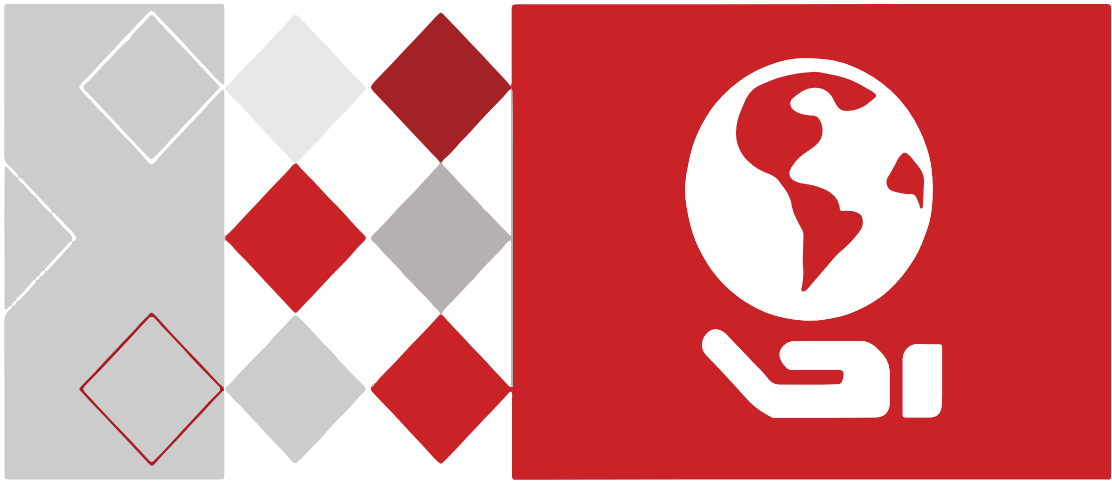
HIKVISION



DS-2CD2D21G0/M-D/NF
Pinhole and Covert Mini Network Cameras

User Manual

About this Manual

This Manual is applicable to the DS-2CD2D21G0/M-D/NF Pinhole and Covert Mini Network Cameras.

The Manual includes instructions for using and managing the product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version in the company Web site.

Please use this user manual under the guidance of professionals.

Legal Disclaimer

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, THE PRODUCT DESCRIBED, WITH ITS HARDWARE, SOFTWARE AND FIRMWARE, IS PROVIDED "AS IS", WITH ALL FAULTS AND ERRORS, AND OUR COMPANY MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY, SATISFACTORY QUALITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF THIRD PARTY. IN NO EVENT WILL OUR COMPANY, ITS DIRECTORS, OFFICERS, EMPLOYEES, OR AGENTS BE LIABLE TO YOU FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR INDIRECT DAMAGES, INCLUDING, AMONG OTHERS, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, OR LOSS OF DATA OR DOCUMENTATION, IN CONNECTION WITH THE USE OF THIS PRODUCT, EVEN IF OUR COMPANY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

REGARDING TO THE PRODUCT WITH INTERNET ACCESS, THE USE OF PRODUCT SHALL BE WHOLLY AT YOUR OWN RISKS. OUR COMPANY SHALL NOT TAKE ANY RESPONSIBILITIES FOR ABNORMAL OPERATION, PRIVACY LEAKAGE OR OTHER DAMAGES RESULTING FROM CYBER ATTACK, HACKER ATTACK, VIRUS INSPECTION, OR OTHER INTERNET SECURITY RISKS; HOWEVER, OUR COMPANY WILL PROVIDE TIMELY TECHNICAL SUPPORT IF REQUIRED.

SURVEILLANCE LAWS VARY BY JURISDICTION. PLEASE CHECK ALL RELEVANT LAWS IN YOUR JURISDICTION BEFORE USING THIS PRODUCT IN ORDER TO ENSURE THAT YOUR USE CONFORMS THE APPLICABLE LAW. OUR COMPANY SHALL NOT BE LIABLE IN THE EVENT THAT THIS PRODUCT IS USED WITH ILLEGITIMATE PURPOSES.

IN THE EVENT OF ANY CONFLICTS BETWEEN THIS MANUAL AND THE APPLICABLE LAW, THE LATER PREVAILS.

Notice:

If camera fails to synchronize local time with that of the network, you need to set up camera time manually. Visit the camera and enter system setting interface for time setting.

Safety Instruction

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

The precaution measure is divided into “Warnings” and “Cautions”:

Warnings: Serious injury or death may be caused if any of these warnings are neglected.

Cautions: Injury or equipment damage may be caused if any of these cautions are neglected.

WARNINGS! Follow these safeguards to prevent serious injury or death.	**CAUTIONS!** Follow these precautions to prevent potential injury or material damage.

WARNINGS

- Please use a power adapter that can meet the safety extra low voltage (SELV) standard. Source with 12 VDC or 24 VAC (depending on model) according to the IEC60950-1 and Limited Power Source standard.
- To reduce the risk of fire or electrical shock, do not expose this product to rain or moisture.
- This installation should be made by a qualified service person and should conform to all local codes.
- Please install blackout equipment into the power supply circuit to address supply interruption.
- Make sure that the ceiling can support more than 50 (N) Newton gravities if the camera is fixed to the ceiling.
- If the product does not work properly, please contact your dealer or the nearest service center. Never attempt to disassemble the camera yourself. (We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.)

CAUTIONS!

- Make sure the power supply voltage is correct before using the camera.
- Do not drop the camera or subject it to physical shock.
- Do not touch sensor modules with fingers. If cleaning is necessary, use a clean cloth with a bit of ethanol and wipe it gently. If the camera will not be used for an extended period of time, put on the lens cap to protect the sensor from dirt.
- Do not aim the camera lens at a strong light such as the sun or an incandescent lamp. A strong light can cause fatal damage to the camera.
- The sensor may be burned out by a laser beam, so when any laser equipment is being used, make sure that the surface of the sensor not be exposed to the laser beam.
- Do not place the camera in extremely hot or cold temperatures (refer to product specification for working temperature), dusty or damp environment, and do not expose it to high electromagnetic radiation.

- To avoid heat accumulation, ensure there is good ventilation to the device.
- Keep the camera away from water and any liquids.
- While shipping, pack the camera in its original, or equivalent, packing materials or packing of the same texture.
- Improper use or replacement of the battery may result in hazard of explosion. Please use the manufacturer recommended battery type.

NOTE: For cameras that support IR, you are required to pay attention to the following precautions to prevent IR reflection:

- Dust or grease on the dome cover will cause IR reflection. Please do not remove the dome cover film until the installation is finished. If there is dust or grease on the dome cover, clean the dome cover with a clean soft cloth and isopropyl alcohol.
- Make certain the installation location does not have reflective surfaces of objects too close to the camera. The IR light from the camera may reflect back into the lens, causing reflection.
- The foam ring around the lens must be seated flush against the inner surface of the bubble to isolate the lens from the IR LEDS. Fasten the dome cover to the camera body so that the foam ring and the dome cover are attached seamlessly.

Table of Contents

Chapter 1 General

1.1 System Requirement

1.1.1 Operating System

- Microsoft Windows XP SP1 and above version
- CPU: 2.0 GHz or higher
- RAM: 1 GB or higher
- Display: 1024 × 768 resolution or higher
- Web Browser (For cameras that supports plug-in free live view): Internet Explorer 8-11, Mozilla Firefox 30.0 and above version, and Google Chrome 41.0 and above version

  NOTES:
  - » *For Google Chrome 45 and above versions or Mozilla Firefox 52 and above versions that are plug-in free,* ***Picture*** *and* ***Playback*** *functions are hidden.*
  - » *To use mentioned functions via a Web browser, change to their lower version, or change to Internet Explorer 8.0 and above version.*
  - » *For cameras that do NOT support plug-in free live view, Internet Explorer 8 - 11, Mozilla Firefox 30.0 - 51, and Google Chrome 41.0 - 44.*

Chapter 2 Network Connection

NOTES:

» *You shall acknowledge that the use of the product with Internet access might be under network security risks. For avoidance of any network attacks and information leakage, please strengthen your own protection. If the product does not work properly, please contact with your dealer or the nearest service center.*

» *To ensure the network security of the network camera, we recommend you to have the network camera assessed and maintained periodically. You can contact us if you need such service.*

Before you start:

- If you want to set the network camera via a LAN (Local Area Network), please refer to *Section 2.1* ***Setting the Network Camera over the LAN***.
- If you want to set the network camera via a WAN (Wide Area Network), please refer to *Section 2.2* ***Setting the Network Camera over the WAN***.

2.1 Setting the Network Camera over a LAN

Purpose:
To view and configure the camera via a LAN, you need to connect the network camera in the same subnet as your computer, and install the SADP or Hik-Connect software to search and change the IP of the network camera.

NOTE: For detailed introduction to SADP, refer to Appendix 1.

2.1.1 Wiring over the LAN

The following figures show the two ways of cable connection of a network camera and a computer:

Purpose:

- To test the network camera, you can directly connect the network camera to the computer with a network cable as shown in Figure 2-1.
- Refer to the Figure 2-2 to set network camera over the LAN via a switch or a router.

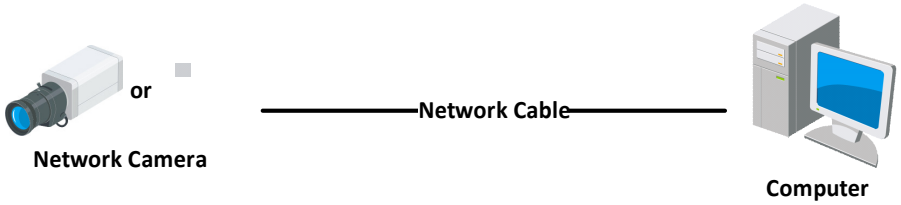


Figure 1, Connecting Directly

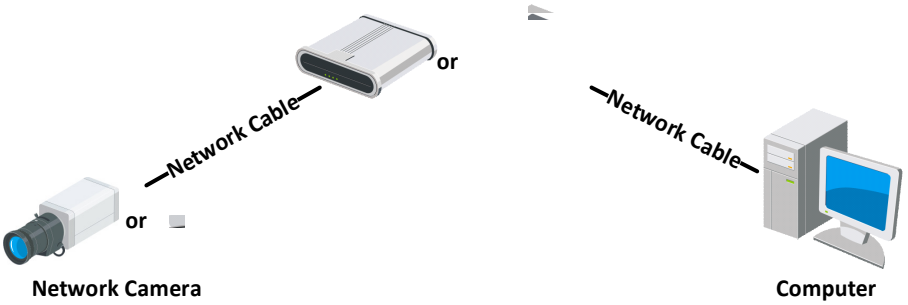


Figure 2, Connecting via a Switch or a Router

2.1.2 Activating the Camera

You are required to activate the camera first by setting a strong password for it before you can use the camera. Activation via Web Browser, Activation via SADP, and Activation via Client Software are all supported.

- **Activation via Web Browser**

1. Power on the camera, and connect the camera to the network.
2. Input the IP address into the address bar of the web browser, and click **Enter** to enter the activation interface.

   NOTES:
   - » *The default IP address of the camera is 192.168.1.64.*
   - » *The computer and the camera should belong to the same subnet.*
   - » *For cameras with DHCP enabled by default, use the SADP software to search for the IP address.*

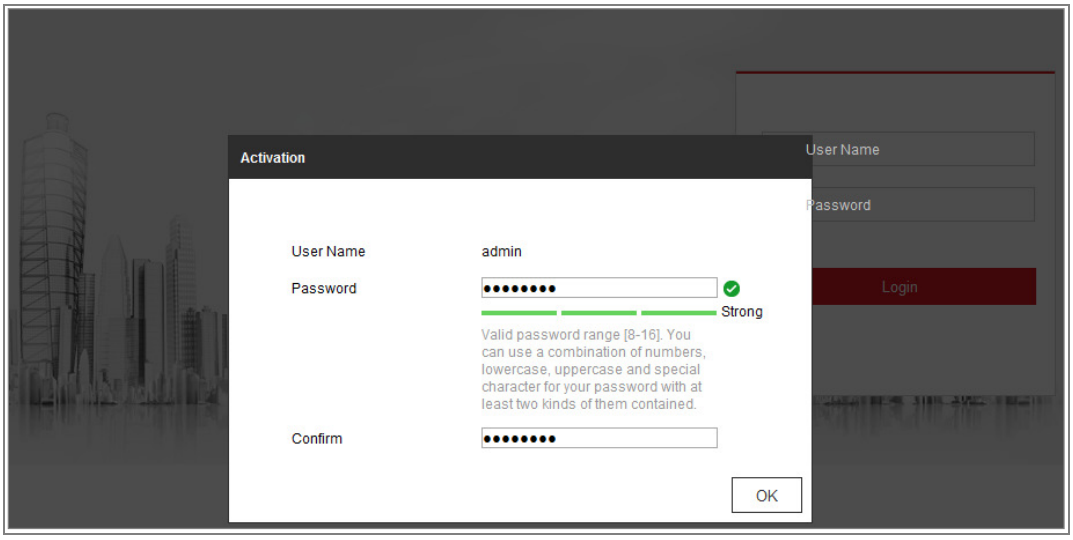


Figure 3, Activation via Web Browser

3. Create a password and input it into the password field. A password containing a user name is not allowed.

STRONG PASSWORD RECOMMENDED – We highly recommend that you create a strong password of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. We also recommend that you reset your password regularly. Especially high security systems, resetting the password monthly or weekly can better protect your product.

4. Confirm the password.

5. Click **OK** to save the password and enter the live view interface.

- **Activation via SADP Software**

SADP software is used for detecting the online device, activating the camera, and resetting the password.

Get the SADP software from the supplied disk or the official Web site, and install the SADP according to the prompts. Follow the steps to activate the camera.

1. Run the SADP software to search the online devices.

2. Check the device status from the device list, and select the inactive device.

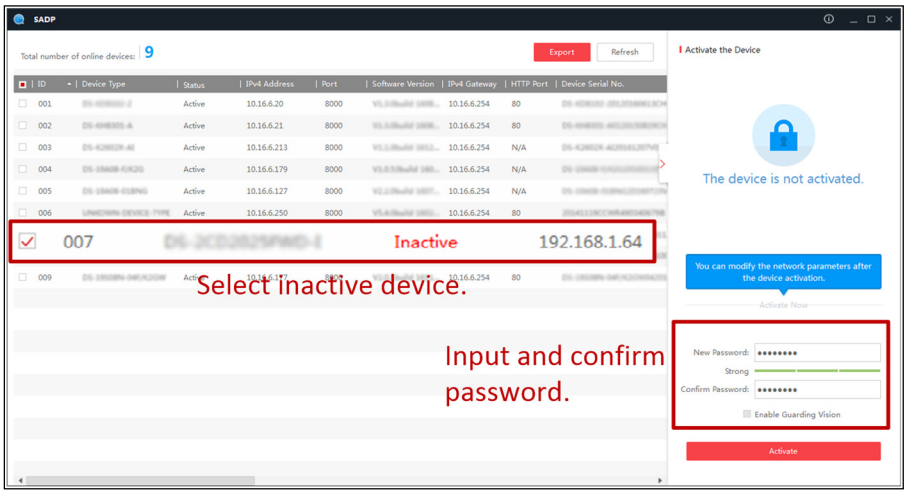


Figure 4, SADP Interface

NOTE: SADP software supports activating the camera in batches. See the SADP software user manual for details.

3. Create a password and input the password in the password field, and confirm the password. A password containing a user name is not allowed.

STRONG PASSWORD RECOMMENDED – We highly recommend that you create a strong password of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of

your product. We also recommend that you reset your password regularly. Especially in high security systems, resetting the password monthly or weekly can better protect your product.

NOTE: You can enable the Hik-Connect service for the device during activation.

4. Click Activate to save the password. You can check whether the activation is completed on the pop-up window. If activation failed, make sure that the password meets the requirement and try again.

5. Change the device IP address to the same subnet with your computer by either modifying the IP address manually or checking the Enable DHCP checkbox.

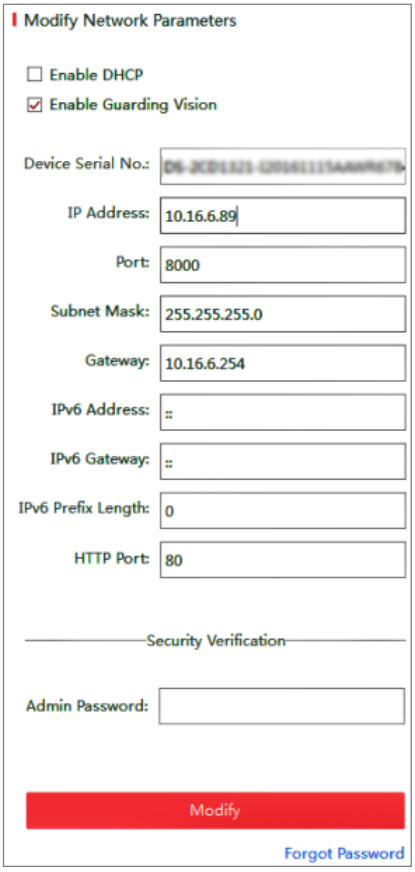


Figure 5, Modify the IP Address

6. Input the password and click the **Modify** button to activate your IP address modification. SADP supports batch IP address modification. Refer to the SADP user manual for details.

- **Activation via Client Software**

The client software is versatile video management software for multiple kinds of devices.

Get the client software from the supplied disk or the official Web site, and install the software according to the prompts. Follow the steps to activate the camera**.**

1. Run the client software and the control panel of the software pops up, as shown in the figure below.

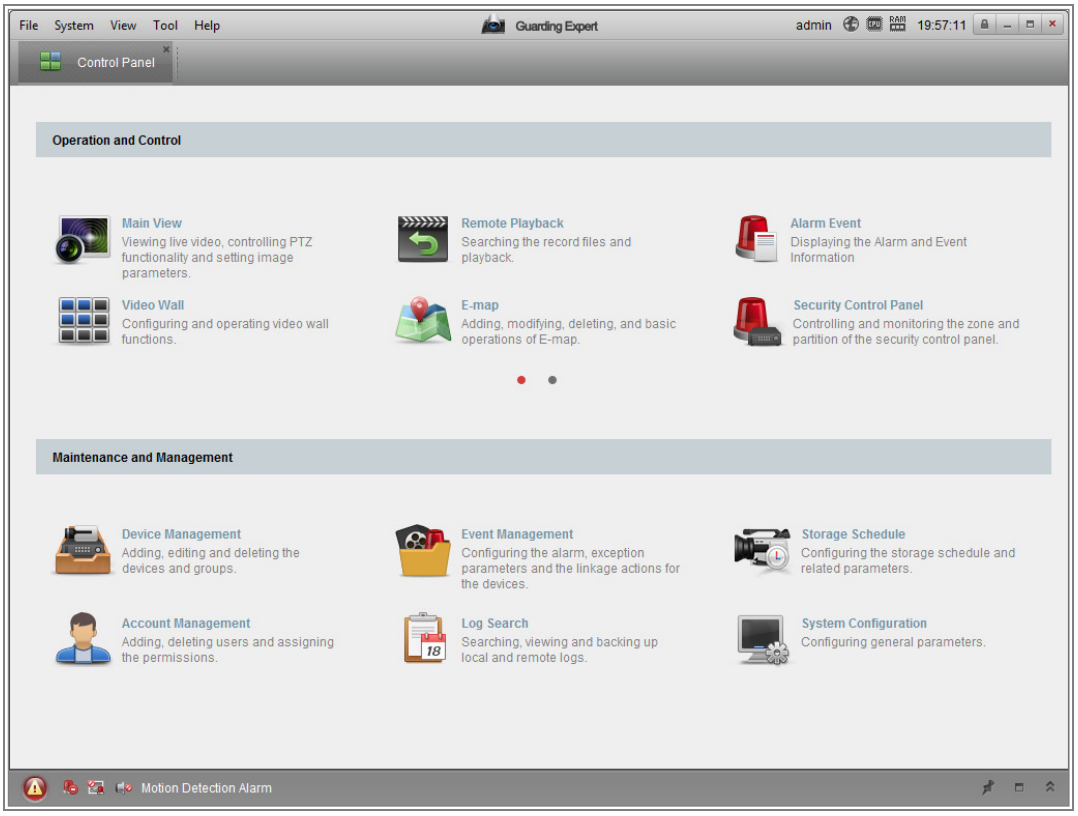


Figure 6, Control Panel

2. Click the **Device Management** icon to enter the Device Management interface, as shown in the figure below.

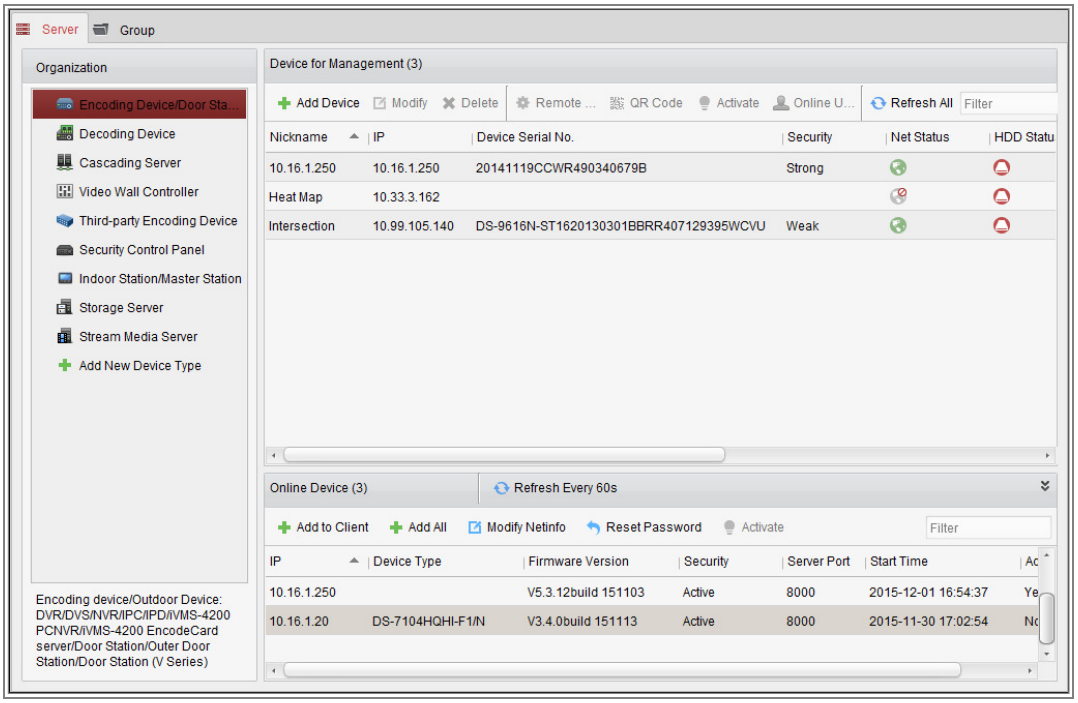


Figure 7, Device Management Interface

3. Check the device status from the device list, and select an inactive device.

4. Click the **Activate** button to pop up the Activation interface.

5. Create a password, input the password in the password field, and confirm the password. A password containing a user name is not allowed.

STRONG PASSWORD RECOMMENDED – We highly recommend that you create a strong password of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. We also recommend that you reset your password regularly. Especially in a high security system, resetting the password monthly or weekly can better protect your product.

Figure 8, Activation Interface (Client Software)

6. Click **OK** button to start activation.

7. Click the **Modify Netinfo** button to pop up the Network Parameter Modification interface, as shown in the figure below.

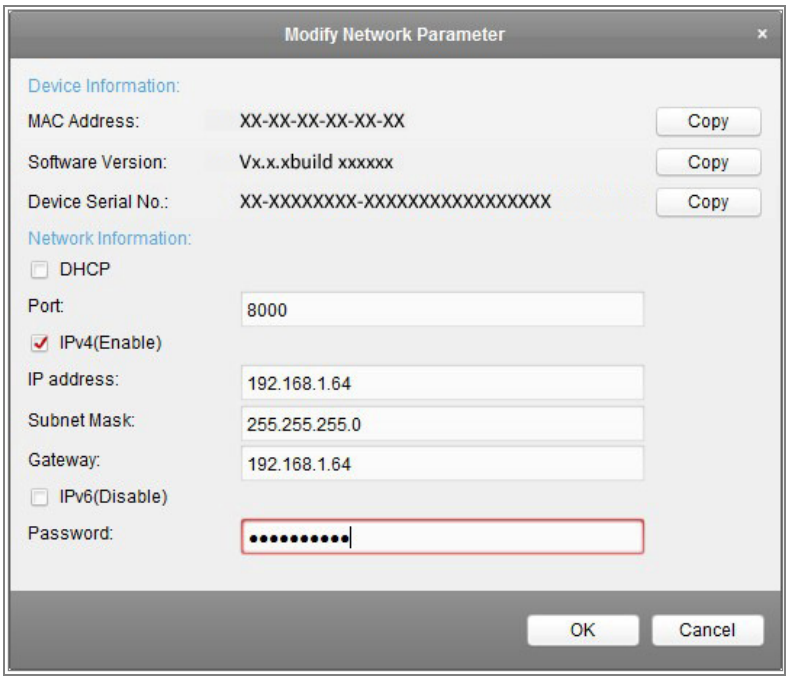


Figure 9, Modifying the Network Parameters

8. Change the device IP address to the same subnet as your computer by either modifying the IP address manually or checking the Enable DHCP checkbox.

9. Input the password to activate your IP address modification.

2.1.3 (Optional) Setting Security Question

A security question is used to reset the admin password when the admin user forgets the password.

The Admin user can follow the pop-up window to complete the security question settings during camera activation, or the admin user can go to the **User Management** interface to set up the function.

2.2 Setting the Network Camera over the WAN

Purpose:
This section explains how to connect the network camera to a WAN with a static IP or a dynamic IP.

2.2.1 Static IP Connection

Before you start:
Please apply a static IP from an ISP (Internet Service Provider). With the static IP address, you can connect the network camera via a router or connect it to the WAN directly.

- **Connecting the Network Camera via a Router**

1. Connect the network camera to the router.
2. Assign a LAN IP address, the subnet mask and the gateway. Refer to Section 2.1.2 for detailed IP address configuration of the network camera.
3. Save the static IP in the router.
4. Set port mapping, e.g., 80, 8000, and 554 ports. The steps for port mapping vary according to the different routers. Please call the router manufacturer for assistance with port mapping.

   NOTE: Refer to Appendix 2 for detailed information about port mapping.
5. Visit the network camera through a Web browser or the client software over the Internet.

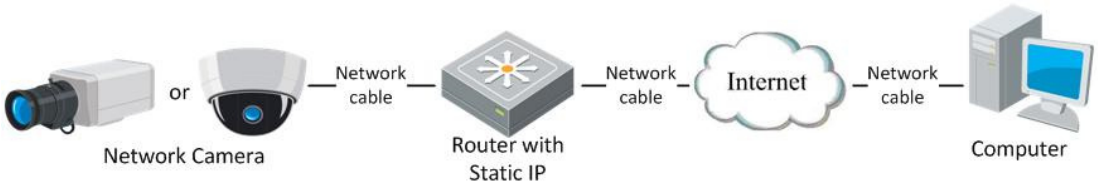


Figure 10, Accessing the Camera through Router with Static IP

- **Connecting the Network Camera with Static IP Directly**

You can also save the static IP in the camera and directly connect it to the Internet without using a router. Refer to Section 2.1.2 for detailed IP address configuration of the network camera.

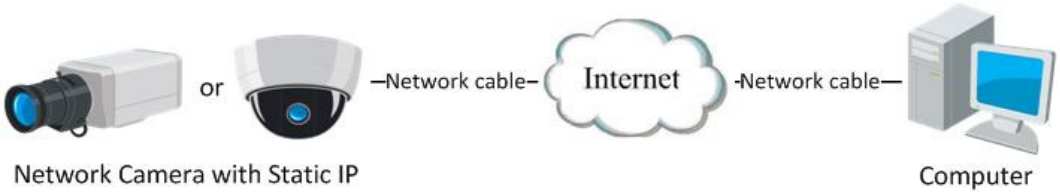


Figure 11, Accessing the Camera with Static IP Directly

2.2.2 Dynamic IP Connection

Before you start:
Please apply for a dynamic IP from an ISP. With a dynamic IP address, you can connect the network camera to a modem or a router.

- **Connecting the Network Camera via a Router**

1. Connect the network camera to the router.
2. In the camera, assign a LAN IP address, the subnet mask, and the gateway. Refer to Section 2.1.2 for detailed IP address configuration of the network camera.

3. In the router, set the PPPoE user name, password and confirm the password.
4. Set port mapping. E.g., 80, 8000, and 554 ports. The steps for port mapping vary depending on different routers. Please call the router manufacturer for assistance with port mapping.

   NOTE: Refer to Appendix 2 for detailed information about port mapping.
5. Apply a domain name from a domain name provider.
6. Configure the DDNS settings in the setting interface of the router.
7. Visit the camera via the applied domain name.

- **Connecting the Network Camera via a Modem**

This camera supports the PPPoE auto dial-up function. The camera gets a public IP address by ADSL dial-up after the camera is connected to a modem. You need to configure the PPPoE parameters of the network camera. Refer to *Section 7.1.3* ***Configuring PPPoE Settings*** for detailed configuration.

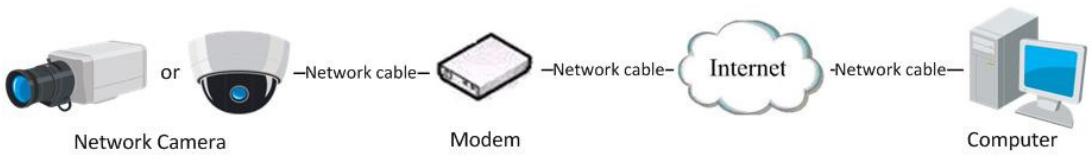


Figure 12, Accessing the Camera with Dynamic IP

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 a dynamic IP, you need to get a domain name from the DDNS provider (e.g., DynDns.com). Please follow the steps below for normal domain name resolution and private domain name resolution to solve the problem.

- **Normal Domain Name Resolution**

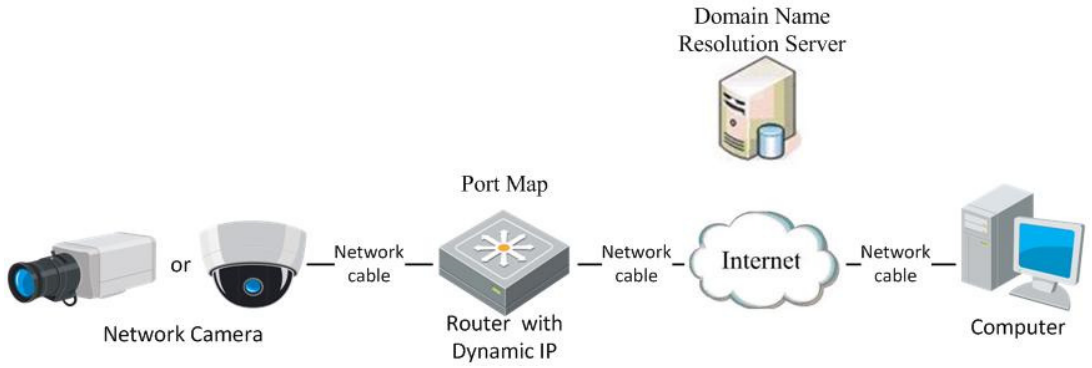


Figure 13, Normal Domain Name Resolution

1. Apply a domain name from a domain name provider.

2. Configure the DDNS settings in the **DDNS Settings** interface of the network camera. Refer to *Section 7.1.2* ***Configuring DDNS Settings*** for detailed configuration.

