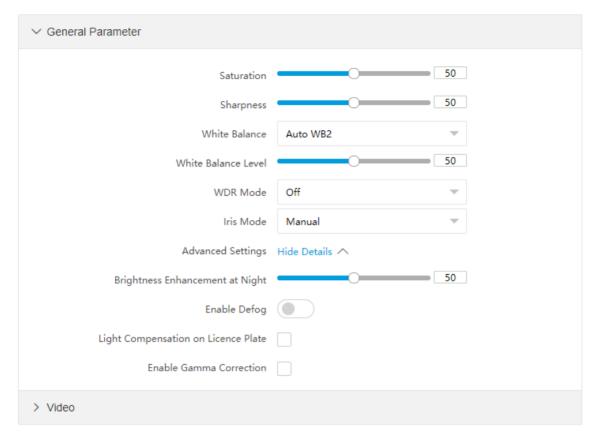


Figure 7-1 Set Image Parameters

### 2. Adjust the parameters.

#### **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.

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.

#### Iris Mode

Select the iris mode as manual.

#### **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 light compensation on license plates 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.

#### Video

#### **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

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 special intensity is too high, the outline of the image may become fuzzy and the details may lose. If the time 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.

#### **Video Standard**

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

- **3. Optional:** You can click **a** under the live view image to enable digital zoom. Refer to **Enable Digital Zoom** for details.
- 4. Optional: Click Capture Test to check the image effect.

#### 7.3 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  $\rightarrow$  Video  $\rightarrow$  Video Encoding  $\rightarrow$  ROI.

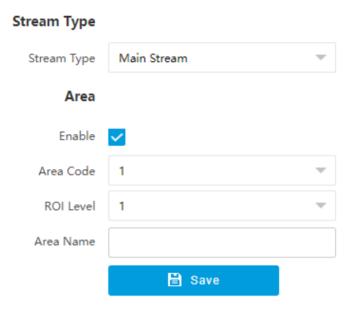


Figure 7-2 Set ROI

- 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 the fixed area.
  - 5) Select the fixed area that needs to be adjusted and drag the mouse to adjust its position.
  - 6) Click Stop Drawing.
- 4. Enter Area Name and select ROI Level.



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.

### 7.4 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 .

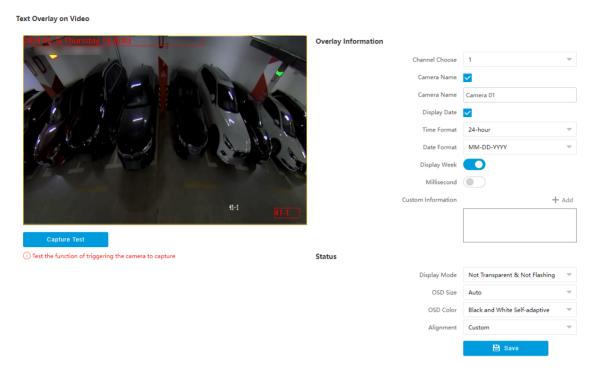


Figure 7-3 Set OSD

- 2. Optional: If you have enabled two/four-image calibration mode, select a channel.
- 3. Set display contents.
  - 1) Check Camera Name.
  - 2) Enter Camera Name.
  - 3) Check **Display Date**, and set the time and date format.
  - 4) Enable **Display Week** or **Millisecond** according to your needs.
- **4. Optional:** Click **Add** and enter information if you want to add custom information.



Up to 2 items of custom information can be added.

- 5. Set display properties (font, color, etc.).
- 6. Select Alignment.



