

# **Network Camera**

**User Manual** 

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# **Update Firmware**

For better user experience, we recommend you to update your device to the latest firmware asap. Please get the latest firmware package from the official website or the local technical expert. For more information, please visit the official website: <a href="https://www.hikvision.com/en/support/">https://www.hikvision.com/en/support/</a> download/firmware/.

For the upgrading settings, refer to **Upgrade** .

# **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.

# **Safety Instruction**

These instructions are intended to ensure that user can use the product correctly to avoid danger or property loss.

# Laws and Regulations

• The device should be used in compliance with local laws, electrical safety regulations, and fire prevention regulations.

# **Electricity**

- In the use of the product, you must be in strict compliance with the electrical safety regulations of the nation and region.
- The equipment shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the equipment.
- Provide a surge suppressor at the inlet opening of the equipment under special conditions such as the mountain top, iron tower, and forest.
- CAUTION: To reduce the risk of fire, replace only with the same type and rating of fuse.
- The equipment must be connected to an earthed mains socket-outlet.
- An appropriate readily accessible disconnect device shall be incorporated external to the equipment.
- An appropriate overcurrent protective device shall be incorporated external to the equipment, not exceeding the specification of the building.
- An all-pole mains switch shall be incorporated in the electrical installation of the building.
- Ensure correct wiring of the terminals for connection to an AC mains supply.
- The equipment has been designed, when required, modified for connection to an IT power distribution system.

#### **Battery**

- Do not ingest battery. Chemical burn hazard!
- This product contains a coin/button cell battery. If the coin/button cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death.
- Keep new and used batteries away from children.
- If the battery compartment does not close securely, stop using the product and keep it away from children.
- If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.
- CAUTION: Risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.
- ATTENTION: IL Y A RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT. METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.

- Improper replacement of the battery with an incorrect type may defeat a safeguard (for example, in the case of some lithium battery types).
- Do not dispose of the battery into fire or a hot oven, or mechanically crush or cut the battery, which may result in an explosion.
- Do not leave the battery in an extremely high temperature surrounding environment, which may result in an explosion or the leakage of flammable liquid or gas.
- Do not subject the battery to extremely low air pressure, which may result in an explosion or the leakage of flammable liquid or gas.
- + identifies the positive terminal(s) of equipment which is used with, or generates direct current.
  - identifies the negative terminal(s) of equipment which is used with, or generates direct current.

#### Fire Prevention

- No naked flame sources, such as lighted candles, should be placed on the equipment.
- The serial port of the equipment is used for debugging only.

#### **Hot Surface Prevention**

CAUTION: Hot parts! Burned fingers when handling the parts. Wait one-half hour after switching off before handling parts. This sticker is to indicate that the marked item can be hot and should not be touched without taking care. For device with this sticker, this device is intended for installation in a restricted access location, access can only be gained by service persons or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.

#### Installation

- Install the equipment according to the instructions in this manual.
- To prevent injury, this equipment must be securely attached to the floor/wall in accordance with the installation instructions.
- Never place the equipment in an unstable location. The equipment may fall, causing serious personal injury or death.

# **Power Supply**

- The input voltage should conform to IEC60950-1 standard: SELV (Safety Extra Low Voltage) and the Limited Power Source. Refer to the appropriate documentation for detailed information.
- The power source should meet limited power source or PS2 requirements according to IEC 60950-1 or IEC 62368-1 standard.
- DO NOT connect multiple devices to one power adapter, to avoid over-heating or fire hazards caused by overload.
- Make sure the plug is properly connected to the power socket.

# White Light Illuminator (If supported)

- Possibly hazardous optical radiation emitted from this product.
- DO NOT stare at operating light source. May be harmful to the eyes.
- Wear appropriate eye protection or DO NOT turn on the white light when you assemble, install or maintain the camera.

# **Transportation**

· Keep the device in original or similar packaging while transporting it.

# System Security

• The installer and user are responsible for password and security configuration.

#### Maintenance

- If the product does not work properly, please contact your dealer or the nearest service center.
- We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.
- A few device components (e.g., electrolytic capacitor) require regular replacement. The average lifespan varies, so periodic checking is recommended. Contact your dealer for details.

# Cleaning

• Please use a soft and dry cloth when clean inside and outside surfaces of the product cover. Do not use alkaline detergents.

#### **Using Environment**

- When any laser equipment is in use, make sure that the device lens is not exposed to the laser beam, or it may burn out.
- DO NOT expose the device to high electromagnetic radiation or dusty environments.
- For indoor-only device, place it in a dry and well-ventilated environment.
- DO NOT aim the lens at the sun or any other bright light.
- Make sure the running environment meets the requirement of the device. The operating temperature shall be -30 °C to 60 °C (-22 °F to 140 °F), and the operating humidity shall be 95% or less (no condensing).
- DO NOT place the camera in extremely hot, cold, dusty or damp locations, and do not expose it to high electromagnetic radiation.

### **Emergency**

• If smoke, odor, or noise arises from the device, immediately turn off the power, unplug the power cable, and contact the service center.

# **Time Synchronization**

• Set up device time manually for the first time access if the local time is not synchronized with that of the network. Visit the device via Web browse/client software and go to time settings interface.

# Reflection

• Make sure that no reflective surface is too close to the device lens. The IR light from the device may reflect back into the lens causing reflection.

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# **Chapter 1 System Requirement**

Your computer should meet the requirements for proper visiting and operating the product.

Operating System Microsoft Windows XP SP1 and above version

CPU 2.0 GHz or higher

RAM 1G or higher

Display 1024×768 resolution or higher

Web Browser For the details, see *Plug-in Installation* 

# **Chapter 2 Device Activation and Accessing**

To protect the security and privacy of the user account and data, you should set a login password to activate the device when access the device via network.



Refer to the user manual of the software client for the detailed information about the client software activation.

### 2.1 Activate the Device via SADP

Search and activate the online devices via SADP software.

#### **Before You Start**

Access www.hikvision.com to get SADP software to install.

#### Steps

- 1. Connect the device to network using the network cable.
- 2. Run SADP software to search the online devices.
- 3. Check Device Status from the device list, and select Inactive device.
- 4. Create and input the new password in the password field, and confirm the password.



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.

5. Click OK.

Device Status changes into Active.

6. Optional: Change the network parameters of the device in Modify Network Parameters.

#### 2.2 Activate the Device via Browser

You can access and activate the device via the browser.

#### Steps

- 1. Connect the device to the PC using the network cables.
- 2. Change the IP address of the PC and device to the same segment.



The default IP address of the device is 192.168.1.64. You can set the IP address of the PC from 192.168.1.2 to 192.168.1.253 (except 192.168.1.64). For example, you can set the IP address of the PC to 192.168.1.100.

- 3. Input 192.168.1.64 in the browser.
- 4. Set device activation password.



We highly recommend you create a strong password of your own choosing (using a minimum of 8 characters, including at least three of the following categories: 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.

- 5. Click OK.
- 6. Input the activation password to log in to the device.
- 7. Optional: Go to Configuration → Network → Basic → TCP/IP to change the IP address of the device to the same segment of your network.

# 2.3 Login

Log in to the device via Web browser.

#### 2.3.1 Plug-in Installation

Certain operation systems and web browser may restrict the display and operation of the camera function. You should install plug-in or complete certain settings to ensure normal display and operation. For detailed restricted function, refer to the actual device.

Operating System	Web Browser	Operation	
Windows	<ul> <li>Internet Explorer 8+</li> <li>Google Chrome 57 and earlier version</li> <li>Mozilla Firefox 52 and earlier version</li> </ul>	Follow pop-up prompts to complete plug-in installation.	
	<ul><li>Google Chrome 57+</li><li>Mozilla Firefox 52+</li></ul>	Click Download Plug-in to download and install plug-in.	
Mac OS	<ul><li>Google Chrome 57+</li><li>Mozilla Firefox 52+</li><li>Mac Safari 16+</li></ul>	Plug-in installation is not required.	

Operating System	Web Browser	Operation
		Go to Configuration → Network → Advanced Settings → Network Service to enable WebSocket or Websockets for normal view. Display and operation of certain functions are restricted. For example, Playback and Picture are not available. For detailed restricted function, refer to the actual device.



The camera only supports Windows and Mac OS system and do not support Linux system.

# 2.3.2 Admin Password Recovery

If you forget the admin password, you can reset the password by clicking **Forget Password** on the login page after completing the account security settings.

You can reset the password by setting the security question or email.



When you need to reset the password, make sure that the device and the PC are on the same network segment.

### **Security Question**

You can set the account security during the activation. Or you can go to **Configuration** → **System** → **User Management**, click **Account Security Settings**, select the security question and input your answer.

You can click **Forget Password** and answer the security question to reset the admin password when access the device via browser.

#### **Email**

You can set the account security during the activation. Or you can go to **Configuration** → **System** → **User Management**, click **Account Security Settings**, input your email address to receive the verification code during the recovering operation process.

# 2.3.3 Illegal Login Lock

It helps to improve the security when accessing the device via Internet.

Go to Configuration → System → Security → Security Service , and enable Enable Illegal Login Lock. Illegal Login Attempts and Locking Duration are configurable.

### **Illegal Login Attempts**

When your login attempts with the wrong password reach the set times, the device is locked.

### **Locking Duration**

The device releases the lock after the setting duration.

# **Chapter 3 Live View**

It introduces the live view parameters, function icons and transmission parameters settings.

#### 3.1 Live View Parameters

The supported functions vary depending on the model.

### 3.1.1 Enable and Disable Live View

This function is used to quickly enable or disable live view of the channel.

- Click ▶ to start the live view.
- Click **to stop the live view**.

# 3.1.2 Adjust Aspect Ratio

#### Steps

- 1. Click Live View.
- 2. Click to select the aspect ratio.
  - 🔞 refers to 4:3 window size.
  - 163 refers to 16:9 window size.
  - refers to original window size.
  - 🔚 refers to self-adaptive window size.
  - refers to original ratio window size.

# 3.1.3 Live View Stream Type

Select the live view stream type according to your needs. For the detailed information about the stream type selection, refer to  $\underline{Stream\ Type}$ .

# 3.1.4 Select the Third-Party Plug-in

When the live view cannot display via certain browsers, you can change the plug-in for live view according to the browser.

#### Steps

- 1. Click Live View.
- 2. Click (a) to select the plug-in.

- When you access the device via Internet Explorer, you can select Webcomponents or QuickTime.
- When you access the device via the other browsers, you can select Webcomponents, QuickTime, VLC or MJPEG.

#### 3.1.5 Window Division

- refers to 1 × 1 window division.
- III refers to 2 × 2 window division.
- Ⅲ refers to 3 × 3 window division.
- m refers to 4 × 4 window division.

# 3.1.6 Light

Click \* to turn on or turn off the illuminator.

#### 3.1.7 Count Pixel

It helps to get the height and width pixel of the selected region in the live view image.

#### **Steps**

- 1. Click 'La. to enable the function.
- 2. Drag the mouse on the image to select a desired rectangle area.

The width pixel and height pixel are displayed on the bottom of the live view image.

#### 3.1.8 Start Digital Zoom

It helps to see a detailed information of any region in the image.

### Steps

- 1. Click **⊙** to enable the digital zoom.
- 2. In live view image, drag the mouse to select the desired region.
- 3. Click in the live view image to back to the original image.

### 3.1.9 Auxiliary Focus

It is used for motorized device. It can improve the image if the device cannot focus clearly.

For the device that supports ABF, adjust the lens angle, then focus and click ABF button on the device. The device can focus clearly.

Click to focus automatically.

Note

- If the device cannot focus with auxiliary focus, you can use <u>Lens Initialization</u>, then use auxiliary focus again to make the image clear.
- If auxiliary focus cannot help the device focus clearly, you can use manual focus.

#### 3.1.10 Lens Initialization

Lens initialization is used on the device equipped with motorized lens. The function can reset lens when long time zoom or focus results in blurred image. This function varies according to different models.

#### Manual Lens Initialization

Click a to operate lens initialization.

#### **Auto Lens Initialization**

Go to Configuration -> System -> Maintenance -> Lens Correction to enable this function. You can set the arming schedule, and the device will correct lens automatically during the configured time periods.

#### 3.1.11 Quick Set Live View

It offers a quick setup of PTZ, display settings, OSD, video/audio and VCA resource settings on live view page.

#### Steps

- 1. Click to show quick setup page.
- 2. Set PTZ, display settings, OSD, video/audio and VCA resource parameters.
  - For PTZ settings, see *Lens Parameters Adjustment*.
  - For display settings, see *Display Settings* .
  - For OSD settings, see OSD.
  - For audio and video settings, see Video and Audio .
  - For VCA settings, see Allocate VCA Resource .

Note

The function is only supported by certain models.

### 3.1.12 Lens Parameters Adjustment

It is used to adjust the lens focus, zoom and iris.

#### Zoom

- Click a, and the lens zooms in.
- Click , and the lens zooms out.

#### **Focus**

- Click \_ , then the lens focuses far and the distant object gets clear.
- Click n, then the lens focuses near and the nearby object gets clear.

# **PTZ Speed**

• Slide —— to adjust the speed of the pan/tilt movement.

#### Iris

- When the image is too dark, click o to enlarge the iris.
- When the image is too bright, click to stop down the iris.

#### **PTZ Lock**

PTZ lock means to disable the zoom, focus and PTZ rotation functions of the corresponding channel, so that to reduce the target missing caused by PTZ adjustment.

Go to Configuration → PTZ, checkEnable PTZ Lock, and click Save.

# 3.1.13 Conduct 3D Positioning

3D positioning is to relocate the selected area to the image center.

#### Steps

- 1. Click ( to enable the function.
- 2. Select a target area in live image.
  - Left click on a point on live image: the point is relocated to the center of the live image. With no zooming in or out effect.
  - Hold and drag the mouse to a lower right position to frame an area on the live: the framed area is zoomed in and relocated to the center of the live image.
  - Hold and drag the mouse to an upper left position to frame an area on the live: the framed area is zoomed out and relocated to the center of the live image.
- 3. Click the button again to turn off the function.

### 3.2 Set Transmission Parameters

The live view image may be displayed abnormally according to the network conditions. In different network environments, you can adjust the transmission parameters to solve the problem.

### Steps

- 1. Go to Configuration -> Local .
- 2. Set the transmission parameters as required.

#### Protocol

#### **TCP**

TCP ensures complete delivery of streaming data and better video quality, yet the real-time transmission will be affected. It is suitable for the stable network environment.

#### **UDP**

UDP is suitable for the unstable network environment that does not demand high video fluency.

#### **MULTICAST**

MULTICAST is suitable for the situation that there are multiple clients. You should set the multicast address for them before selection.



For detailed information about multicast, refer to <u>Multicast</u>.

#### HTTP

HTTP is suitable for the situation that the third-party needs to get the stream from the device.

#### **Play Performance**

#### **Shortest Delay**

The device takes the real-time video image as the priority over the video fluency.

#### Balanced

The device ensures both the real-time video image and the fluency.

#### Fluent

The device takes the video fluency as the priority over teal-time. In poor network environment, the device cannot ensures video fluency even the fluency is enabled.