3. Visit the camera via the applied domain name.

Chapter 3 Access to the Network Camera

3.1 Accessing by Web Browsers

NOTES:

» *For certain camera models, HTTPS is enabled by default and the camera creates an unsigned certificate automatically. When you access to the camera the first time, the web browser prompts a notification about the certificate issue.*

» *To cancel the notification, install a signed-certificate to the camera. For detailed operation, see 7.2.6 HTTPS Settings.*

1. Open the Web browser.

2. In the browser address bar, input the IP address of the network camera, and press the Enter key to enter the login interface.

   NOTE: The default IP address is 192.168.1.64. You are recommended to change the IP address to the same subnet as your computer.

3. Input the user name and password and click Login.

   NOTE:

   » *The admin user should configure the device accounts and user/operator permissions properly. Delete unnecessary accounts and user/operator permissions.*

   » *The IP address locks if the admin user performs seven failed password attempts (five attempts for the user/operator).*

Figure 14, Login Interface

4. Click **Login**.

5. (Optional) Install the plug-in before viewing the live video and operating the camera. Follow the installation prompts to install the plug-in

   NOTE: For cameras that support plug-in free live view, if you are using Google Chrome v45 or above or Mozilla Firefox v52 or above, plug-in installation is not required, but Picture and Playback functions are hidden. To use these functions via a Web browser, change to their lower version, or use Internet Explorer v8.0 or above.

3.2 Accessing by Client Software

The product CD contains Hik-Connect client software. You can view live video and manage the camera with the software.

Follow the installation prompts to install the software. The control panel and live view interface of Hik-Connect client software are shown as below.

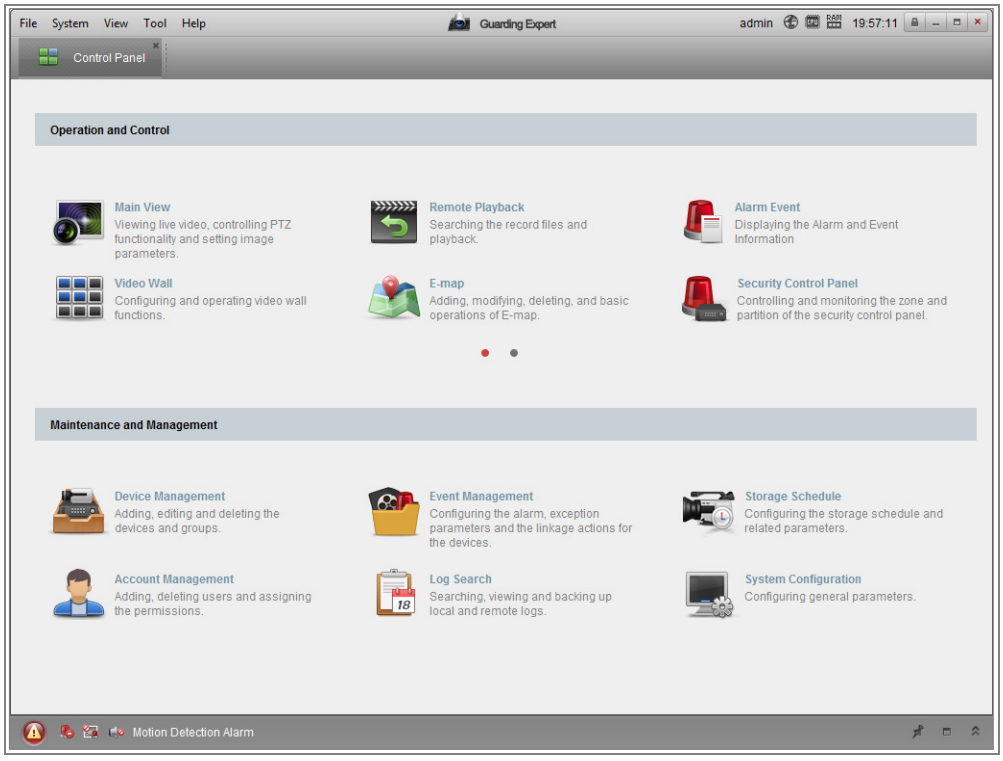


Figure 15, Hik-Connect Control Panel

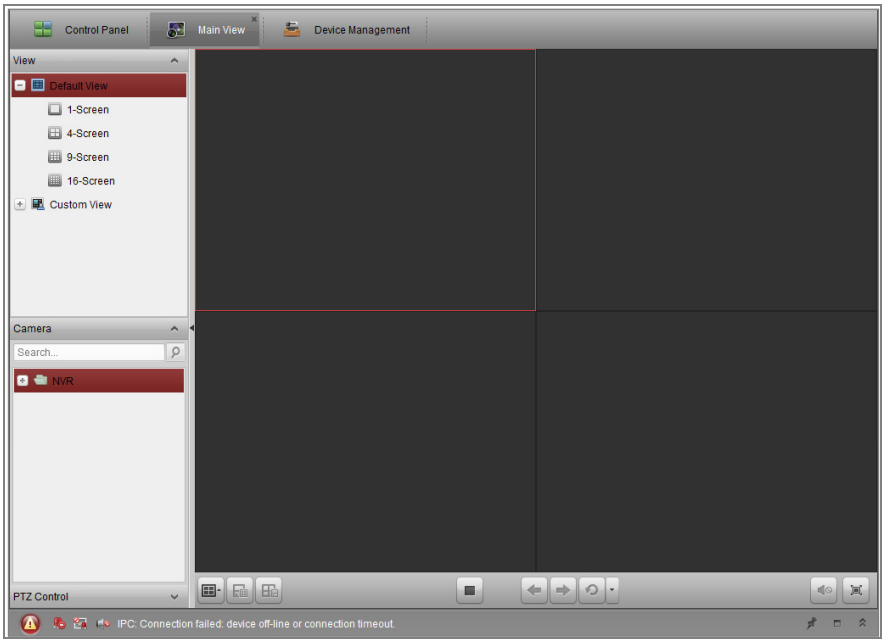


Figure 16, Hik-Connect Main View

Chapter 4 Wi-Fi Settings

Purpose:
By connecting to the wireless network, you don't need to use cables of any kind for a network connection, which is very convenient for the actual surveillance application.

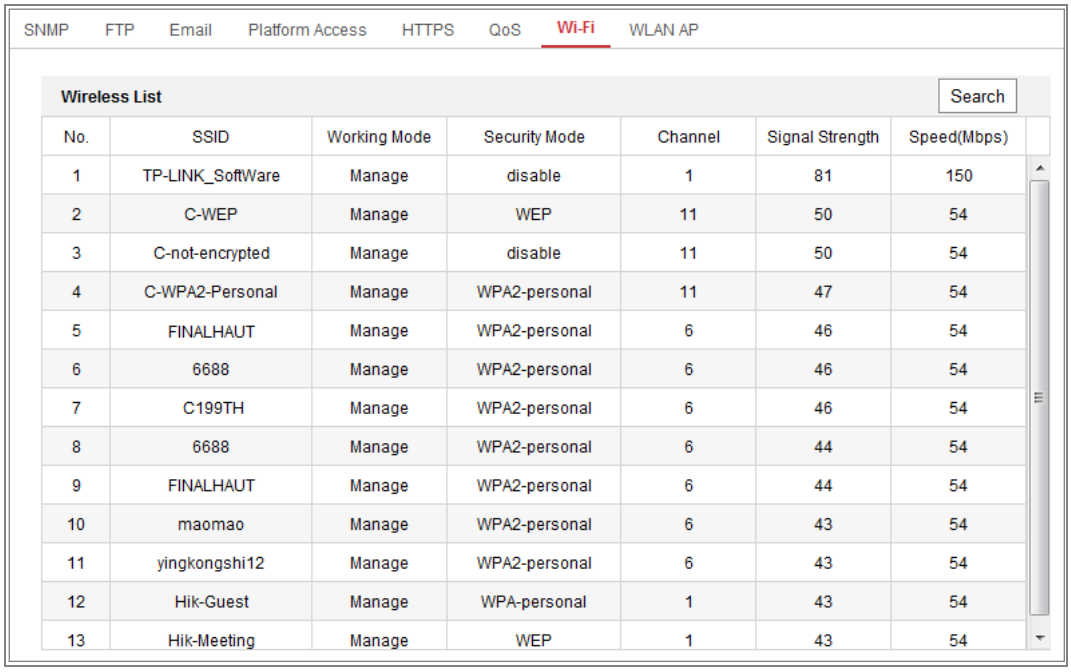
NOTE: This chapter is only for cameras with a built-in Wi-Fi module.

4.1 Configuring Wi-Fi Connection in Manage and Ad-hoc Modes

Purpose:
Two connection modes are supported. Choose a mode as desired and perform the steps to configure the Wi-Fi.

- **Wireless Connection in Manage Mode**

1. Enter the Wi-Fi configuration interface, **Configuration > Network > Advanced Settings > Wi-Fi**.
2. Click **Search** to search the online wireless connections.



No.	SSID	Working Mode	Security Mode	Channel	Signal Strength	Speed(Mbps)
1	TP-LINK_SoftWare	Manage	disable	1	81	150
2	C-WEP	Manage	WEP	11	50	54
3	C-not-encrypted	Manage	disable	11	50	54
4	C-WPA2-Personal	Manage	WPA2-personal	11	47	54
5	FINALHAUT	Manage	WPA2-personal	6	46	54
6	6688	Manage	WPA2-personal	6	46	54
7	C199TH	Manage	WPA2-personal	6	46	54
8	6688	Manage	WPA2-personal	6	44	54
9	FINALHAUT	Manage	WPA2-personal	6	44	54
10	maomao	Manage	WPA2-personal	6	43	54
11	yingkongshi12	Manage	WPA2-personal	6	43	54
12	Hik-Guest	Manage	WPA-personal	1	43	54
13	Hik-Meeting	Manage	WEP	1	43	54

Figure 17, Wi-Fi List

3. Click to choose a wireless connection on the list.

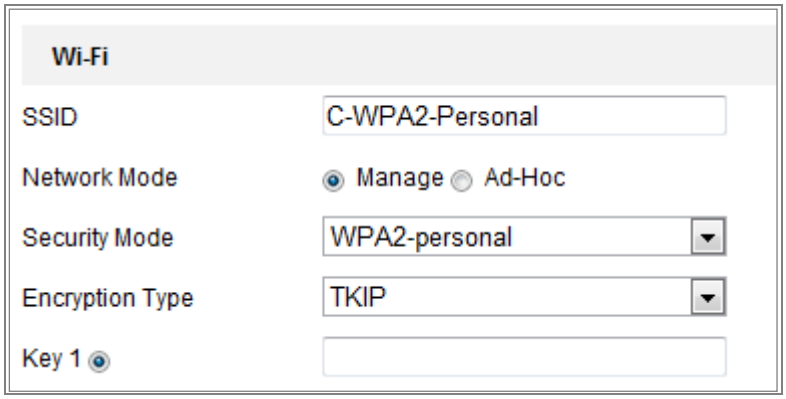


Figure 18, Wi-Fi Setting, Manage Mode

4. Check the radio button to select the *Network mode* as *Manage,* and the *Security mode* of the network is automatically shown when you select the wireless network, please don't change it manually.

NOTE: These parameters are identical to those in the router.

5. Enter the key to connect the wireless network. The key should be that of the wireless network connection you set on the router.

- **Wireless Connection in Ad-hoc Mode**

If you choose the Ad-hoc mode, you don't need to connect the wireless camera via a router. The scenario is the same as connecting the camera and the PC directly with a network cable.

1. Choose Ad-hoc mode.

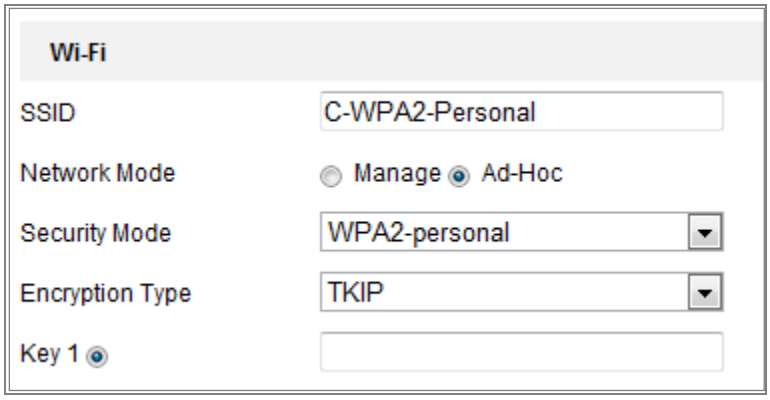


Figure 19, Wi-Fi Setting, Ad-hoc

2. Customize an SSID for the camera.
3. Choose the Security Mode of the wireless connection.
4. Enable the wireless connection function for your PC.
5. On the PC side, search the network and you can see the SSID of the camera listed.

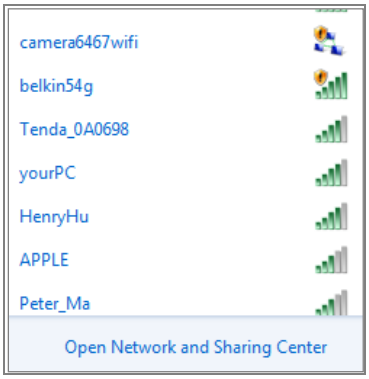


Figure 20, Ad-hoc Connection Point

6. Choose the SSID and connect.

- **Security Mode Description**

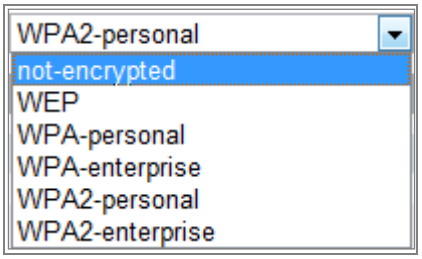


Figure 21, Security Mode

You can choose the Security Mode as not-encrypted, WEP, WPA-personal, WPA-enterprise, WPA2-personal, and WPA2-enterprise.

- **WEP Mode**

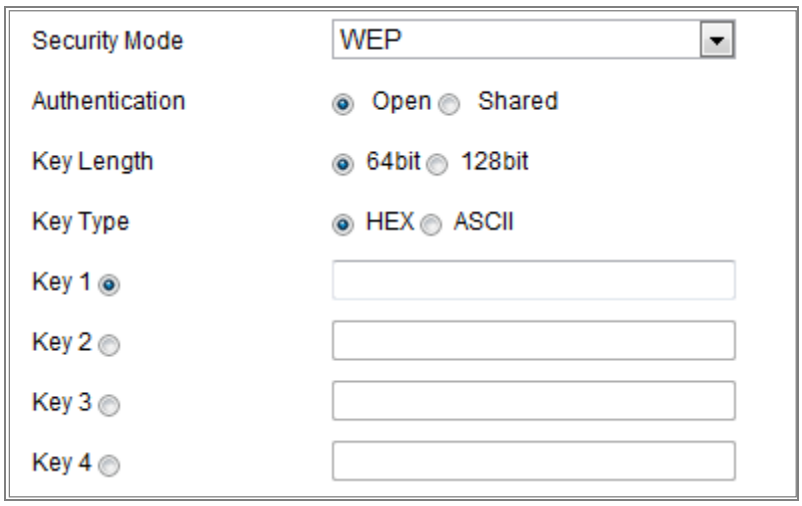


Figure 22, WEP Mode

> **Authentication**: Select Open or Shared Key System Authentication, depending on the method used by your access point. Not all access points have this option, in which case they probably use Open System, which is sometimes known as SSID Authentication.

> **Key Length:** This sets the length of the key used for the wireless encryption, 64 or 128 bits. The encryption key length can sometimes be shown as 40/64 and 104/128.

> **Key Type:** The key types available depend on the access point being used. The following options are available:

HEX — Allows you to manually enter the hex key

ASCII — In this method the string must be exactly five characters for 64-bit WEP and 13 characters for 128-bit WEP

WPA-personal and WPA2-personal Mode — Enter the required pre-shared key for the access point, which can be a hexadecimal number or a passphrase.

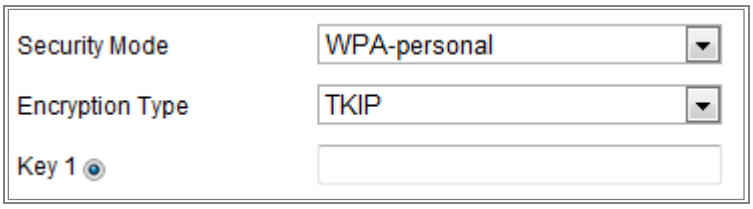


Figure 23, Security Mode, WPA-personal

WPA-enterprise and WPA2-enterprise Mode — Choose the type of client/server authentication being used by the access point; EAP-TLS or EAP-PEAP.

EAP-TLS

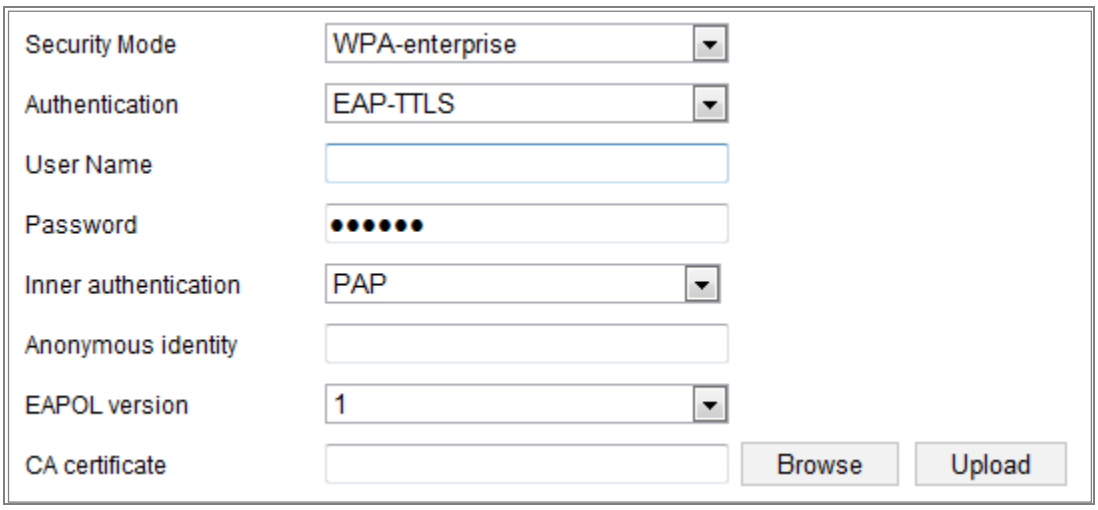


Figure 24, EAP-TLS

- **Identity** — Enter the user ID to present to the network.
- **Private Key Password** — Enter the password for your user ID.
- **EAPOL Version** — Select the version used (1 or 2) in your access point.
- **CA Certificates** — Upload a CA certificate to present to the access point for authentication.

EAP-PEAP:

- **User Name** — Enter the user name to present to the network
- **Password** — Enter the password of the network
- **PEAP Version** — Select the PEAP version used at the access point.
- **Label** — Select the label used by the access point.
- **EAPOL Version** — Select version (1 or 2) depending on the version used at the access point
- **CA Certificates** — Upload a CA certificate to present to the access point for authentication

CAUTION!

For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers and special characters) in order to increase the security of your product.

Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

4.2 Easy Wi-Fi Connection with WPS function

Purpose:
The setting of the wireless network connection is never easy. To avoid the complex setting of the wireless connection you can enable the WPS function.

WPS (Wi-Fi Protected Setup) refers to the easy configuration of the encrypted connection between the device and the wireless router. The WPS makes it easy to add new devices to an existing network without entering long passphrases. There are two modes of the WPS connection, the PBC mode and the PIN mode.

NOTE: If you enable the WPS function, you do not need to configure the parameters such as the encryption type, and you don't need to know the key of the wireless connection.

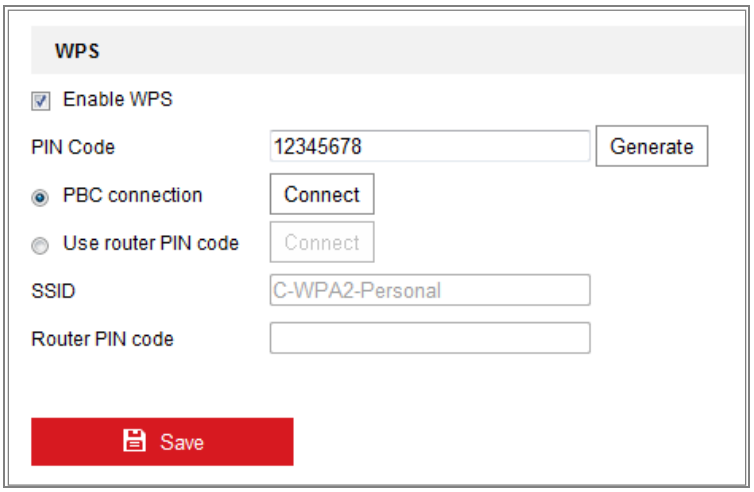


Figure 25, Wi-Fi Settings, WPS

- **PBC Mode**

PBC refers to the Push-Button-Configuration, in which the user simply has to push a button, either an actual or virtual one (as the Connect button on the configuration interface of the IE browser), on both the Access Point (and a registrar of the network) and the new wireless client device.

1. Check the **Enable WPS** checkbox to enable WPS.
2. Choose the connection mode as **PBC**.

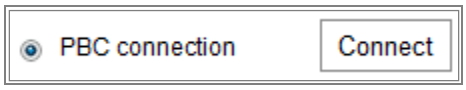


Figure 26, PBC Connection

NOTE: Support of this mode is mandatory for both the Access Points and the connecting devices.

3. Check on the Wi-Fi router to see if there is a WPS button. If yes, push the button and the indicator near the button will start flashing, which means the WPS function of the router is enabled. For detailed operation, please see the user guide of the router.
4. Push the WPS button to enable the function on the camera. If there is no WPS button on the camera, you can also click the virtual button to enable the PBC function on the Web interface.
5. Click **Connect** button. When PBC mode is both enabled in the router and the camera, the camera and the wireless network connect automatically.

- **PIN Mode**

The PIN mode requires a Personal Identification Number (PIN) to be read from either a sticker or the display on the new wireless device. This PIN must then be entered to connect the network, usually the Access Point of the network.

1. Choose a wireless connection on the list, and the SSID is loaded automatically.

2. Choose Use Route PIN code.

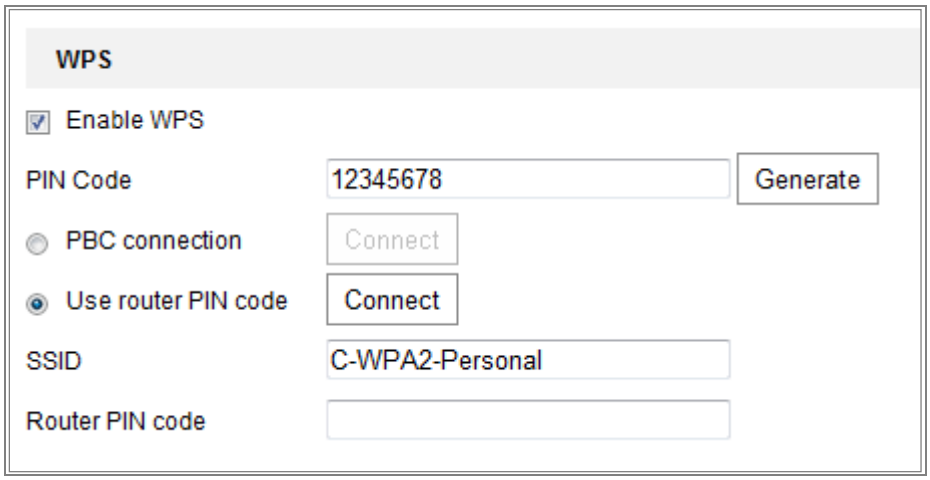


Figure 27, Use PIN Code

If the PIN code is generated from the router side, enter the PIN code you get from the router side in the **Router PIN code** field.

3. Click **Connect** or generate the PIN code on the camera side. The expired time for the PIN code is 120 seconds.

   A. Click Generate.

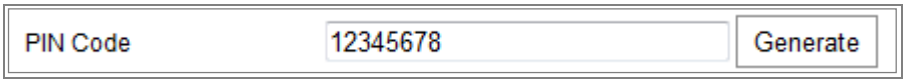


Figure 28, PIN Code

   B. Enter the code to the router. In the example, enter 48167581 into the router.

4.3 IP Property Settings for Wireless Network Connection

The default IP address of a wireless network interface controller is 192.168.1.64. When you connect the wireless network you can change the default IP.

1. Enter the TCP/IP configuration interface, **Configuration > Network > Basic Settings > TCP/IP**.

2. Select the **Wlan** tab.

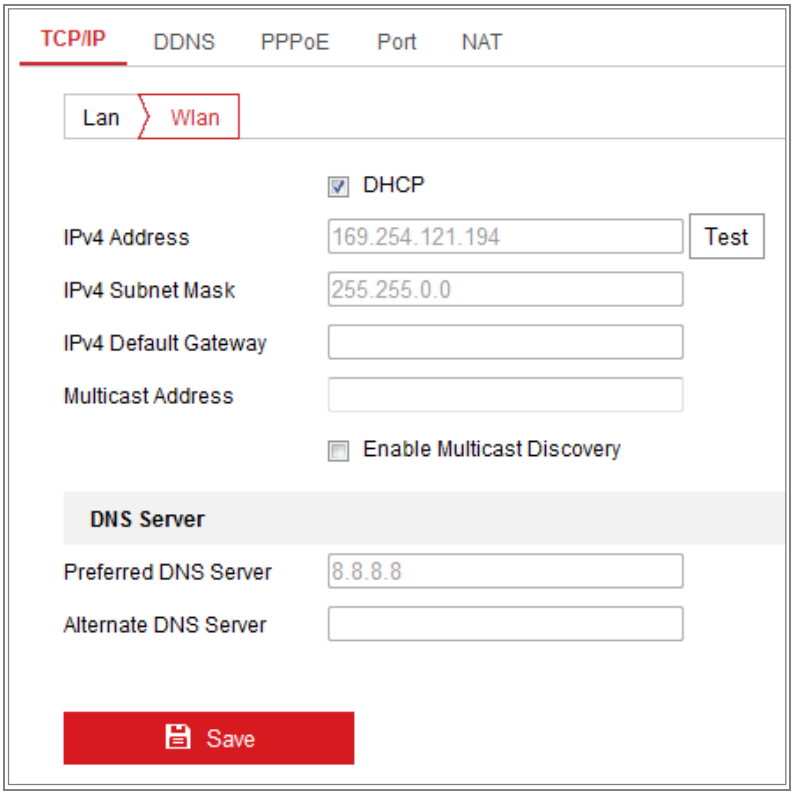


Figure 29, Setting WLAN Parameters

3. Customize the IPv4 address, the IPv4 Subnet Mask, and the Default Gateway.

The setting procedure is the same as that of the LAN.

To be assigned the IP address, check the **Enable DHCP** checkbox.

Chapter 5 Live View

5.1 Live View Page

Purpose:
The live view page allows you to view the real-time video, capture images, realize PTZ control, set/call presets and configure video parameters.

Log in the network camera to enter the live view page, or you can click **Live View** on the menu bar of the main page to enter the live view page.

- **Descriptions of the Live View Page**

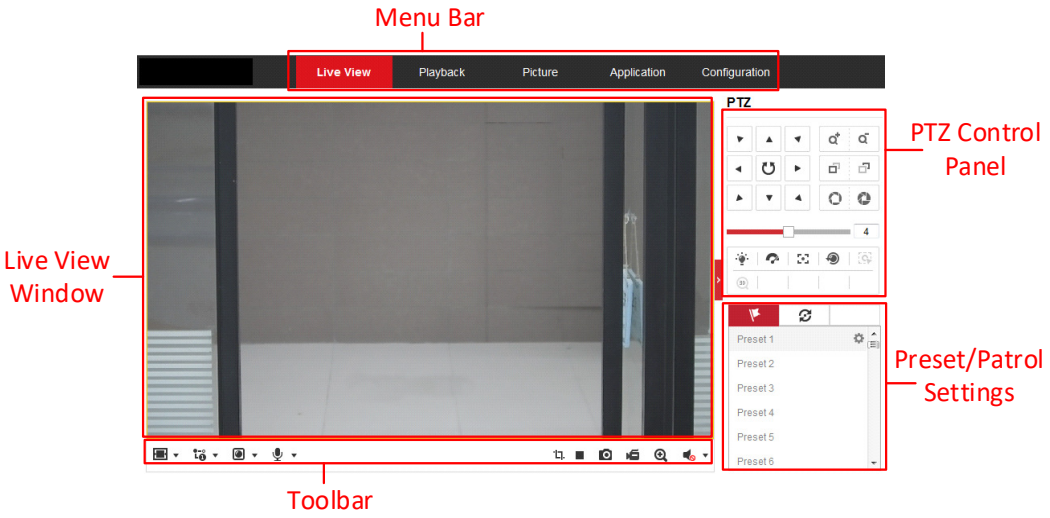


Figure 30, Live View Page

- **Menu Bar: Click each tab to enter Live View, Playback, Picture, Application, and Configuration page respectively.**

  - **Live View Window:** Display the live video

  - **Toolbar:** Toolbar allows you to adjust the live view window size, the stream type, and the plug-ins. It also allows you to process the operations on the live view page, e.g., start/stop live view, capture, record, audio on/off, two-way audio, start/stop digital zoom, etc.

  - **IE (Internet Explorer) Users:** Plug-ins such as web components and QuickTime are selectable.

  - **Non-IE Users,** Web components, QuickTime, VLC, or MJPEG is selectable if they are supported by the Web browser.

    NOTE: For cameras that support plug-in free live view, when Google Chrome 45 or above version or Mozilla Firefox 52 or above version are used, plug-in installation is not required. But Picture and Playback functions are hidden. To use mentioned function via a Web browser, change to their lower versions, or change to Internet Explorer 8.0 or above version.

- **PTZ Control**

  Perform panning, tilting, and zooming actions of the camera. Control the light and the wiper (available only for cameras supporting PTZ function).

- **Preset/Patrol Settings**

  Set/call/delete the presets or patrols for PTZ cameras.

5.2 Starting Live View

In the live view window, as shown in Figure 4-2, click ▶ on the toolbar to start the live view of the camera.