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

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

#### Result

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

# **Chapter 8 Network Configuration**

### 8.1 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.

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

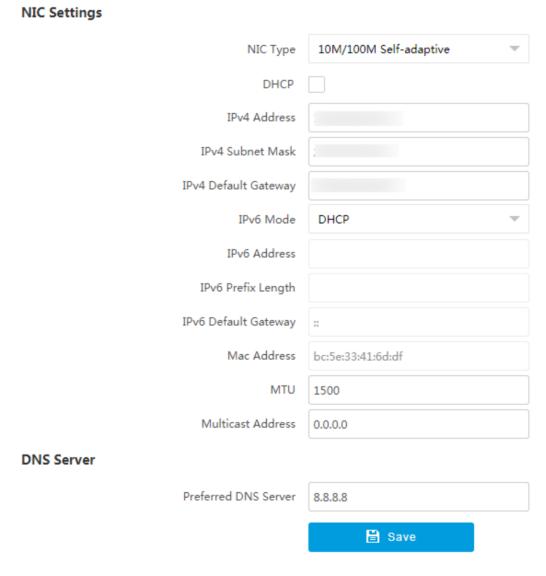


Figure 8-1 Set IP Address

#### **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.



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.



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.

### 8.2 Set Port

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

Go to Configuration  $\rightarrow$  Network  $\rightarrow$  Network Parameters  $\rightarrow$  Port for port settings.

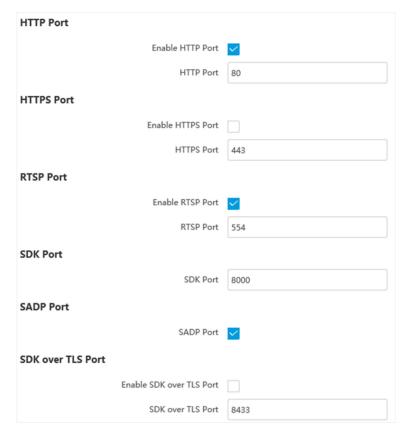


Figure 8-2 Set Port

#### **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**

It refers to the port through which the browser accesses the device, but certificate verification is needed.

### **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.

#### **SDK over TLS Port**

It refers to the port that adopts TLS protocol over the SDK service, to provide safer data transmission.



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

### 8.3 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 for details.
- Complete port mapping. The default ports are 80, 8000, and 554.

#### Steps

- 1. Go to Configuration → Network → Network Parameters → 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.

### 8.4 Set SNMP

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



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.



- The SNMP version you select should be the same as that of the SNMP software.
- Use different versions according to the security levels required. There exists information leakage using SNMP v1 or v2. You're recommended to use SNMP v3, which provides encryption and is safer. If you use v3, HTTPS protocol must be enabled.
- 3. Set the SNMP parameters.
- 4. Click Save.

### 8.5 Set QoS

QoS (Quality of Service) can help improve the network delay and network congestion by setting the priority of data sending.



QoS needs support from network devices such as routers and switches.

### **Steps**

- 1. Go to Configuration → Network → Network Parameters → QoS.
- 2. Enable Video/Audio DSCP, Event/Alarm DSCP, and Management DSCP according to the actual needs.



Network can identify the priority of data transmission. The bigger the DSCP value is, the higher the priority is. Same settings need to be set in the router for configuration.

3. Click Save.

### 8.6 Connect to Platform

### 8.6.1 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  $\rightarrow$  Network  $\rightarrow$  Data Connection  $\rightarrow$  FTP.
- 2. Check Enable FTP.

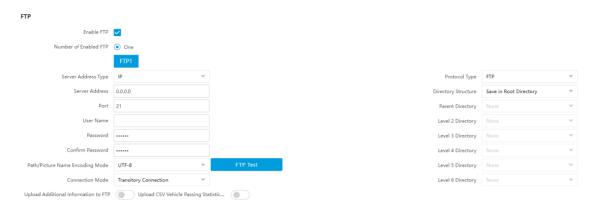


Figure 8-3 Set FTP

3. Select Number of Enabled FTP.



You can only enable one FTP.

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



If you select **SFTP**, the files will be transmitted via encryption mode to guarantee security.

5) Select Directory Structure.



You can customize the directory structure according to your needs.

6) Select Path/Picture Name Encoding Mode.

