



Stitched PanoVu Camera with PTZ

User Manual

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Chapter 1 Overview

1.1 Product Introduction

PanoVu Series Stitched Panoramic Camera is able to capture panoramic images as well as close-up images, offering both panorama and details. With video analysis algorithm and multiple target tracking algorithm, the device can automatically or manually detect and analyze multiple targets in panoramic area, and output alarm signal as well as linked PTZ tracking.

The camera series includes 180° stitched panoramic camera with PTZ, 270° stitched panoramic camera with PTZ, and 360° stitched panoramic camera with PTZ.

- The 360° stitched panoramic camera with PTZ has three channels.

Channel No.	Description
Camera 01	It stands for the tracking PTZ channel, which offers close-up view by pan, tilt, and zoom control.
Camera 02 Camera 03	These two camera stand for panoramic channels, which offer panoramic view. Camera 02 is the main panoramic channel.

- The 180° and 270° stitched panoramic camera with PTZ has two channels.

Channel No.	Description
Camera 01	It stands for the tracking PTZ channel, which offers close-up view by pan, tilt, and zoom control.
Camera 02	It stands for panoramic channels, which offer panoramic view.

1.2 Key Function

Link Panoramic and PTZ channel

A panoramic channel is composed of multiple lenses and could achieve 180° or 270° panoramic monitoring.

The PTZ channel supports pan, tilt, and zoom control to monitor close-up details.

After configuration, click or draw a frame on any position in panoramic image, and the selected area moves into the center of the image via PTZ control.

Smart Functions

The device can detect, track, capture, grade, and filter moving faces, and output the best captured picture.

The device supports event detection, such as intrusion, line crossing, region entrance, and region exiting detection.

The device can detect the level of people density in configured areas and trigger alarms.

The device can detect traffic congestion in configured areas and trigger alarms.

1.3 System Requirement

Your computer should meet the requirements to access and operate the device.

Recommended Specifications	
Operating System	Microsoft Windows 7 (32 bit/64 bit) or later
CPU	Intel® Core™ i7-7700K 4.5 GHz or greater
Graphics Card	GeForce® GTX 1080 Ti or greater
RAM	1G or higher
Display	1024 × 768 resolution or higher
Web Browser	IE browser 10-11, Chrome 57+, FireFox 52+, and Safari 12+

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 Device

The device needs to be activated by setting a strong password before use. This part introduces activation using different client tools.

2.1.1 Activate Device via Web Browser

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

Before You Start

Make sure your device and your PC connect to the same LAN.

Steps

1. Change the IP address of your PC to the same subnet as the device.
The default IP address of the device is 192.168.1.64.
2. Open a web browser and input the default IP address.
3. Create and confirm the admin password.



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

4. Click **OK** to complete activation and enter **Live View** page.
5. Modify IP address of the camera.
 - 1) Enter IP address modification page. **Configuration** → **Network** → **TCP/IP**
 - 2) Change IP address.
 - 3) Save the settings.

2.1.2 Activate via SADP

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

Before You Start

- Get the SADP software from the supplied disk or the official website <http://www.hikvision.com/>, and install the SADP according to the prompts.
- The device and the PC that runs the SADP tool should belong to the same subnet.

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

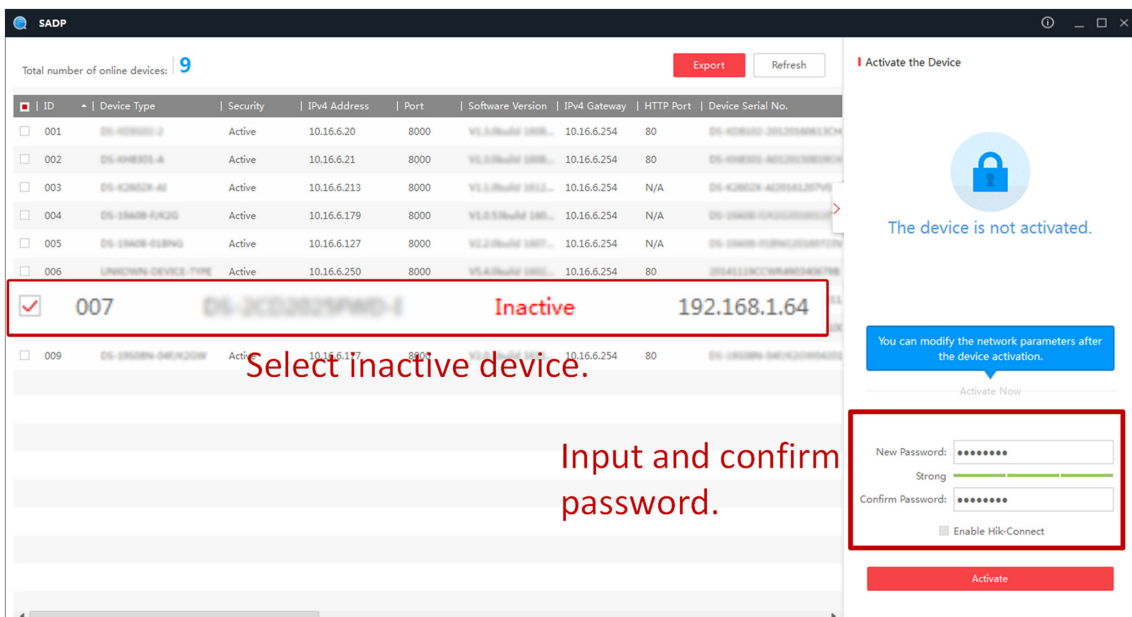
Steps

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

Caution

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

4. Click **Activate** to start activation.



The screenshot shows the SADP software interface. On the left, a table lists online devices. The table has columns for ID, Device Type, Security, IPv4 Address, Port, Software Version, IPv4 Gateway, HTTP Port, and Device Serial No. Device 007 is highlighted with a red box and labeled "Select inactive device." The status of device 007 is "Inactive" and its IP address is "192.168.1.64". On the right, the "Activate the Device" panel is shown. It displays "The device is not activated." and a blue button that says "You can modify the network parameters after the device activation." Below this, there is a section for entering a new password and confirming it. The "New Password" and "Confirm Password" fields are highlighted with a red box and labeled "Input and confirm password." There is also a checkbox for "Enable Hik-Connect" and a red "Activate" button at the bottom.

ID	Device Type	Security	IPv4 Address	Port	Software Version	IPv4 Gateway	HTTP Port	Device Serial No.
001	DS-K2302-L	Active	10.16.6.20	8000	V5.0.0.0.0.0.0.0	10.16.6.254	80	DS-K2302-L0123456789
002	DS-K2302-A	Active	10.16.6.21	8000	V5.0.0.0.0.0.0.0	10.16.6.254	80	DS-K2302-A0123456789
003	DS-K2302-AE	Active	10.16.6.213	8000	V5.0.0.0.0.0.0.0	10.16.6.254	N/A	DS-K2302-AE0123456789
004	DS-K2302-FK20	Active	10.16.6.179	8000	V5.0.0.0.0.0.0.0	10.16.6.254	N/A	DS-K2302-FK200123456789
005	DS-K2302-FK20S	Active	10.16.6.127	8000	V5.0.0.0.0.0.0.0	10.16.6.254	N/A	DS-K2302-FK20S0123456789
006	UNKNOWN DEVICE TYPE	Active	10.16.6.250	8000	V5.0.0.0.0.0.0.0	10.16.6.254	80	DS-K2302-FK20S0123456789
007	DS-K2302-FK20-L	Inactive	192.168.1.64	8000	V5.0.0.0.0.0.0.0	10.16.6.254	80	DS-K2302-FK20-L0123456789
009	DS-K2302-FK20-L	Active	10.16.6.177	8000	V5.0.0.0.0.0.0.0	10.16.6.254	80	DS-K2302-FK20-L0123456789

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

5. Modify IP address of the device.
 - 1) Select the device.

- 2) Change the device IP address to the same subnet as your computer by either modifying the IP address manually or checking **Enable DHCP**.
- 3) Input the admin password and click **Modify** to activate your IP address modification.

2.2 Access Device via Web Browser

Before You Start

Check the system requirement to confirm that the operating computer and web browser meets the requirements.

Steps

1. Open the web browser.
2. Input IP address of the device to enter the login interface.
3. Input user name and password.



Note


Illegal login lock is activated by default. If admin user performs seven failed password attempts (five attempts for user/operator), the IP address is blocked for 30 minutes.

If illegal login lock is not needed, go to **Configuration → System → Security → Security Service** to turn it off.

4. Click **Login**.
5. Download and install appropriate plug-in for your web browser.
For IE based web browser, webcomponents and QuickTime™ are optional. For non-IE based web browser, webcomponents, QuickTime™, VLC and MJPEG are optional.

2.2.1 Plug-in Installation

Certain operation systems and web browser may restrict the display and operation of the device 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	Internet Explorer 10+	Follow pop-up prompts to complete plug-in installation.
Windows 7 and above version	Google Chrome 57+ Mozilla Firefox 52+	Click  Download Plug-in to download and install plug-in.
Mac OS	Google Chrome 57+ Mozilla Firefox 52+ Mac Safari 12+	Plug-in installation is not required. Go to Configuration → Network → Advanced Settings

Operating System	Web Browser	Operation
		→ 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.

 **Note**

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

2.2.2 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.

 **Note**

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.

2.2.3 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 Smart Function

3.1 Allocate VCA Resource

VCA resource offers you options to enable certain VCA functions according to actual need. It allocates resources to the desired functions.

Steps

1. Go to **Configuration** → **System** → **System Settings** → **VCA Resource** .
2. Select a VCA function for each device channel.

Smart Event

The device detects certain target movements, such as going across a predefined line and intruding a predefined area, and triggers alarms and linkage actions. Supported event types for the PTZ channel and panoramic channels are different.

Four smart event types, line crossing detection, intrusion detection, region entrance detection, and region exiting detection, are often used to monitor and defend areas with clear perimeters.

Face Capture

The device captures human faces in detection areas.

People Density

The device detects the level of people density in detection areas.

Traffic Congestion

The device detects traffic congestion in detection areas.

3. Click **Save**.



Note

- The device only displays the selected VCA options on the configuration page.
 - For some device models, when **Panorama View 32 MP** is selected as the video output mode, people density and smart event are not supported.
 - A reboot is needed for the settings to take effect.
-

3.2 Face Capture

Face capture function detects faces and captures pictures. When the grading of the detected face exceeds an algorithm-defined value, the device captures the face and triggers linkage actions. Set up rule and parameters before using the function.

Note

- For certain device models, you need to select **Face Capture** on **VCA Resource** page first.
 - This function is only supported by certain device models.
-

3.2.1 Set Auto Face Capture Rule

After set the face capture rules and algorithm parameters, the device captures faces and trigger linkage actions automatically.

Steps

1. Go to **Configuration** → **Face Capture** → **Rule** .
2. Check **Enable**.
3. Select a configuration mode.

Normal One detection scene is allowed to set. The device captures face in the scene in set arming schedule.

See [Normal Mode Settings](#) for details.

Expert The device can patrol among the detection scenes and capture face images. Detection scenes and patrol schedule should be set in advance.

See [Expert Mode Settings](#) for details.

4. Click **Save**.

What to do next

Go to **Picture** to search and view the captured pictures.

Go to **Smart Display** to see currently captured face pictures.



Normal Mode Settings

Steps

1. **Optional:** Click **Lock** to lock PTZ control to prevent the interruption from other PTZ related action during configuration.



Normally, the PTZ control is automatically locked when you enter the configuration interface.

You can manually resume the lock when the countdown is over.

2. Use PTZ control panel or click  to locate a scene with a face.
3. Click , and draw a detection area on live image.
4. Input **Mounting Height** of the device.
5. Input or draw the min. pupil distance and the max. pupil distance.

The **Min. Pupil Distance** and the **Max. Pupil Distance** are used to improve detection accuracy.