#### Custom

You can set the frame rate manually. In poor network environment, you can reduce the frame rate to get a fluent live view. But the rule information may cannot display.

### 3. Click OK.

# 3.3 Set Smooth Streaming

It is a function to tackle the latency and network congestion caused by unstable network condition, and keep the live view stream on the web browser or the client software smooth.

#### **Before You Start**

Add the device to your client software and select NPQ protocol in client software before configuring the smooth streaming function.

Be sure that the **Bitrate Type** is selected as **Constant** and the **SVC** is selected as **OFF** before enabling the function. Go to **Configuration**  $\Rightarrow$  **Video/Audio**  $\Rightarrow$  **Video** to set the parameters.

#### Steps

- 1. Go to the settings page: Configuration -> Network -> Advanced Settings -> Smooth Streaming .
- 2. Check Enable Smooth Streaming.
- 3. Select the mode for smooth streaming.

#### Auto

The resolution and bitrate are adjusted automatically and resolution takes the priority. The upper limits of these two parameters will not exceed the values you set on Video page. Go to Configuration -> Video/Audio -> Video, set the Resolution and Max. Bitrate before you enable smooth streaming function. In this mode, the frame rate will be adjusted to the maximum value automatically.

# Resolution Priority

The resolution stays the same as the set value on **Video** page, and the bitrate will be adjusted automatically. Go to **Configuration**  $\rightarrow$  **Video/Audio**  $\rightarrow$  **Video**, set the **Max. Bitrate** before you enable smooth streaming function. In this mode, the framerate will be adjusted to the maximum value automatically.

# Frame Rate Priority

The image is still smooth even under the poor network, while the image quality may be not good.

### Error Correction

The resolution and bitrate stay the same as the set values on **Video** page. The mode is used to correct the data error during transmission to ensure the image quality. You can set the **Error Correction Proportion** within range of 0-100.

When the proportion is 0, the data error will be corrected by data retransmission. When the proportion is higher than 0, the error data will be corrected via redundant data that is added to the stream and data retransmission. The higher the value is, the more redundant date will be generated, the more data error would be corrected, but the larger bandwidth would be required. When the proportion is 100, the redundant data will be as large as the original data, and the bandwidth is twice required.

i Note

Be sure the bandwidth is sufficient in the Error Correction mode.

4. Save the settings.

# **Chapter 4 Video and Audio**

This part introduces the configuration of video and audio related parameters.

# 4.1 Video Settings

This part introduces the settings of video parameters, such as, stream type, video encoding, and resolution.

Go to setting page: Configuration → Video/Audio → Video .

### 4.1.1 Stream Type

For device supports more than one stream, you can specify parameters for each stream type.

#### Main Stream

The 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**

The stream usually offers comparatively low resolution options, which consumes less bandwidth and storage space.

#### Other Streams

Steams other than the main stream and sub stream may also be offered for customized usage.

#### **Set Custom Video**

You can set up additional video streams if required. For custom video streams, you can preview them, but cannot record or play back them.

#### Steps



- The function is only supported by certain camera models.
- After restoring the device (not restore to default settings), quantity of custom video streams and their names are kept, but the related parameters are restored.
- 1. Click + to add a stream.
- 2. Change the stream name as needed.

**i** Note

Up to 32 letters and symbols (except &, <, >, \, or ") are allowed for the stream name.

- 3. Customize the stream parameters (resolution, frame rate, max. bitrate, video encoding).
- 4. Optional: Add stream description as needed.
- **5. Optional:** If a custom stream is not needed, click  $\times$  to delete it.
- 6. Click Save.

# 4.1.2 Video Type

Select the content (video and audio) that should be contained in the stream.

#### Video

Only video content is contained in the stream.

#### Video & Audio

Video content and audio content are contained in the composite stream.

#### 4.1.3 Resolution

Select video resolution according to actual needs. Higher resolution requires higher bandwidth and storage.

# 4.1.4 Bitrate Type and Max. Bitrate

#### **Constant Bitrate**

It means that the stream is compressed and transmitted at a comparatively fixed bitrate. The compression speed is fast, but mosaic may occur on the image.

#### Variable Bitrate

It means that the device automatically adjust the bitrate under the set **Max. Bitrate**. The compression speed is slower than that of the constant bitrate. But it guarantees the image quality of complex scenes.

# 4.1.5 Video Quality

When **Bitrate Type** is set as Variable, video quality is configurable. Select a video quality according to actual needs. Note that higher video quality requires higher bandwidth.

#### 4.1.6 Frame Rate

The frame rate 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. Note that higher frame rate requires higher bandwidth and larger storage space.

# 4.1.7 Video Encoding

It stands for the compression standard the device adopts for video encoding.

 $\square$ i $_{\mathsf{Note}}$ 

Available compression standards vary according to device models.

#### H.264

H.264, also known as MPEG-4 Part 10, Advanced Video Coding, is a compression standard. Without compressing image quality, it increases compression ratio and reduces the size of video file than MJPEG or MPEG-4 Part 2.

#### H.264 +

H.264+ is an improved compression coding technology based on H.264. By enabling H.264+, you can estimate the HDD consumption by its maximum average bitrate. Compared to H.264, H.264+ reduces storage by up to 50% with the same maximum bitrate in most scenes.

When H.264+ is enabled, **Max. Average Bitrate** is configurable. The device gives a recommended max. average bitrate by default. You can adjust the parameter to a higher value if the video quality is less satisfactory. Max. average bitrate should not be higher than max. bitrate.

 $\square_{\mathbf{i}}$ Note

When H.264+ is enabled, Video Quality, I Frame Interval, Profile, SVC, Main Stream Smoothing and ROI are not supported.

#### H.265

H.265, also known as High Efficiency Video Coding (HEVC) and MPEG-H Part 2, is a compression standard. In comparison to H.264, it offers better video compression at the same resolution, frame rate and image quality.

#### H.265 +

 $\rm H.265+$  is an improved compression coding technology based on  $\rm H.265$ . By enabling  $\rm H.265+$ , you can estimate the HDD consumption by its maximum average bitrate. Compared to  $\rm H.265+$  reduces storage by up to 50% with the same maximum bitrate in most scenes.

When H.265+ is enabled, **Max. Average Bitrate** is configurable. The device gives a recommended max. average bitrate by default. You can adjust the parameter to a higher value if the video quality is less satisfactory. Max. average bitrate should not be higher than max. bitrate.



When H.265+ is enabled, Video Quality, I Frame Interval, Profile and SVC are not configurable.

#### I-Frame Interval

I-frame interval defines the number of frames between 2 I-frames.

In H.264 and H.265, an I-frame, or intra frame, is a self-contained frame that can be independently decoded without any reference to other images. An I-frame consumes more bits than other frames. Thus, video with more I-frames, in other words, smaller I-frame interval, generates more steady and reliable data bits while requiring more storage space.

#### **SVC**

Scalable Video Coding (SVC) is the name for the Annex G extension of the H.264 or H.265 video compression standard.

The objective of the SVC standardization has been to enable the encoding of a high-quality video bitstream that contains one or more subset bitstreams that can themselves be decoded with a complexity and reconstruction quality similar to that achieved using the existing H.264 or H.265 design with the same quantity of data as in the subset bitstream. The subset bitstream is derived by dropping packets from the larger bitstream.

SVC enables forward compatibility for older hardware: the same bitstream can be consumed by basic hardware which can only decode a low-resolution subset, while more advanced hardware will be able decode high quality video stream.

#### MPEG4

MPEG4, referring to MPEG-4 Part 2, is a video compression format developed by Moving Picture Experts Group (MPEG).

#### **MJPEG**

Motion JPEG (M-JPEG or MJPEG) is a video compression format in which intraframe coding technology is used. Images in a MJPEG format is compressed as individual JPEG images.

#### **Profile**

This function means that under the same bitrate, the more complex the profile is, the higher the quality of the image is, and the requirement for network bandwidth is also higher.

# 4.1.8 Smoothing

It refers to the smoothness of the stream. The higher value of the smoothing is, the better fluency of the stream will be, though, the video quality may not be so satisfactory. The lower value of the smoothing is, the higher quality of the stream will be, though it may appear not fluent.

## 4.2 ROI

ROI (Region of Interest) encoding helps to discriminate the ROI and background information in video compression. The technology assigns more encoding resource to the region of interest, thus to increase the quality of the ROI whereas the background information is less focused.

#### 4.2.1 Set ROI

ROI (Region of Interest) encoding helps to assign more encoding resource 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 coding type. ROI is supported when the video coding type is H.264 or H. 265.

#### **Steps**

- 1. Go to Configuration  $\rightarrow$  Video/Audio  $\rightarrow$  ROI.
- 2. Check Enable.
- 3. Select Stream Type.
- 4. Select Region No. in Fixed Region to draw ROI region.
  - 1) Click **Draw Area**.
  - 2) Click and drag the mouse on the view screen to draw the fixed region.
  - 3) Click **Stop Drawing**.

iNote

Select the fixed region that needs to be adjusted and drag the mouse to adjust its position.

- 5. Input the Region Name and ROI Level.
- 6. Click Save.

Note

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

**7. Optional:** Select other region No. and repeat the above steps if you need to draw multiple fixed regions.

# 4.2.2 Set Face Tracking ROI

When the face tracking function is enabled in ROI and the face appears in the live picture, the image of the face is clearer than that of the surrounding area.

#### Steps

- 1. Go to the ROI setting page: Configuration → Video/Audio → ROI.
- 2. Check Enable Face Tracking.
- 3. Select ROI Level in Dynamic Region.

Note

ROI level means the image quality enhancing level. The larger the value is, the better the image quality would be.

4. Click Save.

# 4.2.3 Set Target Tracking ROI

The moving target is clearer than other areas in live image or recordings after enabling the function.

#### **Before You Start**

Go to Configuration  $\rightarrow$  PTZ  $\rightarrow$  Smart Tracking to complete the smart tracking settings.

#### Steps

- 1. Go to Configuration → Video/Audio → ROI.
- 2. Check Enable Target Tracking.
- 3. Set ROI Level for target tracking. The higher the value is, the clearer the target is.
- 4. Click Save.

# 4.2.4 Set License Plate Tracking ROI

When the license plate tracking ROI function is enabled and the license plate appears in the live picture, the image of the license plate is clearer than that of the surrounding area.

#### Steps

- 1. Go to the ROI setting page: Configuration -> Video/Audio -> ROI .
- 2. Check Enable License Plate Tracking.
- 3. Select ROI Level in Dynamic Region.



ROI level means the image quality enhancing level. The larger the value is, the better the image quality would be.

4. Click Save.

# 4.3 Display Info. on Stream

The information of the objects (e.g. human, vehicle, etc.) is marked in the video stream. You can set rules on the connected rear-end device or client software to detect the events including line crossing, intrusion, etc.

#### Steps

- 1. Go to the setting page: Configuration -> Video/Audio -> Display Info. on Stream .
- 2. Check Enable Dual-VCA.
- 3. Click Save.

# 4.4 Audio Settings

It is a function to set audio parameters such as audio encoding, environment noise filtering.

Go to the audio settings page: Configuration → Video/Audio → Audio .

#### 4.4.1 Audio Encoding

Select the audio encoding compression of the audio.

# 4.4.2 Audio Input

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	_	Note

- Connect the audio input device as required.
- The audio input display varies with the device models.

LineIn	Set <b>Audio Input</b> to <b>LineIn</b> when the device connects to the audio input device with the high output power, such as MP3, synthesizer or active pickup.	
MicIn	Set <b>Audio Input</b> to <b>MicIn</b> when the device connects to the audio input device with the low output power, such as microphone or passive pickup.	

# 4.4.3 Audio Output



Connect the audio output device as required.

It is a switch of the device audio output. When it is disabled, all the device audio cannot output. The audio output display varies with the device modes.

### 4.4.4 Environmental Noise Filter

Set it as OFF or ON. When the function is enabled, the noise in the environment can be filtered to some extent.

# 4.5 Two-way Audio

It is used to realize the two-way audio function between the monitoring center and the target in the monitoring screen.

#### **Before You Start**

- Make sure the audio input device (pick-up or microphone) and audio output device (speaker) connected to the device is working properly. Refer to specifications of audio input and output devices for device connection.
- If the device has built-in microphone and speaker, two-way audio function can be enabled directly.

#### Steps

1. Click Live View.

- 2. Click & on the toolbar to enable two-way audio function of the camera.
- 3. Click 🐁 , disable the two-way audio function.

# 4.6 Display Settings

It offers the parameter settings to adjust image features.

Go to Configuration → Image → Display Settings .

Click **Default** to restore settings.

#### 4.6.1 Scene Mode

There are several sets of image parameters predefined for different installation environments. Select a scene according to the actual installation environment to speed up the display settings.

# **Image Adjustment**

By adjusting the **Brightness**, **Saturation**, **Hue**, **Contrast** and **Sharpness**, the image can be best displayed.

# **Exposure Settings**

Exposure is controlled by the combination of iris, shutter, and photo sensibility. You can adjust image effect by setting exposure parameters.

In manual mode, you need to set Exposure Time, Gain and Slow Shutter.

#### **Focus**

It offers options to adjust the focus mode.

#### **Focus Mode**

#### **Auto**

The device focuses automatically as the scene changes. If you cannot get a well-focused image under auto mode, reduce light sources in the image and avoid flashing lights.

#### Semi-auto

The device focuses once after the PTZ and lens zooming. If the image is clear, the focus does not change when the scene changes.

#### Manual

You can adjust the focus manually on the live view page.

# Day/Night Switch

Day/Night Switch function can provide color images in the day mode and turn on fill light in the night mode. Switch mode is configurable.

## Day

The image is always in color.

### Night

The image is black/white or colorful and the supplement light will be enabled to ensure clear live view image at night.

Note

Only certain device models support the supplement light and colorful image.

### Auto

The camera switches between the day mode and the night mode according to the illumination automatically.

#### **Scheduled-Switch**

Set the Start Time and the End Time to define the duration for day mode.

**i** Note

Day/Night Switch function varies according to models.

# **Grey Scale**

You can choose the range of the Grey Scale as [0-255] or [16-235].

#### **Rotate**

When enabled, the live view will rotate 90  $^{\circ}$  counterclockwise. For example, 1280  $\times$  720 is rotated to 720  $\times$  1280.

Enabling this function can change the effective range of monitoring in the vertical direction.

## **Lens Distortion Correction**

For device equipped with motorized lens, image may appear distorted to some extent. Enable this function to correct the distortion.

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Note

- This function is only supported by certain device equipped with motorized lens.
- The edge of image will be lost if this function is enabled.

#### **BLC**

If you focus on an object against strong backlight, the object will be too dark to be seen clearly. BLC (backlight compensation) compensates light to the object in the front to make it clear. If BLC mode is set as **Custom**, you can draw a red rectangle on the live view image as the BLC area.

#### **WDR**

The WDR (Wide Dynamic Range) function helps the camera provide clear images in environment with strong illumination differences.

When there are both very bright and very dark areas simultaneously in the field of view, you can enable the WDR function and set the level. WDR automatically balances the brightness level of the whole image and provides clear images with more details.

**i** Note

When WDR is enabled, some other functions may be not supported. Refer to the actual interface for details.