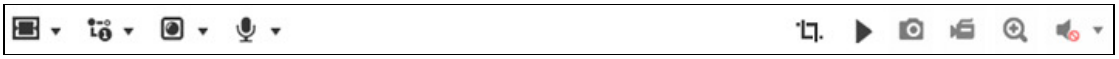


Figure 31, Live View Toolbar

Table 5-1 Descriptions of the Toolbar

Icon	Description
▶/■	Start/Stop live view
4:3	The window size is 4:3
16:9	The window size is 16:9
1×	The original window size
	Self-adaptive window size
, , , etc.	Live view with the different video streams Supported video streams vary by camera model
	Click to select the third-party plug-in
	Manually capture the picture
/	Manually start/stop recording
/	Audio on and adjust volume/mute
/	Turn on/off microphone
/	Start/stop digital zoom function
/	Start/stop pixel counter

NOTE: The icons vary by camera model.

- **Pixel Counter**

  1. Click the **Start Pixel Counter** button to enable the function.

  2. Drag the mouse on the image to select the desired rectangle area. Width pixel and height pixel are displayed on the

bottom of the Web page.

3. Click the button again to stop the function.

NOTE: The pixel counter is supported only under the main stream and only one rectangle is supported.

5.3 Recording and Capturing Pictures Manually

In the live view interface, click on the toolbar to capture the live pictures or click to record the live view. The saving paths of the captured pictures and clips can be set on the **Configuration > Local** page. To configure remote scheduled recording, please refer to *Section 6.1*.

NOTE: The captured image will be saved as a JPEG file or BMP file in your computer.

5.4 Operating PTZ Control

Purpose:
In the live view interface, you can use the PTZ control buttons to realize pan/tilt/zoom control of the camera.

NOTE: To realize PTZ control, the camera connected to the network must support the PTZ function or have a pan/tilt unit installed to the camera. Please properly set the PTZ parameters on RS-485 settings page (referr to Section 6.2.4 RS485 Settings).

5.4.1 PTZ Control Panel

- On the live view page, click next to the right side of the live view window to show the PTZ control panel and click to hide it.
- Click the direction buttons to control the pan/tilt movements.

Figure 32, PTZ Control Panel

- Click the zoom/focus/iris buttons to realize lens control.

NOTES:

» *There are eight direction arrows (△, ▽, ◁, ▷, ◸, ◹, ◺, ◿) in the control panel. Click the arrows to adjust the relative positions.*

» *For cameras that support lens movements only, the direction buttons are invalid.*

Table 5-2 Descriptions of PTZ Control Panel

Icon	Description
	Zoom in/out
	Focus near/far
	Iris **+/-**
4	PTZ speed adjustment
	Light on/off
	Wiper on/off
	Auxiliary focus
	Initialize lens
	Adjust speed of pan/tilt movements
	Start Manual Tracking
	Start 3D Zoom

5.4.2 Setting/Calling a Preset

- **Setting a Preset**

1. In the PTZ control panel, select a preset number from the preset list.

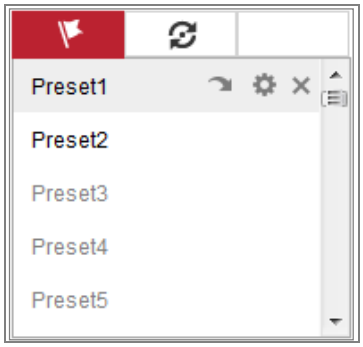


Figure 33, Setting a Preset

2. Use the PTZ control buttons to move the lens to the desired position.
   - Pan the camera to the right or left
   - Tilt the camera up or down
   - Zoom in or out

- Refocus the lens.

3. Click to finish the setting of the current preset.
4. You can click to delete the preset.

- **Calling a Preset**

This feature enables the camera to point to a specified preset scene manually or when an event takes place. For the defined preset, you can call it at any time to the desired preset scene.

In the PTZ control panel, select a defined preset from the list and click to call the preset or you can place the mouse on the presets interface, and call the preset by typing the preset No. to call the corresponding presets.

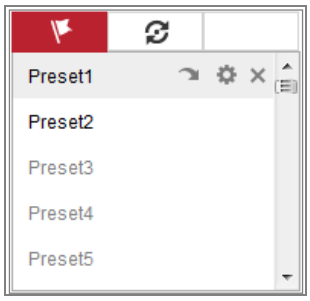


Figure 34, Calling a Preset

5.4.3 Setting/Calling a Patrol

NOTE: No fewer than two presets have to be configured before you set a patrol.

1. Click to enter the patrol configuration interface.
2. Select a path No., and click to add the configured presets.
3. Select the preset, and input the patrol duration and patrol speed.
4. Click OK to save the first preset.
5. Follow the steps above to add the other presets.

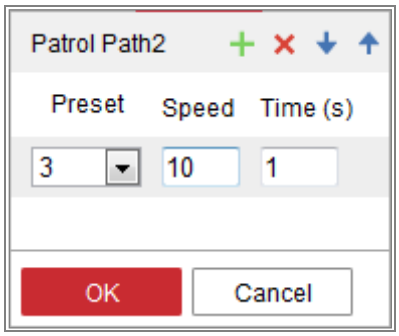


Figure 35, Add Patrol Path

6. Click **OK** to save a patrol.
7. Click  to start the patrol, and click  to stop it.
8. (Optional) Click  to delete a patrol.

Chapter 6 Network Camera Configuration

6.1 Configuring Local Parameters

Purpose:
The local configuration refers to the parameters of the live view, record files and captured pictures. The record files and captured pictures are the ones you record and capture using the Web browser and thus the saving paths of them are on the PC running the browser.

1. Enter the Local Configuration interface, **Configuration** > **Local**.

2. Configure the following settings:

   - **Live View Parameters:** Set the protocol type and live view performance.

     - Protocol Type: TCP, UDP, MULTICAST and HTTP are selectable

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

       > **UDP:** Provides real-time audio and video streams.

       > **HTTP:** Allows the same quality as of TCP without setting specific ports for streaming under some network environments.

       > **MULTICAST:** It's recommended to select MCAST type when using the Multicast function. For detailed information about Multicast, refer to *Section 7.1.1* ***Configuring TCP/IP Settings****.*

     - Play Performance: Set the live view performance to Shortest Delay, Balanced, Fluent, or Custom. For Custom, you can set the frame rate for live view.

     - Rules: It refers to the rules on your local browser, select enable or disable to display or not display the colored marks when the motion detection, face detection, or intrusion detection is triggered. E.g., enabled as the rules are, and the face detection is enabled as well, when a face is detected, it will be marked with a green rectangle on the live view.

     - Display POS Information: Enable the function, feature information of the detected target is dynamically displayed near the target in the live image. The feature information of different functions is different. For example, ID and waiting time for Queue Management, height for People Counting, etc.

     NOTE: Display POS Information is available only for certain camera models.

     - Image Format: Choose the image format for picture capture.

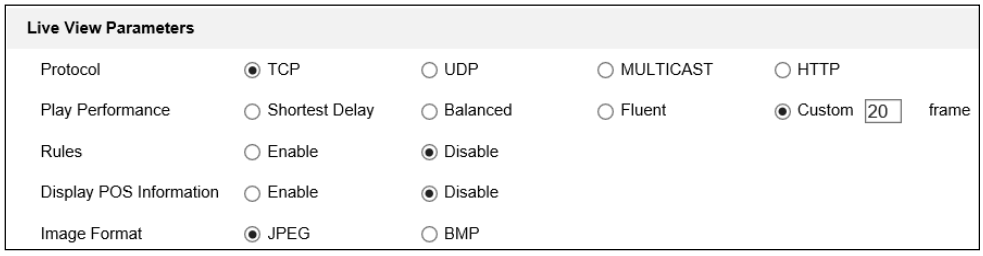


Figure 36, Live View Parameters

- **Record File Settings:** Set the saving path of the recorded video files. Valid for the record files you recorded with the Web browser.
  - Record File Size: Select the packed size of the manually recorded and downloaded video files to 256M, 512M or 1G. After the selection, the maximum record file size is the value you selected.
  - Save record files to: Set the saving path for the manually recorded video files.
  - Save downloaded files to: Set the saving path for the downloaded video files in playback mode.
- **Picture and Clip Settings:** Set the saving paths of the captured pictures and clipped video files. Valid for the pictures you capture with the Web browser.
  - Save snapshots in live view to: Set the saving path of the manually captured pictures in live view mode.
  - Save snapshots when playback to: Set the saving path of the captured pictures in playback mode.
  - Save clips to: Set the saving path of the clipped video files in playback mode.

  NOTE: You can click Browse to change the directory for saving the clips and pictures, and click Open to open the set folder of clips and picture saving.

3. Click **Save** to save the settings.

6.2 Configure System Settings

Purpose:
Follow the instructions below to configure the system settings, include System Settings, Maintenance, Security, User Management, etc.

6.2.1 Configuring Basic Information

Enter the Device Information interface: **Configuration** > **System** > **System Settings** > **Basic Information**. In the **Basic Information** interface, you can edit the Device Name and Device No.

Other information of the network camera, such as Model, Serial No., Firmware Version, Encoding Version, Number of Channels, Number of HDDs, Number of Alarm Input and Number of Alarm Output are displayed. The information cannot be

changed in this menu. It is reference for maintenance or modification in the future.

6.2.2 Configuring Time Settings

Purpose:
You can follow the instructions in this section to configure the time synchronization and DST settings.

1. Enter the Time Settings interface, **Configuration > System> System Settings > Time Settings**.

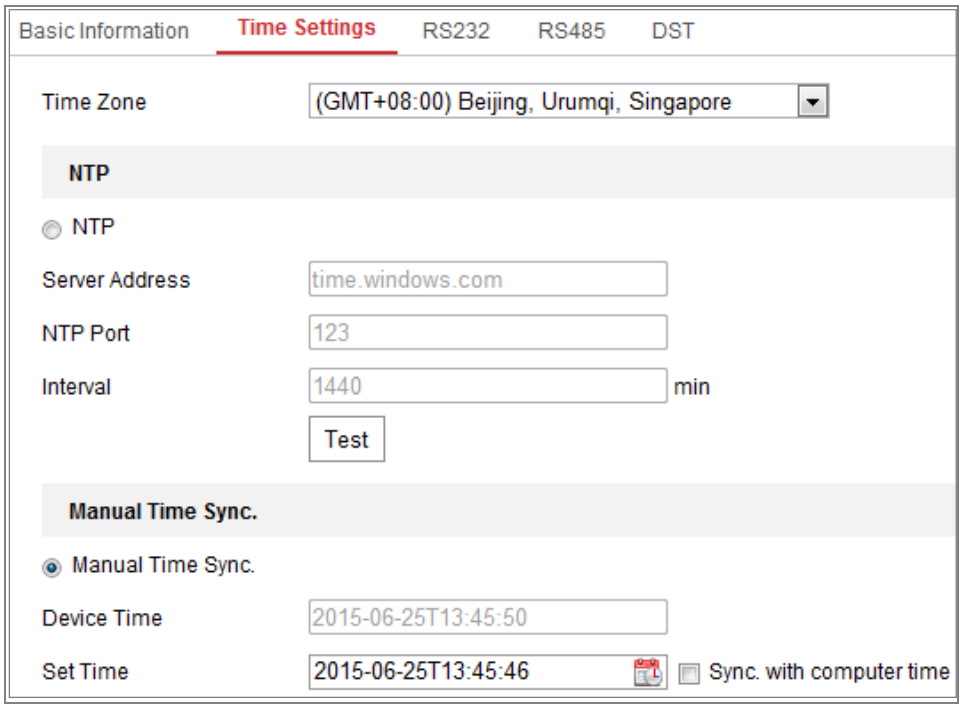


Figure 37, Time Settings

2. Select the Time Zone of your location from the drop-down menu.
3. Configure the NTP settings.
   A. Click to enable the **NTP** function.
   B. Configure the following settings:
      - **Server Address:** IP address of NTP server
      - **NTP Port:** Port of NTP server
      - **Interval:** The time interval between the two synchronizing actions with NTP server
   C. (Optional) You can click the **Test** button to test the time synchronization function via NTP server.

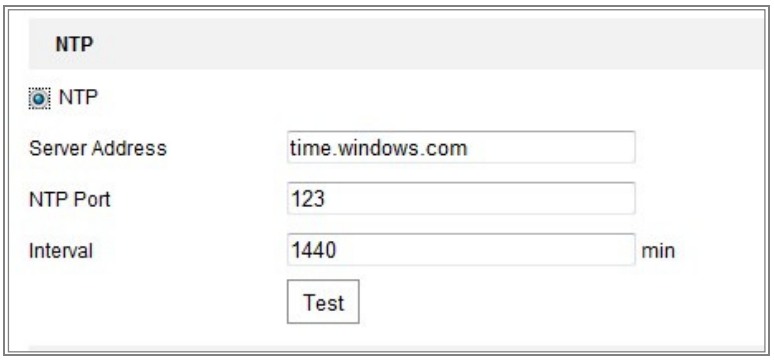


Figure 38, Time Sync by NTP Server

NOTE: If the camera is connected to a public network, you should use a NTP server that has a time synchronization function such as the server at the National Time Center (IP address: 210.72.145.44). If the camera is set in a customized network, NTP software can be used to establish an NTP server for time synchronization.

4. Configure the manual time synchronization.

   A. Check the **Manual Time Sync.** item to enable the manual time synchronization function.

   B. Click the icon to select the date, time from the pop-up calendar.

   C. (Optional) You can check **Sync. with computer time** item to synchronize the time of the device with that of the local PC.

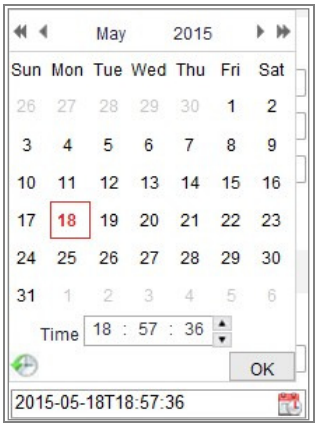


Figure 39, Time Sync Manually

5. Click **Save** to save the settings.

6.2.3 Configuring RS-232 Settings

The RS-232 port can be used in two ways:

- **Console:** Connect a computer to the camera through the serial port. Device parameters can be configured by using software such as HyperTerminal. The serial port parameters must be the same as the camera serial port parameters.

- **Transparent Channel:** Connect a serial device directly to the camera. The serial device will be controlled remotely by the computer through the network.

1. Enter RS232 Port Setting interface: **Configuration**> **System** > **System Settings** > **RS232**.

2. Configure the Baud Rate, Data Bit, Stop Bit, Parity, Flow Control, and Usage.

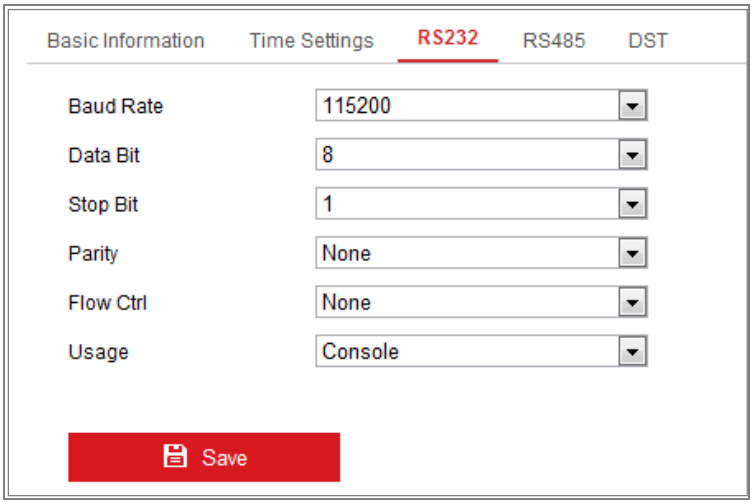


Figure 40, RS-232 Settings

NOTE: If you want to connect the camera by the RS-232 port, the parameters of the RS-232 should be exactly the same as the parameters you configure here.

3. Click **Save** to save the settings.

6.2.4 Configuring RS-485 Settings

Purpose:
The RS-485 serial port is used to control the PTZ of the camera. The configuring of the PTZ parameters should be done before you control the PTZ unit.

1. Enter RS-485 Port Setting interface: **Configuration** > **System** > **System Settings** > **RS485**.

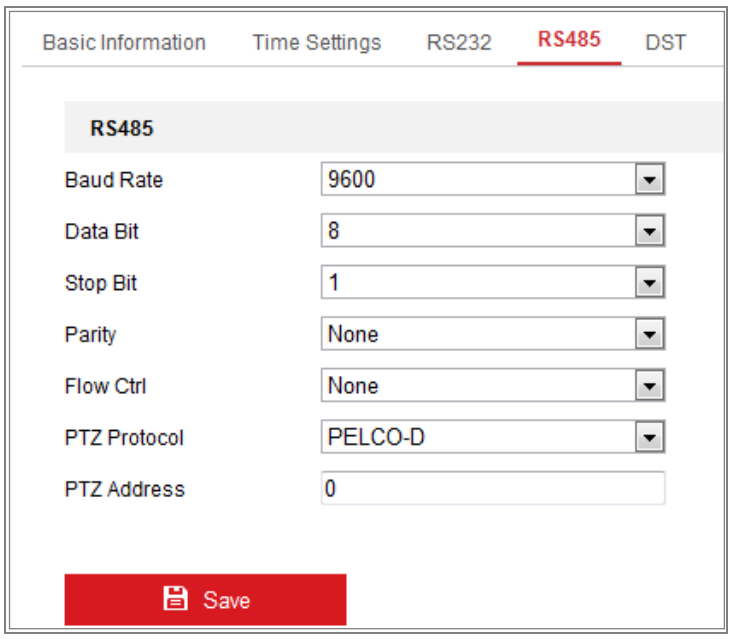


Figure 41, RS-485 Settings

2. Set the RS485 parameters and click **Save** to save the settings.

NOTE: By default, the Baud Rate is set as 9600 bps, the data bits is 8, the stop bit is 1, and the parity and flow control is None. The baud rate, PTZ protoco,l and PTZ address parameters must be exactly the same as the PTZ camera parameters.

6.2.5 Configuring DST Settings

Purpose:
Daylight Saving Time (DST) is a way of making better use of the natural daylight by setting your clock forward one hour during the summer months and back again in the fall.

Configure the DST according to your actual demand.

1. Enter the DST configuration interface, **Configuration > System > System Settings > DST**.

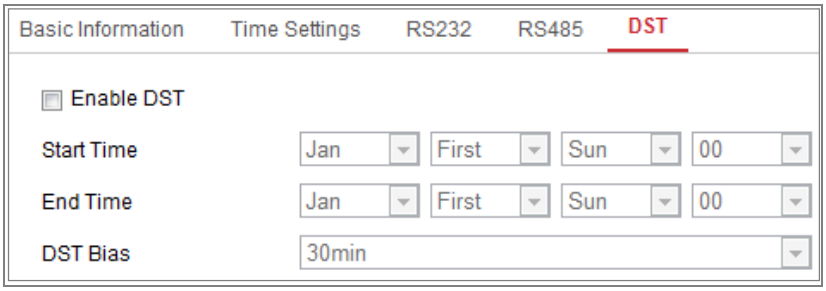


Figure 42, DST Settings

2. Select the start time and the end time.

3. Select the DST Bias.

4. Click **Save** to activate the settings.

6.2.6 Configuring External Devices

Purpose:
For device-supported external devices, including the wiper on the housing or the LED light, you can control them via a Web browser. External devices vary by camera model.

1. Enter the External Device configuration interface, **Configuration > System > System Settings > External Device**.

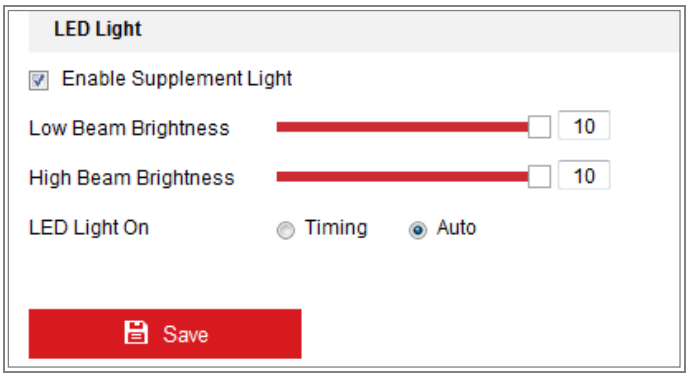


Figure 43, External Device Settings

2. Check the Enable Supplement Light checkbox to enable the LED Light.

3. Move the slider to adjust the low beam brightness and high bean brightness.

4. Select the mode for LED light. Timing and Auto are selectable.

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

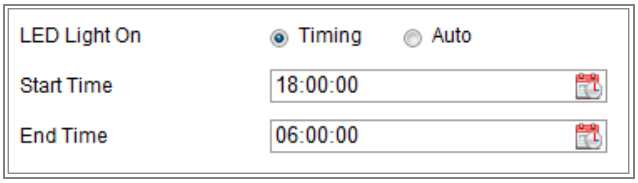


Figure 44, Set Schedule

   - **Auto:** The LED will be turned on according to the environment illumination.

5. Click Save to save the settings.

6.2.7 Configuring VCA Resource

Purpose:
VCA resource offers you options to enable certain VCA functions according to actual need when several VCA functions are

available. It helps allocate more resources to the desired functions.

1. Enter VCA Resource configuration interface, **Configuration > System > System Settings > VCA Resource**.

2. Select a desired VCA combination. Available VCA combination varies by camera model.

3. Click **Save** to save the settings. A reboot is required after setting the VCA Resource.

NOTES:
» *VCA combinations are mutually exclusive. When you activate one combination, the others are hidden.*
» *The function may not be supported by some camera models.*

6.2.8 Open Source Software License

Information about the open source software that applies to the IP camera can be checked if required. Go to **Configuration > System Settings > About.**

6.3 Maintenance

6.3.1 Upgrade and Maintenance

Purpose:
The upgrade and maintenance interface allows you to process the operations, including reboot, partly restore, restore to default, export/import the configuration files, and upgrade the device.

Enter the Maintenance interface, **Configuration > System > Maintenance > Upgrade & Maintenance**.

- **Reboot**: Restart the device.

- **Restore:** Reset all the parameters, except the IP parameters and user information, to the default settings.

- **Default**: Restore all the parameters to the factory default.

NOTES:
» *After restoring the default settings, the IP address is restored to the default IP address, please be careful for this action.*
» *For camera that supports Wi-Fi, wireless dial, or WLAN function,* ***Restore*** *action does not restore the related settings of mentioned functions to default.*

- **Information Export**

  - **Device Parameters:** Click to export the current configuration file of the camera. This operation requires admin password to proceed.

  - For the exported file, you also have to create an encryption password. The encryption password is required when you import the file to other cameras.

- **Diagnose Information: Click to download log and system information.**
- **Import Config. File: Configuration file is used for the batch configuration of the cameras.**

1. Click **Browse** to select the saved configuration file.
2. Click **Import** and input the encryption password that you set during exporting.

NOTE: You need to reboot the camera after importing the configuration file.

- **Upgrade: Upgrade the device to a certain version.**

1. Select firmware or firmware directory to locate the upgrade file.
   - Firmware: Locate the exact path of the upgrade file.
   - Firmware Directory: Only the directory the upgrade file belongs to is required.
2. Click **Browse** to select the local upgrade file and then click **Upgrade** to start remote upgrade.

NOTE: The upgrading process will take 1 to 10 minutes. Please don't disconnect power of the camera during the process, and the camera will reboot automatically after upgrade.

6.3.2 Log

Purpose:
The operation, alarm, exception, and information of the camera can be stored in log files. You can also export the log files on demand.

Before you start:
Please configure network storage for the camera or insert a SD card in the camera.

1. Enter log searching interface: **Configuration** > **System** > **Maintenance** > **Log**.

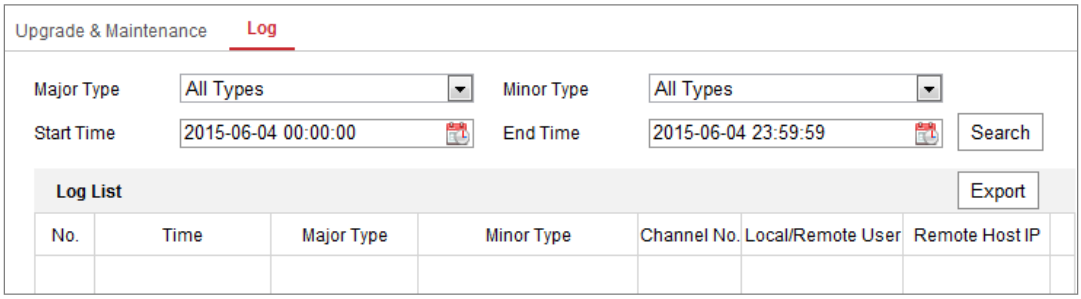


Figure 45, Log Searching Interface

2. Set the log search conditions to specify the search, including the Major Type, Minor Type, Start Time, and End Time.
3. Click **Search** to search log files. The matched log files will be displayed on the log list interface.

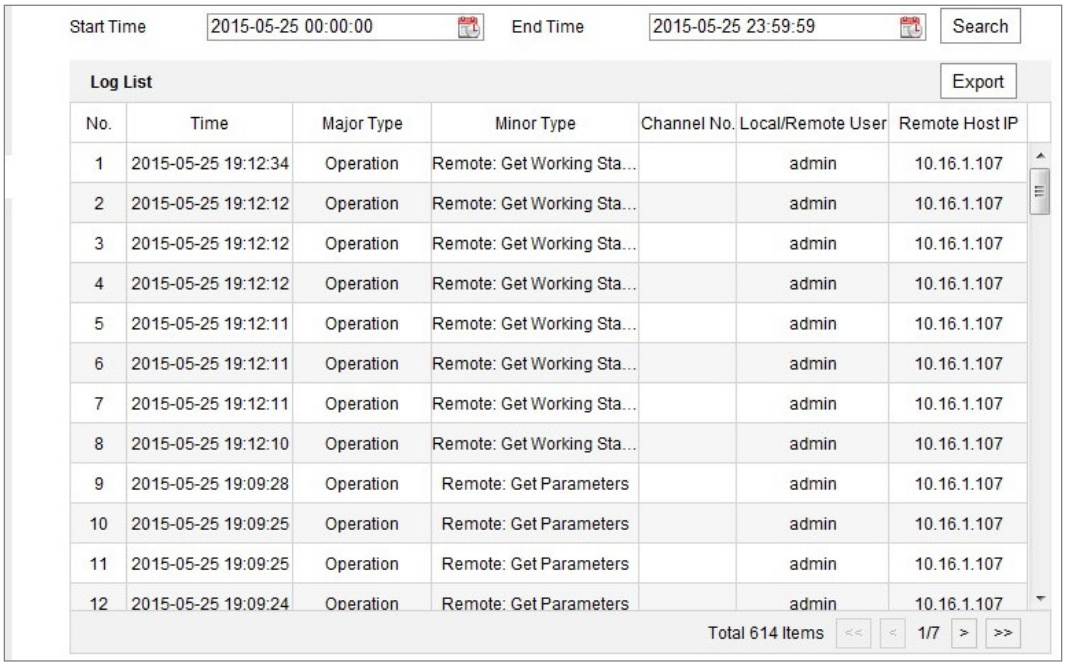


Figure 46, Log Searching

4. To export the log files, click **Export** to save the log files.

6.3.3 System Service

Purpose:
System service settings refer to the software and hardware service the camera supports. Supported functions vary according to the different cameras. For the cameras support IR LED, ABF (Auto Back Focus), Auto Defog, or Status LED, you can select to enable or disable the corresponding service according to the actual demands.

- **ABF:** When the ABF function is enabled, click on the PTZ control panel to realize auxiliary focus.

- **Third Stream**: For some models, the third stream is not enabled by default. Check the **Enable Third Stream** checkbox to reboot the system and enable the third stream.

6.3.4 Security Audit Log

Purpose:
The security audit logs refer to the security operation logs. You can search and analyze the security log files of the camera so that to find out the illegal intrusion and troubleshooting the security events.

1. Enter log searching interface, **Configuration > System > Maintenance > Security Audit Log**.

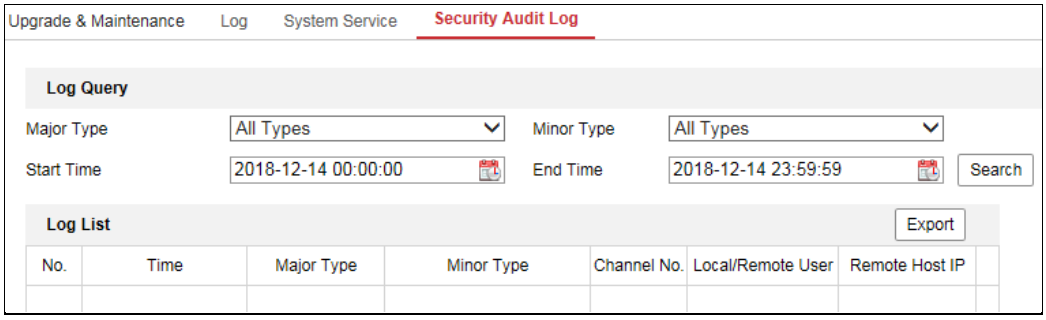


Figure 47, Security Audit Log Searching Interface

2. Set the log search conditions to specify the search, including the Major Type, Minor Type, Start Time and End Time.

3. Click **Search** to search log files. The matched log files will be displayed on the log list interface.

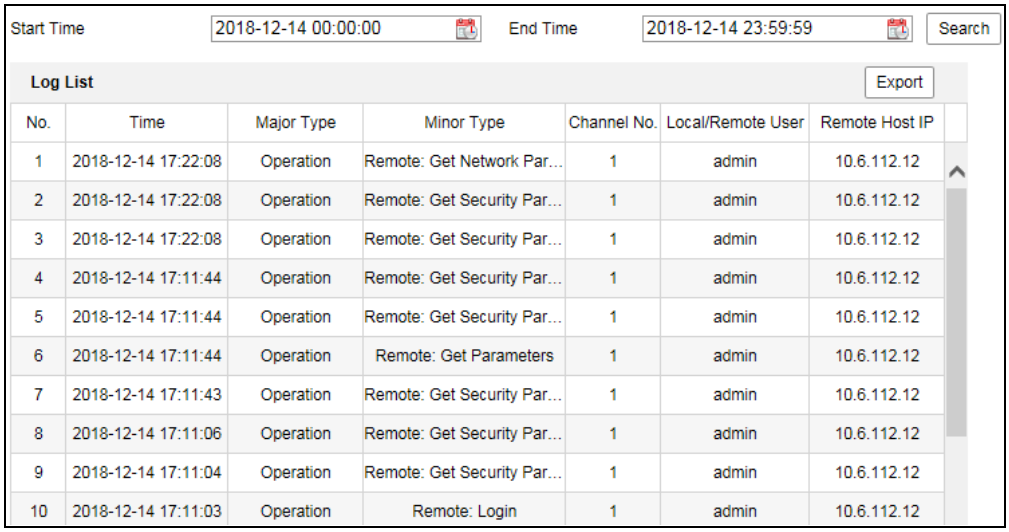


Figure 48, Log Searching

4. To export the log files, click **Export** to save the log files.

6.4 Security Settings

Configure the parameters, including Authentication, IP Address Filter, and Security Service from security interface.