Only targets whose pupil distance are between the maximum distance and the minimum distance trigger the capture.

Click  and  to draw the distance on live image, or input values in the text fields of **Min. Pupil Distance** and **Max. Pupil Distance**.



6. Click **Save**.
7. Set arming schedule. See [Set Arming Schedule](#) .
8. Set linkage method. See [Linkage Method Settings](#) .

Expert Mode Settings



Steps

1. **Optional:** Click **Lock** to lock PTZ control to prevent the interruption from other PTZ related action during configuration.





Normally, the PTZ control is automatically locked when you enter the configuration interface. You can manually resume the lock when the countdown is over.

2. Input **Mounting Height** of the device.
3. Set detection scenes and detection areas.
 - 1) Select a detection scene.
 - 2) Adjust the live image to a desired scene. You can use PTZ control buttons or click  to locate a scene with a face.
 - 3) Click , and draw a detection area on live image.
 - 4) Input or draw the min. pupil distance and the max. pupil distance.

The **Min. Pupil Distance** and the **Max. Pupil Distance** are used to improve detection accuracy. Only targets whose pupil distance are between the maximum distance and the minimum distance trigger the capture.

Click  and  to draw the distance on live image, or input values in the text fields of **Min. Pupil Distance** and **Max. Pupil Distance**.

- 5) Click **Save**.
- 6) Repeat above steps to set other detection scenes and areas.
4. Set patrol schedule.
 - 1) Click **Patrol Schedule**.
 - 2) Draw time bars as desired.
 - 3) Click a time bar and click **Configuration**.
 - 4) Edit patrol path and input dwell time for each detection scene.


	Add a detection scene to the patrol path.
 	Adjust the order of the scenes.
	Delete the detection scene.

- 5) Click **Save**.
5. Set linkage method. See [Linkage Method Settings](#) .

3.2.2 Operate Manual Face Capture

Capture the target face manually in live view image.

Steps

1. Click **Live View**.
2. Click  to start manual face capture.
3. Draw a frame to select the target face in live view image.
The captured picture can be uploaded to the center.
4. Click the icon again to stop manual face capture.

3.2.3 Overlay and Capture

Overlay and Capture offers options to overlay information on stream or alarm pictures and set the captured pictures.

Display VCA Info. on Stream

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

Display Target Info. on Alarm Picture

Overlay the alarm pictures with target information.

Target Picture Settings

You can set the face picture type by selecting **Custom**, **Head Shot**, **Half-Body Shot**, or **Full-Body Shot**. If you select **Custom**, you can define detailed picture width and height of a picture freely. If the captured pictures should have the same picture height, check **Fixed Value** and input desired picture height.

Check **Face Beautification** and adjust the beautification level as needed.





Note

Face Beautification slightly adjusts the skin tone and reduces facial noise.

Background Picture Settings

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

Text Overlay

You can check desired items (Device No., Camera Info. and Capture Time) and adjust their order to display on captured pictures by clicking  .

The content of **Device No.** and **Camera Info** should be input on the same page.

3.2.4 Face Capture Algorithm Parameters

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

Face Capture Version

It refers to the current algorithm version, which cannot be edited.

Detection Parameters

Generation Speed

The speed to identify a target can be set by adjusting the slider, ranging from 1 to 5. The higher the value is, the faster the target will be recognized. The default value is recommended.

Sensitivity

The sensitivity to identify a target can be set by adjusting the slider, ranging from 1 to 5. The higher the value is, the easier a face will be detected, and the higher possibility of misinformation would be. The default value of 3 is recommended.

Capture Parameters

Upload Feature

Feature stands for the feature information the algorithm can tell from face pictures. Check the function to upload the information.

Best Shot

The device captures the target picture with the highest score after setting the parameters.

Capture Times

It refers to the capture times a face will be captured during its stay in the detection area.

Capture Threshold

It refers 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

The device captures the target picture once the score of the captured face exceeds the **Quick Shot Threshold** during the **Max. Capture Interval**. Otherwise, the device selects and uploads the picture with the highest score during the **Max. Capture Interval**.

Quick Shot Threshold

It refers to the quality of face to trigger quick shot.

Max. Capture Interval

It describes the max. time occupation for one quick shot.

Capture Times

It refers to the capture times a face will be captured during its stay in the configured area.

Unlimited

The device keeps capturing the target face, which exceeds the **Quick Shot Threshold** during the **Max. Capture Interval**.

Limited

The device captures the target face according to the set times.

Face Exposure

Enable the function, and the device automatically adjusts exposure level when human faces appear in the scene.

Reference Brightness

It refers to the reference brightness of a face in the face exposure mode. If a face in the actual scene is brighter than the set reference brightness, the device lower the exposure level. If a face in the actual scene is darker than the set reference, the device increases the exposure level.

Minimum Duration

The extra time the device keeps the face exposure level after the face disappears in the scene.

Face Filtering

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.

Restore Default

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


3.3 People Density



This function detects the level of people density in the detection areas.

Before You Start

People Density is supported by the panoramic channel. You need to select **People Density** for Camera 02 or Camera 03 on **VCA Resource** page first.

Steps



1. Enable the function in **Configuration → People Density → Rule** .
2. Set a detection area.
 - Click  , and click on the live image to define the boundary of the detection area. Left click to finish drawing.

- Click  to clear selected areas.
- Click  to clear all the areas.



Note

Up to 8 areas can be set at the same time.

3. Select an area from the list and set the target size as **Large-size Target** or **Small-size Target**.
 - Click , and a frame of 40 × 40 pixels will be displayed in the live image. If the shoulder of the target is wider than the frame, you should select **Large-size Target**.
 - Click , and a frame of 20 × 20 pixels will be displayed in the live image. If the shoulder of the target is shorter than the frame, you should select **Small-size Target**.



Note

If the shoulder width is between the two modes, adjust installation position and device angle to meet the requirements.

4. Define the **Density Level** by the number of people in the detection area and the target pixel ratio.

Number of People	Set the range for each level by inputting the lower limit of the number of people in the detection area.
Target Pixel Ratio	Target pixel ratio refers to the ratio of the detection area occupied by people. Check Enable Target Pixel Ratio and input the lower limit of target pixel ratio for each level.



Note

- Up to three levels can be configured. The density increases from level 1 to level 3.
- The target pixel ratio is optional. When it is enabled, both the set number of people and the ratio should be met to reach the density level.

Example

Set the people number of **Level 1** as **10**, **Level 2** as **100**, and **Level 3** as **1000**. When the number of people in the detection area is less than 10, the alarm is not triggered. When the number of people is between 10 and 100, Level 1 alarm is triggered. When the number of people is between 100 and 1000, Level 2 alarm is triggered. When the number exceeds 1000, Level 3 alarm is triggered.

5. Click **Save**.
6. Set arming schedule. See [Set Arming Schedule](#) .
7. Set linkage method. See [Linkage Method Settings](#) .
8. Set data uploading parameters in **Data Upload**.
 - 1) Check **Enable Data Uploading**, and the data of people density detection is uploaded to surveillance center.
 - 2) **Optional**: Check **Enable Picture Uploading**, and the alarm is uploaded to surveillance center with pictures.
 - 3) Set the **Uploading Mode**.

Scheduled Uploading

The detection data and pictures can be uploaded to surveillance center at certain time intervals. Select **Statistics Cycle** on your demand.

Instant Uploading

Once the level of people density changes, the detection data and pictures are uploaded to surveillance center immediately.

4) **Optional:** If required, set **HTTP Data Transmission**. Input IP address, URL, and port, and click **Test** to see if it succeeds.

5) Click **Save**.

9. Configure overlay information in **Advanced Configuration**.

Display Rule Info. on Stream

Check **Display Rule Info. on Stream** to overlay the rule information in live image.

Display Rule Info. on Alarm Picture

Check **Display Rule Info. on Alarm Picture** to overlay the rule information on alarm pictures.

Overlay Pseudo-Color Density

Check **Overlay Pseudo-Color Density** and the real-time density is marked with colors in live image.



Note

The pseudo-color density can only be displayed on devices with discrete graphics.

Flow Overlay

Select corresponding parameters to display people number, density level, or ratio in live image. You can edit the region name for the detection area.

10. Click **Save**.

11. Select the **Algorithm Mode** in **Parameters**.

- If the network condition is good, select **Low Latency**.

- If long distance transmission is required, select **Long Distance**.

12. Click **Save**.

What to do next

After configuration, you can monitor people density in live view image, and the overlay information will be displayed in live view.



Note

To display the overlaid information, make sure that **Display POS Information** in **Configuration** → **Local** → **Live View Parameters** has been enabled.

3.4 Traffic Congestion

This function is used to detect congestion in predefined areas. When congestion happens within the armed schedule, alarms and linked actions are triggered.

3.4.1 Basic Configuration

You can set the basic information, camera No. and information, listening server, and ANR.

Go to **Configuration → Traffic Congestion → Basic Configuration** to complete the settings.

Basic Information

Input the **Device No.**

Camera

Input the **Camera No.** and **Camera Info.**

Listening Server

If the device uploads alarms in listening mode via our company's SDK, you should set the IP address and port for the listening server.

ANR

When the network is disconnected, data is temporarily saved on the memory card. When the network connection is resumed, the device automatically uploads the saved data to the arming host, in which case, the arming host IP address is required.



Note




A memory card should be installed in the device. Memory card settings should be completed. See ***Memory Card*** for instructions.

3.4.2 Set Traffic Congestion Detection Rules

Before You Start

Traffic Congestion is supported by the panoramic channel. You need to select **Traffic Congestion** for Camera 02 or Camera 03 on **VCA Resource** page first.

Steps

1. Enable the function in **Configuration → Traffic Congestion → Rule** .
2. Set a detection area.
 - Click  , and click on the live image to define the boundary of the detection area. Left click to finish drawing.
 - Click  to clear selected areas.
 - Click  to clear all the areas.
3. Set detection parameters for the detection area.

Sensitivity

It stands for the ratio limit of free space to detection area that triggers the traffic congestion alarm. For example, if you set the sensitivity as **20**, when 80% or more of the detection area is occupied by vehicles, the alarm is triggered.

Duration

Any congestion should last for at least the set duration to be considered as an alarming event.

Filtering Time

It stands for the minimum interval between two alarms. It is used to avoid repeated alarms in a short time period.

4. Click **Save**.
5. **Optional:** Repeat the steps to set other detection areas.



Note

Up to 4 areas are supported.

-
6. Set arming schedule. See ***Set Arming Schedule*** .
 7. Set linkage method. See ***Linkage Method Settings*** .




Chapter 4 PTZ

PTZ is an abbreviation for pan, tilt, and zoom. It means the movement options of the camera.

4.1 PTZ Control

In live view interface, you can use the PTZ control buttons to control the device panning, tilting, and zooming.

PTZ Control Panel

	<p>Click and hold the directional button to pan/tilt the device.</p> <p>Note</p> <ul style="list-style-type: none"> You can set Keyboard Control Speed in Configuration → PTZ → Basic Settings . The speed of pan/tilt movement in live view is based on this speed level. You can set Max. Tilt-angle in Configuration → PTZ → Basic Settings to limit tilt movement range.
	<p>Click the button, then the device keeps panning.</p> <p>Note</p> <p>You can set Auto Scan Speed in Configuration → PTZ → Basic Settings . The higher the value you set, the faster the device pans.</p>
	<p>Drag the slider to adjust the speed of pan/tilt movement.</p>



Note

You can set **Manual Control Speed** in **Configuration → PTZ → Basic Settings** .

Compatible	The control speed is same as Keyboard Control Speed .
Pedestrian	Choose Pedestrian when you monitor the pedestrians.
Non-motor Vehicle	Choose Non-motor Vehicle when you monitor the non-motor vehicles.
Motor Vehicle	Choose Motor Vehicle when you monitor the motor vehicles.
Auto	You are recommended to set it as Auto when the application scene of the speed dome is complicated.