## HLC

When the bright area of the image is over-exposed and the dark area is under-exposed, the HLC (High Light Compression) function can be enabled to weaken the bright area and brighten the dark area, so as to achieve the light balance of the overall picture.

## White Balance

White balance is the white rendition function of the camera. It is used to adjust the color temperature according to the environment.

### **DNR**

Digital Noise Reduction is used to reduce the image noise and improve the image quality. **Normal** and **Expert** modes are selectable.

#### **Normal**

Set the DNR level to control the noise reduction degree. The higher level means stronger reduction degree.

#### **Expert**

Set the DNR level for both space DNR and time DNR to control the noise reduction degree. The higher level means stronger reduction degree.

# Defog

You can enable the defog function when the environment is foggy and the image is misty. It enhances the subtle details so that the image appears clearer.

#### **EIS**

Increase the stability of video image by using jitter compensation technology.

## Mirror

When the live view image is the reverse of the actual scene, this function helps to display the image normally.

Select the mirror mode as needed.



The video recording will be shortly interrupted when the function is enabled.

# 4.6.2 Image Parameters Switch

The device automatically switches image parameters in set time periods.

Go to image parameters switch setting page: Configuration  $\rightarrow$  Image  $\rightarrow$  Image Parameters Switch, and set parameters as needed.

#### Set Switch

Switch the image parameters to the scene automatically in certain time periods.

#### Steps

- 1. Check Enable.
- 2. Select and configure the corresponding time period and the scene.

Note

For the scene configuration, refer to Scene Mode .

3. Click Save.

#### 4.6.3 Video Standard

Video standard is an ability of a video card or video display device that defines the amount of colors that are shown and the resolution. The two most common video standard used are NTSC and PAL. In NTSC, 30 frames are transmitted each second. Each frame is made up of 525 individual scan lines. In PAL, 25 frames are transmitted each second. Each frame is made up of 625 individual scan lines. Select video signal standard according to the video system in your country/region.

## 4.6.4 Local Video Output

If the device is equipped with video output interfaces, such as BNC, CVBS, HDMI, and SDI, you can preview the live image directly by connecting the device to a monitor screen.

Select the output mode as ON/OFF to control the output.

## **4.7 OSD**

You can customize OSD (On-screen Display) information such as device name, time/date, font, color, and text overlay displayed on video stream.

Go to OSD setting page: Configuration  $\rightarrow$  Image  $\rightarrow$  OSD Settings . Set the corresponding parameters, and click **Save** to take effect.

## **Character Set**

Select character set for displayed information. If Korean is required to displayed on screen, select **EUC-KR**. Otherwise, select **GBK**.

## **Displayed Information**

Set camera name, date, week, and their related display format.

#### **Text Overlay**

Set customized overlay text on image.

#### **OSD Parameters**

Set OSD parameters, such as **Display Mode**, **OSD Size**, **Font Color**, and **Alignment**.

# 4.8 Set Privacy Mask

The function blocks certain areas in the live view to protect privacy. No matter how the device moves, the blocked scene will never be seen.

### **Steps**

- 1. Go to privacy mask setting page: Configuration → Image → Privacy Mask.
- 2. Check Enable Privacy Mask.
- 3. Click Draw Area. Drag the mouse in the live view to draw a closed area.

Drag the corners of the area Adjust the size of the area.

**Drag the area** Adjust the position of the area.

Click Clear All Clear all the areas you set.

4. Click Stop Drawing.

5, Click Save.

# 4.9 Overlay Picture

Overlay a customized picture on live view.

#### **Before You Start**

The picture to overlay has to be in BMP format with 24-bit, and the maximum picture size is  $128 \times 128$  pixel.

#### **Steps**

- 1. Go to picture overlay setting page: Configuration → Image → Picture Overlay.
- 2. Click Browse to select a picture, and click Upload.

The picture with a red rectangle will appear in live view after successfully uploading.

- 3. Check Enable Picture Overlay.
- 4. Drag the picture to adjust its position.
- 5. Click Save.

# 4.10 Set Target Cropping

You can crop the image, transmit and save only the images of the target area to save transmission bandwidth and storage.

#### Steps

- 1. Go to Configuration → Video/Audio → Target Cropping.
- 2. Check Enable Target Cropping and set Third Stream as the Stream Type.

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iNote
After enabling target cropping, the third stream resolution cannot be configured.
3. Select a Cropping Resolution.
A red frame appears in the live view.
4. Drag the frame to the target area.
5. Click Save.
iNote
<ul> <li>Only certain models support target cropping and the function varies according to different camera models.</li> </ul>
<ul> <li>Some functions may be disabled after enabling target cropping.</li> </ul>

# **Chapter 5 Video Recording and Picture Capture**

This part introduces the operations of capturing video clips and snapshots, playback, and downloading captured files.

# 5.1 Storage Settings

This part introduces the configuration of several common storage paths.

# 5.1.1 Set New or Unencrypted Memory Card

#### **Before You Start**

Insert a new or unencrypted memory card to the device. For detailed installation, refer to *Quick Start Guide* of the device.

## **Steps**

- 1. Go to Configuration  $\rightarrow$  Storage  $\rightarrow$  Storage Management  $\rightarrow$  HDD Management .
- 2. Select the memory card.

Note

If an **Unlock** button appears, you need to unlock the memory card first. See <u>Detect Memory</u> <u>Card Status</u> for details.

3. Click Format to initialize the memory card.

When the **Status** of memory card turns from **Uninitialized** to **Normal**, the memory card is ready for use.

- 4. Optional: Encrypt the memory card.
  - 1) Click **Encrypted Format**.
  - 2) Set the encryption password.
  - 3) Click **OK**.

When the **Encryption Status** turns to **Encrypted**, the memory card is ready for use.

**i** Note

Keep your encryption password properly. Encryption password cannot be found if forgotten.

- **5. Optional:** Define the **Quota** of the memory card. Input the percentage for storing different contents according to your needs.
- 6. Click Save.

# **Detect Memory Card Status**

The device detects the status of Hikvision memory card. You receive notifications when your memory card is detected abnormal.

## **Before You Start**

The configuration page only appears when a Hikvision memory card is installed to the device.

## Steps

- 1. Go to Configuration → Storage → Storage Management → Memory Card Detection .
- 2. Click Status Detection to check the Remaining Lifespan and Health Status of your memory card.

#### Remaining Lifespan

It shows the percentage of the remaining lifespan. The lifespan of a memory card may be influenced by factors such as its capacity and the bitrate. You need to change the memory card if the remaining lifespan is not enough.

#### **Health Status**

It shows the condition of your memory card. There are three status descriptions: good, bad, and damaged. You will receive a notification if the health status is anything other than good when the **Arming Schedule** and **Linkage Method** are set.



It is recommended that you change the memory card when the health status is not "good".

- 3. Click R/W Lock to set the permission of reading and writing to the memory card.
  - Add a Lock
    - a. Select the Lock Switch as ON.
    - b. Enter the password.
    - c. Click Save
  - Unlock
    - If you use the memory card on the device that locks it, unlocking will be done automatically and no unlocking procedures are required on the part of users.
    - If you use the memory card (with a lock) on a different device, you can go to HDD
       Management to unlock the memory card manually. Select the memory card, and click
       Unlock. Enter the correct password to unlock it.
  - Remove the Lock
    - a. Select the Lock Switch as OFF.
    - b. Enter the password in Password Settings.
    - c. Click Save.

# Note

- Only admin user can set the R/W Lock.
- The memory card can only be read and written when it is unlocked.
- If the device, which adds a lock to a memory card, is restored to the factory settings, you can go to **HDD Management** to unlock the memory card.
- 4. Set Arming Schedule and Linkage Method. See <u>Set Arming Schedule</u> and <u>Linkage Method</u>
  Settings for details.
- 5. Click Save.

#### 5.1.2 Set FTP

You can configure the FTP server to save images which are captured by events or a timed snapshot task.

#### **Before You Start**

Get the FTP server address first.

#### Steps

- 1. Go to Configuration -> Network -> Advanced Settings -> FTP.
- 2. Configure FTP settings.

#### **FTP Protocol**

FTP and SFTP are selectable. The files uploading is encrypted by using SFTP protocol.

#### Server Address and Port

The FTP server address and corresponding port.

#### **User Name and Password**

The FTP user should have the permission to upload pictures.

If the FTP server supports picture uploading by anonymous users, you can check **Anonymous** to hide your device information during uploading.

# **Directory Structure**

The saving path of snapshots in the FTP server.

# Picture Filing Interval

For better picture management, you can set the picture filing interval from 1 day to 30 days. Pictures captured in the same time interval will be saved in one folder named after the beginning date and ending date of the time interval.

#### **Picture Name**

Set the naming rule for captured pictures. You can choose **Default** in the drop-down list to use the default rule, that is, IP address\_channel number\_capture time\_event type.jpg (e.g., 10.11.37.189\_01\_20150917094425492\_FACE\_DETECTION.jpg). Or you can customize it by adding a **Custom Prefix** to the default naming rule.

3. Check Upload Picture to enable uploading snapshots to the FTP server.

4. Check <b>Enable Automatic Network Replenishme</b> n
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iNote

Upload to FTP/Memory Card/NAS in Linkage Method and Enable Automatic Network Replenishment should be both enabled simultaneously.

- 5. Click Test to verify the FTP server.
- 6. Click Save.

#### 5.1.3 Set NAS

Take network server as network disk to store the record files, captured images, etc.

#### **Before You Start**

Get the IP address of the network disk first.

#### Steps

- 1. Go to NAS setting page: Configuration → Storage → Storage Management → Net HDD.
- 2. Click HDD No.. Enter the server address and file path for the disk.

#### Server Address

The IP address of the network disk.

#### File Path

The saving path of network disk files.

### **Mounting Type**

Select file system protocol according to the operation system.

Enter user name and password of the net HDD to guarantee the security if **SMB/CIFS** is selected.

- 3. Click Test to check whether the network disk is available.
- 4. Click Save.

## 5.1.4 eMMC Protection

It is to automatically stop the use of eMMC as a storage media when its health status is poor.



The eMMC protection is only supported by certain device models with an eMMC hardware.

## Go to Configuration $\rightarrow$ System $\rightarrow$ Maintenance $\rightarrow$ System Service for the settings.

eMMC, short for embedded multimedia card, is an embedded non-volatile memory system. It is able to store the captured images or videos of the device.

The device monitors the eMMC health status and turns off the eMMC when its status is poor. Otherwise, using a worn-out eMMC may lead to device boot failure.

# **5.1.5 Set Cloud Storage**

It helps to upload the captured pictures and data to the cloud. The platform requests picture directly from the cloud for picture and analysis. The function is only supported by certain models.

## **Steps**



If the cloud storage is enabled, the pictures are stored in the cloud video manager firstly.

- 1. Go to Configuration → Storage → Storage Management → Cloud Storage.
- 2. Check Enable Cloud Storage.
- 3. Set basic parameters.

<b>Protocol Version</b>	The protocol version of the cloud video manager.
Server IP	The IP address of the cloud video manager. It supports IPv4 address.
Serve Port	The port of the cloud video manager. You are recommended to use the default port.
AccessKey	The key to log in to the cloud video manager.
SecretKey	The key to encrypt the data stored in the cloud video manager.
User Name and Password	The user name and password of the cloud video manager.
Picture Storage Pool ID	The ID of the picture storage region in the cloud video manager. Make sure storage pool ID and the storage region ID are the same.

- 4. Click Test to test the configured settings.
- 5. Click Save.

# 5.2 Video Recording

This part introduces the operations of manual and scheduled recording, playback, and downloading recorded files.

# 5.2.1 Record Automatically

This function can record video automatically during configured time periods.

#### **Before You Start**

Select **Trigger Recording** in event settings for each record type except **Continuous**. See **Event and Alarm** for details.

#### Steps

- 1. Go to Configuration → Storage → Schedule Settings → Record Schedule .
- 2. Check Enable.
- 3. Select a record type.

Note

The record type is vary according to different models.

#### **Continuous**

The video will be recorded continuously according to the schedule.

#### Motion

When motion detection is enabled and trigger recording is selected as linkage method, object movement is recorded.

#### Alarm

When alarm input is enabled and trigger recording is selected as linkage method, the video is recorded after receiving alarm signal from external alarm input device.

#### Motion | Alarm

Video is recorded when motion is detected or alarm signal is received from the external alarm input device.

#### **Motion & Alarm**

Video is recorded only when motion is detected and alarm signal is received from the external alarm input device.

#### **Event**

The video is recorded when configured event is detected.

- **4.** Set schedule for the selected record type. Refer to <u>Set Arming Schedule</u> for the setting operation.
- 5. Click Advanced to set the advanced settings.

#### Overwrite

Enable **Overwrite** to overwrite the video records when the storage space is full. Otherwise the camera cannot record new videos.

## Pre-record

The time period you set to record before the scheduled time.

#### Post-record

The time period you set to stop recording after the scheduled time.

# **Stream Type**

Select the stream type for recording.



When you select the stream type with higher bitrate, the actual time of the pre-record and post-record may be less than the set value.

### **Recording Expiration**

The recordings are deleted when they exceed the expired time. The expired time is configurable. Note that once the recordings are deleted, they can not be recovered.

6. Click Save.

# 5.2.2 Record Manually

### **Steps**

- 1. Go to Configuration → Local .
- 2. Set the **Record File Size** and saving path to for recorded files.
- 3. Click Save.
- 4. Click in the live view interface to start recording. Click in the stop recording.

# 5.2.3 Set Lite Storage

After the lite storage is enabled, the frame rate and bitrate of the video stream can be reduced to lengthen the storage time of the memory card when there is no moving object in the monitoring scenario.

#### **Steps**

- 1. Go to Configuration → Storage → Storage Management → Lite Storage.
- 2. Check **Enable** and set the level. The higher the level is, the larger the frame rate and bitrate are, and the shorter the recommended storage time is.
- 3. Set the storage time. The device automatically calculates the bitrate and offers the recommended storage time according to the memory card space and level. You are recommended to set the storage time to the device recommended time.

# **i**Note

- If the lite storage is enabled, unformatted memory card will be formatted automatically.
- The displayed available space of the memory card is assigned by default according to
   Percentage of Record in Storage → Storage Management → Quota. You can adjust it as required.
- Only certain device models support the function.

# 5.2.4 Playback and Download Video

You can search, playback and download the videos stored in the local storage or network storage.

#### Steps

- 1. Click Playback.
- 2. Set search condition and click Search.

The matched video files showed on the timing bar.

- 3. Click ▶ to play the video files.
  - Click 🐐 to clip video files.
  - Double click the live view image to play video files in full screen. Press ESC to exit full screen.

Note

Go to Configuration → Local , click Save clips to to change the saving path of clipped video files.

- 4. Click ★ on the playback interface to download files.
  - 1) Set search condition and click **Search**.
  - 2) Select the video files and then click **Download**.

**i**Note

Go to **Configuration**  $\rightarrow$  **Local**, click **Save downloaded files to** to change the saving path of downloaded video files.

# 5.3 Capture Configuration

The device can capture the pictures manually or automatically and save them in configured saving path. You can view and download the snapshots.

# 5.3.1 Capture Automatically

This function can capture pictures automatically during configured time periods.