6.4.1 Authentication

Purpose:
You can specifically secure the stream data of live view.

1. Enter the Authentication interface, **Configuration > System > Security > Authentication**.

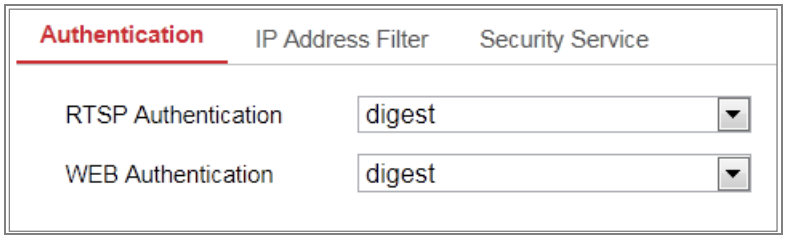


Figure 49, Authentication

2. Set up authentication method for RTSP authentication and WEB authentication.

CAUTION!

Digest is the recommended authentication method for better data security. You must be aware of the risk if you adopt basic as the authentication method.

3. Click **Save** to save the settings.

6.4.2 IP Address Filter

Purpose:
This function makes it possible for access control.

1. Enter the IP Address Filter interface, **Configuration** > **System** > **Security** > **IP Address Filter**.

Figure 50, IP Address Filter Interface

2. Check the **Enable IP Address Filter** checkbox.
3. Select the type of IP Address Filter in the drop-down list, **Forbidden** and **Allowed** are selectable.
4. Set the IP Address Filter list.

- **Add an IP Address**

    1. Click **Add** to add an IP.
    2. Input the IP **Address**.

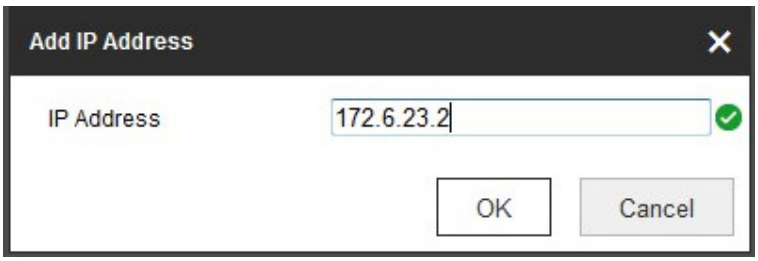


Figure 51, Add an IP

3. Click **OK** to finish adding.

- **Modify an IP Address**

1. Left-click an IP address from filter list and click **Modify**.
2. Modify the IP address in the text filed.

Figure 52, Modify an IP

3. Click **OK** to finish modifying.

- **Delete an IP Address or IP Addresses**

1. Select the IP address(es) and click **Delete**.
2. Click **Save** to save the settings.

6.4.3 Security Service

To enable remote login and improve the data communication security, the camera provides the security service for better user experience.

1. Enter the security service configuration interface, **Configuration** > **System** > **Security** > **Security Service**.

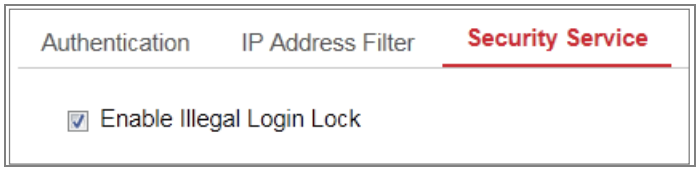


Figure 53, Security Service

2. Check the **Enable Illegal Login Lock** checkbox. Illegal Login Lock limits user login attempts. Login attempt from the IP address are rejected if admin user performs seven failed user name/password attempts (five attempts for an operator/user).

   NOTE: If the IP address is rejected, you can try to log into the device again after 30 minutes.

6.4.4 Advanced Security

Follow the steps below to set the advanced security parameters for the camera.

1. Enter the security service configuration interface, **Configuration** > **System** > **Security** > **Advanced Security**.

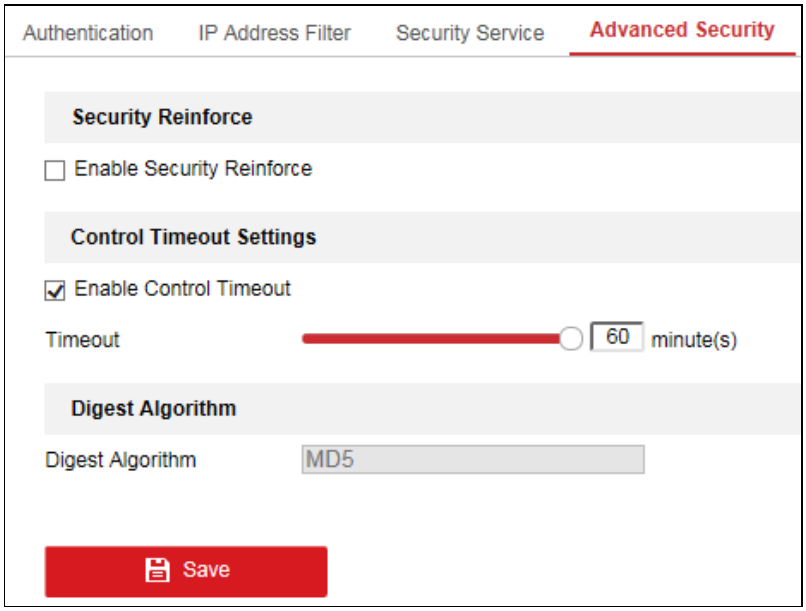


Figure 54, Advance Security

2. Check the **Enable Security Reinforce** checkbox.

   NOTE: If Security Reinforce is enabled, certain functions are enabled by default such as Enable HTTPS, Enable HTTPS Browsing, TLS1.2, and websockets; certain functions are disabled by default such as websocket, ONVIF, and 802.1x. For 802.1x, only TLS is supported. SHA256 algorithm is supported, MD5 algorithm and SDK service are not supported.

3. Check the **Control Timeout Settings** checkbox to enable control timeout settings.

4. Slide to set the timeout as required.

5. Click **Save**.

6.5 User Management

6.5.1 User Management

As Administrator

The admin user can add, delete or modify user accounts, and grant them different permissions. We highly recommend you manage the user accounts and permissions properly.

1. Enter the User Management interface, **Configuration** > **System** > **User Management**.

NOTE: Admin password is required to adding or modify a user account.

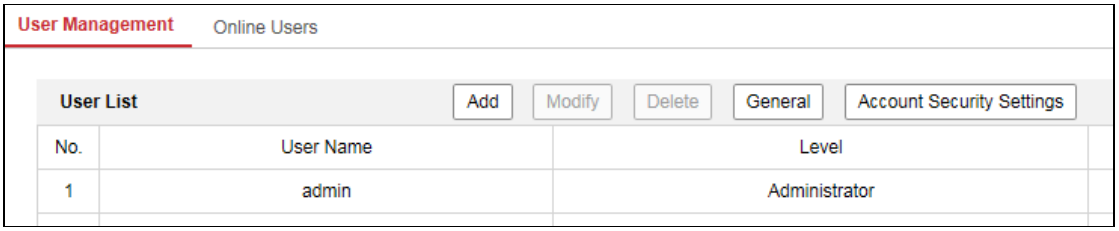


Figure 55, User Management Interface

- **Adding a User**

The *admin* user has all permissions by default and can create/modify/delete other accounts. The *admin* user cannot be deleted and you can change only the *admin* password.

1. Click **Add** to add a user.
2. Input the Admin Password, User Name, select Level, and input Password.

NOTES:
» *Up to 31 user accounts can be created.*
» *Users of different levels own different default permissions. Operator and user are selectable.*

STRONG PASSWORD RECOMMENDED – We highly recommend that you create a strong password of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. We also recommend that you reset your password regularly. Especially in high security systems, resetting the password monthly or weekly can better protect your product.

3. You can check or uncheck the permissions for the new user.
4. Click **OK** to finish the user addition.

- **Modifying a User**

1. Left-click to select the user from the list and click **Modify**.

2. Modify the User Name, Level, and Password.

STRONG PASSWORD RECOMMENDED – We highly recommend that you create a strong password of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. We also recommend that you reset your password regularly. Especially in high security systems, resetting the password monthly or weekly can better protect your product.

3. You can check or uncheck the permissions.

4. Click **OK** to finish the user modification.

- **Deleting a User**

1. Click to select the user you want to delete and click **Delete**.

2. Click **OK** on the pop-up dialogue box to confirm the deletion.

- **Setting Simultaneous Login**

1. Click **General**.

2. Slide the slide bar to set the simultaneous login. If the number of the illegal login attempts exceeds the set threshold, your access will be denied.

As Operator or User
Operator or user can modify password. Old password is required for this action.

6.5.2 Security Question

Purpose:
Security question is used to recover the admin password when admin user forgets the password. Recovering the password via the security questions and via the email are available.

- **Set Account Security**

You can set the security questions during camera activation, or you can set the function at user management interface. Security question setting is not cleared when you restore the camera (not to default).

1. Enter setting interface: **Configuration > System > User Management > User Management**.

2. Click **Account Security Settings**.

3. Select questions and input answers.

4. Enter the E-mail address to receive the verification code for password recovery.

5. Click **OK** to save the settings.

- **Reset Admin Password**

The PC used to reset password and the camera should belong to the same IP address segment of the same LAN.

1. Enter login interface via Web browser.
2. Click **Forgot Password**.
3. Set the verification **mode** to **E-mail Verification**.
4. Read the Privacy Policy, and click **OK**.
5. Click **Export QR Code** and save the code locally.
6. Send the code to pw_recovery@device-service.com as an attachment. Your e-mail account for password recovery will receive a verification code in five minutes.

   NOTE: The verification code is valid for 48 hours.

7. Input the verification code in the text field below.

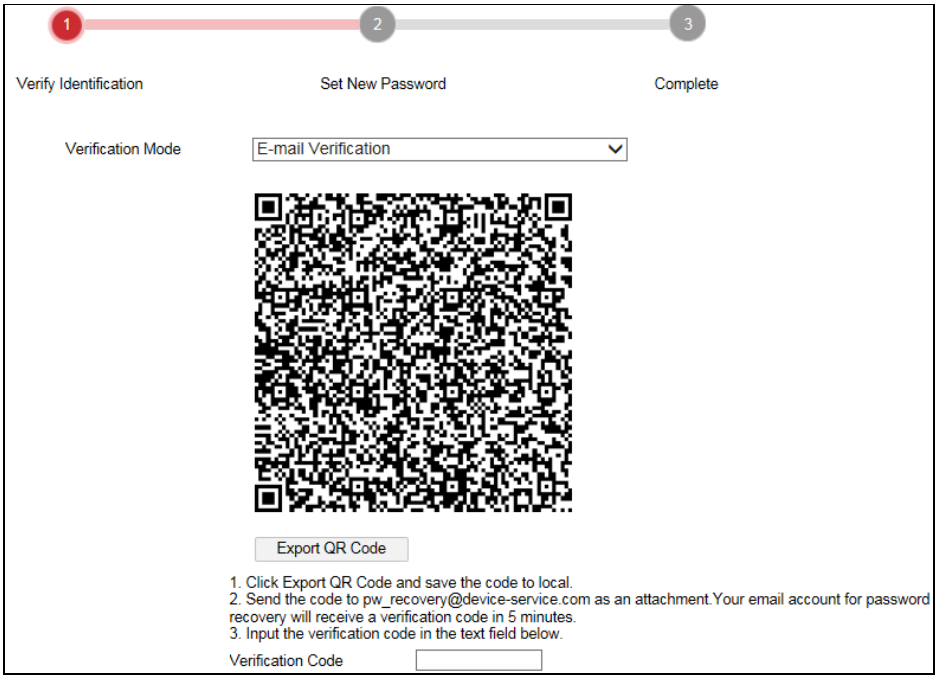


Figure 56, Reset Password

8. Click **Next**.
9. Input the password and confirm.
10. Follow the prompts to create a new password.

NOTE: User IP address locks for 30 minutes after seven failed security question answers.

6.5.3 Online Users

Purpose:
You can see the current users who are visiting the device through this interface. User information such as user name, level, IP address, and operation time, is displayed in the User List.

1. Click **Refresh** to refresh the list.

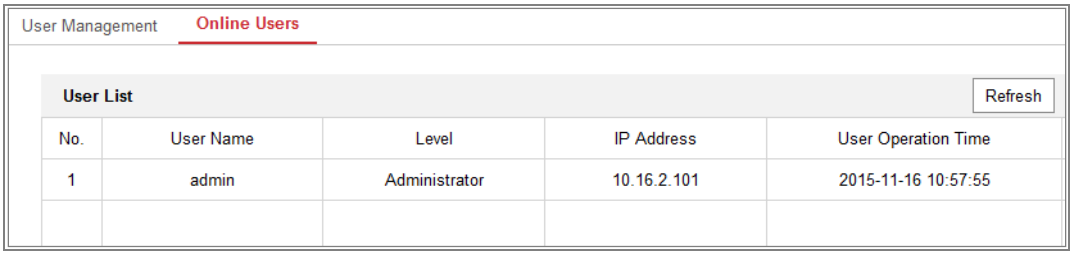


Figure 57, View the Online Users

Chapter 7 Network Settings

Purpose:
Follow the instructions in this chapter to configure the basic and advanced settings.

7.1 Configuring Basic Settings

Purpose:
You can configure parameters, including TCP/IP, DDNS, PPPoE, Port, NAT, etc., by following instructions in this section.

7.1.1 Configuring TCP/IP Settings

Purpose:
TCP/IP settings must be properly configured before you operate the camera over the network. The camera supports both IPv4 and IPv6. Both versions can be configured simultaneously without conflicting with each other, and at least one IP version should be configured.

1. Enter the TCP/IP Settings interface: **Configuration > Network > Basic Settings > TCP/IP**.

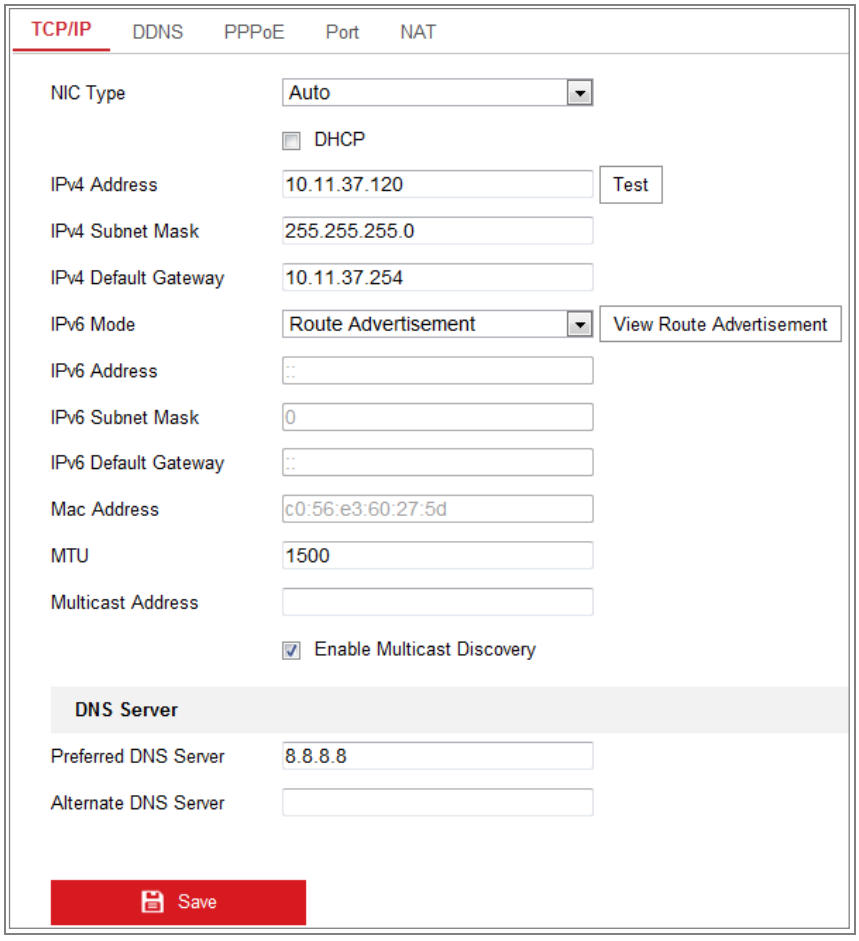


Figure 58, TCP/IP Settings

2. Configure the basic network settings, including the NIC Type, IPv4 or IPv6 Address, IPv4 or IPv6 Subnet Mask, IPv4 or IPv6 Default Gateway, MTU settings, and Multicast Address.

3. (Optional) Check the **Enable Multicast Discovery** checkbox to have the online network camera be automatically detected by client software via private multicast protocol in the LAN.

4. Configure the DNS server. Input the preferred DNS server and alternate DNS server.

5. Click **Save** to save the above settings.

NOTES:
» *The valid value range of MTU is 1280 to 1500.*
» *The Multicast sends a stream to the multicast group address and allows multiple clients to acquire the stream at the same time by requesting a copy from the multicast group address. Before utilizing this function, you have to enable the Multicast function of your router.*
» *A reboot is required for the settings to take effect.*

7.1.2 Configuring DDNS Settings

Purpose:
If the camera is set to use PPPoE as its default network connection, you can use Dynamic DNS (DDNS) for network access.

Before you start:
Registration on the DDNS server is required before configuring the DDNS settings of the camera.

1. Enter the DDNS Settings interface: **Configuration > Network > Basic Settings > DDNS**.

2. Check the **Enable DDNS** checkbox to enable this feature.

3. Select **DDNS Type**. Two DDNS types are selectable: **DynDNS** and **NO-IP**.

- **DynDNS**

A. Enter **Server Address** of DynDNS (e.g., members.dyndns.org).

B. In the **Domain** text field, enter the domain name obtained from the DynDNS Web site.

C. Enter the **User Name** and **Password** registered on the DynDNS Web site.

D. Click **Save** to save the settings.

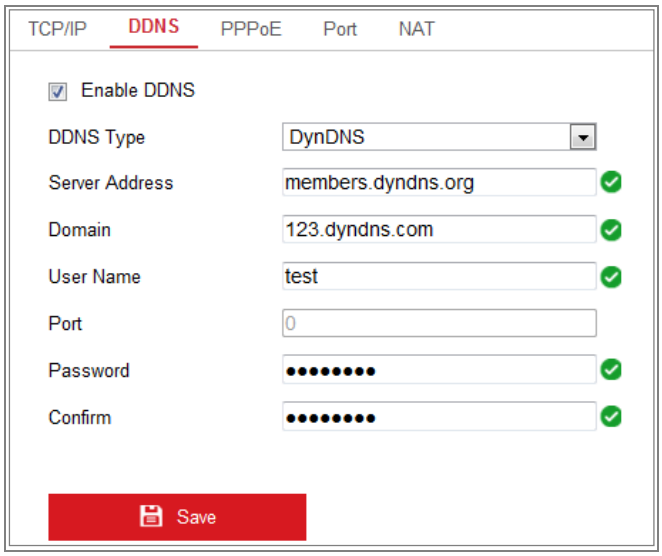


Figure 59, DynDNS Settings

- **NO-IP**

A. Choose the DDNS Type as **NO-IP**.

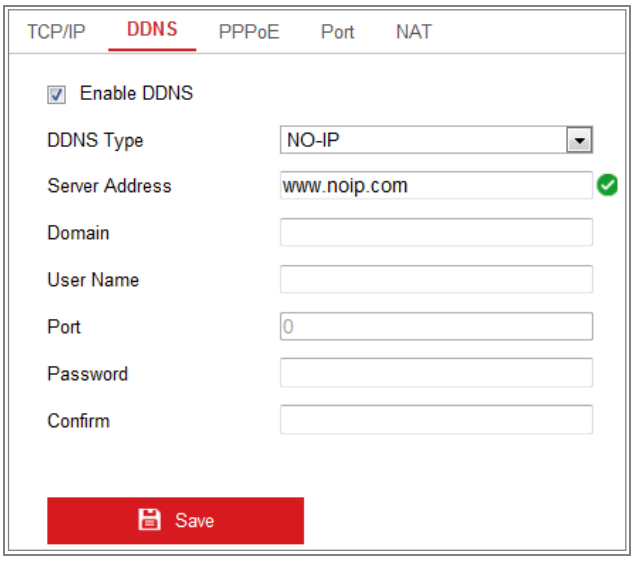


Figure 60, NO-IP DNS Settings

B. Enter the Server Address as www.noip.com

C. Enter the Domain name you registered.

D. Enter the User Name and Password.

E. Click **Save** and then you can view the camera with the domain name.

NOTE: Reboot the device to have the settings take effect.

7.1.3 Configuring PPPoE Settings

1. Enter the PPPoE Settings interface: **Configuration > Network > Basic Settings > PPPoE**.

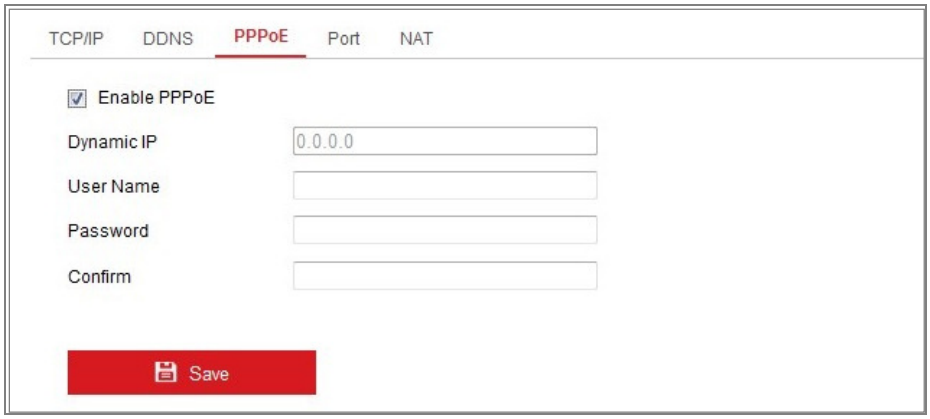


Figure 61, PPPoE Settings

2. Check the **Enable PPPoE** checkbox to enable this feature.

3. Enter **User Name**, **Password**, and **Confirm** password for PPPoE access.

NOTE: The User Name and Password are assigned by your ISP.

CAUTION!

For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers and special characters) in order to increase the security of your product.

Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

4. Click **Save** to save and exit the interface.

NOTE: A reboot is required for the settings to take effect.

7.1.4 Configuring Port Settings

Purpose:
You can set the port no. of the camera, e.g., HTTP port, RTSP port, and HTTPS port.

1. Enter the Port Settings interface, **Configuration > Network > Basic Settings > Port**.

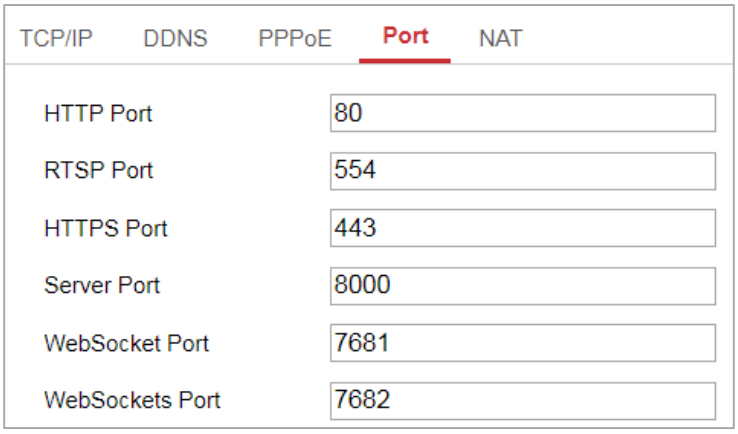


Figure 62, Port Settings

2. Set the camera ports.

- **HTTP Port**: The default port number is 80 and can be changed to any port number that is not occupied.
- **RTSP Port:** The default port number is 554 and can be changed to any port number, range 1 to 65535.
- **HTTPS Port:** The default port number is 443 and can be changed to any port number that is not occupied.
- **Server Port:** The default server port number is 8000 and can be changed to any port number, range 2000 to 65535.

  NOTE: When you use client software to visit the camera and you have changed the server port number, you must input the correct server port number in the login interface to access the camera.

- **WebSocket Port:** The default port number is 7681 and can be changed to any port number, range 1 to 65535.
- **WebSockets Port:** The default server port number is 7682 and can be changed to any port number, range 1 to 65535.

  NOTE: WebSocket and WebSockets protocol are used for plug-in free live view. For detailed information, see 7.2.11 Network Service.

3. Click **Save** to save the settings.

   NOTE: A reboot is required for the settings to take effect.

7.1.5 Configure NAT (Network Address Translation) Settings

Purpose:
The NAT interface allows you to configure the UPnP™ parameters.

Universal Plug and Play (UPnP™) is a networking architecture that provides compatibility among networking equipment, software, and other hardware devices. The UPnP protocol allows devices to connect seamlessly and simplifies the implementation of networks.

With the function enabled, you don't need to configure port mapping for each port, and the camera connects to the Wide Area Network via the router.

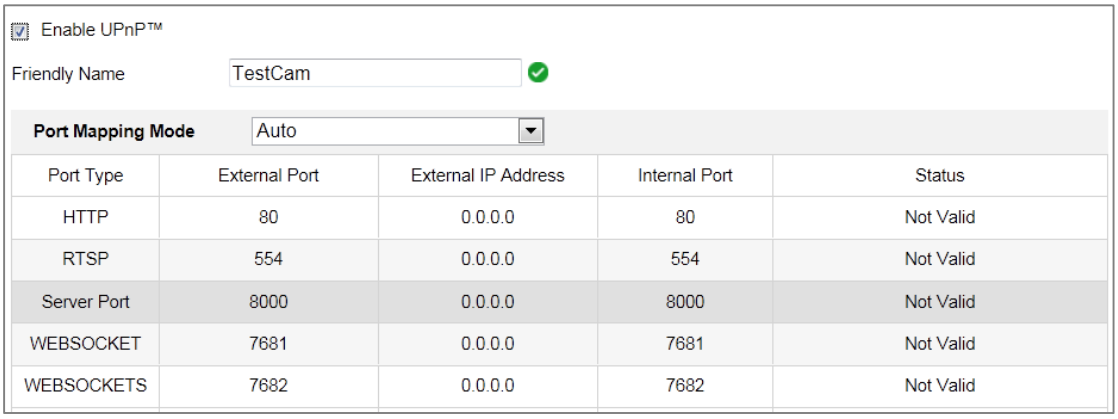


Figure 63, UPnP Settings

1. Enter the NAT settings interface, **Configuration > Network > Basic Settings > NAT**.
2. Check the UPnP™ checkbox to enable the function.

   NOTE: Camera ports are active only when the UPnP™ function is enabled.
3. Choose a friendly name for the camera, or you can use the default name.
4. Select the port mapping mode. Manual and Auto are selectable.

   NOTES:
   - » *If you select Auto, you enable THE UPnP™ function on the router.*
   - » *If you select Manual, customize the external port value and complete port mapping settings on the router manually.*
5. Click **Save** to save the settings.

7.2 Configure Advanced Settings

Purpose:
You can configure the parameters, including SNMP, FTP, E-mail, HTTPS, QoS, 802.1x, etc., by following the instructions in this section.

7.2.1 Configuring SNMP Settings

Purpose:
You can set the SNMP function to get camera status, parameters, and alarm related information and manage the camera remotely when it is connected to the network.

Before you start:

Before setting the SNMP, download the SNMP software and manage to receive the camera information via SNMP port. By setting the Trap Address, the camera can send the alarm event and exception messages to the surveillance center.

NOTE: The SNMP version you select should be the same as that of the SNMP software. You also need to use the version according to the security level you require. SNMP v1 provides no security and SNMP v2 requires password for access. SNMP v3 provides encryption and if you use the third version, HTTPS protocol must be enabled.

 **CAUTION**!

For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers and special characters) in order to increase the security of your product.

Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

1. Enter the SNMP Settings interface: **Configuration > Network > Advanced Settings > SNMP**.

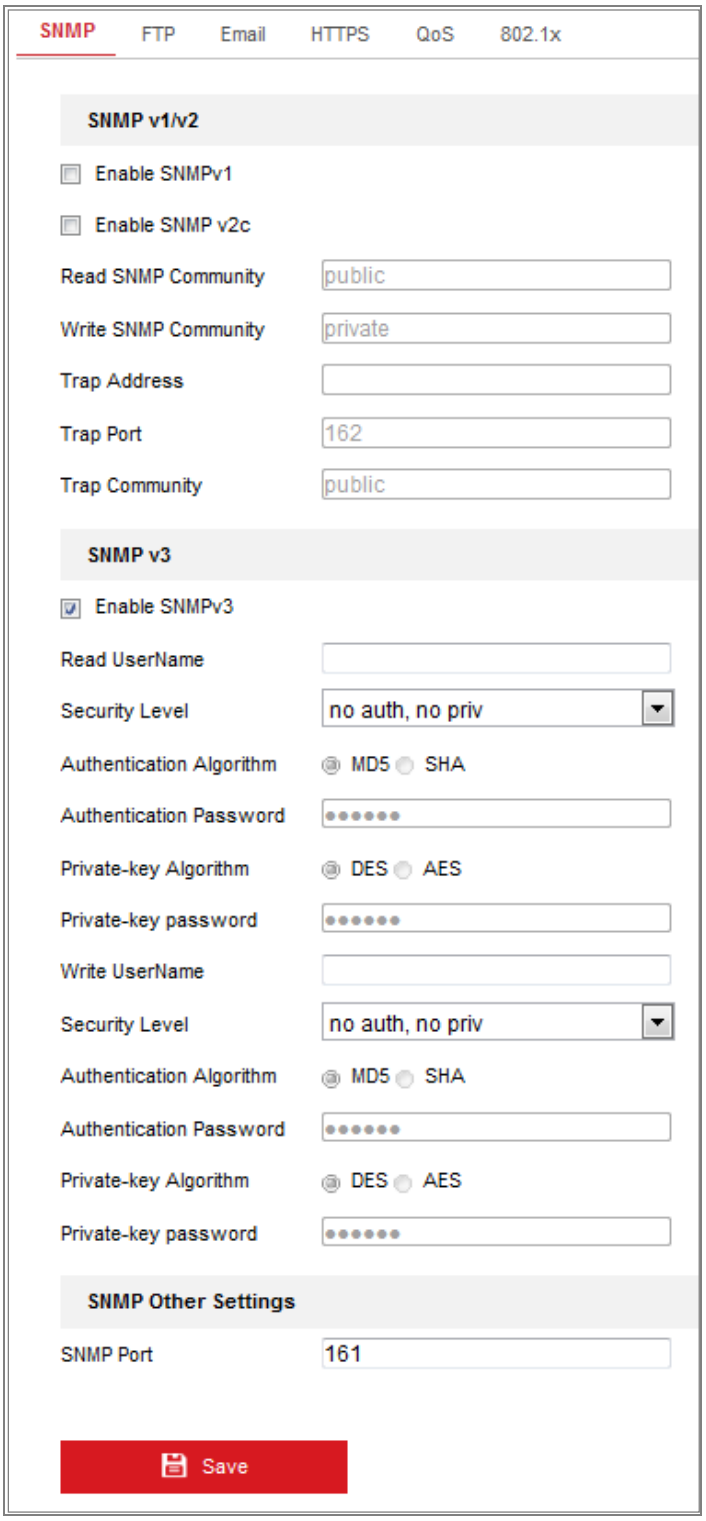


Figure 64, SNMP Settings

2. Check the **Enable SNMPv1**, **Enable SNMP v2c**, or **Enable SNMPv3** checkbox to enable the corresponding feature.

3. Configure the SNMP settings.

NOTE: The settings of the SNMP software should be the same as the settings you configure here.