To avoid blurred image resulted from fast zoom, you can check **Enable Proportional Pan** in **Configuration → PTZ → Basic Settings** . If you enable this function, the pan/tilt speed change according to the amount of zoom. When there is a large amount of zoom, the pan/tilt speed will be slower for keeping the image from moving too fast on the live view image.



Zoom in/out

	Click the button, and the lens zooms in.
	Click the button, and the lens zooms out.



Note

- You can set **Zooming Speed** in **Configuration → PTZ → Basic Settings** . The higher the value is, the faster the zooming speed is.
 - You can set **Zoom Limit** in **Configuration → Image → Display Settings → Other** to limit the maximum value of the total zoom (digital zoom and optical zoom).
-

Focus

	Click the button, then the lens focuses near and the object nearby gets clear.
	Click the button, then the lens focuses far and the object far away gets clear.




Iris

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

4.2 Set Preset

A preset is a predefined image position. For the defined preset, you can call the preset No. to view the position.



Steps

1. Click  to show the setting panel, and click .
2. Use the PTZ control buttons to move the lens to the desired position.
3. Select a preset number from the preset list, and click  to finish the setting.

Note

Some presets are predefined with special command. You can only call them but not configure them.

-
4. Repeat the steps above to set multiple presets.

-  Click the button to call the preset.
-  Click the button to delete the preset.

Note

You can delete all presets in **Configuration → PTZ → Clear Config**. Click **Clear All Presets**, and click **Save**.

What to do next

Go to **Configuration → PTZ → Basic Settings** to set preset freezing and preset speed.

After enabling preset freezing, the live image switches directly from one preset to another, without showing the areas between these two scenes. It also guarantees the masked area will not be seen when the device is moving.

4.2.1 Special Presets

You can call the following presets with special demands to enable corresponding functions.

Preset No.	Function	Preset No.	Function
33	Auto flip	92	Set manual limits
34	Back to origin	93	Save manual limits
35	Call patrol 1	94	Remote reboot
36	Call patrol 2	95	Call OSD menu
37	Call patrol 3	96	Stop a scan
38	Call patrol 4	97	Start random scan
39	Day mode	98	Start frame scan
40	Night mode	99	Start auto scan
41	Call pattern 1	100	Start tilt scan
42	Call pattern 2	101	Start panorama scan
43	Call pattern 3	102	Call patrol 5
44	Call pattern 4	103	Call patrol 6
45	One-touch patrol	104	Call patrol 7
46	Day/Night Mode	105	Call patrol 8





4.3 Set Patrol Scan

Patrol scan is a function to automatically move among multiple presets.

Before You Start

Make sure that you have defined more than one presets. See [Set Preset](#) for detailed configuration.

Steps

1. Click  to show the setting panel, and click  to enter patrol setting interface.
2. Select a patrol number from the list and click .
3. Click  to add presets.

Preset


Select predefined preset.



Speed

Set the speed of moving from one preset to another.

Time





It is the duration staying on one patrol point.

-  Delete the presets in patrol.

  Adjust the preset order.

Note

A patrol can be configured with 32 presets at most, and 2 presets at least.

4. Click **OK** to finish a patrol setting.
5. Repeat the steps above to configure multiple patrols.
6. Operate patrols.
 -  Call the patrol.
 -  Stop patrolling.
 -  Delete the patrol.
 -  Set the patrol.

Note


You can delete all patrols in **Configuration** → **PTZ** → **Clear Config** . Click **Clear All Patrols**, and click **Save**.

4.3.1 Set One-Touch Patrol

The device automatically adds presets to one patrol path and starts patrol scan.

Steps




1. Set two or more presets among preset No.1 to preset No.32. For setting presets, refer to **Set Preset** .

The device will automatically add presets to patrol path No.8.
2. Choose one of the following methods to enable the function.
 - Click  .
 - Call patrol path No.8.
 - Select and call preset No.45.

4.4 Set Pattern Scan






The device can move as the recorded pattern.

Steps

1. Click  to show the PTZ control panel, and click  .
2. Select one pattern scan path that needs to be set.
3. Click  to start recording pattern scan.
4. Click PTZ control buttons as demands.

Note

Recording stops when the space for pattern scan is 0%.

5. Click  to complete one pattern scan path settings.
6. Click  to call pattern scan.
 -  Stop pattern scan.
 -  Reset pattern scan path.
 -  Delete the selected pattern scan.

Note

If you need to delete all the pattern scans, go to **Configuration → PTZ → Clear Config** , and check **Clear All Patterns**, and click **Save**.

4.5 Set Limit

The device can only move within the limited range.

Steps

1. Go to **Configuration → PTZ → Limit** .
2. Select **Limit Type**.

Manual Stops

It refers to the movement range limit when you control the device manually.

Scan Stops

It refers to the movement range limit when the device scans automatically.

Note

Scan limit is only supported by the device that has scan function.

3. Click **Set** and set limits according to the prompt on the live image.
4. **Optional:** Click **Clear** to clear the limit settings of the selected mode.
5. Click **Save**.
6. Check **Enable Limit**.

Note

If you need to cancel all the set patrol paths, go to **Configuration → PTZ → Clear Config** , select **Clear All PTZ Limited**, and click **Save**.

Result

The device can only move within the set region after saving the settings.

4.6 Set Initial Position

Initial position refers to the relative initial position of the device azimuth. You can set the initial position if you need to select one point in the scene as the base point.

Steps

1. Go to **Configuration → PTZ → Initial Position** .
2. Move the device to the needed position by manually controlling the PTZ control buttons.
3. Click **Set** to save the information of initial position.

Call The device moves to the set initial position.

Clear Clear the set initial position.

4.7 Set Scheduled Tasks

You can set the device to perform a certain task during a certain period.

Steps

1. Go to **Configuration → PTZ → Scheduled Tasks** .
2. Check **Enable Scheduled Task**.
3. Select the task type and set the period. For setting the period, refer to **Set Arming Schedule** .
4. Repeat step 3 to set more than one scheduled tasks.
5. Set **Park Time**. During the set task period, if you operate the device manually, the scheduled task will be suspended. When the manual operation is over, the device will continue to perform the scheduled task after the set park time.
6. Click **Save**.



If you want to clear all scheduled tasks, go to **Configuration → PTZ → Clear Config** , check **Clear All Scheduled Tasks**, and click **Save**.

4.8 Set Park Action

You can set the device to perform an action (for example, preset or patrol) or return to a position after a period of inactivity (park time).

Before You Start

Set the action type first. For example, if you want to select patrol as park action, you should set the patrol. See **Set Patrol Scan** for details.

Steps


1. Go to **Configuration → PTZ → Park Action** .
2. Check **Enable Park Action**.

3. Set **Park Time**: the inactive time before the device starts park action.
4. Select **Action Type** according to your needs.
5. Select an **Action Type ID**, if you select patrol or preset as action type.
When the action type is patrol, action type ID stands for patrol No. When the action type is preset, action type ID stands for preset No.
6. Click **Save**.

4.8.1 Set One-Touch Park

This function is used to start park instantly.

Steps

1. Refer to **Set Park Action** to set a park action.
2. Choose from the following methods to start one-touch park.
 - Click  .
 - Call Preset No. 32.

4.9 Set Privacy Mask

Privacy masks cover certain areas on the live image to protect personal privacy from being live viewed and recorded.

Steps

1. Go to **Configuration → PTZ → Privacy Mask** .
2. Select the PTZ channel.
 - 1) Check **Enable Privacy Masks**.
 - 2) Adjust the live image to the target scene via PTZ control buttons.
 - 3) Draw the area.

Draw Area	Click Draw Area and drag the mouse in live view image. You can drag the corners of the red rectangle to adjust the area.
Stop Drawing	Click Stop Drawing after drawing area.

- 4) Click **Add**.
It is listed in **Privacy Mask List**.
- 5) Edit **Name**, **Type**, and **Active Zoom Ratio** on your demand.

Active Zoom Ratio

When the actual zoom ratio is less than the set active zoom ratio, the set area can not be covered. When the actual zoom ratio is greater than the set active zoom ratio, the privacy mask is valid. The maximum value of active zoom ratio depends on the camera module.

- 6) Click **Save**.

- 7) Repeat the steps above to set other privacy masks.
3. Select panoramic channel.
- 1) Check **Enable Privacy Masks**.
 - 2) Draw the area.

Draw Area	Click Draw Area and drag the mouse in live image. You can drag the corners of the red rectangle to adjust the area.
Stop Drawing	Click Stop Drawing after drawing area.

- 3) Click **Add**.
It will be listed in **Privacy Mask List**.
- 4) Edit **Name**, **Type** on your demand.
- 5) Click **Save**.
- 6) Repeat the steps above to set other privacy masks.

4.10 Set Smart Tracking

The function allows the device detecting and tracking the moving targets in the scene. The target stays in the center of the live image with a predefined size during the tracking process.

Steps

1. Go to **Configuration → PTZ → Smart Tracking**.
2. Check **Enable Smart Tracking**
3. Set the **Duration**. The device stops tracking when the duration time is up.
4. Set the zooming control and tracking parameters.

Zooming Control

Two modes are available. Controlled by target frame or by tilt angle of the device.

By Tilt Angle

The device calculates the tracking zoom ratio automatically according to the tilt angle of the device.



Note

The attitude of the device affects the accuracy of this zooming control mode. For the model with a built-in gyroscope, try to calibrate the attitude if some zooming problems happen during tracking. See **Set Device Position** for instructions.

By Target Frame

The tracked target has a virtual frame around. The device calculates a suitable zoom ratio according to the frame and the set **Tracking Zoom Ratio**. Larger value means bigger zoom ratio.

Wait to Stop Tracking If Low Validity

The validity is an internal parameter that helps judge whether the device should keep tracking or not. This parameter is the waiting time level before the device stops tracking when the validity is low. Larger value means longer waiting time.

Wait to Lower Tracking Speed If Low Validity

The validity is an internal parameter that helps judge whether the PTZ channel should lower the tracking speed or not. This parameter is the waiting time level before the device lowers the tracking speed when the validity is low. Larger value means longer waiting time.

5. Optional: Check Tuning Mode.



Tuning mode is to display the information that helps debugging the function. This mode is reserved for technical support.

6. Click Save.

4.11 Set Rapid Focus

Rapid focus is a function to reduce time of focusing comparing with that of normal focusing. To use the function, calibration should be done first. Rapid focus may not be supported by certain device models.

Steps

- 1. Go to Configuration → PTZ → Rapid Focus .**
 - 2. Add scenes for calibration.**
 - 1) Adjust the live image to a desired scene via PTZ control buttons, and click **Add**.
 - 2) Set the **Rate** and the **Calibration Point Amount** of the added scene.
-



More calibration points may increase calibration accuracy, but more focusing time is required. The default amount is recommended.

- 3. Select the scene to display the calibration line.**

A red line displays on live image.
 - 4. Adjust the length and position of the line by dragging its two endpoints.**
-



The red line is recommended to stay in the center of the scene and to cover ground at the same time.

Double click the image to enter full screen mode.

- 5. Click Start Calibration.**

Calibration status displays on the live image.
 - 6. Repeat to add other scenes and complete the calibration.**
 - 7. Check Enable after successful calibration.**
 - 8. Click Save.**
-

4.12 Panorama Tracking

This function links panoramic channel with PTZ channel through calibration. The PTZ channel tracks moving objects in panoramic channel and automatically adjusts its PTZ positions to keep the target in the center of PTZ view for more details.

4.12.1 Set Panorama Tracking – Auto Calibration

Before You Start

Avoid using auto calibration for vast similar scenes (for example, lake, lawn, or public square) or dark scenes (for example, night scenes).

Steps

1. Go to **Configuration → PTZ → Panorama Tracking → Calibration** .
2. Check **Track**.
3. **Optional:** Check **Enable Linkage Capture and Upload** if you want to capture and upload pictures during tracking.
4. Select the **Calibration Mode** as **Auto**. Click **Start Calibration**.
5. Select a method for auto calibration.