### UTF-8

UNICODE encoding.

7) Select Connection Mode.

### **Transitory Connection**

The connection is temporarily made for one data transmission task. After this task, the connection will be broken.

### **Persistent Connection**

The connection is made for long-term data transmission, which will be broken only when the device is disconnected from the FTP server.

5. Optional: Enable upload functions.

**i**Note

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

### **Upload Additional Information to FTP**

Add related information when uploading data to the FTP server.

### **Upload CSV Vehicle Passing Statistics Information to FTP**

Upload the CSV vehicle passing statistics information to the FTP server.

- 6. Optional: Click FTP Test to check the FTP server.
- 7. Set naming rules and separators according to the actual needs.
- **8. 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.
- 9. Click Save.

### 8.6.2 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 → Arm Upload.



Figure 8-4 Set Arm Host

- **2.** Enable **Parking Space Detection** to upload the captured parking space detection pictures via the arm host.
- 3. Click Save.

### 8.6.3 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 → SDK Listening.
- 2. Check Enable SDK Listening.

### **SDK Listening**

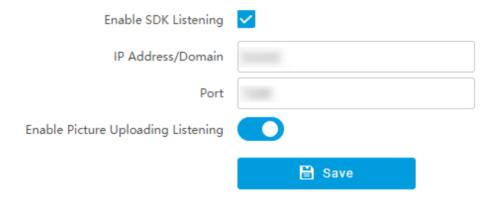


Figure 8-5 Set SDK Listening

- 3. Set IP Address/Domain and Port if you need to upload the alarm information and pictures.
- **4. Optional:** Enable the picture uploading listening if you need to upload image information.
- 5. Click Save.

### 8.6.4 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.

- 1. Go to Configuration → Network → Data Connection → ISAPI Listening.
- 2. Check Enable ISAPI Listening.

### ISAPI Listening

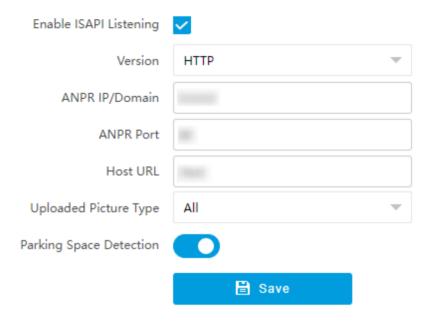


Figure 8-6 Set ISAPI Listening

- 3. Set ANPR IP/Domain, ANPR Port, and Host URL.
- 4. Set Uploaded Picture Type.
- **5. Optional:** Enable **Parking Space Detection** to upload the captured parking space detection pictures via ISAPI protocol.
- 6. Click Save.

### 8.6.5 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  $\rightarrow$  Network  $\rightarrow$  Data Connection  $\rightarrow$  ISUP.

Enable ISUP

Protocol Version v5.0

Address Type IP Address

Server IP Address

Server Port

Device ID

Key

Register Status

Offline

Unable to send picture to ISUP platform at the first access. Please restart the system and try again.

Figure 8-7 Connect to ISUP Platform

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



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

- 6. Click Save.
- 7. Optional: View Register Status.

### What to do next

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

# **Chapter 9 Alarm Configuration**

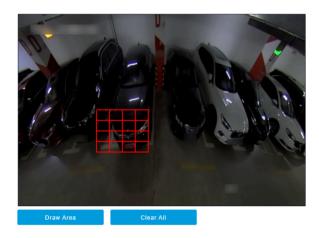
This section explains how to set the device to respond to alarm events, including motion detection and exceptions. These events can trigger the linkage methods, such as notifying the video security center.

### 9.1 Set Motion Detection

Motion detection detects the moving objects in the set video security area, and a series of actions can be taken when the alarm is triggered.