4. Click **Save** to save and finish the settings.

NOTES:

» *A reboot is required for the settings to take effect.*

» *To lower the risk of information leakage, you are suggested to enable SNMP v3 instead of SNMP v1 or v2.*

7.2.2 Configuring FTP Settings

Purpose:

You can configure the FTP server related information to enable the uploading of the captured pictures to the FTP server. The captured pictures can be triggered by events or a timing snapshot task.

1. Enter the FTP Settings interface: **Configuration > Network > Advanced Settings > FTP**.

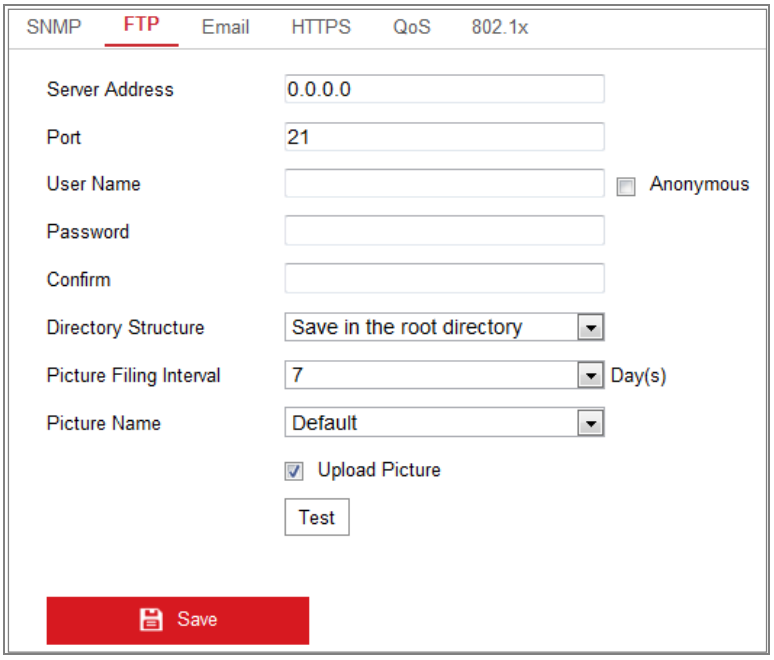


Figure 65, FTP Settings

2. Input the FTP address and port.

3. Configure the FTP settings; and the user name and password are required for the FTP server login.

CAUTION!

For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers and special characters) in order to increase the security of your product.

Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

4. Set the directory structure and picture filing interval.

   - **Directory**: In the **Directory Structure** field, you can select the root directory, parent directory, and child directory. When the parent directory is selected, you have the option to use the Device Name, Device Number, or Device IP for the name of the directory; and when the Child Directory is selected, you can use the Camera Name or Camera No. as the name of the directory.

   - **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 picture files. You can choose **Default** in the drop-down list to use the default rule (i.e., 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.

5. Check the **Upload Picture** checkbox to enable the function.

   - **Upload Picture:** To enable uploading the captured picture to the FTP server.

   - **Anonymous Access to the FTP Server (in which case the user name and password won't be required.)**: Check the Anonymous checkbox to enable the anonymous access to the FTP server.

     NOTE: The anonymous access function must be supported by the FTP server.

6. Click **Save** to save the settings.

7.2.3 Configuring E-Mail Settings

Purpose:
The system can be configured to send an e-mail notification to all designated receivers if an alarm event is detected, e.g., motion detection event, video loss, video tampering, etc.

Before you start:
Please configure the DNS Server settings under **Configuration > Network > Basic Settings > TCP/IP** before using the E-mail function.

1. Enter the TCP/IP Settings (**Configuration > Network > Basic Settings > TCP/IP**) to set the IPv4 Address, IPv4 Subnet Mask, IPv4 Default Gateway, and the Preferred DNS Server.

   NOTE: Please refer to Section 7.1.1 Configuring TCP/IP Settings for detailed information.

2. Enter the E-mail Settings interface: **Configuration** > **Network** >**Advanced Settings** > **Email**.

3. Configure the following settings:

   - **Sender:** The name of the e-mail sender.

- **Sender's Address:** The e-mail address of the sender.
- **SMTP Server:** IP address or host name (e.g., smtp.263xmail.com) of the SMTP Server.
- **SMTP Port:** The SMTP port. The default TCP/IP port for SMTP is 25 (not secured), and the SSL SMTP port is 465.
- **Email Encryption:** None, SSL, and TLS are selectable. If you select SSL or TLS and disable STARTTLS, e-mails will be sent after being encrypted by SSL or TLS. The SMTP port should be set as 465 for this encryption method. When you select SSL or TLS and enable STARTTLS, e-mails will be sent after being 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 e-mail server. If you check the Enable STARTTLS checkbox and the protocol is not supported by your e-mail sever, your e-mail will not be encrypted.

- **Attached Image:** Check the **Attached Image** checkbox if you want to send e-mails with attached alarm images.
- **Interval:** The interval refers to the time between two actions of sending attached pictures.
- **Authentication (optional):** If your e-mail server requires authentication, check this checkbox to use authentication to log in to this server and input the login user name and password.

CAUTION!

For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers and special characters) in order to increase the security of your product.

Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

- **Receiver Table:** Select the receiver to which the e-mail is sent. Up to three receivers can be configured.
  - **Receiver:** The name of the user to be notified.
  - **Receiver's Address**: The e-mail address of user to be notified.

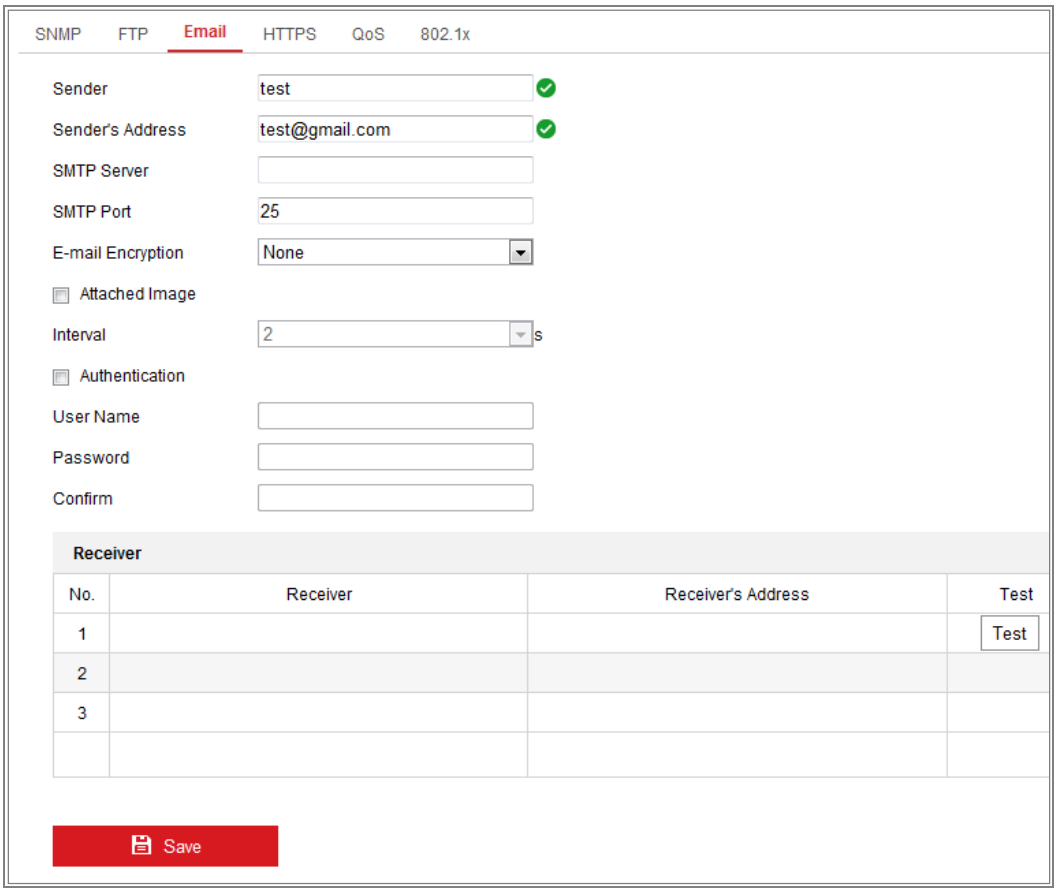


Figure 66, E-Mail Settings

4. Click **Save** to save the settings.

7.2.4 Platform Access

Purpose:
Platform access provides you an option to manage the devices via platform.

1. Enter the Platform Access settings interface: **Configuration > Network > Advanced Settings > Platform Access**.

2. Check the **Enable** checkbox to enable the platform access function of the device.

3. Select the **Platform Access Mode**.

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

If you select **Platform Access Mode** as **Hik-Connect**:

1. Click and read “Terms of Service” and “Privacy Policy” in pop-up window.

2. Create a verification code or change the verification code for the camera.

NOTE:

» *The verification code is required when you add the camera to the Hik-Connect app.*

» *For more information about the Hik-Connect app, refer to the Hik-Connect Mobile Client User Manual.*

3. You can use the default server address, or you can check the **Custom** checkbox on the right and input a desired server address.

4. Click **Save** to save the settings.

7.2.5 Wireless Dial

Purpose:

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

NOTES:

» *The wireless dial function may not be supported by some camera models.*

» *Cameras that support wireless dial do not support PPPoE.*

1. Click Wireless Dial tab to enter the Wireless Dial configuration interface: **Configuration > Network > Advanced Settings > Wireless Dial**.

2. Check the checkbox to enable the wireless dial settings.

3. Configure the dial parameters.

   A. Select the dial mode from the drop-down list. **Auto** and **Manual** are selectable. If **Auto** is selected, you can set the arming schedule for dialing; If **Manual** is selected, you can set the offline time and manual dialing parameters.

   B. Set the **access number**, **user name**, **password**, **APN**, **MTU**, and **verification protocol**. You can also leave these parameters blank, and the device will adopt the default settings for dialing after other parameters are configured.

   C. Select the network mode from the drop-down list. **Auto**, **3G**, and **4G** are selectable. If **Auto** is selected, the network selection priority is: **4G** > **3G** > **Wired Network**.

   D. Input the offline time if **Manual** is selected as the dial mode.

   E. Input the **UIM Number** (Mobile Phone Number).

   F. Click the **Edit** button to set the arming schedule if **Auto** is selected as the dial mode.

   G. Click **Save** to save the settings.

4. View the dial status.

   A. Click the **Refresh** button to view the dial status including **real-time mode**, **UIM status**, **signal strength**, etc.

   B. If **Manual** is selected as the dial mode, you can also manually connect/disconnect the wireless network.

5. Set the white list. The mobile phone number on the white list can receive the alarm message from the device and reboot the device via SMS.

   A. Check the **Enable SMS Alarm** checkbox.

   B. Select the item on the white list, and click the **Edit** button.

   C. Input the mobile phone number for the white list, check the **Reboot via SMS** checkbox, select the alarm for SMS push, and click **OK**.

      NOTE: To reboot the device via SMS, send the message "reboot" to the device, and the device will reply with the message, "reboot success" after rebooting succeeds.

   D. (Optional) You can click **Send Test SMS** to send a message to the mobile phone as a test.

   E. Click **Save** to save the settings.

7.2.6 HTTPS Settings

Purpose:
HTTPS provides authentication of the Web site and its associated Web server, which protects against man-in-the-middle attacks.

NOTES:
- *For cameras that support plug-in free live view, if you use HTTPS to visit the camera, you should enable **Websockets** for live view. Go to **Configuration > Network > Advanced Settings > Network Service**.*
- *If HTTPS is enabled by default, the camera creates an unsigned certificate automatically. When you visit the camera via HTTPS, the Web browser will send a notification about the certificate issue. Install a signed-certificate to the camera to cancel the notification.*

1. Enter the HTTPS settings interface, **Configuration > Network > Advanced Settings > HTTPS**.

2. Check **Enable** to access the camera via HTTP or HTTPS protocol.

3. Check **Enable HTTPS Browsing** to access the camera only via HTTPS protocol.

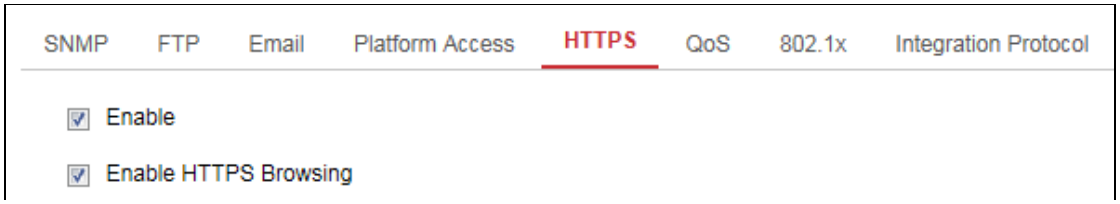


Figure 67, HTTPS Configuration Interface

4. Create the self-signed certificate or authorized certificate.

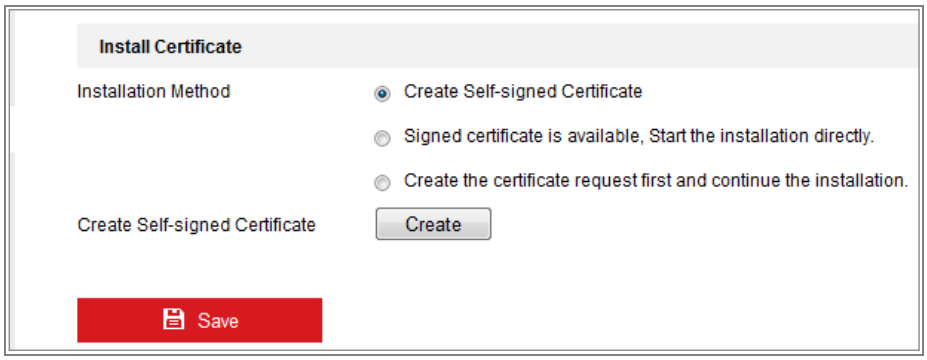


Figure 68, Create Self-Signed Certificate

- **Create the Self-Signed Certificate**

1. Select **Create Self-signed Certificate** as the Installation Method.
2. Click **Create** button to enter the creation interface.
3. Enter the country, host name/IP, validity and other information.
4. Click **OK** to save the settings.

NOTE: If you already have a certificate installed, the Create Self-signed Certificate is grayed out.

- **Create the Request and Import the Authorized Certificate**

1. Select **Create the Certificate Request** first and continue the installation as the Installation Method.
2. Click **Create** button to create the certificate request. Fill in the required information in the pop-up window.
3. Click **Download** to download the certificate request and submit it to the trusted certificate authority for signature.
4. After receiving the signed valid certificate, you can import the certificate in two ways:

   - Select Signed certificate is available, Start the installation directly. Click Browse and Install to import the certificate to the device.

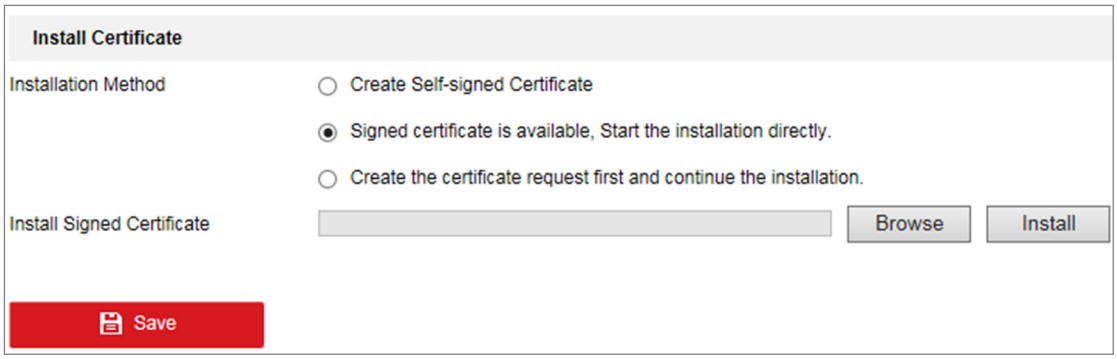


Figure 69, Import the Certificate (1)

   - Select Create the certificate request first and continue the installation. Click Browse and Install to import the

certificate to the device.

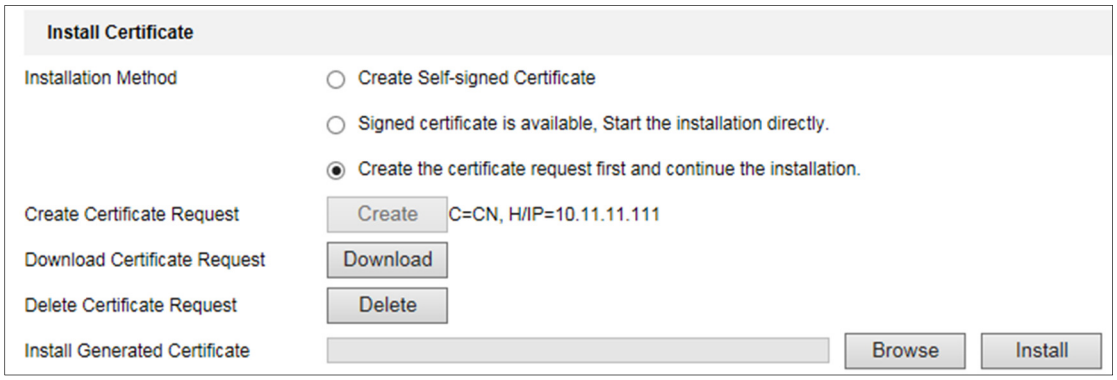


Figure 70, Import the Certificate (2)

5. There will be the certificate information after your successfully creating and installing the certificate.

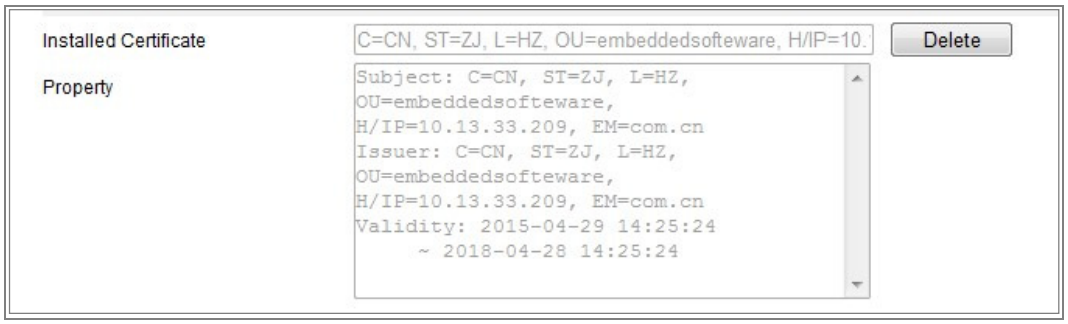


Figure 71, Installed Certificate

6. Export and save the certificate for verification when adding the device to client software.

NOTE: The exported certificate should be saved in the certificate folder of your client software before adding the device to your PC client.

7. Click the **Save** button to save the settings.

7.2.7 Configuring QoS Settings

Purpose:
QoS (Quality of Service) can help solve network delay and network congestion by configuring the data sending priority.

1. Enter the QoS Settings interface, **Configuration > Network > Advanced Settings > QoS**.

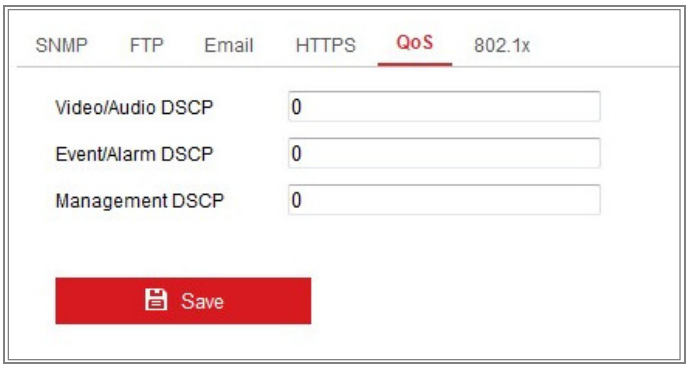


Figure 72, QoS Settings

2. Configure the QoS settings, including **Video/Audio DSCP**, **Event/Alarm DSCP**, and **Management DSCP**. The valid value range of the DSCP is 0 to 63. The larger the DSCP value, the higher the priority.

   NOTE: DSCP refers to the Differentiated Service Code Point, and the DSCP value is used in the IP header to indicate the priority of the data.

3. Click **Save** to save the settings.

   NOTE: A reboot is required for the settings to take effect.

7.2.8 Configuring 802.1X Settings

Purpose:
The IEEE 802.1X standard is supported by the network cameras, and when the feature is enabled, the camera data is secured and user authentication is needed when connecting the camera to the network protected by the IEEE 802.1X.

Before you start:
The authentication server must be configured. Apply and register a user name and password for 802.1X in the server.

CAUTION!

For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers and special characters) in order to increase the security of your product.

Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

1. Enter the 802.1X Settings interface, **Configuration > Network > Advanced Settings > 802.1X**.

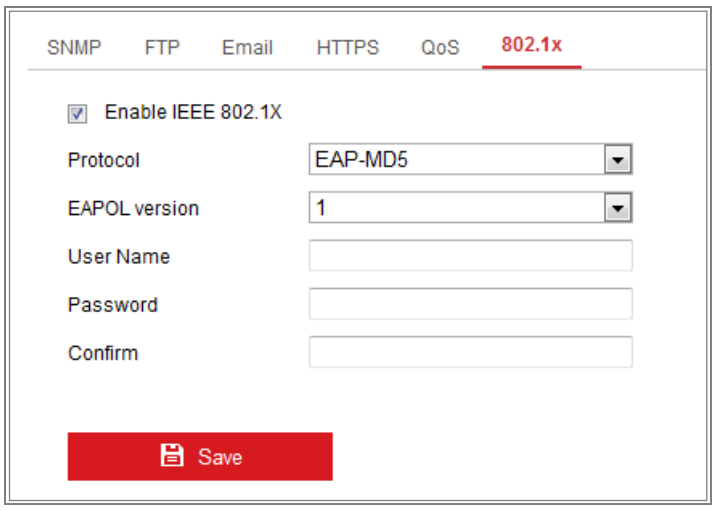


Figure 73, 802.1X Settings

2. Check the **Enable IEEE 802.1X** checkbox to enable the feature.

3. Configure the 802.1X settings, including **Protocol**, **EAPOL version**, **User Name**, **Password**, and **Confirm**.

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

4. Enter the **user name** and **password** to access the server.

5. Click **Save** to finish the settings.

   NOTE: A reboot is required for the settings to take effect.

7.2.9 Integration Protocol

Purpose:
If you need to access to the device through ONVIF protocol, you can configure an ONVIF user in this interface. Refer to the ONVIF standard for detailed configuration rules.

1. Check the **Enable ONVIF** checkbox to enable the function.

2. Add ONVIF users. Up to 32 users are allowed.

3. Set the user name and password, and confirm the password. You can set the user as media user, operator, and administrator.

   NOTE: ONVIF user account is different from the camera user account. You set the ONVIF user account independently.

4. Save the settings.

   NOTE: ONVIF User settings are cleared when you restore the camera.

7.2.10 Bandwidth Adaptation

When you enable the function, live view fluency is taken as the priority of camera performance. The camera adjusts video-related parameters automatically, and the pre-set video-related configuration is invalid. A reboot is required for the function to take effect.

NOTE: Bandwidth adaptation is available only for certain camera models.

7.2.11 Network Service

You can control the ON/OFF status of certain protocols that the camera supports.

NOTES:
» *Keep unused function OFF for security concern.*
» *Supported function varies by camera model.*

- **WebSocket and WebSockets**

  WebSocket or WebSockets protocol should be enabled if you use Google Chrome 45 or above or Mozilla Firefox 52 or above to visit your camera. Otherwise, live view, image capture, and digital zoom function cannot be used.

  - If the camera uses HTTP, enable **WebSocket**.
  - If the camera uses HTTPS, enable **WebSockets**.

- **SDK Service and Enhanced SDK Service**

  If you want to add the device to the client software, you must enable SDK Service or Enhanced SDK Service.

  - **SDK Service:** SDK protocol is used
  - **Enhanced SDK Service:** SDK over TLS protocol is used. Communication between the device and the client software is secured by using TLS (Transport Layer Security) protocol.
  - **TLS (Transport Layer Security):** The device offers TLS 1.1 and TLS 1.2. Enable one or more protocol versions according to your need.

7.2.12 Smooth Streaming

Purpose:
When the network is unstable or high quality video is required, you can enable Smooth Streaming to view the live view smoothly via the client software or a Web browser.

Before you start:
Add the device to your client software and select **NPQ** protocol in the client software before configuring the smooth streaming function.

1. Enter the Smooth Streaming Settings interface, **Configuration > Network > Advanced Settings > Smooth Streaming**.

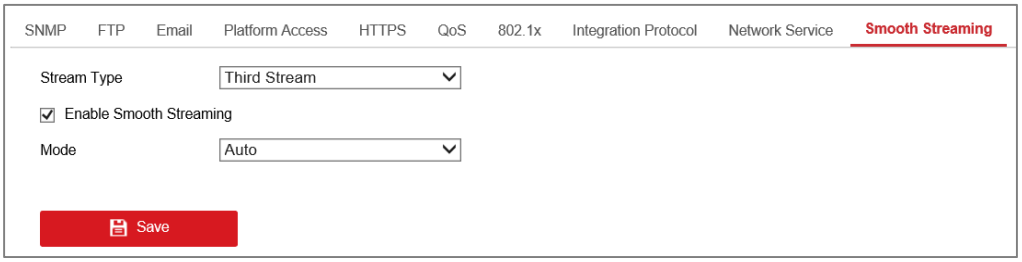


Figure 74, Smooth Streaming Settings

2. Select the Stream Type.

3. Check **Enable Smooth Streaming**.

   *NOTE: Be sure the Bitrate Type is selected as Constant and the SVC is selected as OFF before enable this function. Go to **Configuration > Video/Audio > Video** page to set the parameters.*

4. Select the smooth streaming mode. There are three modes selectable: **Auto, Resolution Priority**, and **Error Correction.**

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

   - **Resolution Priority**: The resolution stays the same as the set value in the Video page, and the bitrate will be adjusted automatically. Go to **Configuration > Video/Audio > Video** page, set the **Max. Bitrate** before you enable the smooth streaming function. In this mode the framerate will be adjusted automatically to the maximum value.

   - **Error Correction:** The resolution and bitrate stay the same as the set values in the Video page. When the bandwidth is sufficient, there is packet loss or bit error during transmission, and these situations will lead to video data error or loss. This mode is used to correct data errors during transmission. You can configure the error correction proportion within a range of 0-100. When the proportion is 0, the data error will be corrected by data retransmission. When the proportion is higher than 0, the error data will be corrected via redundant data that is added to the stream and data retransmission. The higher the value, the more redundant data will be generated, the more data error will be corrected, and the larger bandwidth is required. When the proportion is 100, the redundant data will be as large as the original data, and the bandwidth required will be double.

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

5. Click **Save** to save the settings.

Chapter 8 Video/Audio Settings

Purpose:
Follow the instructions below to configure the video setting, audio settings, ROI, Display info. on Stream, etc.

8.1 Configuring Video Settings

For certain camera models, you can configure parameters for available video streams. For example, the main stream, the sub-stream, etc. You can also customize additional video streams for further needs.

- On **Video** page, set-up available video streams.
- On **Custom Video** page, add extra video streams

8.1.1 Video Settings

1. Enter the Video Settings interface, **Configuration > Video/Audio > Video**.

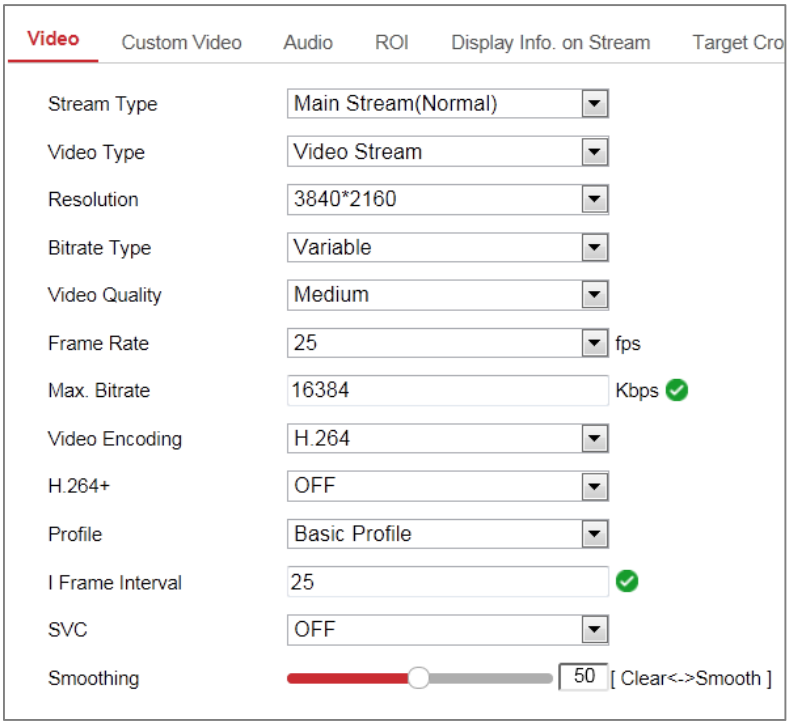


Figure 75, Video Settings

2. Select the Stream Type. Supported stream types are listed in the drop-down list.

NOTES: For some models, the Third Stream is not enabled by default. Go to **System > Maintenance > System Service> Software** to enable the function as required.

The main stream is usually for recording and live view with good bandwidth, and the sub-stream can be used for live view when the bandwidth is limited.

3. You can customize the following parameters for the selected stream type.

- **Video Type:** Select the stream type to video stream, or video & audio composite stream. The audio signal will be recorded only when the Video Type is Video & Audio.
- **Resolution**: Select the resolution of the video output.
- **Bitrate Type:** Select the bitrate type to **Constant** or **Variable**.
- **Video Quality:** When bitrate type is selected as **Variable**, six levels of video quality are selectable.
- **Frame Rate:** Set the frame rate. The frame rate is to describe the frequency at which the video stream is updated and is measured in frames per second (fps). A higher frame rate is advantageous when there is movement in the video stream, as it maintains image quality throughout.
- **Max. Bitrate:** Set the maximum bitrate from 32 to 16384 Kbps. A higher value corresponds to higher video quality, but more bandwidth is required.