### **Before You Start**

If event-triggered capture is required, you should configure related linkage methods in event settings. Refer to *Event and Alarm* for event settings.

#### Steps

- 1. Go to Configuration → Storage → Schedule Settings → Capture → Capture Parameters .
- 2. Set the capture type.

#### **Timing**

Capture a picture at the configured time interval.

#### **Event-Triggered**

Capture a picture when an event is triggered.

- 3. Set the Format, Resolution, Quality, Interval, and Capture Number.
- 4. Refer to <u>Set Arming Schedule</u> for configuring schedule time.
- 5. Click Save.

# 5.3.2 Capture Manually

#### Steps

- 1. Go to Configuration → Local.
- 2. Set the Image Format and saving path to for snapshots.

#### **JPEG**

The picture size of this format is comparatively small, which is better for network transmission.

#### **BMP**

The picture is compressed with good quality.

- 3. Click Save.
- 4. Click on near the live view or play back window to capture a picture manually.

# 5.3.3 Set Timing Wake

When the device is sleeping, it will wake up at the set time interval, and capture pictures and upload them.

## **Steps**



The function is only supported by certain device models.

- 1. Go to Configuration → System → System Settings → Power Consumption Mode , under Sleep Schedule, click the time schedule to set Sleep Capture Interval.
- 2. Enter Configuration → Event → Basic Event → Timing Wake .
- 3. Check Enable.
- 4. Select Capture Types.
- 5. For the linkage method settings, see <u>Linkage Method Settings</u>.
- 6. Click Save.

#### Result

The device will wake up at the set sleep capture interval, and capture pictures and upload them.

#### 5.3.4 View and Download Picture

You can search, view and download the pictures stored in the local storage or network storage.

#### Steps

- 1. Click Picture.
- 2. Set search condition and click Search.

The matched pictures showed in the file list.

Note						
Go to <b>Configuration</b> → <b>Local</b> , click <b>Save snapshots when playback</b> to change the saving path opictures.						

# **Chapter 6 Event and Alarm**

This part introduces the configuration of events. The device takes certain response to triggered alarm.

## 6.1 Basic Event

#### 6.1.1 Set Motion Detection

It helps to detect the moving objects in the detection region and trigger the linkage actions.

#### Steps

- 1. Go to Configuration  $\rightarrow$  Event  $\rightarrow$  Basic Event  $\rightarrow$  Motion Detection.
- 2. Check Enable Motion Detection.
- 3. Optional: Highlight to display the moving object in the image in green.
  - 1) Check Enable Dynamic Analysis for Motion.
  - 2) Go to Configuration → Local.
  - 3) Set Rules to Enable.
- 4. Select Configuration Mode, and set rule region and rule parameters.
  - For the information about normal mode, see **Normal Mode** .
  - For the information about expert mode, see **Expert Mode** .
- 5. Set the arming schedule and linkage methods. For the information about arming schedule settings, see <u>Set Arming Schedule</u>. For the information about linkage methods, see <u>Linkage</u> <u>Method Settings</u>.
- 6. Click Save.

# **Expert Mode**

You can configure different motion detection parameters for day and night according to the actual needs.

#### Steps

- 1. Select Expert Mode in Configuration.
- 2. Set parameters of expert mode.

#### **Scheduled Image Settings**

**OFF** 

Image switch is disabled.

**Auto-Switch** 

The system switches day/night mode automatically according to environment. It displays colored image at day and black and white image at night.

#### **Scheduled-Switch**

The system switches day/night mode according to the schedule. It switches to day mode during the set periods and switches to night mode during the other periods.

## Sensitivity

The higher the value of sensitivity is, the more sensitive the motion detection is. If scheduled image settings is enabled, the sensitivity of day and night can be set separately.

**3.** Select an **Area** and click **Draw Area**. Click and drag the mouse on the live image and then release the mouse to finish drawing one area.



Figure 6-1 Set Rules

**Stop Drawing** Finish drawing one area.

Clear All

Delete all the areas.

- 4. Click Save.
- **5. Optional:** Repeat above steps to set multiple areas.

#### **Normal Mode**

You can set motion detection parameters according to the device default parameters.

#### **Steps**

1. Select normal mode in Configuration.

- 2. Set the sensitivity of normal mode. The higher the value of sensitivity is, the more sensitive the motion detection is. If the sensitivity is set to 0, motion detection and dynamic analysis do not take effect.
- **3.** Set **Detection Target**. Human and vehicle are available. If the detection target is not selected, all the detected targets will be reported, including the human and vehicle.
- **4.** Click **Draw Area**. Click and drag the mouse on the live video, and then release the mouse to finish drawing one area.

**Stop Drawing** Stop drawing one area.

**Clear All** Clear all the areas.

5. Optional: You can set the parameters of multiple areas by repeating the above steps.

# **6.1.2 Set Video Tampering Alarm**

When the configured area is covered and cannot be monitored normally, the alarm is triggered and the device takes certain alarm response actions.

## **Steps**

- 1. Go to Configuration → Event → Basic Event → Video Tampering.
- 2. Check Enable.
- 3. Set the Sensitivity. The higher the value is, the easier to detect the area covering.
- 4. Click Draw Area and drag the mouse in the live view to draw the area.

Stop Drawing Finish drawing.

Clear All Delete all the drawn areas.

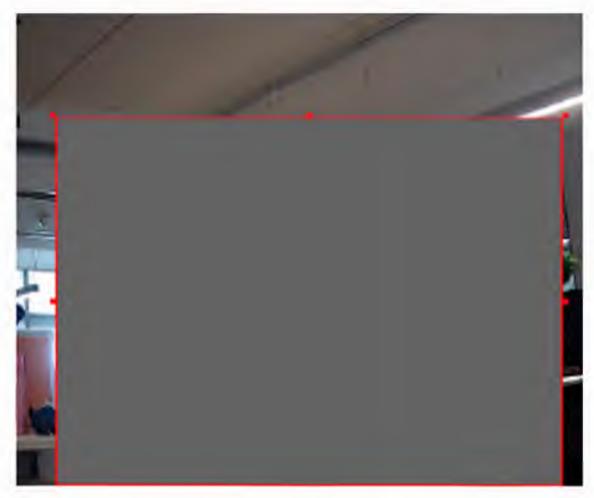


Figure 6-2 Set Video Tampering Area

- **5.** Refer to <u>Set Arming Schedule</u> for setting scheduled time. Refer to <u>Linkage Method Settings</u> for setting linkage method.
- 6. Click Save.

# 6.1.3 Set PIR Alarm

A PIR (Passive Infrared) alarm is triggered when an intruder moves within the detector's field of view. The heat energy dissipated by a person, or any other warm blooded creature such as dogs, cats, etc., can be detected.

## Steps



Only certain models support PIR alarm.

- 1. Go to Configuration → Advanced Configuration → Basic Event → PIR Alarm.
- 2. Check Enable PIR Alarm.

- **3.** Refer to <u>Set Arming Schedule</u> for setting scheduled time. Refer to <u>Linkage Method Settings</u> for setting linkage method.
- 4. Click Save.

# 6.1.4 Set Exception Alarm

Exception such as network disconnection can trigger the device to take corresponding action.

#### Steps

1. Go to Configuration → Event → Basic Event → Exception .

2. Select Exception Type.

**HDD Full** The HDD storage is full.

HDD ErrorRetwork DisconnectedError occurs in HDD.The device is offline.

IP Address Conflicted The IP address of current device is same as that of other device in

the network.

Illegal Login Incorrect user name or password is entered.

**Voltage Instable** The power supply voltage is fluctuating.

3. Refer to Linkage Method Settings for setting linkage method.

4. Click Save.

## 6.1.5 Set Alarm Input

Alarm signal from the external device triggers the corresponding actions of the current device.

#### **Before You Start**

Make sure the external alarm device is connected. See Quick Start Guide for cable connection.

#### Steps

- 1. Go to Configuration → Event → Basic Event → Alarm Input.
- 2. Check Enable Alarm Input Handling.
- 3. Select Alarm Input NO. and Alarm Type from the dropdown list. Edit the Alarm Name.
- **4.** Refer to <u>Set Arming Schedule</u> for setting scheduled time. Refer to <u>Linkage Method Settings</u> for setting linkage method.
- **5.** Click **Copy to...** to copy the settings to other alarm input channels.
- 6. Click Save.

# 6.1.6 Set Video Quality Diagnosis

When the video quality of the device is abnormal and the alarm linkage is set, the alarm will be triggered automatically.

### **Steps**

- 1. Go to Configuration → Event → Basic Event → Video Quality Diagnosis .
- 2. Select Diagnosis Type.
- 3. Set the corresponding parameters.

#### **Alarm Detection Interval**

The time interval to detect the exception.

## Sensitivity

The higher the value is, the more easily the exception will be detected, and the higher possibility of misinformation would be.

## **Alarm Delay Times**

The device uploads the alarm when the alarm reaches the set number of times.

- 4. Check Enable, and the selected diagnosis type will be detected.
- 5. Set arming schedule. See Set Arming Schedule.
- 6. Set linkage method. See Linkage Method Settings .
- 7. Click Save.

Note

The function is only supported by certain models. The actual display varies with models.

# 6.1.7 Set Vibration Detection

It is used to detect whether the device is vibrating. The device reports an alarm and triggers linkage actions if the function is enabled.

# Steps

- 1. Go to Configuration → Event → Basic Event → Vibration Detection .
- 2. Check Enable.
- 3. Drag the slider to set the detection sensitivity. You can also enter number to set the sensitivity.
- 4. Set the arming schedule. See Set Arming Schedule.
- 5. Set the linkage method. See Linkage Method Settings .
- 6. Click Save.

**i** Note

The function is only supported by certain models. The actual display varies with models.

## 6.2 Smart Event

Set smart events by the following instructions.



- For certain device models, you need to enable the smart event function on **VCA Resource** page first to show the function configuration page.
- The function varies according to different models.

# 6.2.1 Detect Audio Exception

Audio exception detection function detects the abnormal sound in the surveillance scene, such as the sudden increase/decrease of the sound intensity, and some certain actions can be taken as response.

#### Steps

- 1. Go to Configuration → Event → Smart Event → Audio Exception Detection .
- 2. Select one or several audio exception detection types.

#### **Audio Loss Detection**

Detect sudden loss of audio track.

## **Sudden Increase of Sound Intensity Detection**

Detect sudden increase of sound intensity. **Sensitivity** and **Sound Intensity Threshold** are configurable.



- The lower the sensitivity is, the more significant the change should be to trigger the detection.
- The sound intensity threshold refers to the sound intensity reference for the detection. It is recommended to set as the average sound intensity in the environment. The louder the environment sound, the higher the value should be. You can adjust it according to the real environment.

#### **Sudden Decrease of Sound Intensity Detection**

Detect sudden decrease of sound intensity. **Sensitivity** is configurable.

- **3.** Refer to <u>Set Arming Schedule</u> for setting scheduled time. Refer to <u>Linkage Method Settings</u> for setting linkage methods.
- 4. Click Save.



The function varies according to different models.

# 6.2.2 Set Defocus Detection

The blurred image caused by lens defocus can be detected. If it occurs, the device can take linkage actions.

#### Steps

- 1. Go to Configuration → Event → Smart Event → Defocus Detection .
- 2. Check Enable.
- 3. Set **Sensitivity**. The higher the value is, the more easily the defocus image can trigger the alarm. You can adjust the value according to the actual environment.
- 4. For the linkage method settings, refer to Linkage Method Settings.
- 5. Click Save.



The function is only supported by certain models. The actual display varies with models.

# **6.2.3 Detect Scene Change**

Scene change detection function detects the change of surveillance scene. Some certain actions can be taken when the alarm is triggered.

#### Steps

- 1. Go to Configuration → Event → Smart Event → Scene Change Detection .
- 2. Click Enable.
- 3. Set the **Sensitivity**. The higher the value is, the more easily the change of scene can be detected. But the detection accuracy is reduced.
- 4. Refer to <u>Set Arming Schedule</u> for setting scheduled time. Refer to <u>Linkage Method Settings</u> for setting linkage method.
- 5. Click Save.



The function varies according to different models.

## 6.2.4 Set Face Detection

It helps to detect the face in the detection region. If a face is detected, the device triggers the linkage actions.

#### Steps

- 1. Go to Configuration → Event → Smart Event → Face Detection .
- 2. Check Enable Face Detection.
- 3. Optional: Highlight to display the face in the image.
  - 1) Check Enable Dynamic Analysis For Face Detection.

- 2) Go to Configuration → Local, set Rules to Enable.
- 4. Set Sensitivity. The lower the sensitivity is, the profile of the face or unclear face is more difficult to detect.
- 5. Set the arming schedule and linkage methods. For the information about arming schedule settings, see <u>Set Arming Schedule</u> . For the information about linkage methods, see <u>Linkage</u> Method Settings.
- 6. Click Save.

### 6.2.5 Set Video Loss

This function can detect the video signal loss in time and trigger the linkage action.

## Steps

- 1. Go to Configuration → Event → Basic Event → Video Loss.
- 2. Check Enable.
- 3. Refer to Set Arming Schedule for setting scheduled time. Refer to Linkage Method Settings for setting linkage method.
- 4. Click Save.

#### 6.2.6 Set Intrusion Detection

It is used to detect objects entering and loitering in a pre-defined virtual region. If it occurs, the device can take linkage actions.

#### Steps

- 1. Go to Configuration → Event → Smart Event → Intrusion Detection .
- 2. Check Enable.

- 3. Select a Region. For the detection region settings, refer to **Draw Area**.
- 4. Set rules.

Sensitivity	Sensitivity stands for the percentage of the body part of an acceptable target that enters the pre-defined region. Sensitivity = $100 - S1/ST \times 100$ . S1 stands for the target body part that goes across the pre-defined region. ST stands for the complete target body. The higher the value of sensitivity is, the more easily the alarm can be triggered.
Threshold	Threshold stands for the threshold for the time of the object loitering in the region. If the time that one object stays exceeds the threshold, the alarm is triggered. The larger the value of the threshold is, the longer the alarm triggering time is.
Detection Target	Human and vehicle are available. If the detection target is not selected, all the detected targets will be reported, including the human and vehicle.

# Target Validity

If you set a higher validity, the required target features should be more obvious, and the alarm accuracy would be higher. The target with less obvious features would be missing.



Figure 6-3 Set Rule

- **5. Optional:** You can set the parameters of multiple areas by repeating the above steps.
- **6.** For the arming schedule settings, refer to <u>Set Arming Schedule</u>. For the linkage method settings, refer to <u>Linkage Method Settings</u>.
- 7. Click Save.

## 6.2.7 Set Line Crossing Detection

It is used to detect objects crossing a pre-defined virtual line. If it occurs, the device can take linkage actions.

#### Steps

- 1. Go to Configuration → Event → Smart Event → Line Crossing Detection .
- 2. Check Enable.
- 3. Select one Line and set the size filter. For the size filter settings, refer to Set Size Filter.
- **4.** Click **Draw Area** and a line with an arrow appears in the live video. Drag the line to the location on the live video as desired.
- 5. Set rules.

#### Direction

It stands for the direction from which the object goes across the line.

A<->B: The object going across the line from both directions can be detected and alarms are triggered.