One-touch Calibration

If all scenes in panoramic channel have good stitching effect, it is recommended to use **One-touch Calibration** to calibrate all scenes.

Click **One-touch Calibration**. When calibration for all scenes is complete, click **Stop Calibration** to exit.

Single Scene Calibration

If certain scenes in panoramic channel have bad stitching effect, it is recommended to use **Single Scene Calibration** to calibrate these scenes.

Select a scene. Use the PTZ control buttons to adjust the close-up view to the same scene in the panorama view. Click **Single Scene Calibration**, and the calibration for the selected scene starts.

When the calibration is complete, click **Stop Calibration** to exit. Select another scene and repeat the calibration.

6. Set tracking initial position. Use the PTZ control buttons to adjust close-up view. Click **Set Tracking Initial Position** to finish setting.

Tracking Initial Position

When tracking finishes or timed out, the PTZ channel returns to the tracking initial position.

When tracking initial is not set, PTZ channel stays where tracking finishes or timed out.

7. Set the tracking duration. Click **Save**.

Tracking Duration

It is used to set the duration of tracking. The PTZ channel switches to next target after the set duration time. When tracking duration is set to 0, tracking continues until the target leaves the scene.

8. Set the zooming ratio. Click **Save**.

Zooming Ratio

It is used to set the zooming ratio for tracking. The higher the value is, the larger the target is in the close-up view.





Tracking Duration and **Zooming Ratio** settings are only supported under some VCA resources.

4.12.2 Set Panorama Tracking – Manual Calibration

Steps

1. Go to **Configuration** → **PTZ** → **Panorama Tracking**.
2. Check **Track**.
3. **Optional**: Check Enable **Linkage Capture and Upload** if you want to capture and upload pictures during tracking.
4. Select the **Calibration Mode** as **Manual**. Click **Start Calibration**.
5. Select a scene.
6. Add calibration points.
 - 1) Select a No. in **Calibration Parameter** list. Click **+**.
A numbered green cross displayed on the live image.
 - 2) Drag the green cross to a certain position.
 - 3) Repeat the steps above to add more calibration points.



- It is recommended to add at least 9 calibration points in one scene. For higher tracking precision, up to 12 calibration points can be added. Calibration points should be distributed evenly in live image, for example, 3 points at far range, middle range, and close range each.
 - It is recommended to put calibration points at distinct positions in live image (for example, corners). If no distinct position is available, you can place something (for example, box, stool, or people) to mark the position.
-
7. Link the PTZ channel to the calibration points in panorama view.
 - 1) Select a calibration point in panorama view.
 - 2) Adjust the PTZ channel to set the center of the close-up view at the same position as the calibration point in panorama view by using the PTZ control buttons or by clicking  and then clicking or dragging an area on live image.
 - 3) Click  to link the current PTZ positions to the calibration point.
 - 4) Repeat the steps above to link other calibration points.
 8. Click **Start Calibration** to finish the calibration for the current scene.
 9. When calibration is complete, click **Stop Calibration** to exit.
 10. Set tracking initial position. Use the PTZ buttons to adjust close-up view. Click **Set Tracking Initial Position** to finish setting.
-

Tracking Initial Position

When tracking finishes or timed out, PTZ channel returns to the tracking initial position.

When tracking initial is not set, PTZ channel stays where tracking finishes or timed out.

11. Set the tracking duration. Click **Save**.

Tracking Duration

It is used to set the duration of tracking. The PTZ channel switches to next target after the set duration time. When tracking duration is set to 0, tracking continues until the target leaves the scene.

12. Set the zooming ratio. Click **Save**.

Zooming Ratio

It is used to set the zooming ratio for tracking. The higher the value is, the larger the target is in the close-up view.

4.12.3 Advanced Settings for Panorama Tracking



The advanced settings are only available when you select VCA resource as **Smart Event** for PTZ and panoramic channels.

Tracking Takeover

When the target leaves the view of the panoramic channel, the PTZ channel takes over the leading role of the task and keeps tracking.

Check to enable the function.

4.13 Set Device Position

Before You Start

Go to **Configuration** → **PTZ** → **Basic Settings** → **PTZ OSD** to enable **PT Status** display.

Use other direction indicating devices to find the North at the device location.

Steps

1. Go to **Configuration** → **PTZ** → **Position Settings** .
2. Set compass.
 - 1) Adjust the tilt position of the device to 0 by controlling the up arrow and down arrow on the PTZ panel.
 - 2) Adjust the pan position to show the live view of the north direction by controlling the left arrow and right arrow on the PTZ panel.
 - 3) Click **Set as North**.
3. Click **Gyroscope Attitude Calibration** to calibrate gyroscope.

Note

Only the device with built-in gyroscope supports this function.

4. Get the device location information in advance, and input the longitude and latitude of the device manually.

5. Set vandal-proof alarm.

The function enables the device to trigger alarms when its position changes because of shock or vandalism.

Sensitivity

The higher the value is, the easier the alarm will be triggered.

Upload Vandal-proof Alarm

The device uploads the alarm information when the alarm is triggered.

Vandal-proof Alarm Voice Warning

The device triggers the alarm with audible warning.

6. Click **Save**.

What to do next

If you lost direction when operating the device, you can click **Point to North** to call the north position that is saved in the device.

4.14 Set Power Off Memory

This function can resume the previous PTZ status of device after it restarting from a power-off.

Steps

1. Go to **Configuration → PTZ → Basic Settings** .
2. Select **Resume Time Point**. When the device stays at one position for the set resume time point or more, the position is saved as a memory point. The device returns to the last memory point when it restarts.
3. Click **Save**.

4.15 Set PTZ Priority

The function can set the PTZ priority of different signals.

Steps

1. Go to **Configuration → PTZ → Prioritize PTZ** .
2. Set the priority signal and delayed time.

Network

The network signal controls the device with priority.

RS-485

The RS-485 signal controls the device with priority.

Delay

It refers to the time interval of PTZ operation controlled by different signals. When the operation with high priority is finished, the low priority signal controls the device after the setting interval.

3. Click **Save**.

Chapter 5 Live View

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







5.1 Live View Parameters





For multichannel devices, select the desired channel first before live view settings.

5.1.1 Window Division

You can choose a layout for live view window.

-  displays live images in three rows.
-  displays two live images on the top and one live image on the bottom.
-  displays live images in two rows.
-  displays one live image.
-  displays live images in 2 × 2 layout.
-  displays live images in PIP (picture in picture) layout.

5.1.2 Start and Stop Live View

On **Live View** page, click  to start all live view. Click  to stop all live view.

You can also start the live view of the channels one by one through clicking a divided window first and double-clicking a channel from the channel list on left.


5.1.3 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 [Stream Type](#) .

5.1.4 Start Digital Zoom

It helps enlarge the image.

Steps



1. Click on a live channel.
2. Click  to enable the digital zoom.
3. Control the scroll wheel to enlarge the image.

4. Click the icon again to exit digital zoom.

5.1.5 Conduct Regional Focus

You can enable the function to focus on certain area.



Steps

1. Click  to enable regional focus.
2. Drag the mouse on the live view to draw a rectangle as the desired focus area.
3. Click  to disable this function.

5.1.6 Conduct Regional Exposure

When the brightness of live view is not balanced, you can enable this function to optimize the exposure of the selected image region.

Steps

1. Click  to enable regional exposure.
2. Drag the mouse on the live view to draw a rectangle as the desired exposure area.
3. Click  to disable this function.

5.1.7 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.

Click  to operate lens initialization.

5.1.8 Track Manually

In live view, manually select a target for the device to track.

Steps


1. Click  on the toolbar of the live view page.
2. Click a moving object in the live image.

The camera tracks the target and keep it in the center of live view image.

5.1.9 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.



5.1.10 Display PTZ Range on Panorama


The view of PTZ channel is marked on the panoramic channel with a rectangle. It helps to locate the PTZ channel in the whole scene.

Go to **Configuration** → **System** → **Maintenance** → **System Service** to turn on or off the function.

5.1.11 OSD Menu

When network access is unavailable, you can call the Preset No.95 to show OSD menu to start device configuration.

Click direction buttons or  and  to move up and down.

Click  to confirm your selection.

5.2 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 ***Multicast*** .

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 real-time. In poor network environment, the device cannot ensure 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 not display.

Auto Start Live View

- **Yes** means the live view is started automatically. It requires a high performance monitoring device and a stable network environment.
- **No** means the live view should be started manually.

3. Click **OK**.







5.3 Smart Display

This function displays real time pictures captured by smart functions and analyzes the target in real time.





To use this function, your web browser version should be above IE11.0.9600.17843.

Live View Parameter

Icon	Function
	Start or stop live view.
	For devices with multiple channels, you can choose a way to display the images.
	For devices with multiple channels, you can choose one or more channels for live view.
	Capture a picture.
	Start or stop recording.
	Adjust the volume of live view. Move the slider to right to turn up the volume and left to turn down the volume. Move to the left end to mute the live view.


Download Display Pictures

Click  and the device stores captured pictures to the browser cache. Hover the pointer over the icon to see the number of pictures in the cache. Click  again to download the pictures in a package.

Note

The browser cache has a limited size. The recommended number of pictures to download is no more than 200.

Layout

Click  and choose **Layout**. Check the display content you need to add it to the smart display page. When real-time analyze is selected, you can choose the contents you want to display.

Chapter 6 Video and Audio

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

6.1 Video Settings

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

Go to **Configuration** → **Video/Audio** → **Video** to start configuration.



- For device with multiple channels, select a channel before other settings.
 - For the device with two panoramic channels, you can copy most of the video settings from one to another by clicking **Copy to...** and select the target channel. Note that settings of H.264+, H.265+, and Video Type are not included.
-

6.1.1 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

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

6.1.2 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.

6.1.3 Resolution

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

6.1.4 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.

6.1.5 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.

6.1.6 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.

6.1.7 Video Encoding

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

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.

Note

When H.264+ is enabled, **Video Quality, I Frame Interval, Profile** and **SVC** are not configurable.

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+

H.265+ is an improved compression coding technology based on H.265. By enabling H.265+, you can estimate the HDD consumption by its maximum average bitrate. Compared to H.265, 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.

Note

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

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.

6.1.8 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.

6.1.9 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 to decode high quality video stream.

6.1.10 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.

6.1.11 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.

6.2 Image Stitching

You can set image stitching parameters for panoramic channels. This function varies for different device models.

Go to **Configuration** → **System** → **System Settings** → **Image Stitching** to set the image stitching parameters.

Video Output Mode

Different modes offer different maximum resolutions for the main stream.

In **Panorama View 32 MP**, the main stream maximum resolution of the panoramic channel is 8160×3616 .

In **Panorama View 8 MP**, the main stream maximum resolution of the panoramic channel is 4096×1800 .



Note

When **Panorama View 32 MP** is enabled:

- The people density and smart event are not supported.
- Due to the performance limitation, ordinary computers may not be able to live view two 32 MP panoramas at the same time.

Encoder Track

For the channel with extremely high resolution, the stream can be encoded into several tracks. Each track is decoded by one decoder chip. It is recommended to select **3**, when the decoder (for example, NVR) has comparatively low performance.



Note

- Third-party decoders may have compatibility issue when using the 3-track encoding.
- The encoder track setting should be consistent with the decoder settings.
- For some models, panoramic channel supports different types of main stream resolution under 1-track setting and 3-track setting. Go to **Configuration** → **Video/Audio** → **Video** to see which resolution types are supported.

Best Stitching Distance

The image area of the monitoring scene at the best stitching distance has the best stitching effect.

For example, if the best stitching distance is set to 30 meters, the scene 30 meters away from the lens has the best image stitching effect. The image stitching effect of scenes 20 or 40 meters away is relatively unsatisfying and that of scenes 10 or 50 meters away is even worse.

6.3 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** .

6.3.1 Audio Input

External audio pick-up device is available for audio input, and audio encoding and input volume are configurable.