  NOTE: The maximum limit of the max. bitrate value varies by camera platform. For certain cameras, the maximum limit is 8192 Kbps or 12288 Kbps.

- **Video Encoding:** The camera supports multiple video encodings types such as H.264, H.265, MJPEG, and MPEG4. Supported encoding type for different stream types may differ. H.265 is a new encoding technology. Compared to H.264, it reduces the transmission bitrate under the same resolution, frame rate, and image quality.

  NOTE: Selectable video encoding types may vary by camera model.

- **H.264+ and H.265+:** You need to reboot the camera if you want to turn on or turn off the H.264+/H.265+. If you switch from H.264+ to H.265+ directly, and vice versa, a reboot is not required by the system.

  - **H.264+:** If you set the main stream as the stream type, and H.264 as the video encoding, you can see H.264+ available. H.264+ is an improved compression coding technology based on H.264. By enabling H.264+, users can estimate the HDD consumption by its maximum average bitrate. Compared to H.264, H.264+ reduces storage by up to 50 percent with the same maximum bitrate in most scenes.

  - **H.265+:** If you set the main stream as the stream type, and H.265 as the video encoding, you can see H.265+ available. H.265+ is an improved compression coding technology based on H.265. By enabling H.265+, users can estimate the HDD consumption by its maximum average bitrate. Compared to H.265, H.265+ reduces storage by up to 50 percent with the same maximum bitrate in most scenes.

  NOTES:
  - » *Upgrade your video player to the latest version if live view or playback does not work properly due to compatibility.*
  - » *With H.264+/H.265+ enabled, the parameters such as profile, I frame interval, video quality, and SVC are greyed out.*
  - » *With H.264+/H.265+ enabled, some functions are not supported. For those functions, corresponding interfaces will be hidden.*
  - » *H.264+/H.265+ can spontaneously adjust the bitrate distribution according the requirements of the actual scene*

in order to realize the set maximum average bitrate in the long term. The camera needs at least 24 hours to adapt to a fixed monitoring scene.

- **Max. Average Bitrate:** When you set a maximum bitrate, its corresponding recommended maximum average bitrate will be shown in the Max. Average Bitrate box. You can also set the maximum average bitrate manually from 32 Kbps to the value of the set maximum bitrate.
- **Profile:** When you select H.264 or H.265 as video encoding, you can set the profile. Selectable profiles vary by camera model.
- **I Frame Interval:** Set I Frame Interval from 1 to 400.
- **SVC:** Scalable Video Coding is an extension of the H.264/AVC and H.265 standard. Select **OFF/ON** to disable/enable the SVC function. Select **Auto** and the device will automatically extract frames from the original video when the network bandwidth is insufficient.
- **Smoothing:** It refers to the smoothness of the stream. The higher the value, the more fluent the stream will be, although the video quality may not be satisfactory. The lower the value, the higher the stream quality will be, although it might not appear as fluent.

4. Click **Save** to save the settings.

NOTE: The video parameters vary BY camera model. Refer to the actual display page for camera functions.

8.1.2 Custom Video

You can set up additional video streams if required. For custom video streams, you can live view them, but cannot record or playback them.

NOTES: Custom video functions requires the support of the camera.

After a camera restore action (not restore to default setting), quantity of custom video streams and their names are kept, but the related parameters are restored.

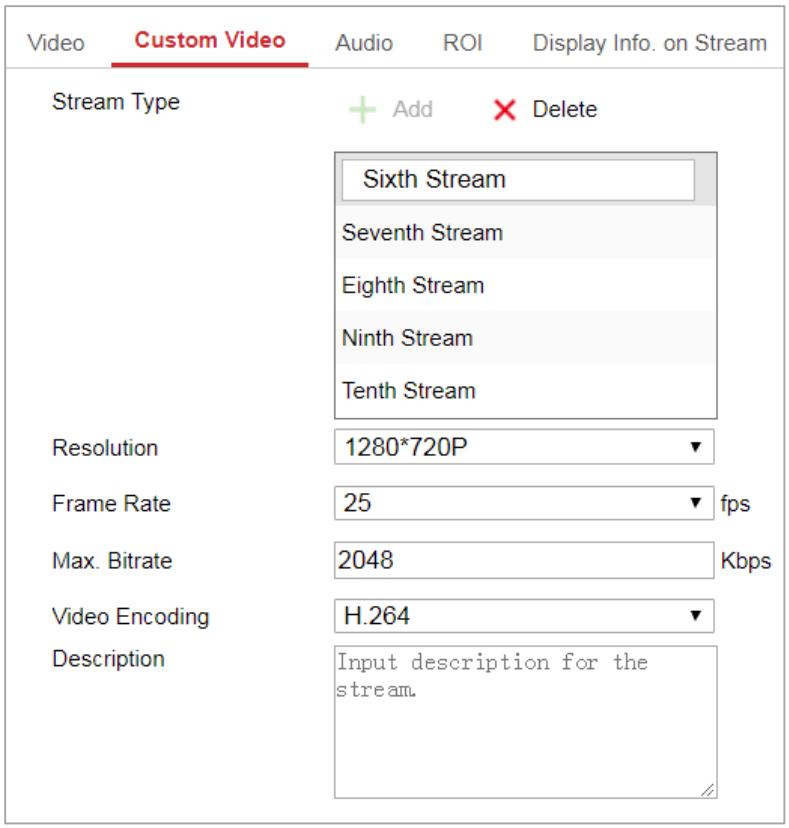


Figure 76, Custom Video Settings

1. Click + to add a stream.
2. Change the stream name if needed.

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

3. Customize the stream parameters (resolution, frame rete, max. bitrate, video encoding). For parameter introduction, see *Section 8.1.1*.
4. (Optional) Add stream description if needed.
5. (Optional) If a custom stream is not needed, click ✕ to delete it.
6. Save the settings.

8.2 Configuring Audio Settings

1. Enter the Audio Settings interface, **Configuration > Video/Audio > Audio**.

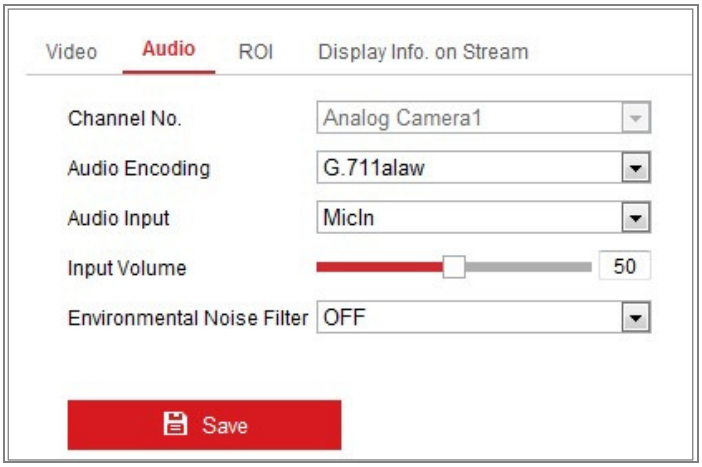


Figure 77, Audio Settings

2. Configure the following settings:

NOTE: Audio settings vary by camera model.

- **Audio Encoding:** G.722.1, G.711 ulaw, G.711alaw, G.726, MP2L2 and PCM are selectable. For MP2L2, the Sampling Rate and Audio Stream Bitrate are configurable. For PCM, the Sampling Rate can be set.
- **Audio Input:** MicIn and LineIn are selectable for the connected microphone and pickup respectively.
- **Input Volume**: 0-100 adjustable.
- **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.

3. Click **Save** to save the settings.

8.3 Configuring ROI Encoding

Purpose:
ROI (Region of Interest) encoding helps to discriminate the ROI and background information in video compression, which means, 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.

NOTE: ROI function varies by camera model.

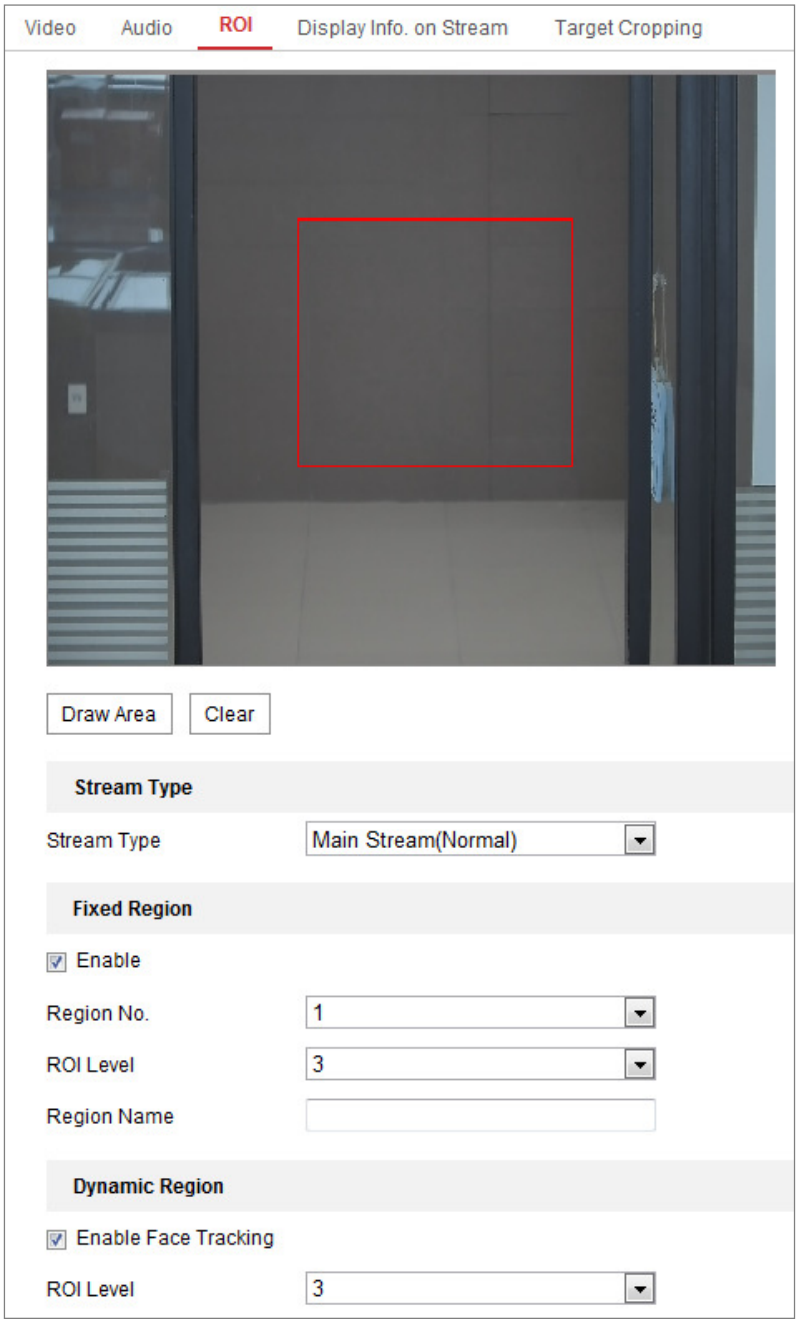


Figure 78, Region of Interest Settings

1. Enter the ROI settings interface: **Configuration > Video/Audio > ROI**.
2. Select the Stream Type for ROI encoding.
3. Check the checkbox of **Enable** under Fixed Region item.
4. Set **Fixed Region** for ROI.
   A. Select the Region No. from the drop-down list.
   B. Check the **Enable** checkbox to enable ROI function for the chosen region.

C. Click **Drawing**. Click and drag the mouse on the view screen to draw a red rectangle as the ROI region. You can click **Clear** to cancel former drawing. Click **Stop Drawing** when you finish.

D. Select the ROI level.

E. Enter a region name for the chosen region.

F. Click **Save** to save the settings of ROI settings for chosen fixed region.

G. Repeat steps (1) to (6) to setup other fixed regions.

5. Set Dynamic Region for ROI.

A. Check the checkbox to enable **Face Tracking**.

NOTE: To enable face tracking, the face detection function must be supported and enabled.

B. Select the ROI level.

6. Click **Save** to save the settings.

NOTE: ROI level means the image quality enhancing level. The larger the value, the better the image quality.

8.4 Display Info. on Stream

Check the **Enable Dual-VCA** checkbox, and object information (e.g., human, vehicle, etc.) will be marked in the video stream. Then, you can set rules on the connected rear-end device to detect the events including line crossing, intrusion, etc.

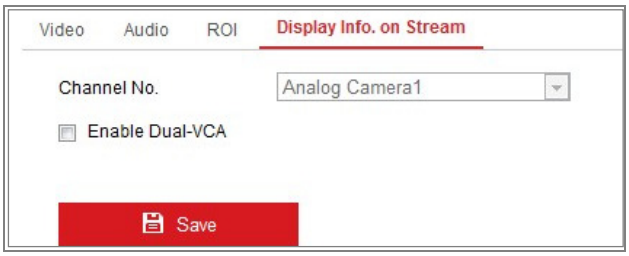


Figure 79, Display Info. on Stream

8.5 Configuring Target Cropping

Purpose:
You can specify a target area on the live video, and then the specified video area can be displayed via the third stream in certain resolution, providing more details of the target area if needed.

NOTE: Target cropping function varies BY camera model.

1. Enter the **Target Cropping** settings interface.

2. Check the **Enable Target Cropping** checkbox to enable the function.

3. Set **Third Stream** as the stream type.

4. Select the cropping resolution for the video display of the target area. A red rectangle is displayed on the live video to mark the target area, and you can click-and-drag the rectangle to locate the target area as desired.

5. Click **Save** to save the settings.

Chapter 9 Image Settings

Purpose:
Follow the instructions in this chapter to configure the image parameters, including display settings, OSD settings, privacy mask, and picture overlay.

9.1 Configuring Display Settings

Purpose:
Configure the image adjustment, exposure settings, day/night switch, backlight settings, white balance, image enhancement, video adjustment, and other parameters in display settings.

NOTE: The display parameters vary by camera model. Please refer to the actual interface for details.

9.1.1 Day/Night Auto-Switch

1. Enter the Display Settings interface, **Configuration > Image > Display Settings**.

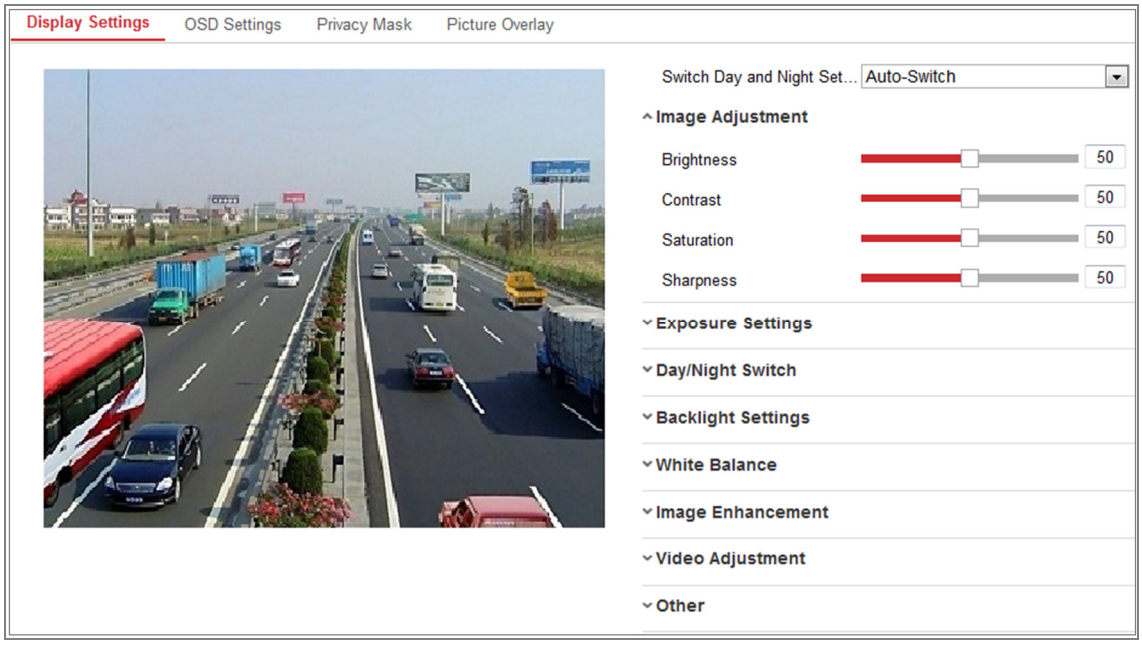


Figure 80, Display Settings of Day/Night Auto-Switch

2. Set the camera image parameters.

NOTE: In order to guarantee the image quality in different illumination, it provides two sets of parameters to configure.

- **Image Adjustment**

  - Brightness describes bright of the image, which ranges from 1 to 100.

- Contrast describes the contrast of the image, which ranges from 1 to 100.
- Saturation describes the colorfulness of the image color, which ranges from 1 to 100.
- Sharpness describes the edge contrast of the image, which ranges from 1 to 100.

- **Exposure Settings**
  - If the camera is equipped with the fixed lens, only **Manual** is selectable, and the iris mode is not configurable.
  - If **Auto** is selected, you can set the auto iris level from 0 to 100.
  - **Exposure Time** refers to the electronic shutter time, which ranges from 1 to 1/100,000s. Adjust it according to the actual luminance condition.
  - **Gain** of image can also be manually configured from 0 to 100. The bigger the value, the brighter the image, and the noise would also be amplified to a larger extent.

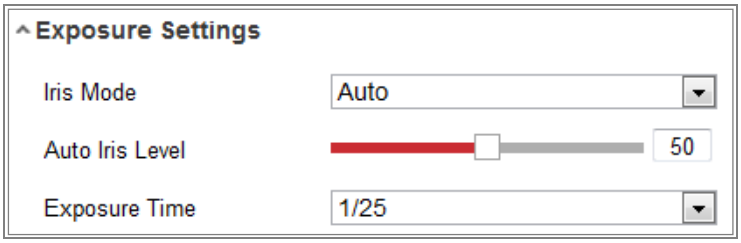


Figure 81, Exposure Settings

- **Focus:** For camera support motor-driven lens, you can set the focus mode as Auto, Manual or Semi-auto.
  - **Auto:** Camera focus is adjusted automatically according to the actual monitoring scenario.
  - **Manual:** You can control the lens by adjusting the zoom, focus, lens initialization, and auxiliary focus manually.
  - **Semi-Auto:** Camera will focus automatically when you adjust the zoom parameters.
- **Day/Night Switch:** Set the Day/Night Switch mode according to the surveillance demand. **Day**, **Night**, **Auto**, **Scheduled-Switch**, and **Triggered** by alarm input are selectable.

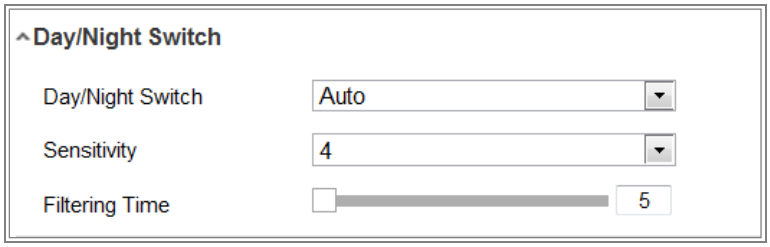


Figure 82, Day/Night Switch

  - **Day:** The camera stays in day mode.
  - **Night:** The camera stays in night mode.

- **Auto:** The camera switches between day mode and night mode according to the illumination automatically. The sensitivity ranges from 0 to 7, the higher the value, the easier the mode switches. The filtering time refers to the interval time between the day/night switch. You can set it from 5s to 120s.

- **Scheduled-Switch:** Set the start time and the end time to define the day/night mode duration.

- **Triggered by Alarm Input:** The switch is triggered by alarm input. You can set the triggered mode to day or night.

- **Smart Supplement Light:** Set the supplement light to **ON**, and **Auto** and **Manual** are selectable.

  > **Auto:** The supplement light changes according to the actual luminance. E.g., if the current scene is bright enough, then the supplement light adjusts to lower power; and if the scene is not bright enough, the light adjusts to higher power.

  > **Manual:** You can adjust the supplement by adjusting the distance. E.g., if the object is near the camera, the device adjusts the supplement light to lower power, and the light is in higher power if the object is far.

- **Backlight Settings:** BLC Area: If you focus on an object against strong backlighting, the object will be too dark to be seen clearly. BLC compensates light to the object in the front to make it clear. **OFF**, **Up**, **Down**, **Left**, **Right**, **Center**, **Auto**, and **Custom** are selectable.

  NOTE: If BLC mode is set to Custom, you can draw a red rectangle on the live view image as the BLC area.

- **WDR**: Wide Dynamic Range can be used when there is a high contrast of the bright areas and the dark areas of the scene.

- **HLC:** The High Light Compression function can be used when there are strong lights in the scene affecting the image quality.

- **White Balance:** White balance is the white rendition function of the camera used to adjust the color temperature according to the environment.

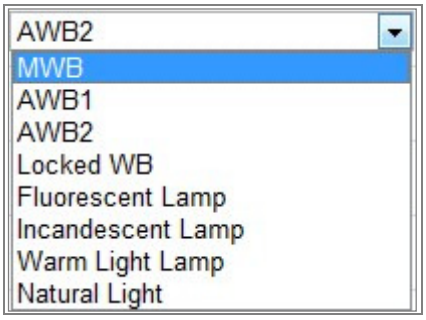


Figure 83, White Balance

- **Image Enhancement**

  - **Digital Noise Reduction**: DNR reduces the noise in the video stream. **OFF**, **Normal**, and **Expert** are selectable. Set the DNR level from 0 to 100 in Normal Mode. Set the DNR level from both space DNR level [0-100] and time DNR level [0-100] in Expert Mode.

- **Defog Mode**: 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 (Electrical Image Stabilizer)**: EIS reduces the effects of vibration in a video.
- **Grey Scale**: You can choose the range of the grey scale as [0-255] or [16-235].

- **Video Adjustment**
  - **Mirror**: It mirrors the image so you can see it inversed. **Left/Right**, **Up/Down**, **Center**, and **OFF** are selectable.
  - **Rotate**: To make a complete use of the 16:9 aspect ratio, you can enable the rotate function when you use the camera in a narrow view scene. When installing, turn the camera 90 degrees or rotate the 3-axis lens to 90 degrees, and set the rotate mode **ON**, you will get a normal view of the scene with 9:16 aspect ratio to ignore needless information such as a wall, and get more meaningful information of the scene.
  - **Scene Mode**: Choose the scene as indoor or outdoor according to the real environment.
  - **Video Standard:** 50 Hz and 60 Hz are selectable. Choose according to the video standard; normally 50 Hz for PAL standard and 60 Hz for NTSC standard.
  - **Lens Distortion Correction:** For cameras equipped with motor-driven lenses, image may appear distorted to some extent. Turn on this function to correct the distortion.

- **Others**

  Some camera models support CVBS, SDI, or HDMI output. Set the local output **ON** or **OFF** according to the actual device.

9.1.2 Day/Night Scheduled-Switch

The Day/Night scheduled-switch configuration interface enables you to set the camera parameters for day and night separately, guaranteeing the image quality in different illumination.

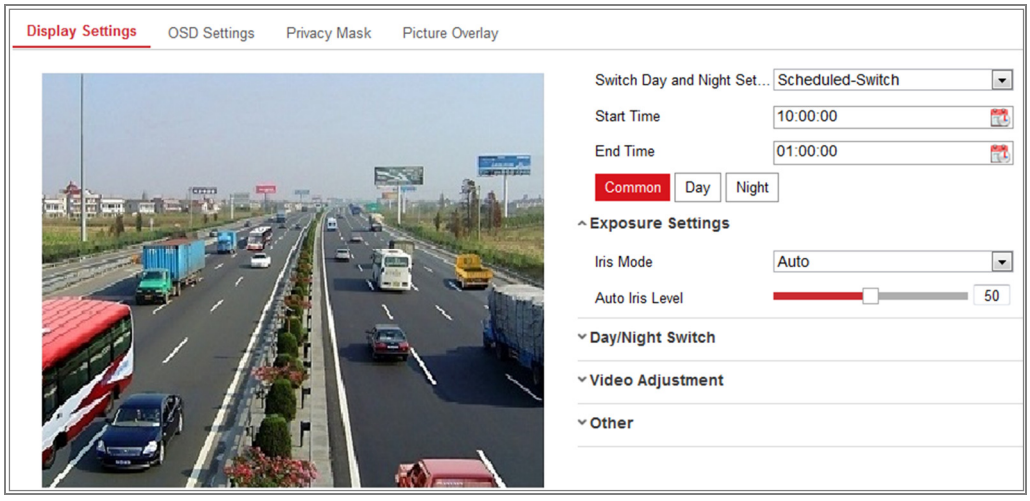


Figure 84, Day/Night Scheduled-Switch Configuration Interface

1. Click the calendar icon to select the start time and the end time of the switch.

   NOTES:
   - » *The start time and end time refer to the valid time for day mode.*
   - » *The time period can start and end on two subsequent days. For example, if you set the start time as 10:00 and end time as 1:00, the day mode will activate at 10:00 in the morning and stop at 1:00 the next morning.*

2. Click the **Common** tab to configure the common parameters applicable to the day mode and night modes.

   NOTE: For detailed information of each parameter, please refer to Section 9.1.1 Day/Night Auto-Switch.

3. Click Day tab to configure the parameters applicable for day mode.

4. Click Night tab to configure the parameters applicable for night mode.

   NOTE: The settings saved automatically if any parameter is changed.

9.2 Configuring OSD Settings

Purpose:
You can customize the camera name, time/date format, display mode, and OSD size displayed on live view.

Figure 85, OSD Settings

1. Enter the OSD Settings interface: **Configuration > Image > OSD Settings**.

2. Check the corresponding checkbox to select the display of **Camera Name**, **Date**, or **Week** if required.

3. Edit the camera name in the **Camera Name** text field.

4. Select from the drop-down list to set the time format and date format.
5. Select from the drop-down list to set the time format, date format, display mode, OSD size, and OSD color.
6. Configure the text overlay settings.
   A. Check the checkbox in front of the textbox to enable the on-screen display.
   B. Input the characters in the textbox.

      NOTE: Up to eight text overlays are configurable.
7. Adjust the position and alignment of text frames. **Left align**, **right align**, and **custom** are selectable. If you select custom, you can use the mouse to click and drag text frames in the live view window to adjust their positions.

      NOTE: The alignment adjustment is applicable only to Text Overlay items.
8. Click **Save** to save the settings.

9.3 Configuring Privacy Mask

Purpose:
Privacy mask lets you cover certain areas of the live video to prevent certain spots in the surveillance area from being live viewed and recorded.

1. Enter the Privacy Mask Settings interface: **Configuration** > **Image** > **Privacy Mask**.
2. Check the **Enable Privacy Mask** checkbox to enable this function.
3. Click **Draw Area**.

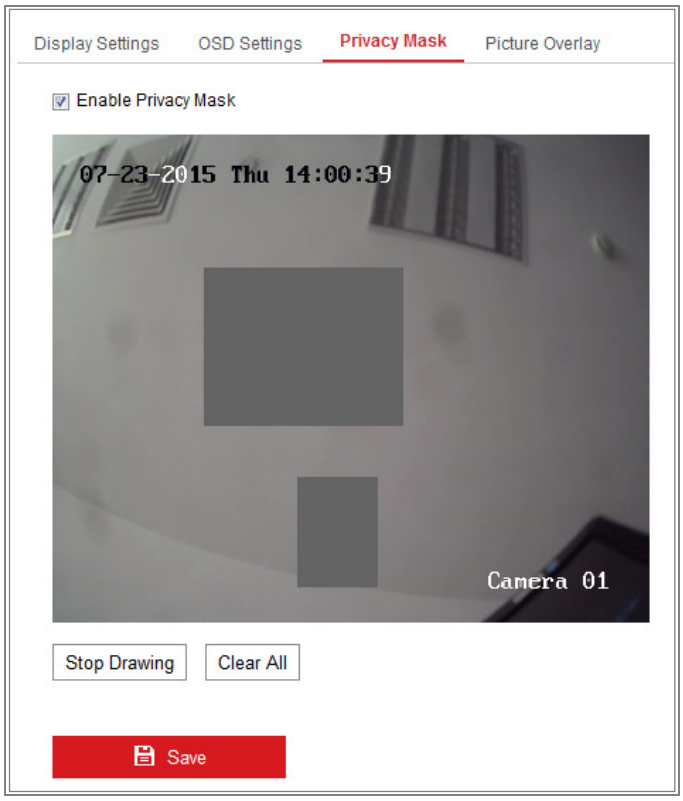


Figure 86, Privacy Mask Settings

4. Click and drag the mouse in the live video window to draw the mask area.

   NOTE: You are allowed to draw up to four areas on the same image.

5. Click **Stop Drawing** to finish drawing or click **Clear All** to clear all of the areas you set without saving them.

6. Click **Save** to save the settings.

9.4 Configuring Picture Overlay

Purpose:
Picture Overlay lets you overlay a picture on the image. This lets an enterprise or user overlay a logo on the image.

1. Enter the Picture Overlay Settings interface, **Configuration** > **Image** > **Picture Overlay**.

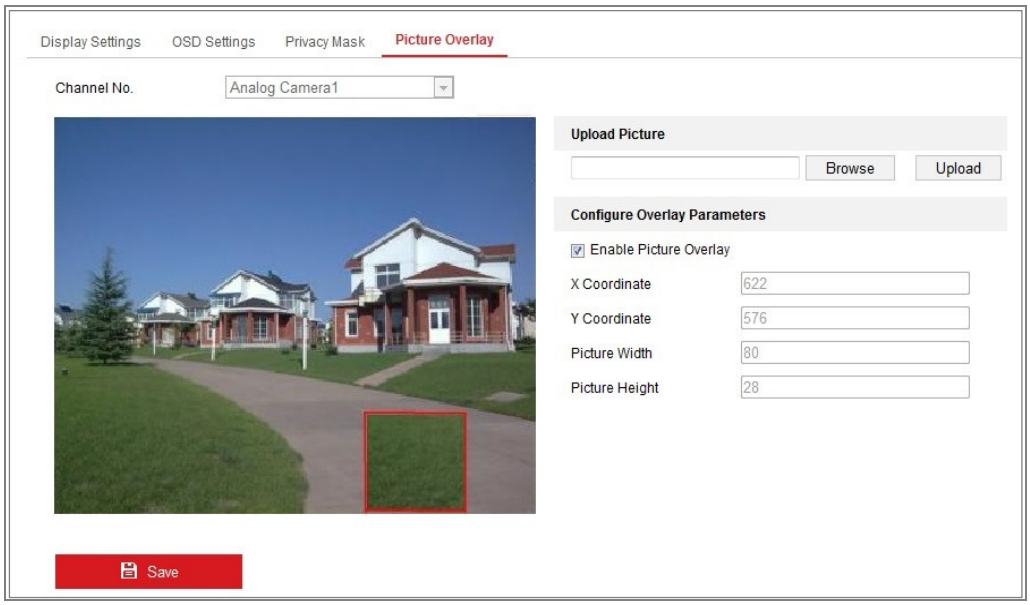


Figure 87, Picture Overlay

2. Click **Browse** to select a picture.
3. Click **Upload** to upload it.
4. Check **Enable Picture Overlay** checkbox to enable the function.
5. Set **X Coordinate** and **Y Coordinate** values to adjust the picture position on the image. Adjust **Picture Width** and **Picture Height** to the desired size.
6. Click **Save** to save settings.