A->B: Only the object crossing the configured line from the A side to the B side can be detected.

B->A: Only the object crossing the configured line from the B side to the A side can be detected.

Sensitivity

It stands for the percentage of the body part of an acceptable target that goes across the pre-defined line. Sensitivity =  $100 - S1/ST \times 100$ . S1 stands for the target body part that goes across the pre-defined line. ST stands for the complete target body. The higher the value of sensitivity is, the more easily the alarm can be triggered.

Detection Target Human and vehicle are available. If the detection target is not selected, all the detected targets will be reported, including the human and vehicle.

Target Validity If you set a higher validity, the required target features should be more obvious, and the alarm accuracy would be higher. The target with less obvious features would be missing.



Figure 6-4 Set Rule

- 6. Optional: You can set the parameters of multiple areas by repeating the above steps.
- **7.** For the arming schedule settings, refer to <u>Set Arming Schedule</u>. For the linkage method settings, refer to <u>Linkage Method Settings</u>.
- 8. Click Save.

# 6.2.8 Set Region Entrance Detection

It is used to detect objects entering a pre-defined virtual region from the outside place. If it occurs, the device can take linkage actions.

#### Steps

- 1. Go to Configuration → Event → Smart Event → Region Entrance Detection .
- 2. Check Enable.
- 3. Select one Region. For the region settings, refer to **Draw Area**.
- **4.** Set the detection target, sensitivity and the target validity.

#### Sensitivity

It stands for the percentage of the body part of an acceptable target that goes across the pre-defined region. Sensitivity =  $100 - S1/ST \times 100$ . S1 stands for the target body part that goes across the pre-defined region. ST stands for the complete target body. The higher the value of sensitivity is, the more easily the alarm can be triggered.

# Detection Target

Human and vehicle are available. If the detection target is not selected, all the detected targets will be reported, including the human and vehicle.

# Target Validity

If you set a higher validity, the required target features should be more obvious, and the alarm accuracy would be higher. The target with less obvious features would be missing.



Figure 6-5 Set Rule

- **5. Optional:** You can set the parameters of multiple areas by repeating the above steps.
- **6.** For the arming schedule settings, refer to <u>Set Arming Schedule</u>. For the linkage method settings, refer to <u>Linkage Method Settings</u>.
- 7. Click Save.

# **6.2.9 Set Region Exiting Detection**

It is used to detect objects exiting from a pre-defined virtual region. If it occurs, the device can take linkage actions.

#### **Steps**

- 1. Go to Configuration → Event → Smart Event → Region Exiting Detection
- 2. Check Enable.
- 3. Select one Region. For the detection region settings, refer to **Draw Area**.
- 4. Set the detection target, sensitivity and the target validity.

## Sensitivity

It stands for the percentage of the body part of an acceptable target that goes across the pre-defined region. Sensitivity =  $100 - S1/ST \times 100$ . S1 stands for the target body part that goes across the pre-defined region. ST stands for the complete target body. The higher the value of sensitivity is, the more easily the alarm can be triggered.

# Detection Target

Human and vehicle are available. If the detection target is not selected, all the detected targets will be reported, including the human and vehicle.

# Target Validity

If you set a higher validity, the required target features should be more obvious, and the alarm accuracy would be higher. The target with less obvious features would be missing.



Figure 6-6 Set Rule

- **5. Optional:** You can set the parameters of multiple areas by repeating the above steps.
- **6.** For the arming schedule settings, refer to <u>Set Arming Schedule</u>. For the linkage method settings, refer to <u>Linkage Method Settings</u>.

#### 7. Click Save.

# 6.2.10 Set Unattended Baggage Detection

It is used to detect the objects left over in the pre-defined region. Linkage methods can be triggered after the object is left and stays in the region for a set time period.

## **Steps**

- 1. Go to Configuration -> Event -> Smart Event -> Unattended Baggage Detection .
- 2. Check Enable.
- 3. Select one Region. For the detection region settings, refer to **Draw Area**.
- 4. Set rules.

#### Sensitivity

Sensitivity stands for the percentage of the body part of an acceptable target that enters the pre-defined region. Sensitivity =  $100 - S1/ST \times 100$ . S1 stands for the target body part that goes across the pre-defined region. ST stands for the complete target body. The higher the value of sensitivity is, the more easily the alarm can be triggered.

#### **Threshold**

It stands for the time of the objects left in the region. Alarm is triggered after the object is left and stays in the region for the set time period.

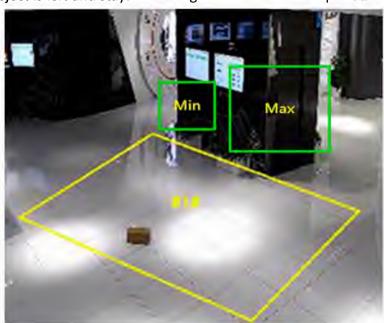


Figure 6-7 Set Rule

- **5. Optional:** You can set the parameters of multiple areas by repeating the above steps.
- **6.** For the arming schedule settings, refer to <u>Set Arming Schedule</u>. For the linkage method settings, refer to <u>Linkage Method Settings</u>.
- 7. Click Save.

## 6.2.11 Set Object Removal Detection

It detects whether the objects are removed from the pre-defined detection region, such as the exhibits on display. If it occurs, the device can take linkage actions and the staff can take measures to reduce property loss.

#### **Steps**

- 1. Go to Configuration → Event → Smart Event → Object Removal Detection .
- 2. Check Enable.
- 3. Select a Region. For the region settings, see <u>Draw Area</u>.
- 4. Set the rule.

### Sensitivity

It stands for the percentage of the body part of an acceptable target that leaves the pre-defined region.

Sensitivity = 100 - S1/ST\*100

S1 stands for the target body part that leaves the pre-defined region. ST stands for the complete target body.

Example: If you set the value as 60, a target is possible to be counted as a removed object only when 40 percent body part of the target leaves the region.

#### Threshold

The threshold for the time of the objects removed from the region. If you set the value as 10, alarm is triggered after the object disappears from the region for 10s.

- 5. Optional: Repeat the above steps to set more regions.
- **6.** For the arming schedule settings, see <u>Set Arming Schedule</u>. For the linkage method settings, see <u>Linkage Method Settings</u>.
- 7. Click Save.

**i** Note

The function is only supported by certain models. The actual display varies with the models.

#### 6.2.12 Draw Area

This section introduces the configuration of area.

#### Steps

- 1. Click Draw Area.
- 2. Click on the live view to draw the boundaries of the detection region, and right click to complete drawing.
- 3. Click Save.

**i**Note

Click Clear All to clear all pre-defined areas.

# 6.2.13 Set Size Filter

This part introduces the setting of size filter. Only the target whose size is between the minimum value and maximum value is detected and triggers alarm.

# Steps

- 1. Click Max. Size, and drag the mouse in the live view to draw the maximum target size.
- 2. Click Min. Size, and drag the mouse in the live view to draw the minimum target size.
- 3. Click Save.

# **Chapter 7 Network Settings**

# 7.1 TCP/IP

TCP/IP settings 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 → Basic Settings → TCP/IP for parameter settings.

## **NIC Type**

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

#### IPv4

Two IPv4 modes are available.

#### **DHCP**

The device automatically gets the IPv4 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 IPv4 parameters manually. Input IPv4 Address, IPv4 Subnet Mask, and IPv4 Default Gateway, and click Test to see if the IP address is available.

#### IPv6

Three IPv6 modes are available.

#### **Route Advertisement**

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

 $\square$ iNote

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

Input IPv6 Address, IPv6 Subnet, IPv6 Default 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.

#### **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 Server** and **Alternate DNS server** properly if needed.

### **Dynamic Domain Name**

Check **Enable Dynamic Domain Name** and input **Register Domain Name**. The device is registered under the register domain name for easier management within the local area network.



**DHCP** should be enabled for the dynamic domain name to take effect.

## 7.1.1 Multicast

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

Go to Configuration → Network → Basic Settings → Multicast for the multicast settings.

#### **IP Address**

It stands for the address of multicast host.

#### **Stream Type**

The stream type of the multicast source.

## **Video Port**

The video port of the selected stream.

#### **Audio Port**

The audio port of the selected stream.

## **FEC Port**

The FEC port of the selected stream.

## **FEC Ratio**

The ratio of forward error correction.

# 7.1.2 Multicast Discovery

Check the **Enable Multicast Discovery**, and then the online network camera can be automatically detected by client software via private multicast protocol in the LAN.

# **7.2 SNMP**

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

#### **Before You Start**

Before setting the SNMP, you should download the SNMP software and manage to receive the device information via SNMP port.

#### Steps

- 1. Go to the settings page: Configuration -> Network -> Advanced Settings -> SNMP.
- 2. Check Enable SNMPv1, Enable SNMP v2c or Enable SNMPv3.



The SNMP version you select should be the same as that of the SNMP software.

And you also need to use the different version according to the security level required. SNMP v1 is not secure and SNMP v2 requires password for access. And SNMP v3 provides encryption and if you use the third version, HTTPS protocol must be enabled.

- 3. Configure the SNMP settings.
- 4. Click Save.

## 7.3 Set SRTP

The Secure Real-time Transport Protocol (SRTP) is a Real-time Transport Protocol (RTP) internet protocol, intended to provide encryption, message authentication and integrity, and replay attack protection to the RTP data in both unicast and multicast applications.

## Steps

- 1. Go to Configuration → Network → Advanced Settings → SRTP.
- 2. Select Server Certificate.
- 3. Select Encrypted Algorithm.
- 4. Click Save.



- Only certain device models support this function.
- If the function is abnormal, check if the selected certificate is abnormal in certificate management.

# 7.4 Port Mapping

By setting port mapping, you can access devices through the specified port.

#### **Before You Start**

When the ports in the device are the same as those of other devices in the network, refer to <u>Port</u> to modify the device ports.

#### Steps

- 1. Go to Configuration → Network → Basic Settings → NAT.
- 2. Select the port mapping mode.

**Auto Port Mapping** 

Refer to **Set Auto Port Mapping** for detailed information.

Manual Port Mapping Refer to Set Manual Port Mapping for detailed information.

3. Click Save.

# 7.4.1 Set Auto Port Mapping

#### **Steps**

- 1. Check Enable UPnP™, and choose a friendly name for the camera, or you can use the default name.
- 2. Select the port mapping mode to Auto.
- 3. Click Save.

Note

UPnP™ function on the router should be enabled at the same time.

## 7.4.2 Set Manual Port Mapping

#### Steps

- 1. Check Enable UPnP™, and choose a friendly name for the device, or you can use the default name.
- 2. Select the port mapping mode to **Manual**, and set the external port to be the same as the internal port.
- 3. Click Save.

#### What to do next

Go to the router port mapping settings interface and set the port number and IP address to be the same as those on the device. For more information, refer to the router user manual.

## 7.4.3 Set Port Mapping on Router

The following settings are for a certain router. The settings vary depending on different models of routers.

## **Steps**

- 1. Select the WAN Connection Type.
- 2. Set the IP Address, Subnet Mask and other network parameters of the router.
- 3. Go to Forwarding → Virtual Severs , and input the Port Number and IP Address.
- 4. Click Save.

#### **Example**

When the cameras are connected to the same router, you can configure the ports of a camera as 80, 8000, and 554 with IP address 192.168.1.23, and the ports of another camera as 81, 8001, 555, 8201 with IP 192.168.1.24.

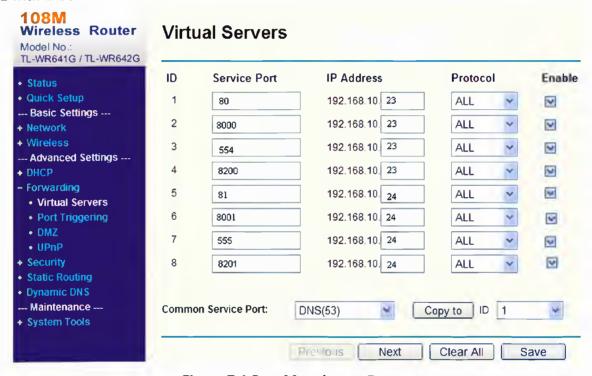


Figure 7-1 Port Mapping on Router



The port of the network camera cannot conflict with other ports. For example, some web management port of the router is 80. Change the camera port if it is the same as the management port.

## **7.5 Port**

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



Do not modify the default port parameters at will, otherwise the device may be inaccessible.

Go to **Configuration** → **Network** → **Basic Settings** → **Port** for port settings.

#### **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 with certificate. Certificate verification is required to ensure the secure access.

#### RTSP Port

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

#### **SRTP Port**

It refers to the port of secure real-time transport protocol.

#### **Server Port**

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

#### **Enhanced SDK Service Port**

It refers to the port through which the client adds the device. Certificate verification is required to ensure the secure access.

#### WebSocket Port

TCP-based full-duplex communication protocol port for plug-in free preview.

#### WebSockets Port

TCP-based full-duplex communication protocol port for plug-in free preview. Certificate verification is required to ensure the secure access.

# **i**Note

- Enhanced SDK Service Port, WebSocket Port, and WebSockets Port are only supported by certain models.
- For device models that support that function, go to Configuration → Network → Advanced
   Settings → Network Service to enable it.

## 7.6 Access to Device via Domain Name

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**

Registration on the DDNS server is required before configuring the DDNS settings of the device.

## **Steps**

- 1. Refer to TCP/IP to set DNS parameters.
- 2. Go to the DDNS settings page: Configuration → Network → Basic Settings → DDNS.
- 3. Check Enable DDNS and select DDNS type.

## **DynDNS**

Dynamic DNS server is used for domain name resolution.

#### NO-IP

NO-IP server is used for domain name resolution.

- 4. Input the domain name information, and click Save.
- **5.** Check the device ports and complete port mapping. Refer to **Port** to check the device port , and refer to **Port Mapping** for port mapping settings.
- 6. 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 manual for

specific adding methods.

# 7.7 Access to Device via PPPoE Dial Up Connection

This device supports the PPPoE auto dial-up function. The device gets a public IP address by ADSL dial-up after the device is connected to a modem. You need to configure the PPPoE parameters of the device.

#### Steps

- 1. Go to Configuration → Network → Basic Settings → PPPoE.
- 2. Check Enable PPPoE.
- **3.** Set the PPPoE parameters.

#### Dynamic IP

After successful dial-up, the dynamic IP address of the WAN is displayed.

#### **User Name**

User name for dial-up network access.

#### **Password**

Password for dial-up network access.

#### Confirm

Input your dial-up password again.

- 4. Click Save.
- 5. Access the device.

By Browsers Enter the WAN dynamic IP address in the browser address bar to access

the device.

By Client Software Add the WAN dynamic IP address to the client software. Refer to the

client manual for details.

☑iNote

The obtained IP address is dynamically assigned via PPPoE, so the IP address always changes after rebooting the camera. To solve the inconvenience of the dynamic IP, you need to get a domain name from the DDNS provider (e.g. DynDns.com). Refer to <u>Access to Device via Domain</u> Name for detail information.

## 7.8 Wireless Dial

Data of audio, video and image can be transferred via 3G/4G wireless network.

Note

The function is only supported by certain device models.