Audio Encoding

The device offers several compression standard. Select according to your need.

Audio Input

LineIn is supported for external audio pick-up device.

Input volume

Adjust the volume of the audio input.

6.3.2 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.



6.4 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.

6.5 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.

6.5.1 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 → Video/Audio → ROI**.
2. Check **Enable**.
3. Select the channel No. according to your need.
4. Select **Stream Type**.
5. 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**.



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

6. Input the **Region Name** and **ROI Level**.
7. Click **Save**.



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

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

6.6 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.

Before You Start

This function is supported in smart events. Go to the **VCA Resource** page to enable **Smart Event**.

Steps

1. Go to **Configuration → Video/Audio → Display Info. on Stream**.
2. Check **Enable Dual-VCA**.
3. Click **Save**.

6.7 Target Cropping

You can crop the image, transmit and save only the images of the target area to save transmission bandwidth and storage. This function is only supported by panoramic channels.

Steps

1. Go to **Configuration → Video/Audio → Target Cropping** .
2. Check **Enable Target Cropping**.
3. Select a **Cropping Resolution**.

Cropping Resolution

Cropping resolution is the main stream resolution after target cropping.

A red frame appears in the live view.

4. Drag the frame to the target area.
5. Click **Save**.



Note

- The number of main stream encoder tracks of panoramic channel does not change after target cropping. Go to **Configuration → System → System Settings → Image Stitching** to see the number of encoder tracks.
 - All stream types of panoramic channel are unable to change resolution after enabling target cropping.
-

6.8 Display Settings

It offers the parameter settings to adjust image features.

Go to **Configuration → Image → Display Settings** and select a device channel to start configuration.

Synchronize Settings among Panoramic Channels

Enable **Panoramic Exposure Synchronization** to copy all display setting parameters of Camera 02 (the main panoramic channel) to Camera 03.



Note

- When you turn off the function, the display settings of the panoramic channels do not return to those before enabling the function.
 - The function is only supported by the models with two panoramic channels.
-

Restore Display Settings

Click **Default** to restore the display settings of the selected channel.



Note

For the models with two panoramic channels and the Panoramic Exposure Synchronization is on, restoring Camera 02 settings also affects those in Camera 03. Simply restoring Camera 03 is not allowed.

6.8.1 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**, **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.

Auto

The iris, shutter, and gain values are adjusted automatically. You can set maximum and minimum limits for iris and shutter.

Iris Priority

You need to set **Iris** according to the environment. The shutter and gain values are adjusted automatically.

Shutter Priority

You need to set **Shutter** manually according to the environment. The iris and gain values are adjusted automatically.

Manual

You need to set **Iris**, **Shutter**, and **Gain** manually.

Max./Min. Iris Limit

Max. and min. iris limits are used to set the range of iris value to suit different scenarios. For short-distance monitoring, increase the iris value. For long-distance monitoring, decrease the iris value.

Max./Min. Shutter Limit

Max. and min. shutter limits are used to set the range of shutter value to suit different scenarios. The faster the shutter speed is, the lower the exposure is, and the darker the image is.

Limit Gain

This feature is used to adjust gain of the image.

Slow Shutter

The higher the slow shutter level, the slower the shutter speed. It ensures full exposure in underexposure condition.

Sensor's Exposure Sync.

This function is only available for panoramic channels. Turn on this function to balance the exposure of all lens in a panoramic channel.

Focus

It offers options to adjust the focus mode and the minimum focus distance.

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.

Min. Focus Distance

When the distance between the scene and lens is shorter than the Min. Focus Distance, the lens does not focus.

Day/Night Switch

Day/Night Switch function can provide color images in the day mode and black/white images in the night mode. Switch mode is configurable.

Day

The image is always in color.

Night

The image is always black/white

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.



Day/Night Switch function varies according to models.

Set Supplement Light

Steps

1. Go to **Configuration** → **Maintenance** → **System Service** .
2. Check **Enable Supplement Light**.
3. Click **Save**.
4. Go to **Configuration** → **Image** → **Display Settings** → **Day/Night Switch** to set supplement light parameters.

Smart Supplement Light

This feature uses smart image processing technology to reduce overexposure caused by supplement light.

IR Light Mode

When the mode is set to **Auto**, the supplement light is automatically enabled or disabled according to the image brightness.

Brightness Limit

Adjust the upper limit of IR light power.

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.

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.

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.

Note

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

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.

White Balance

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

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.

OIS

OIS (Optical Image Stabilization) reduces the effects of vibration in a video in order to increase the stability of the video.

Normal

The camera enable OIS automatically, which can modify most unstable situations.

Expert

You can customize the level and sensitivity of OIS as needed.

6.8.2 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.

6.8.3 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.

6.8.4 Image Parameters Switch

The device automatically switches image parameters in set time periods.

Go to image parameters switch setting page: **Configuration** → **Image** → **Image Parameters Switch** , and set parameters as needed.

Set Link to Preset

You can set a preset to switch the image to a linked scene.

Steps

1. Check **Link to Preset**.
2. Select a preset.
3. Check and set a time period and a linked scene mode.
4. Click **Save**.

Set Scheduled-switch

Switch the image to the linked scene mode automatically in certain time periods.

Steps

1. Check **Scheduled-switch**.
2. Select and configure the corresponding time period and linked scene mode.



For Linked Scene configuration, refer to ***Scene Mode*** .

3. Click **Save**.

6.9 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** → **Image** → **OSD Settings** .

Select a channel.

Set the corresponding parameters, and click **Save** to take effect.

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**.

Chapter 7 Video Recording and Picture Capture

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

7.1 Storage Settings

This part introduces the configuration of several common storage paths.

7.1.1 Memory Card

You can view the capacity, free space, status, type, and property of the memory card. Encryption of memory card is supported to ensure data security.

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** → **Storage** → **Storage Management** → **HDD Management** .
2. Select the memory card.



If an **Unlock** button appears, you need to unlock the memory card first. See [***Detect Memory Card Status***](#) 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.



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**.

Set Encrypted Memory Card

Before You Start

- Insert an encrypted memory card to the device. For detailed installation, refer to *Quick Start Guide* of the device.
- You need to know the correct encryption password of the memory card.

Steps

1. Go to **Configuration** → **Storage** → **Storage Management** → **HDD Management** .
2. Select the memory card.



If an **Unlock** button appears, you need to unlock the memory card first. See [***Detect Memory Card Status***](#) for details.

3. Verify the encryption password.
 - 1) Click **Parity**.
 - 2) Enter the encryption password.
 - 3) Click **OK**.

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



If the encryption password is forgotten and you still want to use this memory card, see [***Set New or Unencrypted Memory Card***](#) to format and set the memory card. All existing contents will be removed.

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



- 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 [Set Arming Schedule](#) and [Linkage Method Settings](#) for details.
 5. Click **Save**.

7.1.2 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.

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. Click **Upload Picture** to enable uploading snapshots to the FTP server.
4. Click **Test** to verify the FTP server.
5. Click **Save**.

7.1.3 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**.

7.1.4 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



Caution

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.

Protocol Version	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**.

7.1.5 eMMC Protection

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



Note

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

Go to **Configuration → System → Maintenance → 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.

7.2 Video Recording

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

7.2.1 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. Select channel No.
3. Check **Enable**.
4. 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.

5. Set schedule for the selected record type. Refer to ***Set Arming Schedule*** for the setting operation.
6. 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.



Note

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.

7. Click **Save**.

7.2.2 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  to start recording. Click  to stop recording.

7.2.3 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. Select channel No.
3. Set search condition and click **Search**.

The matched video files showed on the timing bar.

4. Click ► to play the video files.
 - Click ✂ to clip video files.
 - Click 🖥 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.

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

Note

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

7.3 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.

7.3.1 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 **Set Arming Schedule** for configuring schedule time.
5. Click **Save**.

7.3.2 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  near the live view or play back window to capture a picture manually.

7.3.3 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. Select channel No.
3. Set search condition and click **Search**.
The matched pictures showed in the file list.
4. Select the pictures then click **Download** to download them.

Note

Go to **Configuration** → **Local** , click **Save snapshots when playback** to change the saving path of pictures.

Chapter 8 Event and Alarm

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

8.1 Basic Event

8.1.1 Set Motion Detection

This function detects moving objects in the detection region and trigger linkage actions.

Steps

1. Go to **Configuration** → **Event** → **Basic Event** → **Motion Detection** .
2. Select the channel No.
3. Check **Enable Motion Detection**.
4. **Optional:** (Only available in PTZ channel) Check **Enable Motion Detection in PTZ Control**, and the device detects moving targets in PTZ movement.
5. **Optional:** Highlight moving objects in green.
 - 1) Check **Enable Dynamic Analysis for Motion**.
 - 2) Go to **Configuration** → **Local** to enable **Rules**.
6. Select **Configuration Mode**. Normal mode and expert mode are selectable.
 - For the information about normal mode, see ***Normal Mode*** .
 - For the information about expert mode, see ***Expert Mode*** .
7. Set the arming schedule. See ***Set Arming Schedule*** for details.
8. Set linkage methods. See ***Linkage Method Settings*** for details.
9. Click **Save**.

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. Click **Draw Area**. Click and drag the mouse on the live video, then release the mouse to finish drawing one area.

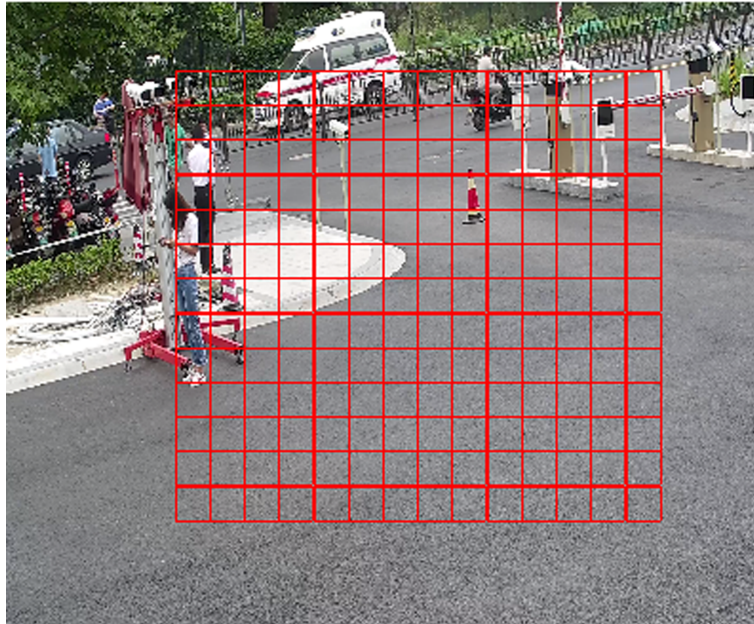


Figure 8-1 Set Rules

Stop Drawing Stop drawing one area.

Clear All Clear all the areas.

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

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.

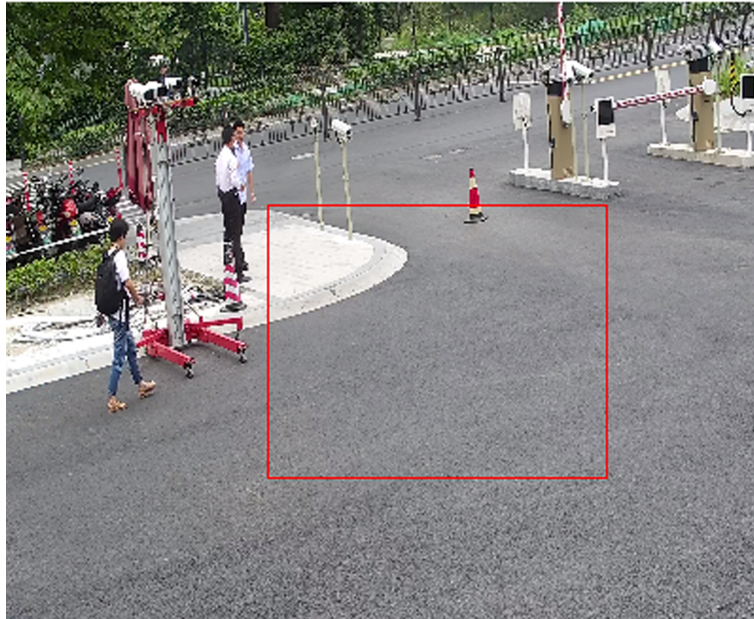


Figure 8-2 Set Rules

Stop Drawing Finish drawing one area.