NOTE: The picture must be in RGB24 .bmp format, and the maximum picture size is 128 x 128 pixels.

Chapter 10 Event Settings

This section explains how to configure the network camera to respond to alarm events, including basic events and smart events.

10.1 Basic Events

You can configure basic events by following the instructions in this section, including motion detection, video tampering, alarm input, alarm output, exception, etc. These events can trigger the linkage methods such as Notify Surveillance Center, Send Email, Trigger Alarm Output, etc.

NOTE: Check the Notify Surveillance Center checkbox if you want the alarm information to be pushed to a PC or mobile client software as soon as the alarm is triggered.

10.1.1 Configuring Motion Detection

Purpose:
Motion detection detects moving objects in a configured surveillance area, and a series of actions can be taken when an alarm is triggered.

In order to detect the moving objects accurately and reduce the false alarm rate, normal configuration and expert configuration are selectable for different motion detection environments.

- **Normal Configuration**

  Normal configuration adopts the same set of motion detection parameters in the day and at night.

  Task 1: Set the Motion Detection Area

  1. Enter the motion detection settings interface: Configuration > Event > Basic Event > Motion Detection.
  2. Check the **Enable Motion Detection** checkbox.
  3. Check the **Enable Dynamic Analysis for Motion** checkbox if you want to mark the detected objects with green rectangles.

     *NOTE: If you don't want detected objects displayed with green rectangles, select **Disable Rules** from **Configuration > Local Configuration > Live View Parameters-rules**.*

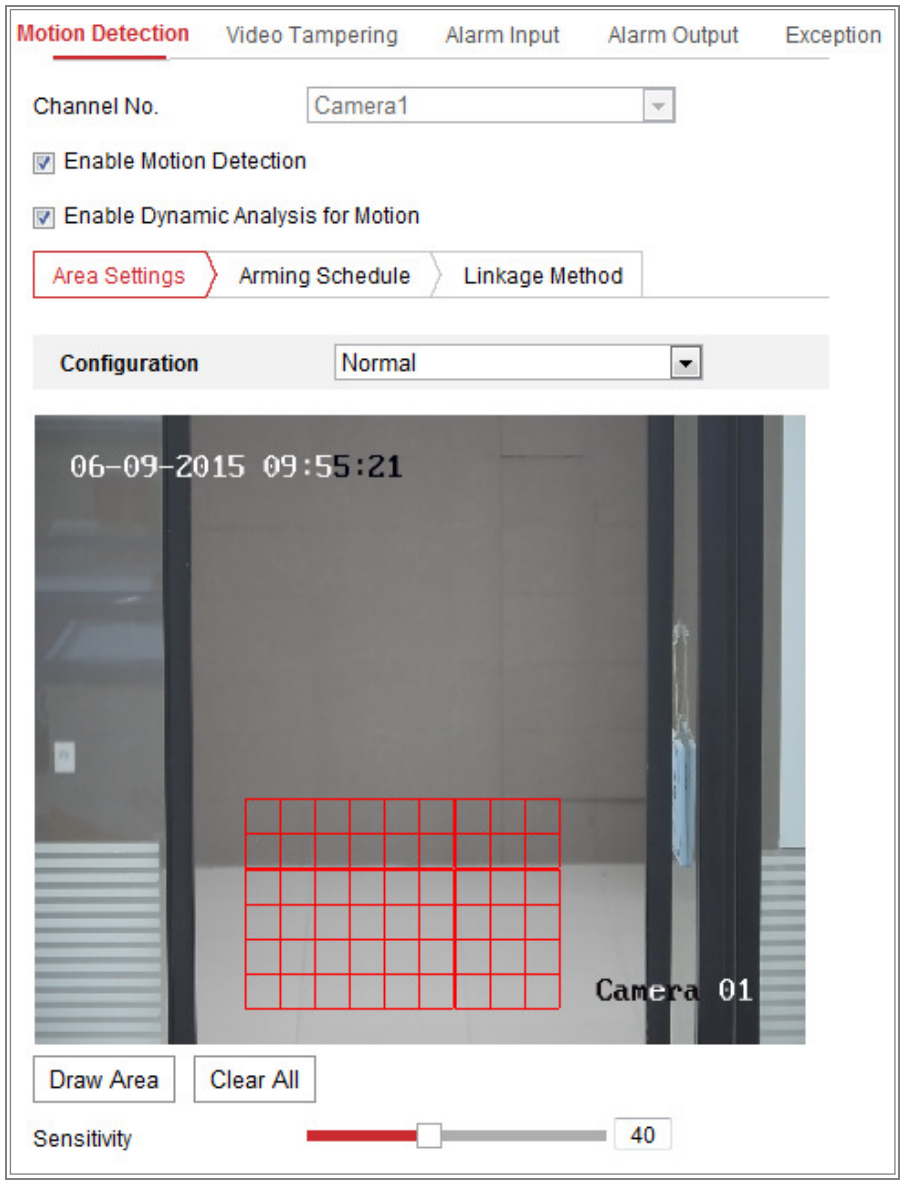


Figure 88, Enable Motion Detection

4. Click **Draw Area**. Click and drag the mouse on the live video to draw a motion detection area. Click **Stop Drawing** to finish drawing one area.

5. (Optional) Click **Clear All** to clear all of the areas.

6. (Optional) Move the slider to set the detection sensitivity.

Task 2: Set the Arming Schedule for Motion Detection

Figure 89, Arming Schedule

1. Click **Arming Schedule** to edit the arming schedule.
2. Click on the time bar and drag the mouse to select the time period.

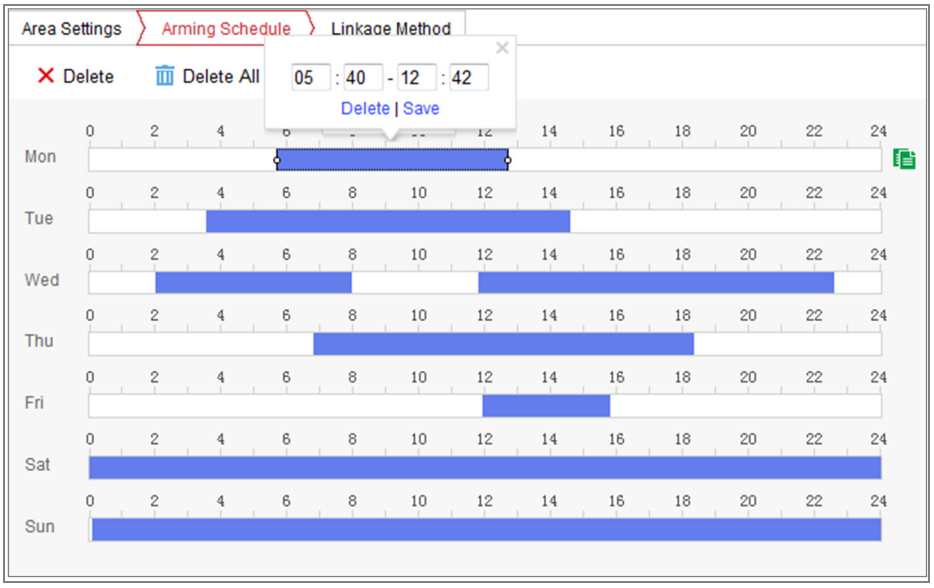


Figure 90, Arming Schedule

NOTE: Click on a time period to adjust it by either moving the time bar or inputting the exact time period.

3. (Optional) Click **Delete** to delete the current arming schedule or click **Save** to save the settings.
4. Move cursor to the end of each day, and a copy dialogue box will pop up. You can copy the settings to other days.

5. Click **Save** to save the settings.

NOTE: Time periods can't overlap. Up to eight periods can be configured for each day.

Task 3: Set the Linkage Method for Motion Detection

Check the checkbox to select the linkage method. **Audible Warning**, **Send Email**, **Notify Surveillance Center**, **Upload to FTP/Memory Card/NAS**, **Trigger Channel**, and **Trigger Alarm Output** are selectable. You can specify the linkage method when an event occurs.

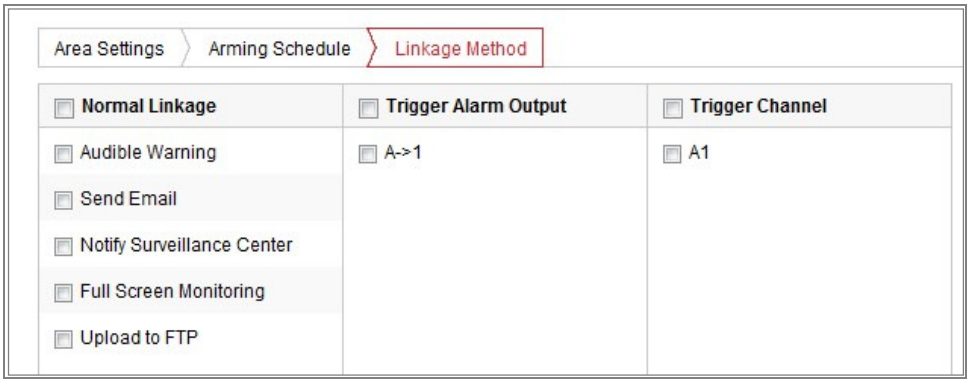


Figure 91, Linkage Method

NOTE: The linkage methods vary by camera model.

- **Audible Warning:** Trigger the audible warning locally (supported only by devices that have audio output).
- **Notify Surveillance Center:** Send an exception or alarm signal to remote management software when an event occurs.
- **Send Email:** Send an e-mail with alarm information to a user(s) when an event occurs.

  NOTE: To send the e-mail when an event occurs, refer to Section 7.2.3 to complete e-mail setup in advance.

- **Upload to FTP/Memory Card/NAS:** Capture the image when an alarm is triggered and upload it to an FTP server.

  NOTE: Set the FTP address and the remote FTP server first. Refer to Section 7.2.2 Configuring FTP Settings for detailed information.

  - Go to **Configuration > Storage > Schedule Settings> Capture > Capture Parameters** page, enable the event-triggered snapshot, and set the capture interval and capture number.
  - The captured image can also be uploaded to an available SD card or network disk.
  - Trigger Channel: The video will be recorded when motion is detected. You have to set the recording schedule to realize this function. Please refer to *Section 11.1* for detailed information.
  - Trigger Alarm Output: Trigger one or more external alarm outputs when an event occurs.

NOTE: To trigger an alarm output when an event occurs, refer to Section 10.1.4 Configuring Alarm Output to set the related parameters.

- **Expert Configuration:** Expert mode is used to configure the sensitivity and proportion of object on each area for different day/night switch.

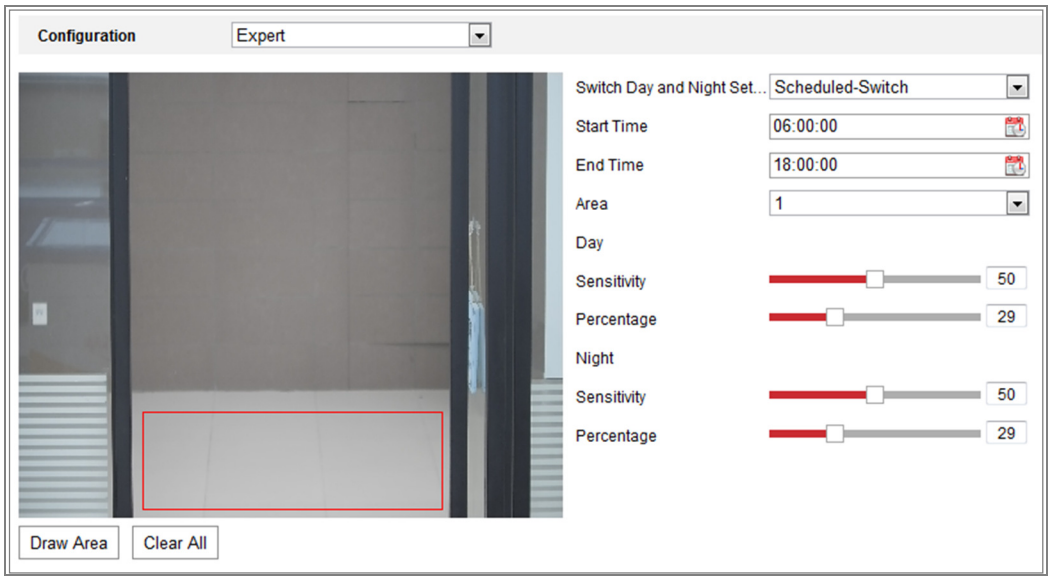


Figure 92, Expert Mode of Motion Detection

- **Day/Night Switch OFF**

1. Draw the detection area as in the normal configuration mode. Up to eight areas are supported.
2. Set **Switch Day and Night Settings** to **OFF**.
3. Select the area by clicking the area no.
4. Slide the cursor to adjust the sensitivity and proportion of object on the area for the selected area.
5. Set the arming schedule and linkage method as in the normal configuration mode.
6. Click **Save** to save the settings.

- **Day/Night Auto-Switch**

1. Draw the detection area as in the normal configuration mode. Up to eight areas are supported.
2. Set **Switch Day and Night Settings** to **Auto-Switch**.
3. Select the area by clicking the area no.
4. Slide the cursor to adjust the sensitivity and object proportion in the area for the selected area in the day.
5. Slide the cursor to adjust the sensitivity and object proportion in the area for the selected area at night.

6. Set the arming schedule and linkage method as in the normal configuration mode.
7. Click **Save** to save the settings.

- **Day/Night Scheduled-Switch**

1. Draw the detection area as in the normal configuration mode. Up to eight areas are supported.
2. Set **Switch Day and Night Settings** to **Scheduled-Switch**.

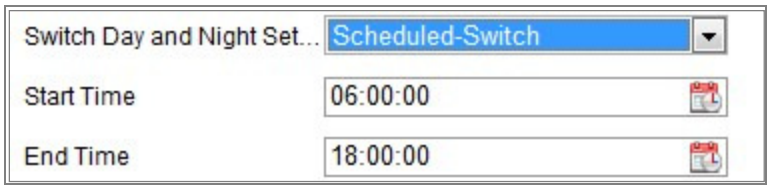


Figure 93, Day/Night Scheduled-Switch

3. Select the start time and the end time for the switch timing.
4. Select the area by clicking the area no.
5. Slide the cursor to adjust the sensitivity and object proportion in the area for the selected area in the day.
6. Slide the cursor to adjust the sensitivity and object proportion in the area for the selected area at night.
7. Set the arming schedule and linkage method as in the normal configuration mode.
8. Click **Save** to save the settings.

10.1.2 Configuring Video Tampering Alarm

Purpose:
You can configure the camera to trigger the alarm when the lens is covered and take certain alarm response actions. Detection area for this alarm is the entire screen.

1. Enter the video tampering Settings interface, **Configuration > Event > Basic Event > Video Tampering**.
2. Check **Enable Video Tampering** checkbox to enable video tampering detection.
3. Click **Edit** to edit the arming schedule for video tampering. The arming schedule configuration is the same as the setting of the arming schedule for motion detection. Refer to ***Task 2: Set the Arming Schedule for Motion Detection*** in *Section 10.1.1.*
4. Check the checkbox to select the linkage method taken for video tampering. Refer to ***Task 3: Set the Linkage Method for Motion Detection*** in *Section 10.1.1.*
5. Click **Save** to save the settings.

10.1.3 Configuring Alarm Input

1. Enter the Alarm Input Settings interface: **Configuration > Event > Basic Event > Alarm Input**.

2. Choose the alarm input no. and the Alarm Type. The alarm type can be NO (Normally Open) and NC (Normally Closed). Edit the name to set a name for the alarm input (optional).

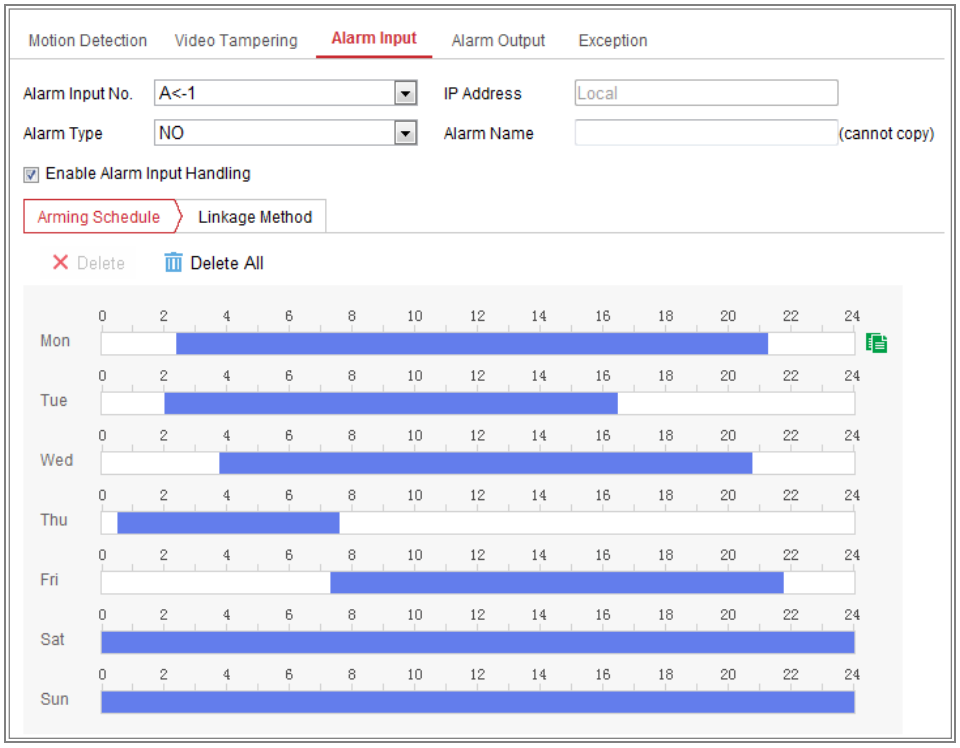


Figure 94, Alarm Input Settings

3. Click **Arming Schedule** to set the arming schedule for the alarm input. Refer to ***Task 2: Set the Arming Schedule for Motion Detection*** in *Section 10.1.1.*

4. Click **Linkage Method** and check the checkbox to select the linkage method for the alarm input. Refer to ***Task 3: Set the Linkage Method for Motion Detection*** in *Section 10.1.1.*

5. You can copy your settings to other alarm inputs.

6. Click **Save** to save the settings.

10.1.4 Configuring Alarm Output

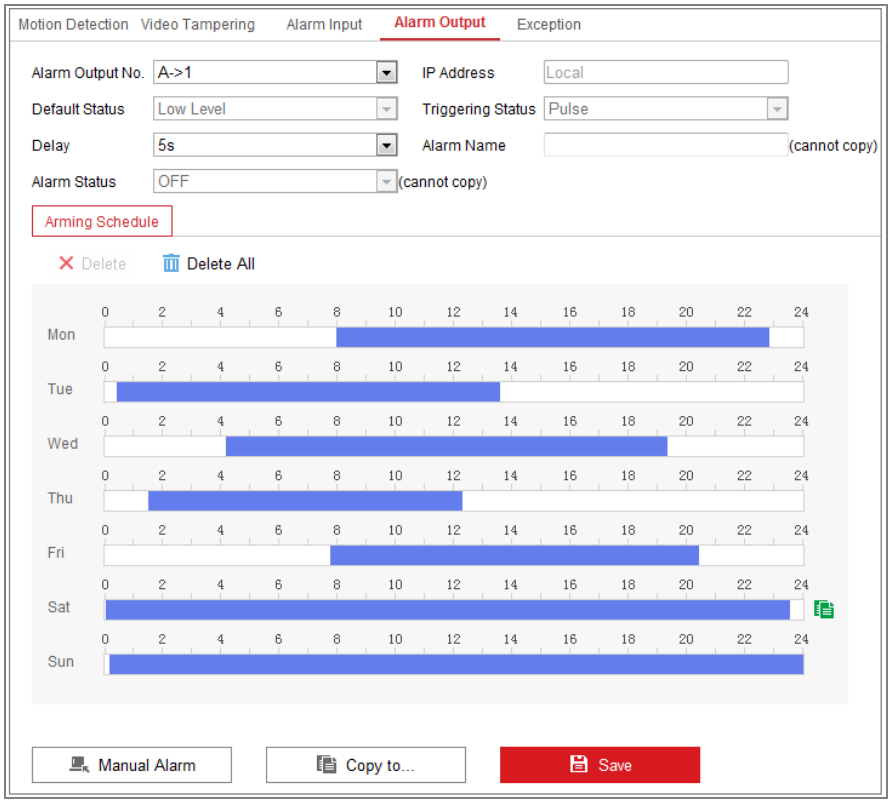


Figure 95, Alarm Output Settings

1. Enter the Alarm Output Settings interface: **Configuration> Event > Basic Event > Alarm Output**.
2. Select an alarm output channel in the **Alarm Output** drop-down list. You can also set a name for the alarm output (optional).
3. The Delay time can be set to 5sec, 10sec, 30sec, 1min, 2min, 5min, 10min or Manual. The delay time refers to the duration that the alarm output remains in effect after an alarm occurs.
4. Click **Arming Schedule** to enter the Edit Schedule Time interface. The time schedule configuration is the same as the settings of the arming schedule for motion detection Refer to ***Task 2: Set the Arming Schedule for Motion Detection*** in *Section 10.1.1.*
5. You can copy the settings to other alarm outputs.
6. Click **Save** to save the settings.

10.1.5 Handling Exception

The exception type can be HDD full, HDD error, network disconnected, IP address conflicted, and illegal login to the cameras.

1. Enter the Exception Settings interface: **Configuration > Event > Basic Event > Exception**.

2. Check the checkbox to set the actions taken for the Exception alarm. Refer to ***Task 3: Set the Linkage Method for Motion Detection*** in *Section 10.1.1.*

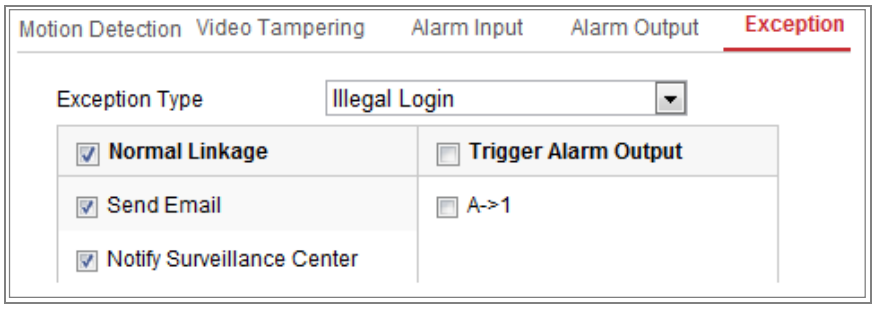


Figure 96, Exception Settings

3. Click **Save** to save the settings.

10.1.6 Configuring Other Alarm

NOTE: Certain cameras support Wireless Alarm, PIR (passive infrared sensor) Alarm, or Emergency Alarm.

- **Wireless Alarm**

When a wireless alarm signal is sent to the camera from the detector such as from a wireless door contact, the wireless alarm is triggered and a series of response actions can be taken.

1. Enter the Wireless Alarm Settings interface: **Configuration > Advanced Configuration> Basic Event > Wireless Alarm**.

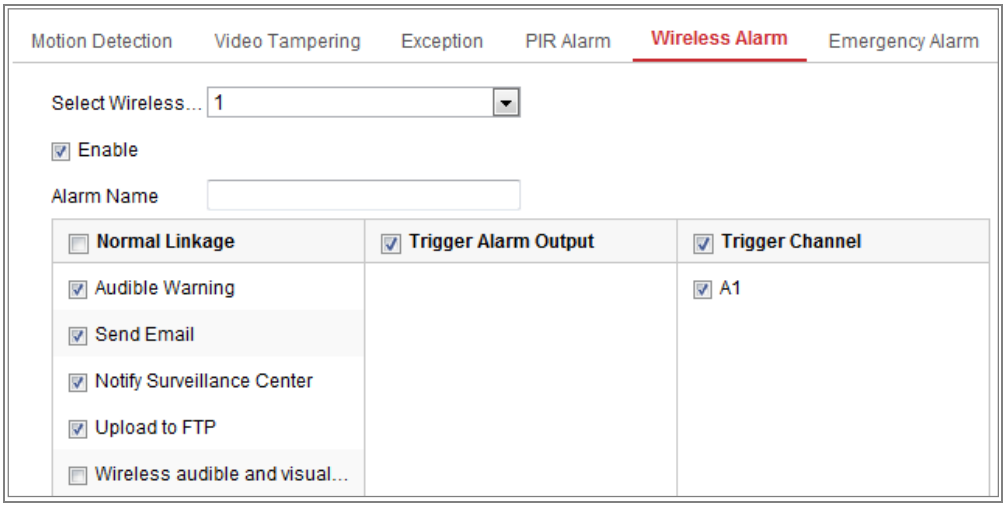


Figure 97, Setting Wireless Alarm

2. Select the wireless alarm number. Up to eight channels of external wireless alarm input are supported.

3. Check the **Enable Wireless Alarm** checkbox to activate the wireless alarm.

4. Input the alarm name in the text field as desired.
5. Check the checkbox to **select** the linkage methods taken for the wireless alarm.
6. Click **Save** to save the **settings**.
7. Locate the external wireless **device** beside the camera, and go to **Configuration > System > System Settings > Remote Control** to arm the camera and examine the wireless alarm.

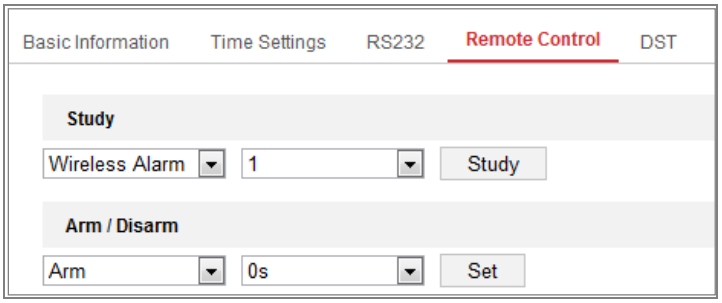


Figure 98, Configuring Wireless Alarm Settings

- **PIR Alarm**

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

1. Enter the PIR Alarm Settings interface: **Configuration > Advanced Configuration > Basic Event > PIR Alarm**.

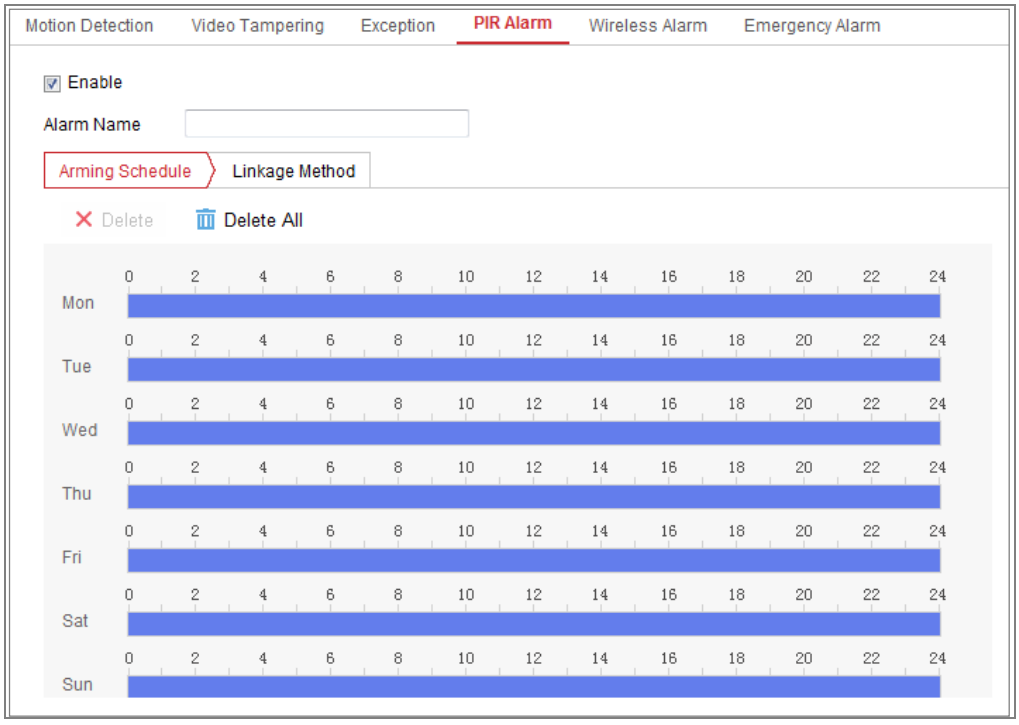


Figure 99, Setting PIR Alarm

2. Check the **Enable** checkbox to activate the PIR alarm function.
3. Input the alarm name in the text field as desired.
4. Check the checkbox to select the linkage methods for the PIR alarm.
5. Click the **Edit** button to set the arming schedule.
6. Click **Save** to save the settings.
7. Go to **Configuration > Advanced Configuration > System > Remote Control** to arm the camera.

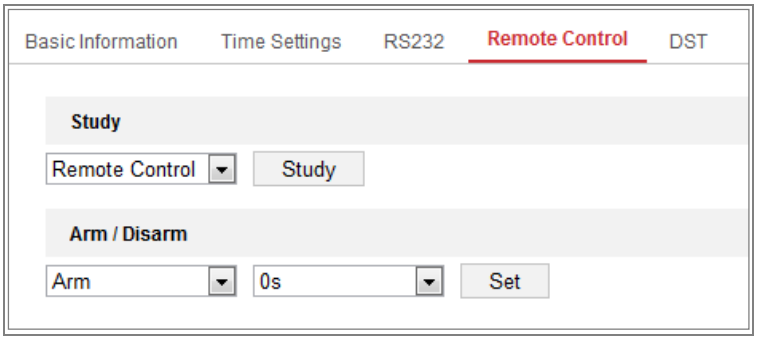


Figure 100, Arming PIR Alarm

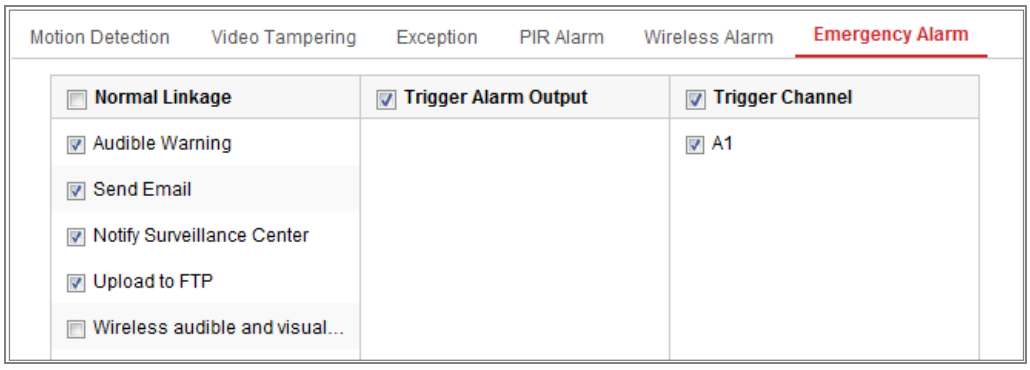
- **Emergency Alarm**

Purpose:

You can press the Emergency button on the remote control to trigger the Emergency Alarm in case of an emergency.