### **Steps**

1. Go to Configuration → Event → Alarm Linkage → Motion Detection .





**Figure 9-1 Set Motion Detection** 

- **2. Optional:** If you have enabled two/four-image calibration mode, select a channel.
- 3. Check Enable Motion Detection and Enable Dynamic Analysis.
- 4. Set the motion detection area.
  - 1) Click Draw Area.
  - 2) Drag the mouse on the live view to draw a motion detection area.
  - 3) Click **Stop Drawing** to complete the current drawing.
  - 4) **Optional:** Repeat the steps to draw more areas.
  - 5) Optional: Click Clear All to clear all the areas.
  - 6) Adjust **Sensitivity** of the motion detection.
- **5.** Set the arming schedule for the motion detection.



Figure 9-2 Set Arming Schedule

1) Drag the cursor on the time bar to set a time period.



Up to 4 time periods can be set on a time bar.

- 2) Adjust the time period.
  - Click a set time period and enter the start time and end time in the pop-up window.
  - Drag two ends of the set time period bar to adjust the length.
  - Drag the whole set time period bar and relocate it.
- 3) Optional: Delete time periods.
  - Click a set time period and click **Delete** in the pop-up window.
  - Click a set time period and click **Delete** on the configuration interface.
- 4) **Optional:** Click to copy the set schedules to other days.
- **6.** Check **Notify Surveillance Center** to send an exception or alarm signal to the video security center when the motion detection occurs.
- 7. Click Save.

## 9.2 Set Exception Alarm

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

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- 1. Go to Configuration  $\rightarrow$  Event  $\rightarrow$  Alarm Linkage  $\rightarrow$  Exception .
- **2.** Check the exception type(s) to be alarmed.
- 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 → 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.



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  $\checkmark$  to change the password and permission.

**Delete the user** Click to delete the user.

### 10.2 Enable User Lock

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

- 1. Go to Configuration → System → Security → Security Service → Software.
- 2. Enable the user lock function.

### 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 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. Enable or disable SSH Service, and set SSH Port if you enable the function.
- 3. Click Save.

### 10.4 Prohibit PING

You can prohibit the external devices to operate network connection volume test to the current device.

### **Steps**

- 1. Go to Configuration → System → Security → Security Service → Software
- 2. Enable Prohibit PING.
- 3. Click Save.

## 10.5 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 of the log server.
- 4. Click Save.

### Result

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

### **10.6 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.

### 10.7 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.

### 10.8 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.

3. Click Save.

# 10.9 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.



The IP address only refers to the IPv4 address.

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

### 10.10 Set HTTPS

### 10.10.1 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, Domain/IP, Validity, and other parameters.
- 5. Click OK.

#### Result

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

### 10.10.2 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.

- 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, Domain/IP, Validity, and other parameters.

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- **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.

# **Chapter 11 Maintenance**

### 11.1 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 and live view and arming status.

### 11.2 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.

### ΑII

Select it, and you can select any mode above.

**i**Note

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

4. Click Save.

### **11.3 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.

### 11.4 Set RS-485

Set RS-485 parameters if the device has been connected to a vehicle detector or other RS-485 devices.

### **Before You Start**

The corresponding device has been connected via the RS-485 serial port.

### **Steps**

1. Go to Configuration → System → System Settings → Serial Port.



**Figure 11-1 Set RS-485** 

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



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

3. Select Work Mode.

### **Application Mode Trigger**

Select it if the vehicle detector has been connected via the RS-485 serial port.

### **Transparent Channel**

Select it, and the network command can be transmitted to RS-485 control command via the RS-485 serial port.

4. Click Save.

### 11.5 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.



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

### 11.6 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 click **OK**. Then the parameters except the IP parameters and user parameters will be restored to the default settings.
  - Click **Restore Factory Settings** and click **OK** to restore all the parameters to the factory settings.

## 11.7 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.

- 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.

### 11.8 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.

### 11.9 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.

## 11.10 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.
- Update the plugin before upgrade.

- 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.



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

### Result

The device will reboot automatically after upgrade.

### 11.11 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**



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.

**i**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.