Clear All Delete all the areas.

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

8.1.2 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. Select the channel number.
3. Check **Enable**.
4. Set the **Sensitivity**. The higher the value is, the easier to detect the area covering.
5. 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.

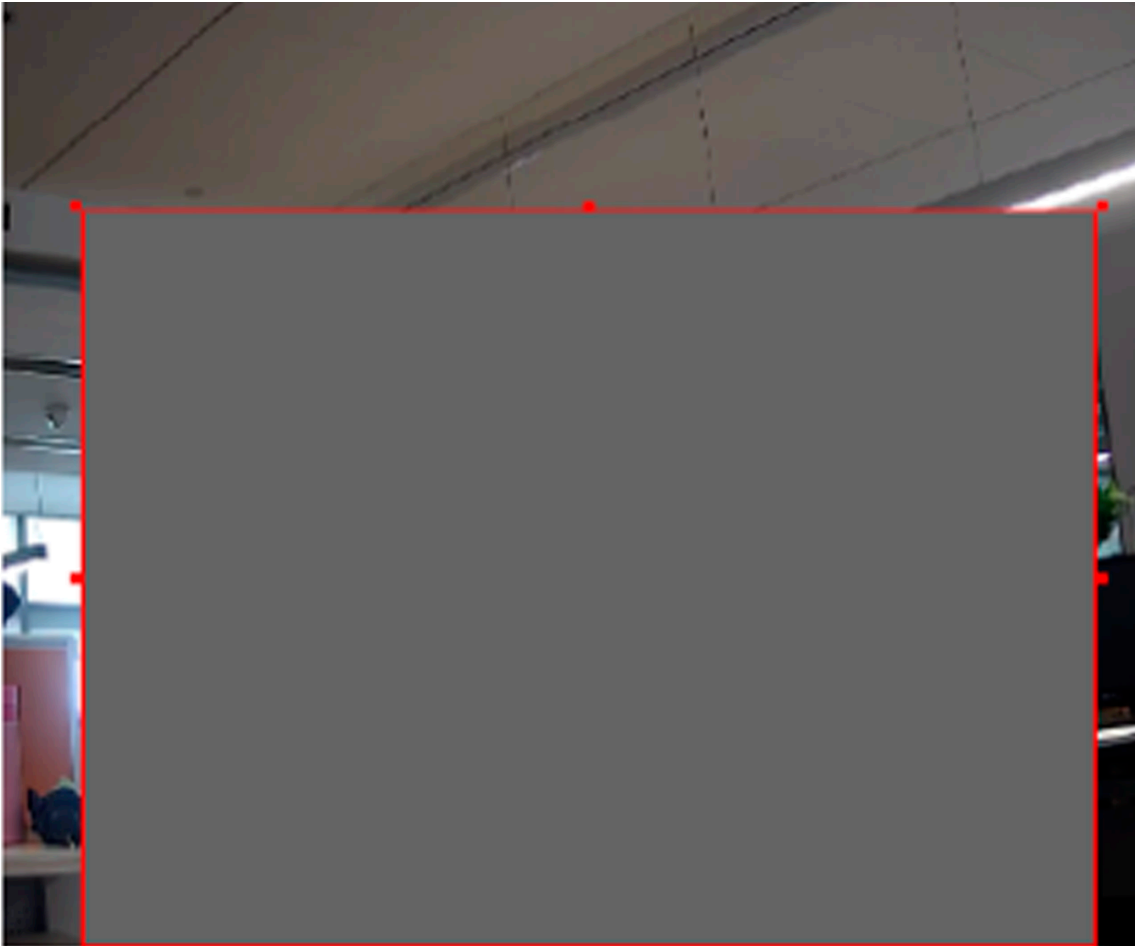


Figure 8-3 Set Video Tampering Area

6. Refer to ***Set Arming Schedule*** for setting scheduled time. Refer to ***Linkage Method Settings*** for setting linkage method.
7. Click **Save**.

8.1.3 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 Error	Error occurs in HDD.

Network Disconnected 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.

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

4. Click **Save**.

8.1.4 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 **Set Arming Schedule** for setting scheduled time. Refer to **Linkage Method Settings** for setting linkage method.

5. Click **Copy to...** to copy the settings to other alarm input channels.

6. Click **Save**.

8.2 Smart Event (PTZ Channel)

This part introduces the smart event configuration in PTZ channel (Camera 01).



Note

- You need to enable the smart event function of PTZ channel on **VCA Resource** page first to show the function configuration page.
 - The function varies according to different models.
-

8.2.1 Set Intrusion Detection

Intrusion detection detects the object movement of entering and loitering in a predefined area.

When intrusion occurs, the device takes linkage actions as response.

Steps

1. Go to **Configuration → Event → Smart Event → Intrusion Detection** .

2. Check **Enable**.

3. Optional: Click **Lock** to lock PTZ control to prevent the interruption from other PTZ related action during configuration.

Normally, the PTZ control is automatically locked when you enter the configuration interface. You can manually resume the lock when the countdown is over.

4. Adjust the live image to the desired scene by using PTZ control buttons.

5. Draw detection area.

1) Select a **Region No.**. Up to 4 regions can be set.

2) Click **Detection Area**.

3) Click on the live image to draw the boundaries of the detection area, and right click to complete drawing.

6. Set detection parameters.

Sensitivity	It stands for the sensitivity of detecting an target. The higher the value of sensitivity is, the more easily the target is detected.
Threshold	Threshold stands for the time of the target loitering in the region. If the time that she/he stays in the region exceeds the threshold, the alarm is triggered.
Detection Target	You can specify the object type, and the device only detects the selected type of objects.



Figure 8-4 Draw Area

7. Click **Save**.

8. Repeat above steps to set other detection areas.

9. Set arming schedule. See **Set Arming Schedule** .

10. Set linkage method. See **Linkage Method Settings** .

8.2.2 Set Line Crossing Detection

Line crossing detection is used to detect the object movement of crossing a predefined line. When it occurs, the device takes linkage actions as response.

Steps

1. Go to **Configuration → Event → Smart Event → Line Crossing Detection** .
2. Check **Enable**.
3. **Optional:** Click **Lock** to lock PTZ control to prevent the interruption from other PTZ related action during configuration.

Normally, the PTZ control is automatically locked when you enter the configuration interface. You can manually resume the lock when the countdown is over.

4. Adjust the live image to the desired scene by using PTZ control buttons.
5. Draw detection line.
 - 1) Select a **Line No.**. Up to 4 lines can be set in the scene.
 - 2) Click **Detection Area**.

A yellow line is displayed on live image.
 - 3) Click on the line, and drag its end points to adjust the length and position.
 - 4) Select the **Direction** for the detection line.

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 side A to side B can be detected.

B->A

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

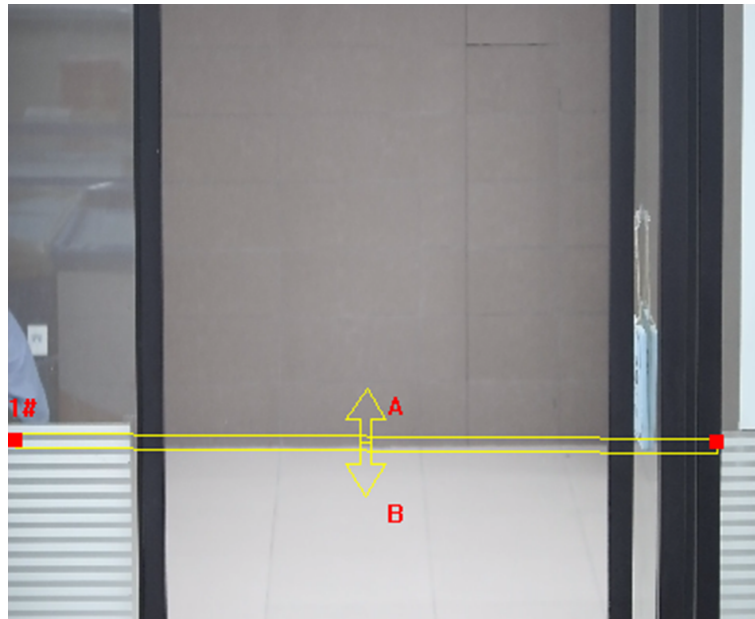


Figure 8-5 Draw Line

6. Set detection parameters.

Sensitivity	It stands for the sensitivity of detecting an target. The higher the value is, the more easily the target is detected.
Detection Target	You can specify the object type, and the device only detects the selected type of objects.

7. Click **Save**.

8. Repeat above steps to set other lines.

9. Set arming schedule. See [Set Arming Schedule](#) .

10. Set linkage method. See [Linkage Method Settings](#) .

8.2.3 Set Region Entrance Detection

Region entrance detection is used to detect the object movement of entering a predefined area. When it occurs, the device takes linkage actions as response.

Steps

1. Go to **Configuration** → **Event** → **Smart Event** → **Region Entrance Detection** .

2. Check **Enable**.

3. **Optional:** Click **Lock** to lock PTZ control to prevent the interruption from other PTZ related action during configuration.

Normally, the PTZ control is automatically locked when you enter the configuration interface.

You can manually resume the lock when the countdown is over.

4. Adjust the live image to the desired scene by using PTZ control buttons.

5. Draw detection area.

- 1) Select a **Region No.**. Up to 4 regions can be set.
- 2) Click **Detection Area**.
- 3) Click on the live image to draw the boundaries of the detection area, and right click to complete drawing.

6. Set detection parameters.

Sensitivity	It stands for the sensitivity of detecting an target. The higher the value is, the more easily the target is detected.
Detection Target	You can specify the object type, and the device only detects the selected type of objects.



Figure 8-6 Draw Area

7. Click **Save**.

8. Repeat above steps to set other regions.

9. Set arming schedule. See [Set Arming Schedule](#) .

10. Set linkage method. See [Linkage Method Settings](#) .

8.2.4 Set Region Exiting Detection

Region exiting detection is used to detect the objects movement of exiting from a predefined area. When it occurs, the device takes linkage actions as response.

Steps

1. Go to **Configuration** → **Event** → **Smart Event** → **Region Exiting Detection** .
2. Check **Enable**.

3. Optional: Click **Lock** to lock PTZ control to prevent the interruption from other PTZ related action during configuration.

Normally, the PTZ control is automatically locked when you enter the configuration interface. You can manually resume the lock when the countdown is over.

4. Adjust the live image to the desired scene by using PTZ control buttons.

5. Draw detection area.

1) Select a **Region No.**. Up to 4 regions can be set.

2) Click **Detection Area**.

3) Click on the live image to draw the boundaries of the detection area, and right click to complete drawing.

6. Set detection parameters.

Sensitivity It stands for the sensitivity of detecting an target. The higher the value is, the more easily the target is detected.

Detection Target You can specify the object type, and the device only detects the selected type of objects.



Figure 8-7 Draw Area

7. Click **Save**.

8. Repeat above steps to set other regions.

9. Set arming schedule. See **Set Arming Schedule** .

10. Set linkage method. See **Linkage Method Settings** .

8.2.5 Set Object Removal Detection

Object removal detection detects whether the objects are removed from the predefined detection area, such as exhibits on display. When it occurs, the device takes linkage actions as response.

Steps

1. Go to **Configuration → Event → Smart Event → Object Removal Detection** .
2. Check **Enable**.
3. **Optional:** Click **Lock** to lock PTZ control to prevent the interruption from other PTZ related action during configuration.