#### 7.8.1 Set Wireless Dial

The built-in wireless module offers dial-up access to the Internet for the device.

#### **Before You Start**

Get a SIM card, and activate 3G/4G services. Insert the SIM card to the corresponding slot.

#### Steps

- 1. Go to Configuration → Network → Advanced Settings → Wireless Dial.
- 2. Check to enable the function.
- 3. Click Dial Parameters to configure and save the parameters.
- 4. Click Dial Plan. See <u>Set Arming Schedule</u> for detailed information.
- 5. Optional: Set Allowlist. See Set Allowlist for detailed information.
- 6. Click Dial Status.

**Click Refresh** Refresh the dial status.

**Click Disconnect** Disconnect the 3G/4G wireless network.

When the **Dial Status** turns to **Connected**, it means a successful dial.

7. Access the device via the IP Address of the computer in the network.

- Input the IP address in the browser to access the device.
- Add the device in client application. Select **IP/Domain**, and input IP address and other parameters to access the device.

## 7.8.2 Set Allowlist

Add the mobile phone number of administrator to the allowlist in order to receive alarm message from the device.

#### Steps

- 1. Go to allowlist settings page: Configuration → Advanced Configuration → Wireless Dial → Allowlist .
- 2. Check Enable SMS Alarm.
- 3. Click + in the allowlist.
  - 1) Input the mobile phone number to receive alarm message.
  - 2) Check Reboot via SMS.
  - 3) Select the certain events, and the mobile phone can receive the alarm message when the event happens.
  - 4) Click Save.
  - 5) Optional: Repeat the steps above to set multiple recipients.
    - Modify the allowlist parameters.
    - × Delete the allowlist that already set.

**Send Test SMS** Send a message to the mobile phone for test.

4. Click Save.

## 7.9 Wi-Fi

Connect the device to wireless network by setting Wi-Fi parameters.



This function is only supported by certain device models.

## 7.9.1 Connect Device to Wi-Fi

## **Before You Start**

Refer to the user manual of wireless router or AP to set SSID, key, and other parameters.

- 1. Go to TCP/IP settings page: Configuration -> Network -> Basic Configuration -> TCP/IP.
- 2. Select Wlan to set the parameters. Refer to TCP/IP for detailed configuration.

iNote

For stable use of Wi-Fi, it is not recommended to use DHCP.

- 3. Go to Wi-Fi settings page: Configuration → Network → Advanced Configuration → Wi-Fi.
- 4. Set and save the parameters.
  - 1) Click Search.
  - 2) Select a SSID, which should be the same as that of wireless router or AP.

The parameters of the network is automatically shown in Wi-Fi.

- 3) Select the Network Mode as Manage.
- 4) Input the key to connect the wireless network. The key should be that of the wireless network connection you set on the router.

#### What to do next

Go to TCP/IP settings page: Configuration  $\rightarrow$  Network  $\rightarrow$  Basic Configuration  $\rightarrow$  TCP/IP, and click Wlan to check the IPv4 Address and log in the device.

## 7.10 Set Network Service

You can control the ON/OFF status of certain protocol as desired.

## Steps

Note

This function varies according to different models.

- 1. Go to Configuration → Network → Advanced Settings → Network Service .
- 2. Set network service.

## WebSocket & WebSockets

WebSocket or WebSockets protocol should be enabled if you use Google Chrome 57 and its above version or Mozilla Firefox 52 and its above version to visit the device. Otherwise, live view, image capture, digital zoom, etc. cannot be used.

If the device uses HTTP, enable WebSocket.

If the device uses HTTPS, enable WebSockets.

When you use WebSockets, select the Server Certificate.

Note

Complete certificate management before selecting server certificate. Refer to <u>Certificate</u> <u>Management</u> for detailed information.

## **SDK Service & Enhanced SDK Service**

Check Enable SDK Service to add the device to the client software with SDK protocol.

Check **Enable Enhanced SDK Service** to add the device to the client software with SDK over TLS protocol.

When you use Enhanced SDK Service, select the Server Certificate.

# Note

- Complete certificate management before selecting server certificate. Refer to *Certificate Management* for detailed information.
- When set up connection between the device and the client software, it is recommended to use Enhanced SDK Service and set the communication in Arming Mode to encrypt the data transmission. See the user manual of the client software for the arming mode settings.

## TLS (Transport Layer Security)

The device offers TLS1.1 and TLS1.2. Enable one or more protocol versions according to your need.

## **Bonjour**

Uncheck to disable the protocol.

3. Click Save.

## 7.11 Set Open Network Video Interface

If you need to access the device through Open Network Video Interface protocol, you can configure the user settings to enhance the network security.

#### Steps

- 1. Go to Configuration → Network → Advanced Settings → Integration Protocol .
- 2. Check Enable Open Network Video Interface.
- 3. Click Add to configure the Open Network Video Interface user.

**Delete** Delete the selected Open Network Video Interface user.

**Modify** Modify the selected Open Network Video Interface user.

- 4. Click Save.
- 5. Optional: Repeat the steps above to add more Open Network Video Interface users.

## 7.12 Set ISUP

When the device is registered on ISUP platform (formerly called Ehome), you can visit and manage the device, transmit data, and forward alarm information over public network.

- 1. Go to Configuration → Network → Advanced Settings → Platform Access.
- 2. Select ISUP as the platform access mode.
- 3. Select Enable.

- 4. Select a protocol version and input related parameters.
- 5. Click Save.

Register status turns to **Online** when the function is correctly set.

## 7.13 Set Alarm Server

The device can send alarms to destination IP address or host name through HTTP, HTTPS, or ISUP protocol. The destination IP address or host name should support HTTP, HTTP, or ISUP data transmission.

#### Steps

- 1. Go to Configuration → Network → Advanced Settings → Alarm Server.
- 2. Enter Destination IP or Host Name, URL, and Port.
- 3. Optional: Check Enable to enable ANR.
- 4. Select Protocol.



HTTP, HTTPS, and ISUP are selectable. It is recommended to use HTTPS, as it encrypts the data transmission during communication.

- 5. Click Test to check if the IP or host is available.
- 6. Click Save.

## 7.14 Access Camera via Hik-Connect

Hik-Connect is an application for mobile devices. Using the App, you can view live image, receive alarm notification and so on.

#### **Before You Start**

Connect the camera to network with network cables.

- 1. Get and install Hik-Connect application by the following ways.
  - Visit <a href="https://appstore.hikvision.com">https://appstore.hikvision.com</a> to download the application according to your mobile phone system.
  - Visit the official site of our company. Then go to Support → Tools → Hikvision App Store.
  - Scan the QR code below to download the application.



# Note

If errors like "Unknown app" occur during the installation, solve the problem in two ways.

- Visit <u>https://appstore.hikvision.com/static/help/index.html</u> to refer to the troubleshooting.
- Visit <u>https://appstore.hikvision.com/</u>, and click **Installation Help** at the upper right corner of the interface to refer to the troubleshooting.
- 2. Start the application and register for a Hik-Connect user account.
- 3. Log in after registration.
- **4.** In the app, tap "+" on the upper-right corner and then scan the QR code of the camera to add the camera. You can find the QR code on the camera or on the cover of the Quick Start Guide of the camera in the package.
- **5.** Follow the prompts to set the network connection and add the camera to your Hik-Connect account.

For detailed information, refer to the user manual of the Hik-Connect app.

## 7.14.1 Enable Hik-Connect Service on Camera

Hik-Connect service should be enabled on your camera before using the service.

You can enable the service through SADP software or Web browser.

## **Enable Hik-Connect Service via Web Browser**

Follow the following steps to enable Hik-Connect Service via Web Browser.

## **Before You Start**

You need to activate the camera before enabling the service.

#### Steps

- 1. Access the camera via web browser.
- 2. Enter platform access configuration interface. Configuration → Network → Advanced Settings → Platform Access
- 3. Select Hik-Connect as the Platform Access Mode.
- 4. Check Enable.
- 5. Click and read "Terms of Service" and "Privacy Policy" in pop-up window.
- 6. Create a verification code or change the old verification code for the camera.



The verification code is required when you add the camera to Hik-Connect service.

7. Save the settings.

## **Enable Hik-Connect Service via SADP Software**

This part introduce how to enable Hik-Connect service via SADP software of an activated camera.

## **Steps**

- 1. Run SADP software.
- 2. Select a camera and enter Modify Network Parameters page.
- 3. Check Enable Hik-Connect.
- **4.** Create a verification code or change the old verification code.



The verification code is required when you add the camera to Hik-Connect service.

- 5. Click and read "Terms of Service" and "Privacy Policy".
- **6.** Confirm the settings.

## 7.14.2 Set Up Hik-Connect

## Steps

- 1. Get and install Hik-Connect application by the following ways.
  - Visit <a href="https://appstore.hikvision.com">https://appstore.hikvision.com</a> to download the application according to your mobile phone system.
  - Visit the official site of our company. Then go to Support → Tools → Hikvision App Store .
  - Scan the QR code below to download the application.



iNote

If errors like "Unknown app" occur during the installation, solve the problem in two ways.

- Visit <u>https://appstore.hikvision.com/static/help/index.html</u> to refer to the troubleshooting.
- Visit <u>https://appstore.hikvision.com/</u>, and click **Installation Help** at the upper right corner of the interface to refer to the troubleshooting.
- 2. Start the application and register for a Hik-Connect user account.
- 3. Log in after registration.

## 7.14.3 Add Camera to Hik-Connect

## Steps

- 1. Connect your mobile device to a Wi-Fi.
- 2. Log into the Hik-Connect app.
- 3. In the home page, tap "+" on the upper-right corner to add a camera.
- 4. Scan the QR code on camera body or on the Quick Start Guide cover.

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

If the QR code is missing or too blur to be recognized, you can also add the camera by inputting the camera's serial number.

5. Input the verification code of your camera.

# Note

- The required verification code is the code you create or change when you enable Hik-Connect service on the camera.
- If you forget the verification code, you can check the current verification code on **Platform**Access configuration page via web browser.
- 6. Tap Connect to a Network button in the popup interface.
- 7. Choose Wired Connection or Wireless Connection according to your camera function.

Wireless Connection	Input the Wi-Fi password that your mobile phone has connected to, and tap <b>Next</b> to start the Wi-Fi connection process. (Locate the camera within 3 meters from the router when setting up the Wi-Fi.)
Wired	Connect the camera to the router with a network cable and tap Connected

Wired Connect the camera to the router with a network cable and tap Connected in the result interface.



The router should be the same one which your mobile phone has connected to.

8. Tap Add in the next interface to finish adding.

For detailed information, refer to the user manual of the Hik-Connect app.

# **Chapter 8 Arming Schedule and Alarm Linkage**

Arming schedule is a customized time period in which the device performs certain tasks. Alarm linkage is the response to the detected certain incident or target during the scheduled time.

## 8.1 Set Arming Schedule

Set the valid time of the device tasks.

## **Steps**

- 1. Click Arming Schedule.
- 2. Drag the time bar to draw desired valid time.



Up to 8 periods can be configured for one day.

- 3. Adjust the time period.
  - Click on the selected time period, and enter the desired value. Click **Save**.
  - Click on the selected time period. Drag the both ends to adjust the time period.
  - Click on the selected time period, and drag it on the time bar.
- 4. Optional: Click Copy to... to copy the same settings to other days.
- 5. Click Save.

# 8.2 Linkage Method Settings

You can enable the linkage functions when an event or alarm occurs.

## 8.2.1 Trigger Alarm Output

If the device has been connected to an alarm output device, and the alarm output No. has been configured, the device sends alarm information to the connected alarm output device when an alarm is triggered.

#### Steps

- 1. Go to Configuration → Event → Basic Event → Alarm Output.
- 2. Set alarm output parameters.

Automatic Alarm For the information about the configuration, see <u>Automatic Alarm</u>.

Manual Alarm For the information about the configuration, see <u>Manual Alarm</u>.

3. Click Save.

## **Manual Alarm**

You can trigger an alarm output manually.

## **Steps**

1. Set the manual alarm parameters.

## Alarm Output No.

Select the alarm output No. according to the alarm interface connected to the external alarm device.

#### **Alarm Name**

Edit a name for the alarm output.

## **Delay**

Select Manual.

- 2. Click Manual Alarm to enable manual alarm output.
- 3. Optional: Click Clear Alarm to disable manual alarm output.

#### **Automatic Alarm**

Set the automatic alarm parameters, then the device triggers an alarm output automatically in the set arming schedule.

#### Steps

1. Set automatic alarm parameters.

## Alarm Output No.

Select the alarm output No. according to the alarm interface connected to the external alarm device.

#### **Alarm Name**

Custom a name for the alarm output.

## Delay

It refers to the time duration that the alarm output remains after an alarm occurs.

- 2. Set the alarming schedule. For the information about the settings, see **Set Arming Schedule**.
- 3. Click Copy to... to copy the parameters to other alarm output channels.
- 4. Click Save.

## 8.2.2 FTP/NAS/Memory Card Uploading

If you have enabled and configured the FTP/NAS/memory card uploading, the device sends the alarm information to the FTP server, network attached storage and memory card when an alarm is triggered.

Refer to Set FTP to set the FTP server.

Refer to **Set NAS** for NAS configuration.

Refer to Set New or Unencrypted Memory Card for memory card storage configuration.

## 8.2.3 Send Email

Check **Send Email**, and the device sends an email to the designated addresses with alarm information when an alarm event is detected.

For email settings, refer to Set Email.

## **Set Email**

When the email is configured and **Send Email** is enabled as a linkage method, the device sends an email notification to all designated receivers if an alarm event is detected.

#### **Before You Start**

Set the DNS server before using the Email function. Go to Configuration  $\rightarrow$  Network  $\rightarrow$  Basic Settings  $\rightarrow$  TCP/IP for DNS settings.

## Steps

- 1. Go to email settings page: Configuration → Network → Advanced Settings → Email .
- 2. Set email parameters.
  - 1) Input the sender's email information, including the **Sender's Address**, **SMTP Server**, and **SMTP Port**.
  - 2) **Optional:** If your email server requires authentication, check **Authentication** and input your user name and password to log in to the server.
  - 3) Set the E-mail Encryption.
    - When you select SSL or TLS, and disable STARTTLS, emails are sent after encrypted by SSL or TLS. The SMTP port should be set as 465.
    - When you select **SSL** or **TLS** and **Enable STARTTLS**, emails are sent after encrypted by STARTTLS, and the SMTP port should be set as 25.



If you want to use STARTTLS, make sure that the protocol is supported by your email server. If you check the **Enable STARTTLS** while the protocol is not supported by your email sever, your email is sent with no encryption.

- 4) **Optional:** If you want to receive notification with alarm pictures, check **Attached Image**. The notification email has 3 attached alarm pictures about the event with configurable image capturing interval.
- 5) Input the receiver's information, including the receiver's name and address.
- 6) Click **Test** to see if the function is well configured.
- 3. Click Save.

## 8.2.4 Notify Surveillance Center

Check **Notify Surveillance Center**, the alarm information is uploaded to the surveillance center when an alarm event is detected.