Normally, the PTZ control is automatically locked when you enter the configuration interface. You can manually resume the lock when the countdown is over.

4. Adjust the live image to the desired scene by using PTZ control buttons.
5. Draw detection area.
 - 1) Select a **Region No.**. Up to 4 regions can be set.
 - 2) Click **Detection Area**.
 - 3) Click on the live image to draw the boundaries of the detection area, and right click to complete drawing.
6. Set detection parameters.

Sensitivity The value of the sensitivity defines the size of the object which can trigger the alarm, when the sensitivity is high, a very small object can trigger the alarm.

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

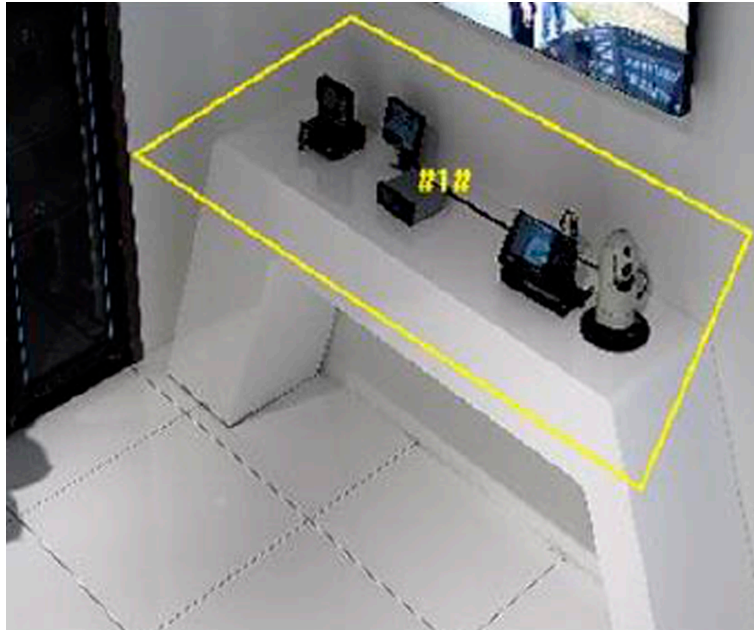


Figure 8-8 Draw Area

7. Click **Save**.
8. Repeat above steps to set other regions.
9. Set arming schedule. See [Set Arming Schedule](#) .
10. Set linkage method. See [Linkage Method Settings](#) .

8.2.6 Set Unattended Baggage Detection

Unattended baggage detection is used to detect the objects left over in the predefined area. Linkage methods are triggered after the object is left and stays in the area for a set time period.

Steps

1. Go to **Configuration → Event → Smart Event → Unattended Baggage Detection** .
2. Check **Enable**.
3. **Optional:** Click **Lock** to lock PTZ control to prevent the interruption from other PTZ related action during configuration.
Normally, the PTZ control is automatically locked when you enter the configuration interface. You can manually resume the lock when the countdown is over.
4. Adjust the live image to the desired scene by using PTZ control buttons.
5. Draw detection area.
 - 1) Select a **Region No.**. Up to 4 regions can be set.
 - 2) Click **Detection Area**.
 - 3) Click on the live image to draw the boundaries of the detection area, and right click to complete drawing.
6. Set detection parameters.

- Sensitivity** The value of the sensitivity defines the size of the object which can trigger the alarm, when the sensitivity is high, a very small object can trigger the alarm.
- Threshold** It stands for the time of the objects left in the area. Alarm is triggered after the object is left and stays in the area for the set time period.

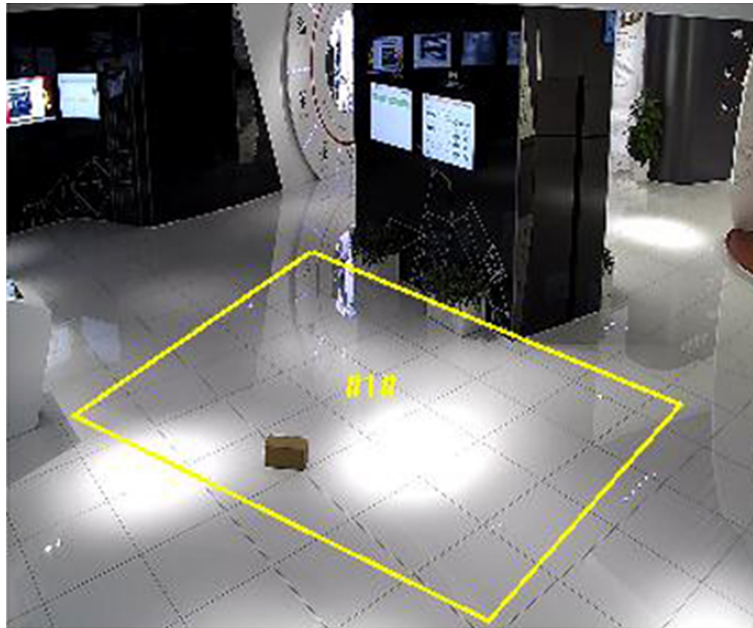


Figure 8-9 Draw Area

7. Click **Save**.
8. Repeat above steps to set other regions.
9. Set arming schedule. See [Set Arming Schedule](#) .
10. Set linkage method. See [Linkage Method Settings](#) .

8.3 Smart Event (Panoramic Channel)

This part introduces the smart event configuration in the panoramic channel (Camera 02 and Camera 03).

Note

- You need to enable the smart event function of Camera 02 or Camera 03 on **VCA Resource** page first to show the function configuration page.
 - Camera 03 may not be supported by some device models.
-

8.3.1 Set Smart Event Rules

Line crossing detection, intrusion detection, region entrance detection, and region exiting detection are available. Rules for each detection and the detection priority should be set separately.

Set Intrusion Detection

Intrusion detection detects the object movement of entering and loitering in a predefined area. When intrusion occurs, the device takes linkage actions as response.

Steps

1. Go to **Configuration** → **Event** → **Smart Event** → **Intrusion Detection** .
2. Select a device channel.



Only panoramic channels support the function.

3. Check **Enable**.
4. Draw detection area.
 - 1) Select a **Region No.**. Up to 4 regions can be set.
 - 2) Click **Detection Area**.
 - 3) Click on the live image to draw the boundaries of the detection area, and right click to complete drawing.
5. Set detection parameters.

Detection Target

You can specify the object type, and the device only detects the selected type of objects.

Sensitivity

It stands for the sensitivity of detecting an target. The higher the value of sensitivity is, the more easily the target is detected.

Threshold

Threshold stands for the time of the object loitering in the region. If the time that object stays in the region exceeds the threshold, the alarm is triggered.

Priority

It stands for the device response priority to the detections. When several perimeter detections happen at the same time and the device resources are limited to response to all, the one with higher priority level goes first.



For the model with 2 panoramic channels, the priority of the detections in Camera 02 is higher than all detections in Camera 03.



Figure 8-10 Draw Area

6. Click **Save**.
7. Repeat above steps to draw other regions.
8. Set arming schedule. See [Set Arming Schedule](#) .
9. Set linkage method. See [Linkage Method Settings](#) .

Set Line Crossing Detection

Line crossing detection is used to detect the object movement of crossing a predefined line. When it occurs, the device takes linkage actions as response.

Steps

1. Go to **Configuration** → **Event** → **Smart Event** → **Line Crossing Detection** .
2. Select a device channel.

Note

Only panoramic channels support the function.

3. Check **Enable**.
4. Draw detection line.
 - 1) Select a **Line No.**. Up to 4 lines can be set.
 - 2) Click **Detection Area**.

A yellow line is displayed on live image.
 - 3) Click on the line, and drag its end points to adjust the length and the position.
 - 4) Select the **Direction** for the detection line.

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 side A to side B can be detected.

B->A

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



Figure 8-11 Draw Line

5. Set detection parameters.

Detection Target

You can specify the object type, and the device only detects the selected type of objects.

Sensitivity

It stands for the sensitivity of detecting an target. The higher the value of sensitivity is, the more easily the target is detected.

Priority

It stands for the device response priority to the detections. When several perimeter detections happen at the same time and the device resources are limited to response to all, the one with higher priority level goes first.

Note

For the model with 2 panoramic channels, the priority of the detections in Camera 02 is higher than all detections in Camera 03.

6. Click **Save**.
7. Repeat above steps to set other lines.
8. Set arming schedule. See [Set Arming Schedule](#) .
9. Set linkage method. See [Linkage Method Settings](#) .

Set Region Entrance Detection

Region entrance detection is used to detect the object movement of entering a predefined area. When it occurs, the device takes linkage actions as response.

Steps

1. Go to **Configuration → Event → Smart Event → Region Entrance Detection** .
 2. Select a device channel.
-

Note

Only panoramic channels support the function.

3. Check **Enable**.
4. Draw detection area.
 - 1) Select a **Region No.**. Up to 4 regions can be set.
 - 2) Click **Detection Area**.
 - 3) Click on the live image to draw the boundaries of the detection area, and right click to complete drawing.
5. Set detection parameters.

Detection Target

You can specify the object type, and the device only detects the selected type of objects.

Priority

It stands for the device response priority to the detections. When several perimeter detections happen at the same time and the device resources are limited to response to all, the one with higher priority level goes first.

Note

For the model with 2 panoramic channels, the priority of the detections in Camera 02 is higher than all detections in Camera 03.



Figure 8-12 Draw Area

6. Click **Save**.
7. Repeat above steps to set other regions.
8. Set arming schedule. See ***Set Arming Schedule*** .
9. Set linkage method. See ***Linkage Method Settings*** .

Set Region Exiting Detection

Region exiting detection is used to detect the objects movement of exiting from a predefined area. When it occurs, the device takes linkage actions as response.

Steps

1. Go to **Configuration → Event → Smart Event → Region Exiting Detection** .
2. Select a device channel.

Note

Only panoramic channels support the function.

3. Check **Enable**.
4. Draw detection area.
 - 1) Select a **Region No.**. Up to 4 regions can be set.
 - 2) Click **Detection Area**.
 - 3) Click on the live image to draw the boundaries of the detection area, and right click to complete drawing.
5. Set detection parameters.

Detection Target

You can specify the object type, and the device only detects the selected type of objects.

Priority

It stands for the device response priority to the detections. When several perimeter detections happen at the same time and the device resources are limited to response to all, the one with higher priority level goes first.

Note

For the model with 2 panoramic channels, the priority of the detections in Camera 02 is higher than all detections in Camera 03.



Figure 8-13 Draw Area

6. Click **Save**.
7. Repeat above steps to set other regions.
8. Set arming schedule. See [Set Arming Schedule](#) .
9. Set linkage method. See [Linkage Method Settings](#) .

8.3.2 Advanced Parameters Configuration

Advanced parameters configurations offers options to optimize the detection performance.

You can set shield regions to block the detection to certain uninterested areas in the monitoring scenes. See [Set Shield Region](#) for the configuration.

For more accurate detection, you can set the size filter to narrow down the target group. See [Set Global Size Filter](#) for the configuration.



Note

The **Intrinsic Parameters** is reserved for professional personnel. You are not recommended to adjust the parameters.

Set Global Size Filter

Targets larger or smaller than the set size range are filtered out. The settings is valid for all perimeter detection rules.



Steps

1. Go to **Configuration → Event → Smart Event → Advanced Parameters Configuration** .
2. Check **Global Size Filter** to enable the filter.
3. Click  to draw a maximum size frame on live image.
4. Click  to draw a minimum size frame on live image.
5. Click **Save**.

Set Shield Region

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

Steps

1. Go to **Configuration → Event → Smart Event → Advanced Parameters Configuration** .
2. Click  to draw shield area. Repeat this step above to set more shield regions.
3. **Optional:** Click  to delete the drawn areas.
4. Click **Save**.

Chapter 9 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.

9.1 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**.