## 8.2.5 Trigger Recording

Check **Trigger Recording**, and the device records the video about the detected alarm event. For recording settings, refer to *Video Recording and Picture Capture* 

## 8.2.6 Flashing Light

After enabling Flashing Light and setting the Flashing Light Alarm Output, the light flashes when an alarm event is detected.

## **Set Flashing Alarm Light Output**

When events occur, the flashing light on the device can be triggered as an alarm.

## Steps

- 1. Go to Configuration → Event → Basic Event → Flashing Alarm Light Output.
- 2. Set Flashing Duration, Flashing Frequency and Brightness.

## **Flashing Duration**

The time that the flashing lasts when one alarm happens.

## **Flashing Frequency**

The rate at which the light flashes. High frequency, medium frequency, low frequency, and normally on are selectable.

#### **Brightness**

The brightness of the light.

- 3. Set the arming schedule. See <u>Set Arming Schedule</u> for details.
- 4. Click Save.

 $\overline{\phantom{a}}$ 

Note	
Only certain device models support the function	

## 8.2.7 Audible Warning

After enabling Audible Warning and setting Audible Alarm Output, the built-in speaker of the device or connected external speaker plays warning sounds when an alarm happens.

For audible alarm output settings, refer to Set Audible Alarm Output.



The function is only supported by certain camera models.

## **Set Audible Alarm Output**

When the device detects targets in the detection area, audible alarm can be triggered as a warning.

## Steps

- 1. Go to Configuration → Event → Basic Event → Audible Alarm Output.
- 2. Select Sound Type and set related parameters.
  - Select **Prompt** and set the alarm times you need.
  - Select Warning and its contents. Set the alarm times you need.
  - Select **Custom Audio**. You can select a custom audio file from the drop-down list. If no file is available, you can click **Add** to upload an audio file that meets the requirement. Up to three audio files can be uploaded.
- 3. Optional: Click Test to play the selected audio file on the device.
- 4. Set arming schedule for audible alarm. See <u>Set Arming Schedule</u> for details.
- 5. Click Save.

Note

The function is only supported by certain device models.

# **Chapter 9 System and Security**

It introduces system maintenance, system settings and security management, and explains how to configure relevant parameters.

## 9.1 View Device Information

You can view device information, such as Device No., Model, Serial No. and Firmware Version.

Enter Configuration  $\rightarrow$  System  $\rightarrow$  System Settings  $\rightarrow$  Basic Information to view the device information.

## 9.2 Search and Manage Log

Log helps locate and troubleshoot problems.

## Steps

- 1. Go to Configuration  $\rightarrow$  System  $\rightarrow$  Maintenance  $\rightarrow$  Log.
- 2. Set search conditions Major Type, Minor Type, Start Time, and End Time.
- 3. Click Search.

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

4. Optional: Click Export to save the log files in your computer.

# 9.3 Simultaneous Login

The administrator can set the maximum number of users logging into the system through web browser simultaneously.

Go to Configuration → System → User Management , click General and set Simultaneous Login.

# 9.4 Import and Export Configuration File

It helps speed up batch configuration on other devices with the same parameters.

Enter Configuration  $\rightarrow$  System  $\rightarrow$  Maintenance  $\rightarrow$  Upgrade & Maintenance . Choose device parameters that need to be imported or exported and follow the instructions on the interface to import or export configuration file.

## 9.5 Export Diagnose Information

Diagnose information includes running log, system information, hardware information.

Go to Configuration  $\rightarrow$  System  $\rightarrow$  Maintenance  $\rightarrow$  Upgrade & Maintenance . Check desired diagnose information and click **Diagnose Information** to export corresponding diagnose information of the device.

## 9.6 Reboot

You can reboot the device via browser.

Go to Configuration → System → Maintenance → Upgrade & Maintenance , and click Reboot.

## 9.7 Restore and Default

Restore and Default helps restore the device parameters to the default settings.

## **Steps**

- 1. Go to Configuration → System → Maintenance → Upgrade & Maintenance .
- 2. Click Restore or Default according to your needs.
  - **Restore** Reset device parameters, except user information, IP parameters and video format to the default settings.
  - **Default** Reset all the parameters to the factory default.



Be careful when using this function. After resetting to the factory default, all the parameters are reset to the default settings.

# 9.8 Upgrade

## **Before You Start**

You need to obtain the correct upgrade package.



DO NOT disconnect power during the process, and the device reboots automatically after upgrade.

#### Steps

- 1. Go to Configuration → System → Maintenance → Upgrade & Maintenance.
- 2. Choose one method to upgrade.

Firmware

Locate the exact path of the upgrade file.

**Firmware Directory** Locate the directory which the upgrade file belongs to.

- Click Browse to select the upgrade file.
- 4. Click Upgrade.

# 9.9 View Open Source Software License

Go to Configuration → System → System Settings → About Device , and click View Licenses.

# 9.10 Wiegand



This function is only supported by certain camera models.

Check Enable and select the protocol. The default protocol is SHA-1 26bit.

If enabled, the recognized license plate number will be output via the selected Wiegand protocol.

## 9.11 Metadata

Metadata is the raw data that the camera collects before algorithm processing. It provide the option to users to explore various data usages.

iNote

The function is only supported by certain device models.

Go to Configuration  $\rightarrow$  System  $\rightarrow$  Metadata Settings to enable metadata uploading of the desired function.

## **Smart Event**

The metadata of the smart event includes the target ID, target coordinate, time, etc.

## 9.12 Time and Date

You can configure time and date of the device by configuring time zone, time synchronization and Daylight Saving Time (DST).

## 9.12.1 Synchronize Time Manually

- 1. Go to Configuration → System → System Settings → Time Settings.
- 2. Select Time Zone.

- 3. Click Manual Time Sync..
- 4. Choose one time synchronization method.
  - Select **Set Time**, and manually input or select date and time from the pop-up calendar.
  - Check **Sync. with computer time** to synchronize the time of the device with that of the local PC.
- 5. Click Save.

#### 9.12.2 Set NTP Server

You can use NTP server when accurate and reliable time source is required.

#### **Before You Start**

Set up a NTP server or obtain NTP server information.

#### Steps

- 1. Go to Configuration → System → System Settings → Time Settings.
- 2. Select Time Zone.
- 3. Click NTP.
- 4. Set Server Address, NTP Port and Interval.

**i** Note

Server Address is NTP server IP address.

- 5. Click Test to test server connection.
- 6. Click Save.

## 9.12.3 Synchronize Time by Satellite

Note

This function varies depending on different devices.

## Steps

- 1. Enter Configuration → System → System Settings → Time Settings .
- 2. Select Satellite Time Sync..
- 3. Set Interval.
- 4. Click Save.

## 9.12.4 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. Select Start Time, End Time and DST Bias.
- 4. Click Save.

## 9.13 Set RS-485

RS-485 is used to connect the device to external device. You can use RS-485 to transmit the data between the device and the computer or terminal when the communication distance is too long.

## **Before You Start**

Connect the device and computer or termial with RS-485 cable.

#### Steps

- 1. Go to Configuration → System → System Settings → RS-485.
- 2. Set the RS-485 parameters.



You should keep the parameters of the device and the computer or terminal all the same.

3. Click Save.

## 9.14 Set RS-232

RS-232 can be used to debug device or access peripheral device. RS-232 can realize communication between the device and computer or terminal when the communication distance is short.

## **Before You Start**

Connect the device to computer or terminal with RS-232 cable.

#### **Steps**

- 1. Go to Configuration → System → System Settings → RS-232.
- 2. Set RS-232 parameters to match the device with computer or terminal.
- 3. Click Save.

# 9.15 Power Consumption Mode

It is used to switch the power consumption when the device is working.



The function is only supported by certain camera models.

Go to Configuration -> System -> System Settings -> Power Consumption Mode , select the desired power consumption mode.

## **Full Consumption Mode**

The device works with all the functions enabled.

## Low Consumption Real-Time Mode

The device DSP works normally. It records the videos with the main stream at the half frame rate, and supports the remote login, preview and the configuration.

## **Low Power Sleep**

When the device power is lower than **Threshold of Low Power Sleep Mode**, the device enters sleep mode.

When the device power is recovered to 10% above the threshold, the device enters the user configuration mode.

## Scheduled Sleep

If the device is during **Scheduled Sleep Time**, it enters the sleep mode, otherwise it enters the user configuration mode.



For the scheduled sleep schedule settings, see  $\underline{\textit{Arming Schedule and Alarm Linkage}}$ . The device supports the timing wake. For the details, see  $\underline{\textit{Set Timing Wake}}$ .

## 9.16 External Device

For the device supporting external devices, including the supplement light, wiper on the housing and the LED light, you can control them via the Web browser when it is used with the housing. External devices vary with models.

#### **Brightness**

Adjust Low Beam Brightness and High Beam Brightness according to the actual scene.

## **Timing**

The LED light will be turned on by the schedule you set. You should set **Start Time** and **End Time**.

#### Auto

The LED light will be turned on according to the environment illumination.

## 9.16.1 Supplement Light Settings

You can set supplement light and refer to the actual device for relevant parameters.

#### **Smart Supplement Light**

Smart supplement light avoids over exposure when the supplement light is on.

## **Supplement Light Mode**

When the device supports supplement light, you can select supplement light mode.

#### IR Mode

IR light is enabled.

#### White Light Mode

White light is enabled.

#### Mix Mode

Both IR light and white light are enabled.

#### Off

Supplement light is disabled.

## **Brightness Adjustment Mode**

#### Auto

The brightness adjusts according to the actual environment automatically.

#### Manual

You can drag the slider or set value to adjust the brightness.

#### 9.16.2 Heater

You can enable heater to remove fog around the lens of the device.

Go to Configuration  $\rightarrow$  System  $\rightarrow$  System Settings  $\rightarrow$  External Device and select the mode as required.

# 9.17 Security

You can improve system security by setting security parameters.

#### 9.17.1 Authentication

You can improve network access security by setting RTSP and WEB authentication.

Go to Configuration  $\rightarrow$  System  $\rightarrow$  Security  $\rightarrow$  Authentication to choose authentication protocol and method according to your needs.

#### **RTSP Authentication**

Digest and digest/basic are supported, which means authentication information is needed when RTSP request is sent to the device. If you select **digest/basic**, it means the device supports digest or basic authentication. If you select **digest**, the device only supports digest authentication.

## **RTSP Digest Algorithm**

MD5, SHA256 and MD5/SHA256 encrypted algorithm in RTSP authentication. If you enable the digest algorithm except for MD5, the third-party platform might not be able to log in to the device or enable live view because of compatibility. The encrypted algorithm with high strength is recommended.

#### WEB Authentication

Digest and digest/basic are supported, which means authentication information is needed when WEB request is sent to the device. If you select **digest/basic**, it means the device supports digest or basic authentication. If you select **digest**, the device only supports digest authentication.

## **WEB Digest Algorithm**

MD5, SHA256 and MD5/SHA256 encrypted algorithm in WEB authentication. If you enable the digest algorithm except for MD5, the third-party platform might not be able to log in to the device or enable live view because of compatibility. The encrypted algorithm with high strength is recommended.



Refer to the specific content of protocol to view authentication requirements.

#### 9.17.2 Set IP Address Filter

IP address filter is a tool for access control. You can enable the IP address filter to allow or forbid the visits from the certain IP addresses.

IP address refers to IPv4.

#### Steps

- 1. Go to Configuration → System → Security → IP Address Filter.
- 2. Check Enable IP Address Filter.
- 3. Select the type of IP address filter.

Forbidden IP addresses in the list cannot access the device.

Allowed Only IP addresses in the list can access the device.

4. Edit the IP address filter list.

Add Add a new IP address or IP address range to the list.

**Modify** Modify the selected IP address or IP address range in the list.

**Delete** Delete the selected IP address or IP address range in the list.

5. Click Save.

## 9.17.3 Set HTTPS

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 → Advanced Settings → HTTPS.
- 2. Check Enable to access the camera via HTTP or HTTPS protocol.
- 3. Check Enable HTTPS Browsing to access the camera only via HTTPS protocol.
- 4. Select the Server Certificate.
- 5. Click Save.

Note

If the function is abnormal, check if the selected certificate is abnormal in **Certificate Management**.

## 9.17.4 Set QoS

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

iNote

QoS needs support from network device such as router and switch.

## **Steps**

- 1. Go to Configuration → Network → Advanced Configuration → QoS.
- Set Video/Audio DSCP, Alarm DSCP and Management DSCP.

Note

Network can identify the priority of data transmission. The bigger the DSCP value is, the higher the priority is. You need to set the same value in router while configuration.

3. Click Save.

## 9.17.5 Set IEEE 802.1X

IEEE 802.1x is a port-based network access control. It enhances the security level of the LAN/WLAN. When devices connect to the network with IEEE 802.1x standard, the authentication is needed.

Go to Configuration → Network → Advanced Settings → 802.1X , and enable the function.

Set Protocol and EAPOL Version according to router information.

## **Protocol**

EAP-LEAP, EAP-TLS, and EAP-MD5 are selectable

#### **EAP-LEAP and EAP-MD5**

If you use EAP-LEAP or EAP-MD5, the authentication server must be configured. Register a user name and password for 802.1X in the server in advance. Input the user name and password for authentication.

#### **EAP-TLS**

If you use EAP-TLS, input Identify, Private Key Password, and upload CA Certificate, User Certificate and Private Key.

### **EAPOL Version**

The EAPOL version must be identical with that of the router or the switch.

## 9.17.6 Control Timeout Settings

If this function is enabled, you will be logged out when you make no operation (not including viewing live image) to the device via web browser within the set timeout period.

Go to Configuration → System → Security → Advanced Security to complete settings.

## 9.17.7 Search Security Audit 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.

## **Steps**



This function is only supported by certain camera models.

- 1. Go to Configuration → System → Maintenance → Security Audit Log.
- 2. Select log types, Start Time, and End Time.
- 3. Click Search.

The log files that match the search conditions will be displayed on the Log List.

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

## 9.17.8 Security Reinforcement

Security reinforce is a solution to enhance network security. With the function enabled, risky functions, protocols, ports of the device are disabled and more secured alternative functions, protocols and ports are enabled.

Go to Configuration → System → Security → Advanced Security . Check Security Reinforcement, and click Save.

## 9.17.9 SSH

Secure Shell (SSH) is a cryptographic network protocol for operating network services over an unsecured network.

The SSH function is disabled by default.



Use the function with caution. The security risk of device internal information leakage exists when the function is enabled.

## 9.18 Certificate Management

It helps to manage the server/client certificates and CA certificate, and to send an alarm if the certificates are close to expiry date, or are expired/abnormal.

Note

The function is only supported by certain device models.

## 9.18.1 Create Self-signed Certificate

## Steps

- 1. Click Create Self-signed Certificate.
- 2. Follow the prompt to enter Certificate ID, Country/Region, Hostname/IP, Validity and other parameters.

**i**Note

The certificate ID should be digits or letters and be no more than 64 characters.

- 3. Click OK.
- **4. Optional:** Click **Export** to export the certificate, or click **Delete** to delete the certificate to recreate a certificate, or click **Certificate Properties** to view the certificate details.

## 9.18.2 Create Certificate Request

#### **Before You Start**

Select a self-signed certificate.

- 1. Click Create Certificate Request.
- 2. Enter the related information.
- 3. Click OK.

## 9.18.3 Import Certificate

## **Steps**

- 1. Click Import.
- 2. Click Create Certificate Request.
- 3. Enter the Certificate ID.
- 4. Click Browser to select the desired server/client certificate.
- 5. Select the desired import method and enter the required information.
- 6. Click OK.
- **7. Optional:** Click **Export** to export the certificate, or click **Delete** to delete the certificate to recreate a certificate, or click **Certificate Properties** to view the certificate details.



- Up to 16 certificates are allowed.
- If certain functions are using the certificate, it cannot be deleted.
- · You can view the functions that are using the certificate in the functions column.
- You cannot create a certificate that has the same ID with that of the existing certificate and import a certificate that has the same content with that of the existing certificate.

## 9.18.4 Install Server/Client Certificate

#### Steps

- 1. Go to Configuration → System → Security → Certificate Management.
- Click Create Self-signed Certificate, Create Certificate Request and Import to install server/client certificate.

Create self-signed certificate Refer to Create Self-signed Certificate

Create certificate request Refer to Create Certificate Request

Import Certificate Refer to Import Certificate

## 9.18.5 Install CA Certificate

- 1. Click Import.
- 2. Enter the Certificate ID.
- 3. Click **Browser** to select the desired server/client certificate.
- **4.** Select the desired import method and enter the required information.
- 5. Click OK.

Til.		
Note		
Up to 16 certificates are allowed.	 _	

## 9.18.6 Enable Certificate Expiration Alarm

## **Steps**

- 1. Check Enable Certificate Expiration Alarm. If enabled, you will receive an email or the camera links to the surveillance center that the certificate will expire soon, or is expired or abnormal.
- 2. Set the Remind Me Before Expiration (day), Alarm Frequency (day) and Detection Time (hour).



- If you set the reminding day before expiration to 1, then the camera will remind you the day before the expiration day. 1 to 30 days are available. Seven days is the default reminding days.
- If you set the reminding day before expiration to 1, and the detection time to 10:00, and the certificate will expire in 9:00 the next day, the camera will remind you in 10:00 the first day.
- 3. Click Save.

## 9.19 User and Account

## 9.19.1 Set User Account and Permission

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



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.

## Steps

- 1. Go to Configuration → System → User Management → User Management .
- 2. Click Add. Enter User Name, select Level, and enter Password. Assign remote permission to users based on needs.

#### **Administrator**

The administrator has the authority to all operations and can add users and operators and assign permission.

#### User

Users can be assigned permission of viewing live video, setting PTZ parameters, 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.

Modify Select a user and click Modify to change the password and permission.

**Delete** Select a user and click **Delete**.

**i** Note

The administrator can add up to 31 user accounts.

3. Click OK.

## 9.19.2 Simultaneous Login

The administrator can set the maximum number of users logging into the system through web browser simultaneously.

Go to Configuration → System → User Management , click General and set Simultaneous Login.

## 9.19.3 Online Users

The information of users logging into the device is shown.

Go to Configuration → System → User Management → Online Users to view the list of online users.

# **Chapter 10 Allocate VCA Resource**

VCA resource offers you options to enable certain VCA functions according to actual needs. It helps allocate more resources to the desired functions.



- 1. Go to Configuration → System → System Settings → VCA Resource .
- 2. Select desired VCA function.
- 3. Save the settings.



Some VCA functions are mutually exclusive. When certain function or functions are selected and saved, others will not be hidden.

## 10.1 Road Traffic

Motor vehicle, non-motor vehicle, and pedestrian can be detected and captured when they enter the set lane to realize rapid detection and comprehensive surveillance of the targets on road.



Only certain device models support this function.

## 10.1.1 Set Vehicle Detection

The vehicle that enters the set lane can be detected and the picture of the vehicle and its license plate can be captured and stored. Alarm will be triggered and capture can be uploaded.

#### **Before You Start**

Go to Configuration → System → System Settings → VCA Resources, and select Road Traffic.

- 1. Go to Configuration → Road Traffic → Detection Configuration , and select Vehicle Detection as detection type.
- 2. Check Enable.
- 3. Select the lane number.
- 4. Click and drag the lane line to set its position, or click and drag the line end to adjust the length and angle of the line.
- **5.** Adjust the zoom ratio of the camera so that the size of the vehicle in the image is close to that of the red frame. Only the position of red frame is adjustable.

Note

Only 1 license plate can be captured at one time for each lane.

- 6. Select Region and Country/Region.
- 7. Select the license plate information upload mode.

**Entrance/Exit** The license plate information of the detected vehicle will be uploaded when

the vehicle passes the detection area and triggers the detection in entrance/

exit.

City Street The license plate information of the detected vehicle will be uploaded when

the vehicle passes the detection area and triggers the detection in city

streets.

Alarm Input 
It means the input alarm will trigger a license plate capture and recognition

action.

Note

- When Alarm Input is selected, the alarm input A<-1 will automatically be assigned to trigger vehicle detection and its alarm type is always NO.
- If the A<-1 alarm input is used to trigger vehicle detection, it can not be used for other basic events.
- When Alarm Input is selected and saved, previously configured linkage method for A<-1 will be canceled.
- 8. Select the Detection mode.
- Check Remove Duplicated License Plates and set the Time Interval. The default time interval is 4 minutes.

**i**Note

Up to 8 license plates are supported.

- 10. Set arming schedule and linkage method. For the arming schedule settings, refer to <u>Set Arming</u> <u>Schedule</u>. For the linkage method settings, refer to <u>Linkage Method Settings</u>.
- 11. Click Save.

## 10.1.2 Set Mixed-Traffic Detection Rule

The motor vehicle, non-motor vehicle, and pedestrian that enter the set lane can be detected, and the picture of targets can be captured and stored. Alarm will be triggered and capture can be uploaded.

#### **Before You Start**

Go to Configuration -> System -> System Settings -> VCA Resources, and select Road Traffic.

#### **Steps**

- 1. Go to Configuration → Road Traffic → Detection Configuration , and select Mixed-traffic Detection as detection type.
- 2. Check Enable.
- 3. Select the lane number.
- 4. Select Region and Country/Region.
- **5.** Set arming schedule and linkage method. For the arming schedule settings, refer to <u>Set Arming</u> <u>Schedule</u>. For the linkage method settings, refer to <u>Linkage Method Settings</u>.
- 6. Click Save.

## 10.1.3 Uploading Pictures Settings

You can set the image parameters of the captured images in vehicle detection and mixed-traffic detection.

Go to Configuration  $\rightarrow$  Road Traffic  $\rightarrow$  Picture.

## **Picture Quality**

The larger the value is, the clearer the picture is, but larger storage space is also required.

#### **Picture Size**

The larger the value is, the larger the storage space is needed. And the level of network transmission requirement is also higher.

#### License Plate Enhancement

The larger the value is, the clearer the license plate is, but larger storage space is also required. Check **License Plate Enhancement** and set the level. The default level is 50.

## Overlay

You can overlay camera, device or vehicle information on the captured image and click  $\uparrow$   $\downarrow$  to adjust the order of overlay texts.

For camera settings, go to **Configuration** → **Road Traffic** → **Camera** to set relevant parameters and click **Save**.

## 10.1.4 Camera Settings

You can set the parameters of each camera for better management.

Go to Configuration  $\rightarrow$  Road Traffic  $\rightarrow$  Camera to set relevant parameters and click Save.

## 10.1.5 Import or Export Blocklist & Allowlist

You can import and export the blocklist and allowlist as desired, and check the list content in this interface.

## Steps

- 1. Click Browse to open the PC local directory.
- 2. Find the blocklist & allowlist file and click to select it. Click Open to confirm.

Note

- The file to import should corresponds with the file template that is required by the camera. You are recommended to export an empty blocklist & allowlist file from the camera as the template and fill in the content.
- The file should be in the .xls format and the cell format should be Text.
- 3. Click Import to import the selected file.
- 4. Click Export to open the PC local directory.
- 5. Select a directory in your PC local directory.
- 6. Name the file in the file name text filed.
- 7. Click Save.

## 10.2 Face Capture

The device can capture the face that appears in the configured area, and the face information will be uploaded with the captured picture as well.

Note

- For device that supports face capture, you need to enable the function in **VCA Resource**. Refer to **Allocate VCA Resource** for details.
- Face capture is only supported by certain models.

## 10.2.1 Set Face Capture

The face that appears in the configured area can be captured.

## **Before You Start**

To enable the function, go to **VCA Resource** and select **Face Capture**.

## Steps

- Go to Configuration → Face Capture .
- 2. For shield region settings, refer to **Set Shield Region**.
- 3. Select Rule and check Rule.
- **4.** Input the min. pupil distance in the text field, or click of to draw the min. pupil distance.

## Min. Pupil Distance

The min. pupil distance refers to the minimum area between two pupils, and it is basic for the device to recognize a face.

5. Input the max. pupil distance in the text field, or click in to draw the max. pupil distance.

- **6.** Click  $\bigcirc$  to draw the detection area you want the face capture to take effect. Draw area by left-clicking end-points in the live view window, and right-clicking to finish the area drawing. It is recommended that the drawn area occupies 1/2 to 2/3 of the live view image.
- **7.** For the arming schedule settings, refer to <u>Set Arming Schedule</u>. For the linkage method settings, refer to <u>Linkage Method Settings</u>.
- 8. Click Save.
- **9.** For overlay and capture settings, refer to <u>Overlay and Capture</u>. For advanced parameters settings, refer to <u>Face Capture Algorithms Parameters</u>.

#### Result

You can view and download captured face images in **Picture**. Refer to <u>View and Download Picture</u> for details.

## 10.2.2 Overlay and Capture

Choose to configure capture parameters and the information you want to display on stream and picture.

## Display VCA info. on Stream

Display smart information on stream, including the target and rules information.

## Display Target info. on Alarm Picture

Overlay the alarm picture with target information.

#### **Target Picture Settings**

Custom, Head Shot, Half-Body Shot and Full-Body Shot are selectable.



If you select Custom, you can customize width, head height and body height as required.

You can check Fixed Value to set the picture height.

#### **Background Picture Settings**

Comparing to target picture, background picture is the scene image offers extra environmental information. You can set the background picture quality and resolution. If the background image need to be uploaded to surveillance center, check **Background Upload**.

## **People Counting Overlay**

Select flow overlay type.

Select the daily reset time. Click Manual Reset if you want to reset right now.

#### Camera

You can set **Device No.** and **Camera Info.** for the camera, which can be overlaid on captured picture.

#### **Text Overlay**

You can check desired items and adjust their order to display on captured pictures by  $\downarrow \uparrow$ . The content of **Device No.** and **Camera Info** should be on the same page.

## 10.2.3 Face Capture Algorithms Parameters

It is used to set and optimize the parameters of the algorithm library for face capture.

Go to Configuration → Face Capture → Advanced Configuration → Parameters .

## **Face Capture Version**

It lists the version of the algorithms library.

#### **Detection Parameters**

## **Generation Speed**

The speed to identify a target. The higher the value, the faster the target will be recognized. Setting the value quite low, and if there was a face in the configured area from the start, this face will not be captured. It can reduce the misinformation of the faces in the wall painting or posters. The default value of 3 is recommended.

## Sensitivity

The sensitivity to identify a target. The higher the value is, the easier a face will be recognized, and the higher possibility of misinformation would be. The default value of 3 is recommended.

## **Capture Parameters**

#### **Best Shot**

The best shot after target leave the detection area.

#### Capture Times

It refers to the capture times a face will be captured during its stay in the configured area. The default value is 1.

## **Capture Threshold**

It stands for the quality of face to trigger capture and alarm. Higher value means better quality should be met to trigger capture and alarm.

#### **Quick Shot**

You can define quick shot threshold and max. capture interval.

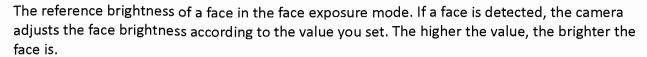
## **Quick Shot Threshold**

It stands for the quality of face to trigger quick shot.

#### **Face Exposure**

Check the checkbox to enable the face exposure.

## **Reference Brightness**





The minimum duration of the camera exposures the face.

Note

If the face exposure is enabled, please make sure the WDR function is disabled, and the manual iris is selected.

## **Face Filtering Time**

It means the time interval between the camera detecting a face and taking a capture action. If the detected face stays in the scene for less than the set filtering time, capture will not be triggered. For example, if the face filtering time is set as 5 seconds, the camera will capture the detected face when the face keeps staying in the scene for 5 seconds.

Note

The face filtering time (longer than 0s) may increase the possibility of the actual capture times less than the set value above.

### **Restore Default**

Click **Restore** to restore all the settings in advanced configuration to the factory default.

## 10.2.4 Set Shield Region

The shield region allows you to set the specific region in which the set smart function rule is invalid.

- 1. Select Shield Region.
- 2. Click to draw shield area. Repeat this step above to set more shield regions.
- 3. Optional: Click X to delete the drawn areas.
- 4. Click Save.

# **Chapter 11 Smart Display**

It can display the captured pictures when enabling smart functions.

Note

The function is only supported by certain device models.

## **Layout Preview**

Click and select **Layout Preview**. Select the contents according to your needs. When you select real-time analysis, you can select the contents only for real-time analysis.

## **Detection Attribute**

Click and select **Detection Attribute**. When you enable this function, the attribute information of target analysis can be displayed and the information you select will be displayed in the attribute analysis area.

# **Chapter 12 EPTZ**

EPTZ (Electronic PTZ) is a high-resolution function that digitally zooms and pans into portions of the image, with no physical camera movement. If you want to use the EPTZ function, make sure you have select the **Fourth Stream** in the live view. Fourth stream and EPTZ should be both enabled simultaneously.

Note
The function is only supported by certain device models.

## 12.1 Patrol

## Steps

- 1. Go to Configuration → EPTZ.
- 2. Check Enable EPTZ.
- 3. Check Fourth Stream.
- 4. Select Patrol in Application.
- 5. Click Save.

#### What to do next

For the detailed information about the patrol settings, see the PTZ operations on live view page.

# 12.2 Auto-Tracking

- 1. Go to Configuration → EPTZ.
- 2. Check Enable EPTZ.
- 3. Check Fourth Stream.
- 4. Select Auto-tracking in Application.
- 5. Click Detection Area to start drawing.
- **6.** Click on the live video to specify the four vertexes of the detection area, and right click to complete drawing.
- 7. Set rules.

Detection Target	Human and vehicle are available. If the detection target is not selected, all the detected targets will be tracked, including the human and vehicle.
	Note
	Only certain camera models support this function.

# Network Camera User Manual

## Sensitivity

It stands for the percentage of the body part of an acceptable target that is tracked. Sensitivity =  $100 - \frac{51}{ST} \times 100$ . S1 stands for the target body part that enters the pre-defined area. ST stands for the complete target body. The higher the value of sensitivity is, the more easily the target can be tracked.

8. Click Save.

# **Appendix A. Device Command**

Scan the following QR code to get device common serial port commands.

Note that the command list contains the commonly used serial port commands for all Hikvision network cameras.



# **Appendix B. Device Communication Matrix**

Scan the following QR code to get device communication matrix.

Note that the matrix contains all communication ports of Hikvision network cameras.