9.2 Linkage Method Settings

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

9.2.1 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 [Automatic Alarm](#) .

Manual Alarm For the information about the configuration, see [Manual Alarm](#) .

3. Click **Save**.

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**.

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.

9.2.2 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.

9.2.3 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 → Network → Basic Settings → 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 **TLS**, and disable **STARTTLS**, emails are sent after encrypted by TLS. The SMTP port should be set as 465.
 - When you select **TLS** and **Enable STARTTLS**, emails are sent after encrypted by STARTTLS, and the SMTP port should be set as 25.
-
-  **Note**
- 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**.

9.2.4 Notify Surveillance Center

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

9.2.5 Smart Tracking

Check **Smart Tracking**, and the device tracks the target when an alarm event is detected.

9.2.6 Trigger Recording

Check **Trigger Recording**, and the device records the video about the detected alarm event. For device with more than one camera channels, you can set one or more channels to take recordings if needed.

For recording settings, refer to **[Video Recording and Picture Capture](#)**

Chapter 10 Network Settings

10.1 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.



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.



Note

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

10.1.1 Multicast

Multicast is group communication where data transmission is addressed to a group of destination devices simultaneously.

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 as the multicast source.

Video Port

The video port of the selected stream.

Audio Port

The audio port of the selected stream.

10.1.2 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.

10.2 Port

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



Caution

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.



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.
-

10.3 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 **Port** 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**.

10.3.1 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.

10.3.2 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.

10.3.3 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 Servers** , 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.

108M Wireless Router
Model No.: TL-WR641G / TL-WR642G

- Status
- Quick Setup
- Basic Settings ---
- + Network
- + Wireless
- Advanced Settings ---
- + DHCP
- Forwarding
 - Virtual Servers
 - Port Triggering
 - DMZ
 - UPnP
- + Security
 - Static Routing
 - Dynamic DNS
- Maintenance ---
- + System Tools

Virtual Servers

ID	Service Port	IP Address	Protocol	Enable
1	80	192.168.10.23	ALL	<input checked="" type="checkbox"/>
2	8000	192.168.10.23	ALL	<input checked="" type="checkbox"/>
3	554	192.168.10.23	ALL	<input checked="" type="checkbox"/>
4	8200	192.168.10.23	ALL	<input checked="" type="checkbox"/>
5	81	192.168.10.24	ALL	<input checked="" type="checkbox"/>
6	8001	192.168.10.24	ALL	<input checked="" type="checkbox"/>
7	555	192.168.10.24	ALL	<input checked="" type="checkbox"/>
8	8201	192.168.10.24	ALL	<input checked="" type="checkbox"/>

Common Service Port: DNS(53) Copy to ID 1

Previous Next Clear All Save

Figure 10-1 Port Mapping on Router

Note

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.

10.4 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**.



Note

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**.

10.5 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.

10.6 Accessing via Mobile Client

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



Hik-Connect service should be supported by the camera.

10.6.1 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.
-

Note

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.

10.6.2 Set Up Hik-Connect

Steps

1. Get and install Hik-Connect application by the following ways.
 - Visit <https://appstore.hikvision.com> 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 <https://appstore.hikvision.com/static/help/index.html> to refer to the troubleshooting.
 - Visit <https://appstore.hikvision.com/>, 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.

10.6.3 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.
-

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 Next to start the Wi-Fi connection process. (Locate the camera within 3 meters from the router when setting up the Wi-Fi.)
Wired Connection	Connect the camera to the router with a network cable and tap Connected in the result interface.

Note

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.

10.7 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.
-

Note

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 **[Access to Device via Domain Name](#)** for detail information.

10.8 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.

Steps

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.

10.9 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.

10.10 Set Network Service

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

Steps



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**.



Complete certificate management before selecting server certificate. Refer to **Certificate Management** 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**.



- 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, TLS1.2 and TLS1.3. Enable one or more protocol versions according to your need.

Bonjour

Uncheck to disable the protocol.

3. Click **Save**.

10.11 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, HTTPS, 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. Select **Protocol**.



Note

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

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

10.12 TCP Acceleration

TCP acceleration is used to improve latency and reduce packet loss caused by network congestion in poor network condition, and guarantee the fluency of live view.

10.13 Traffic Shaping

Traffic shaping is used to shape and smooth video data packet before transmission.

It helps to improve latency and reduce packet loss caused by network congestion and ensure the video quality as well. Shaping level is configurable.

10.14 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**.

 **Note**

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

Chapter 11 System and Security

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

11.1 View Device Information

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

Enter **Configuration** → **System** → **System Settings** → **Basic Information** to view the device information.

11.2 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.



Note

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

11.3 Search and Manage Log

Log helps locate and troubleshoot problems.

Steps

1. Go to **Configuration** → **System** → **Maintenance** → **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.

11.4 Import and Export Configuration File

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

Steps

1. Export configuration file.
 - 1) Go to **Configuration → System → Maintenance → Upgrade & Maintenance** .
 - 2) Click **Device Parameters** and input the encryption password to export the current configuration file.
 - 3) Set the saving path to save the configuration file in local computer.
2. Import configuration file.
 - 1) Access the device that needs to be configured via web browser.
 - 2) Click **Browse** to select the saved configuration file.
 - 3) Input the encryption password you have set when exporting the configuration file.
 - 4) Click **Import**.

11.5 Export Diagnose Information

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

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

11.6 Reboot

You can reboot the device via browser.

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

11.7 Upgrade

Before You Start

You need to obtain the correct upgrade package.



Caution

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.

3. Click **Browse** to select the upgrade file.
4. Click **Upgrade**.

11.8 Undervoltage Alarm

It is used to monitor the device voltage and warns you when the voltage is alarmingly low.

When the device voltage is too low, a sign ⚡ appears in live view image. Then, you are recommended to optimize the power supply, so as to avoid device abnormal.

The function is on by default.

11.9 View Open Source Software License

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

11.10 Set Live View Connection

It controls the remote live view connection amount.

Live view connection controls the maximum live view that can be streamed at the same time.

Enter **Configuration** → **System** → **Maintenance** → **System Service** to set the upper limit of the remote connection number.

11.11 Time and Date

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

11.11.1 Synchronize Time Manually

Steps

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**.

11.11.2 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**.



Server Address is NTP server IP address.

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

11.11.3 Set DST

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

Steps

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

11.12 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 terminal 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**.

11.13 Security

You can improve system security by setting security parameters.

11.13.1 Authentication

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

Go to **Configuration** → **System** → **Security** → **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.



Note

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

11.13.2 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**.

11.13.3 Set MAC Address Filter

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

Steps

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

Forbidden MAC addresses in the list cannot access the device.

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

4. Edit the MAC address filter list.

Add Add a new MAC address to the list.

Modify Modify the selected MAC address in the list.

Delete Delete the selected MAC address in the list.

5. Click **Save**.

11.13.4 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**.
3. **Optional:** Check **HTTPS Browsing** to access the device only via HTTPS protocol.
4. Select a server certificate.

Note

- Complete certificate management before selecting server certificate. Refer to ***Certificate Management*** for detailed information.
- If the function is abnormal, check if the selected certificate is abnormal in **Certificate Management**.

5. Click **Save**.

11.13.5 Set QoS

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

Note

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

Steps

1. Go to **Configuration → Network → Advanced Configuration → QoS** .
2. 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**.

11.13.6 Set IEEE 802.1X

You can authenticate user permission of the connected device by setting IEEE 802.1X.

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

Select protocol and version according to router information. User name and password of server are required.

Note

- If you set the **Protocol** to **EAP-TLS**, select the **Client Certificate** and **CA Certificate**.
- If the function is abnormal, check if the selected certificate is abnormal in **Certificate Management**.

11.13.7 Security Audit Log

The security audit logs refer to the security operation logs. You can search and analyze the security log files of the device so as to find out the illegal intrusion and troubleshoot the security events.

Security audit logs can be saved on device internal storage. The log will be saved every half hour after device booting. Due to limited storage space, you can also save the logs on a log server.

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.

Set Log Server

The log server should support syslog (RFC 3164) over TLS.

Before You Start

- Install client and CA certificates before configuration. Refer to [Certificate Management](#) for detailed information.
- Select certificates according to the requirement of the log server. If two-way authentication is required, select the CA certificate and the client certificate. If one-way authentication is required, select the CA certificate only.

Steps

1. Check **Enable Log Upload Server**.
2. **Optional:** Check **Enable Encrypted Transmission** if you want the log data to be encrypted.
3. Input **Log Server IP** and **Log Server Port**.
4. **Optional:** Select client certificate.
5. Select CA certificate to the device.
6. Click **Test** to test the settings.
7. Click **Save**.

11.13.8 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.

11.13.9 SSH

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

The SSH function is disabled by default.



Caution

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

11.13.10 Certificate Management

It manages the server/client certificates and CA certificate of the device.

Server Certificate/Client Certificate



Note

The device has default self-signed server/client certificate installed. The certificate ID is **default**.

Create and Install Self-signed Certificate

Steps

1. Go to **Configuration** → **System** → **Security** → **Certificate Management** .
 2. Click **Create Self-signed Certificate**.
 3. Input certificate information.
-



Note

The input certificate ID cannot be the same as the existing ones.

4. Click **OK** to save and install the certificate.

The created certificate is displayed in the **Server/Client Certificate** list.

If the certificate is used by certain functions, the function name is shown in the column **Functions**.

5. **Optional**: Click **Certificate Property** to see the certificate details.

Install Self-signed Request Certificate

You can send the self-signed certificate to a trusted third-party for the signature, and install the certificate to the device.

Before You Start

Create a self-signed certificate first. See [*Create and Install Self-signed Certificate*](#) for instructions.

Steps

1. Go to **Configuration → System → Security → Certificate Management** .
2. Select a self-signed certificate from the Server/Client Certificate list.
3. Click **Create Certificate Request**.
4. Input request information.
5. Click **OK**.

The certificate request details are displayed in a pop-up window.

6. Copy the request content and save it as a request file.
7. Send the file to a trusted-third party for signature.
8. After receiving the certificated sent back from the third-party, install it to the device.
 - 1) Click **Import**.
 - 2) Input **Certificate ID**.



The input certificate ID cannot be the same as the existed ones.

-
- 3) Click **Browse** to select the certificate file.
 - 4) Select **Self-signed Request Certificate**.
 - 5) Click **OK**.

The imported certificate is displayed in the **Server/Client Certificate** list.

If the certificate is used by certain function, the function name is shown in the column **Functions**.

9. **Optional:** Click **Certificate Property** see the certificate details.

Install Other Authorized Certificate

If you already has an authorized certificate (not created by the device), you can import it to the device directly.

Steps

1. Go to **Configuration → System → Security → Certificate Management** .
2. Click **Import**.
3. Input **Certificate ID**.

Note

The input certificate ID cannot be the same as the existed ones.

4. Click **Browse** to select the certificate file.

5. Select **Certificate and Key** and select a **Key Type** according to your certificate.

Independent Key If your certificate has a independent key, select this option.
Browse to select the private key and input the private-key password.

PKCS#12 If your certificate has the key in the same certificate file, select this option and input the password.

6. Click **OK**.

The imported certificate is displayed in the **Server/Client Certificate** list.

If the certificate is used by certain function, the function name is shown in the column **Functions**.

Install CA Certificate

Before You Start

Prepare a CA certificate in advance.

Steps

1. Go to **Configuration** → **System** → **Security** → **Certificate Management** .

2. Input **Certificate ID**.

Note

The input certificate ID cannot be the same as the existing ones.

3. Click **Browse** to select the certificate file.

4. Click **OK**.

The imported certificate is displayed in the **CA Certificate** list.

If the certificate is used by certain functions, the function name is shown in the **Functions** column.

11.13.11 User and Account

Set User Account and Permission

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



Caution

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

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**.



Note

The administrator can add up to 31 user accounts.

3. Click **OK**.

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**.

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.

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.





See Far, Go Further