NOTE: The remote control is required for the Emergency Alarm. Go to Configuration > System> System Settings > Remote Control to study the remote control functions.

1. Enter the Emergency Alarm Settings interface: **Configuration > Event > Basic Event > Emergency Alarm**.



Setting Emergency Alarm

2. Check the checkbox to select the linkage methods taken for the Emergency alarm.
3. Click **Save** to save the settings.

10.2 Smart Events

You can configure the smart events by following the instructions in this section, including audio exception detection, defocus detection, scene change detection, intrusion detection, line crossing detection, etc. These events can trigger the linkage methods such as Notify Surveillance Center, Send Email, Trigger Alarm Output, etc.

10.2.1 Configuring Audio Exception Detection

Purpose:
The Audio exception detection function detects abnormal sounds in the surveillance scene such as a sudden increase/decrease in sound intensity, and certain actions can be taken when an alarm is triggered.

NOTE: The audio exception detection function varies by camera model.

1. Enter the Audio Exception Detection settings interface, **Configuration > Event > Smart Event > Audio Exception Detection**.

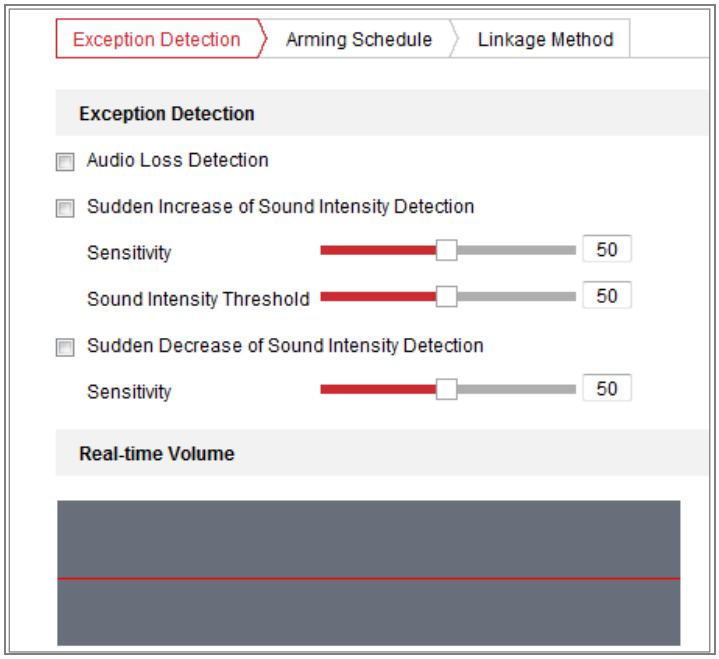


Figure 101, Audio Exception Detection

2. Check the **Audio Loss Exception** checkbox to enable the audio loss detection function.
3. Check the **Sudden Increase of Sound Intensity Detection** checkbox to detect a steep rise in the surveillance scene sound. You can set the detection sensitivity and threshold for the steep rise in sound.
4. Check the **Sudden Decrease of Sound Intensity Detection** checkbox to detect a steep drop in the surveillance scene sound. You can set the detection sensitivity and threshold for the steep drop in sound.

- **Sensitivity:** Range [1-100], the smaller the value, the more severe the change must be to trigger the detection.

- **Sound Intensity Threshold:** Range [1-100], it can filter the sound in the environment, the louder the environment sound, the higher the value should be. You can adjust it according to the real environment.
- You can view the real-time volume of the sound on the interface.

5. Click **Arming Schedule** to set the arming schedule. Refer to ***Task 2 Set the Arming Schedule for Motion Detection*** in *Section 10.1.1* for detailed steps.
6. Click **Linkage Method** and select the linkage methods for audio exception, including **Notify Surveillance Center**, **Send Email**, **Upload to FTP/Memory Card/NAS**, **Trigger Channel** for recording and **Trigger Alarm Output**.
7. Click **Save** to save the settings.

10.2.2 Configuring Defocus Detection

Purpose:
Image blur caused by lens defocus can be detected, and certain actions can be taken when the alarm is triggered.

NOTE: The defocus detection function varies by camera model.

1. Enter the Defocus Detection settings interface, **Configuration > Event > Smart Event > Defocus Detection**.

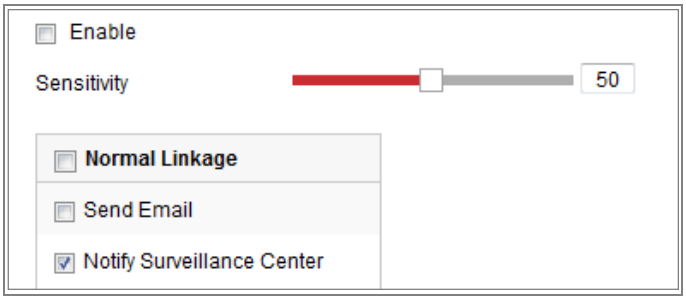


Figure 102, Configuring Defocus Detection

2. Check the **Enable** checkbox to enable the function.
3. Click-and-drag the slider to set the detection sensitivity. The sensitivity value ranges from 1 to 100, and the higher the value, the more easily the defocused image will trigger the alarm.
4. Select the linkage methods for defocus, including **Notify Surveillance Center**, **Send Email**, and **Trigger Alarm Output**.
5. Click **Save** to save the settings.

10.2.3 Configuring Scene Change Detection

Purpose:
The Scene Change Detection function detects the change in the surveillance environment affected by external factors such as intentional rotation of the camera. Certain actions can be taken when the alarm is triggered.

NOTE: The Scene Change Detection function varies by camera model.

1. Enter the Scene Change Detection settings interface, **Configuration > Event > Smart Event > Scene Change Detection**.

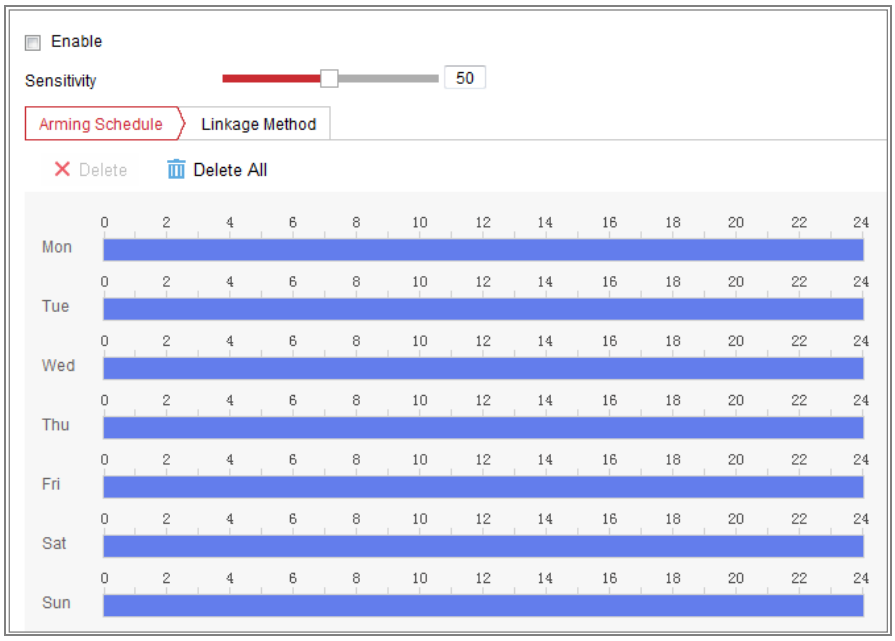


Figure 103, Scene Change Detection

2. Check the **Enable** checkbox to enable the function.
3. Click-and-drag the slider to set the detection sensitivity. The sensitivity value ranges from 1 to 100, and the higher the value, the more easily the change of scene will trigger the alarm.
4. Click **Arming Schedule** to set the arming schedule. Refer to *Task 2* ***Set the Arming Schedule for Motion Detection*** in *Section 10.1.1* for detailed steps.
5. Click **Linkage Method** to select the linkage methods for scene change, including **Notify Surveillance Center**, **Send Email**, **Upload to FTP/Memory Card/NAS**, **Trigger Channel**, and **Trigger Alarm Output**.
6. Click **Save** to save the settings.

10.2.4 Configuring Face Detection

Purpose:
The Face Detection function detects faces that appear in the surveillance scene, and certain actions can be taken when the alarm is triggered.

1. Enter the Face Detection settings interface, **Configuration > Event > Smart Event > Face Detection**.
2. Check the **Enable Face Detection** checkbox to enable the function.

3. Check the **Enable Dynamic Analysis** checkbox for Face Detection, and detected faces will be marked with a green rectangle on the live video.

   NOTE: To mark the detected face on the live video, go to Configuration > Local to enable the Rules.

4. Click-and-drag the slider to set the detection sensitivity. The sensitivity ranges from 1 to 5. The higher the value, the more easily the face will be detected.

5. Click **Arming Schedule** to set the arming schedule. Refer to ***Task 2 Set the Arming Schedule for Motion Detection*** in *Section 10.1.1* for detailed steps.

6. Click **Linkage Method** to select the linkage methods for face detection. Refer to ***Task 3: Set the Linkage Method Taken for Motion Detection*** in *Section 10.1.1.*

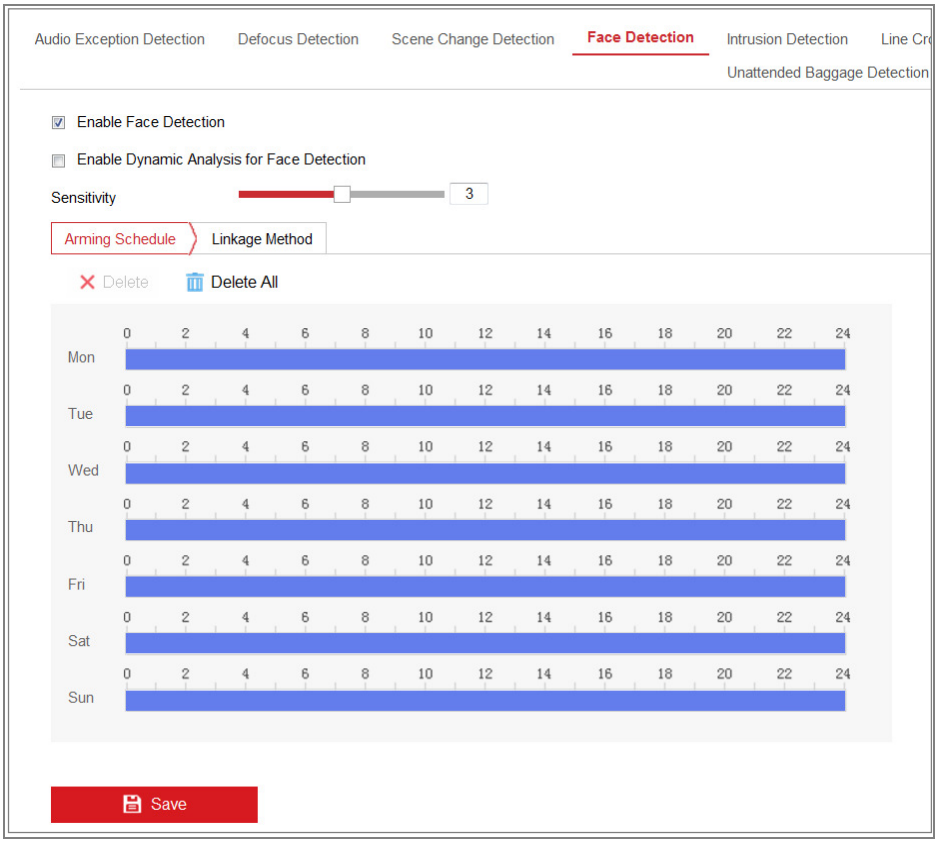


Figure 104, Face Detection

7. Click **Save** to save the settings.

10.2.5 Configuring Intrusion Detection

Purpose:

The Intrusion Detection function detects people, vehicles, or other objects that enter and loiter in a pre-defined virtual region, and certain actions can be taken when the alarm is triggered.

NOTE: The Intrusion Detection function varies by camera model.

1. Enter the Intrusion Detection settings interface, **Configuration > Event > Smart Event > Intrusion Detection**.

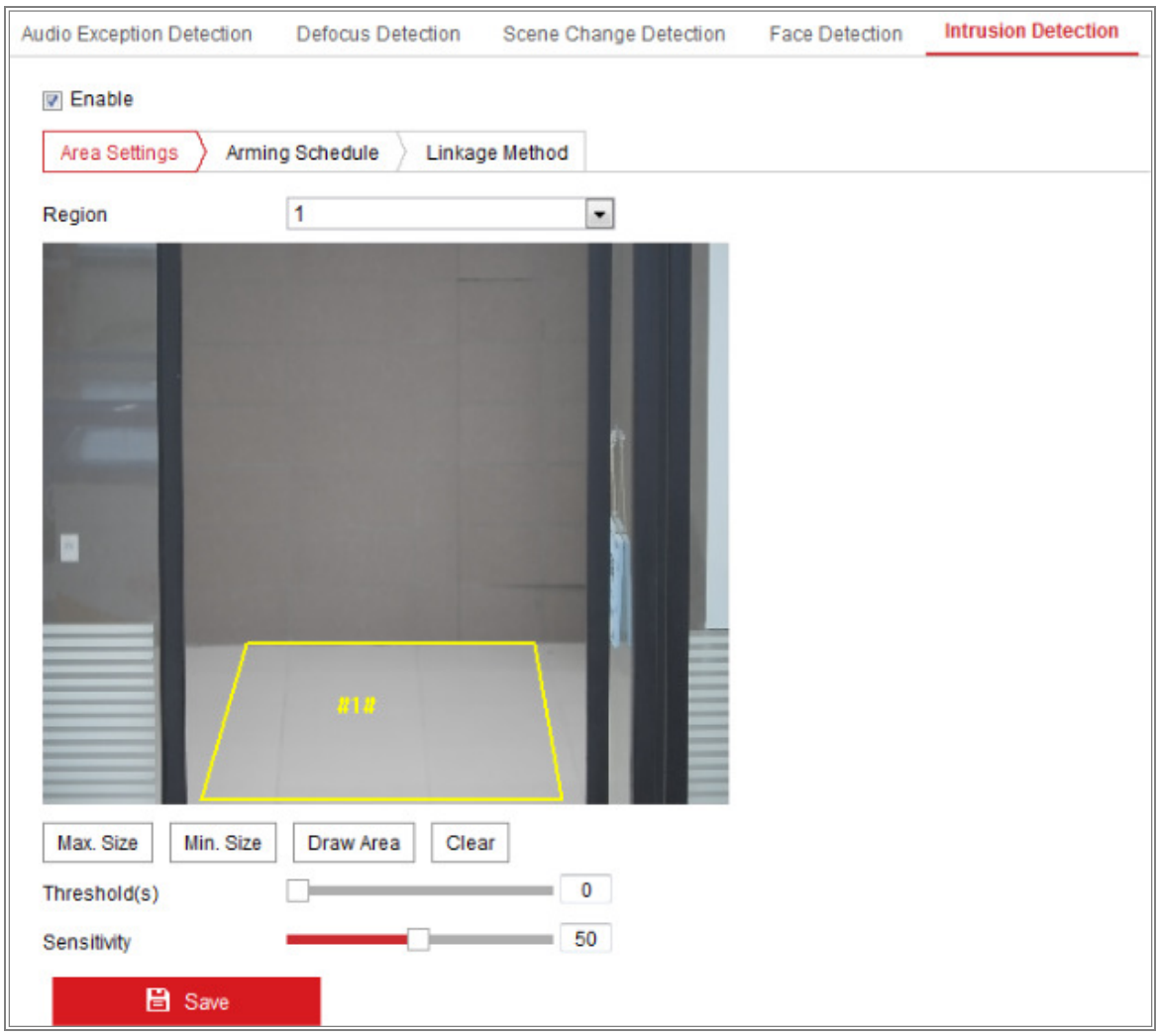


Figure 105, Intrusion Detection

2. Check the **Enable** checkbox to enable the function.
3. Select a region number from the **Region** drop-down list.
   - **Region**: A pre-defined area on the live view image. Targets such as people, vehicles, or other objects entering and loitering in the region will be detected and trigger the set alarm.
4. Click **Area Settings** tab and click **Draw Area** button to start the region drawing.
5. Click on the live video to specify the four vertices of the detection region, and right click to complete drawing.
6. Set the Max. Size and Min. Size for valid targets. Targets smaller or larger than the valid target size will not trigger detection.
   - **Max. Size**: The maximum size of a valid target. Targets with larger sizes would not trigger detection.
   - **Min. Size**: The minimum size of a valid target. Targets with smaller sizes would not trigger detection.

7. Click **Stop Drawing** when finish drawing.

8. Set the time threshold for intrusion detection.

   - **Threshold:** Range [0s-10s], the threshold for the time of the object loitering in the region. If you set the value as 0, alarm is triggered immediately when the object enters the region.

9. Drag the slider to set the sensitivity value.

   - **Sensitivity**: Range [1-100]. Sensitivity stands for the percentage of the body part of an acceptable target that enters the pre-defined region.

     Sensitivity = 100 – S_1/S_T*100

     S_1 stands for the target body part that goes across the pre-defined region. S_T stands for the complete target body.

     EXAMPLE: If you set the value as 60, the action will be counted as an intrusion only when 40 percent of the body enters the region.

     NOTE: Detection Sensitivity is supported by only by certain models. Refer to your actual display for details.

10. Repeat the above steps to configure other regions. Up to four regions can be set. You can click the **Clear** button to clear all pre-defined regions.

11. Click **Arming Schedule** to set the arming schedule.

12. Click **Linkage Method** to select the linkage methods for intrusion detection, including **Notify Surveillance Center**, **Send Email**, **Upload to FTP/Memory Card/NAS**, **Trigger Channel**, and **Trigger Alarm Output**.

13. Click **Save** to save the settings.

10.2.6 Configuring Line Crossing Detection

Purpose:
The Line Crossing Detection function detects people, vehicles, or other objects that cross a pre-defined virtual line, and certain actions can be taken when the alarm is triggered.

NOTE: The Line Crossing Detection function varies by camera model.

1. Enter the Line Crossing Detection settings interface, **Configuration > Event > Smart Event > Line Crossing Detection**.

Figure 106, Line Crossing Detection

2. Check the **Enable** checkbox to enable the function.
3. Select the line from the drop-down list.
4. Click **Area Settings** tab and click **Draw Area** button, and a virtual line is displayed on the live video.
5. Drag the line, and you can locate it on the live video as desired. Click on the line, two red squares are displayed on each end, and you can click-and-drag one of the red squares to define the shape and length of the line.
6. Set the **Max. Size** and **Min. Size** for valid targets. Targets smaller or larger than the valid target size will not trigger detection.
    - **Max. Size**: The maximum size of a valid target. Targets with larger sizes would not trigger detection.

- **Min. Size**: The minimum size of a valid target. Targets with smaller sizes would not trigger detection.

7. Select the direction for line crossing detection, you can select the directions as **A<->B**, **A ->B**, and **B->A**.

   - **A<->B**: An object going across the plane in either direction will be detected and trigger an alarm.
   - **A->B**: Only objects crossing the configured line from the A side to the B side will be detected.
   - **B->A**: Only objects crossing the configured line from the B side to the A side will be detected.

8. Click **Stop Drawing** when finish drawing.

9. Drag the slider to set the sensitivity value.

   - **Sensitivity**: Range [1-100]. It stands for the percentage of the body part of an acceptable target that goes across the pre-defined line.

     Sensitivity = $100 – S_1/S_T*100$

     S_1 stands for the target body part that goes across the pre-defined line. S_T stands for the complete target body.

     EXAMPLE: If you set the value as 60, the action will be counted as a line crossing action only when 40 percent or more of the body part crosses the line.

     NOTE: The detection sensitivity is supported only by certain models. Refer to your actual display for details.

10. Repeat the above steps to configure other lines. Up to four lines can be set. You can click the **Clear** button to clear all pre-defined lines.

11. Click the **Arming Schedule** to set the arming schedule.

12. Select the linkage methods for line crossing detection, including **Notify Surveillance Center**, **Send Email**, **Upload to FTP/Memory Card/NAS**, **Trigger Channel**, and **Trigger Alarm Output**.

13. Click **Save** to save the settings.

10.2.7 Configuring Region Entrance Detection

Purpose:
The Region Entrance Detection function detects people, vehicles, or other objects that enter a pre-defined virtual region, and certain actions can be taken when an alarm is triggered.

1. Enter the Region Entrance Detection settings interface, **Configuration > Event > Smart Event > Region Entrance Detection**.

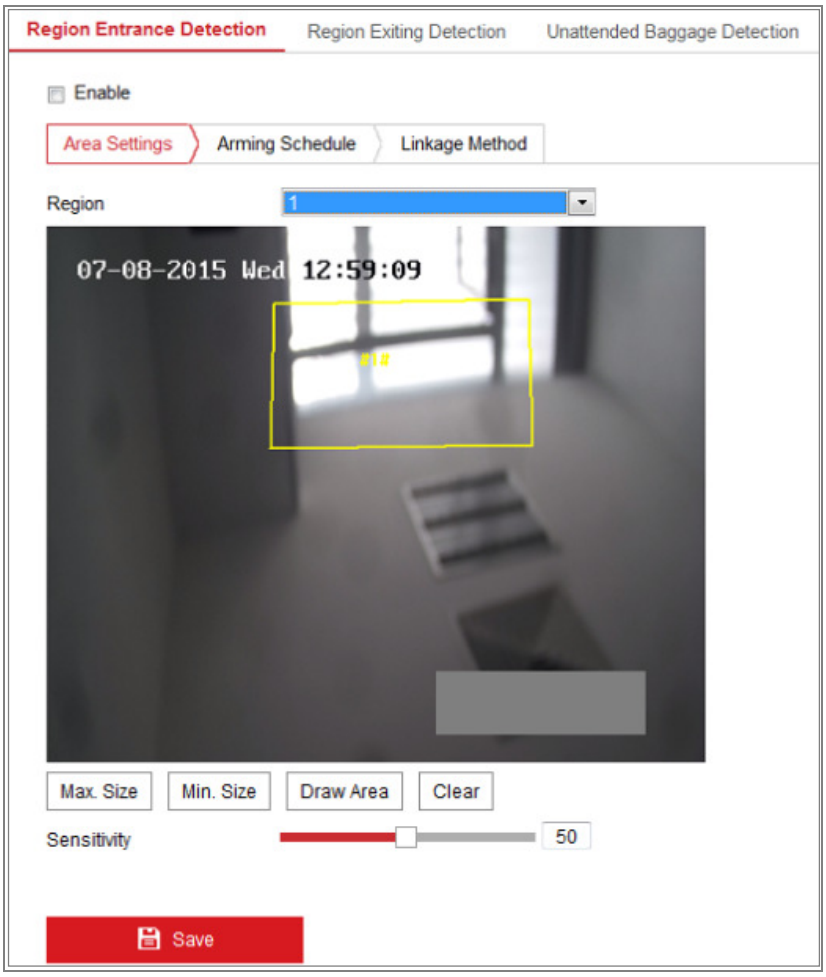


Figure 107, Region Entrance Detection

2. Check the **Enable** checkbox to enable the function.
3. Select the **Region** from the drop-down list for detection settings.
4. Click **Area Settings** and click **Draw Area** button to start the area drawing.
5. Click on the live video to specify the four vertices of the detection region, and right click to complete drawing.
6. Set the Max. Size and Min. Size for valid targets. Targets smaller or larger than the valid target size will not trigger detection.
   - **Max. Size**: The maximum size of a valid target. Targets with larger sizes would not trigger detection.
   - **Min. Size**: The minimum size of a valid target. Targets with smaller sizes would not trigger detection.
7. Click **Stop Drawing** when finish drawing.
8. Drag the slider to set the sensitivity value.
   - **Sensitivity**: Range [1-100]. Sensitivity stands for the percentage of the body part of an acceptable target that enters the pre-defined region.

Sensitivity = 100 – S_1/S_T*100

S_1 stands for the target body part that enters the pre-defined region S_T stands for the complete target body.

EXAMPLE: If you set the value as 60, the action can be counted as a region entrance action only when 40 percent of the body part enters the region.

NOTE: The detection Sensitivity is supported only by certain models. Refer to your actual display for details.

9. Repeat the above steps to configure other regions. Up to four regions can be set. You can click the **Clear** button to clear all pre-defined regions.
10. Click **Arming Schedule** to set the arming schedule.
11. Click **Linkage Method** to select the linkage methods.
12. Click **Save** to save the settings.

10.2.8 Configuring Region Exiting Detection

Purpose:
The Region Exiting Detection function detects people, vehicles, or other objects that exit from a pre-defined virtual region, and certain actions can be taken when the alarm is triggered.

1. Enter the Region Exiting Detection settings interface, **Configuration > Event > Smart Event > Region Exiting Detection**.

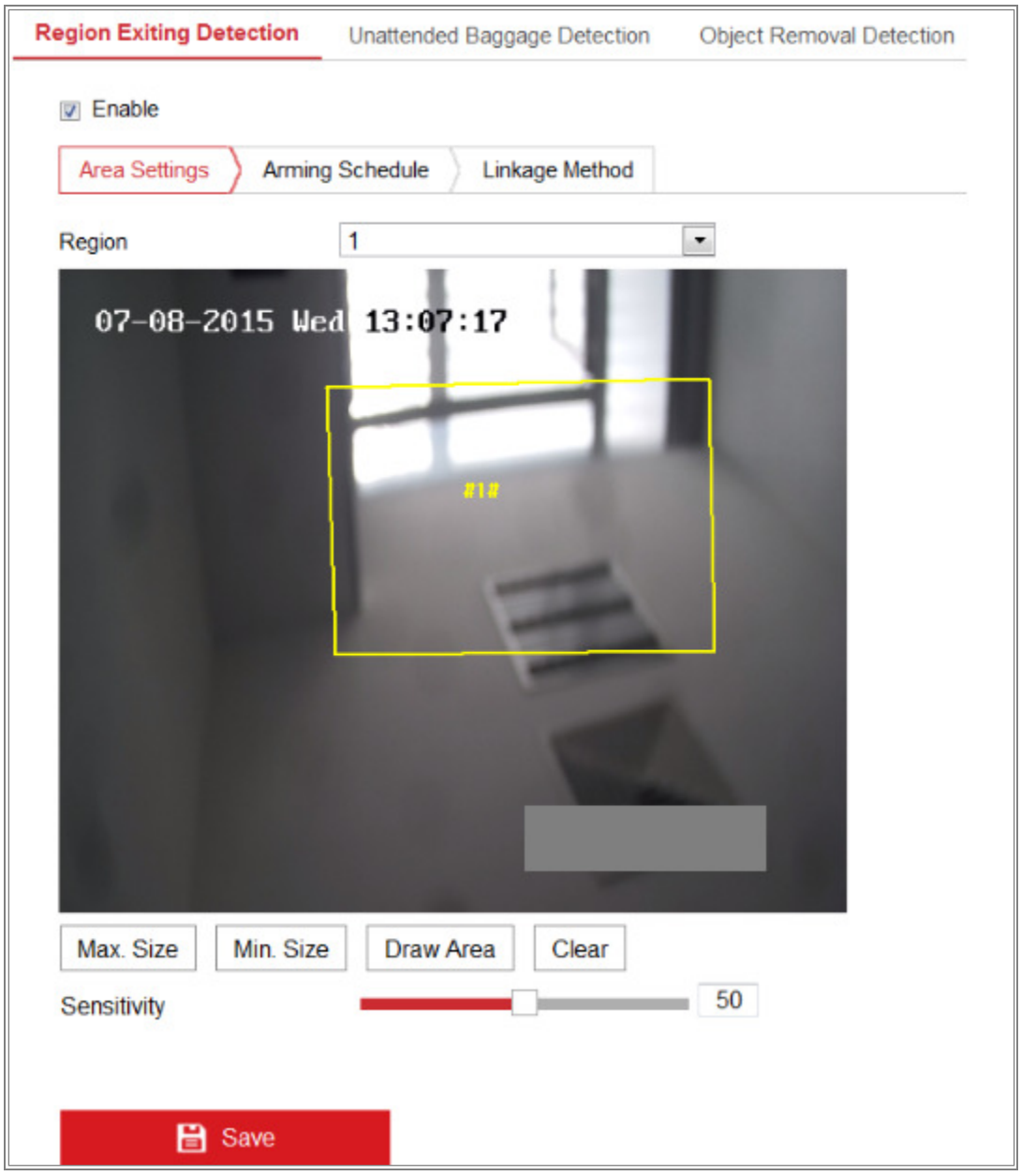


Figure 108, Region Exiting Detection

2. Check the **Enable** checkbox to enable the function.
3. Select the **Region** from the drop-down list for detection settings.
4. Click **Area Settings** and click **Draw Area** button to start the area drawing.
5. Click on the live video to specify the four vertices of the detection region, and right click to complete drawing.
6. Set the Max. Size and Min. Size for valid targets. Targets smaller or larger than the valid target size will not trigger detection.
   - **Max. Size**: The maximum size of a valid target. Targets with larger sizes would not trigger detection.
   - **Min. Size**: The minimum size of a valid target. Targets with smaller sizes would not trigger detection.

7. Click **Stop Drawing** when finish drawing.

8. Drag the slider to set the sensitivity value.

   - **Sensitivity**: Range [1-100]. Sensitivity stands for the percentage of the body part of an acceptable target that exits the pre-defined region.

     Sensitivity = 100 – S_1/S_T*100

     S_1 stands for the target body part that exits the pre-defined region. S_T stands for the complete target body.

     EXAMPLE: If you set the value as 60, the action can be counted as a region exiting action only when 40 percent of the body part exits the region.

   NOTE: Detection sensitivity is supported only by certain models. Refer to your actual display for details.

9. Repeat the above steps to configure other regions. Up to four regions can be set. You can click the **Clear** button to clear all pre-defined regions.

10. Click **Arming Schedule** to set the arming schedule.

11. Click **Linkage Method** to select the linkage methods.

12. Click **Save** to save the settings.

10.2.9 Configuring Unattended Baggage Detection

Purpose:
The Unattended Baggage Detection function detects objects left in a pre-defined region such as baggage, purses, dangerous materials, etc. A series of actions can be taken when the alarm is triggered.

1. Enter the Unattended Baggage Detection settings interface, **Configuration > Event > Smart Event > Unattended Baggage Detection**.

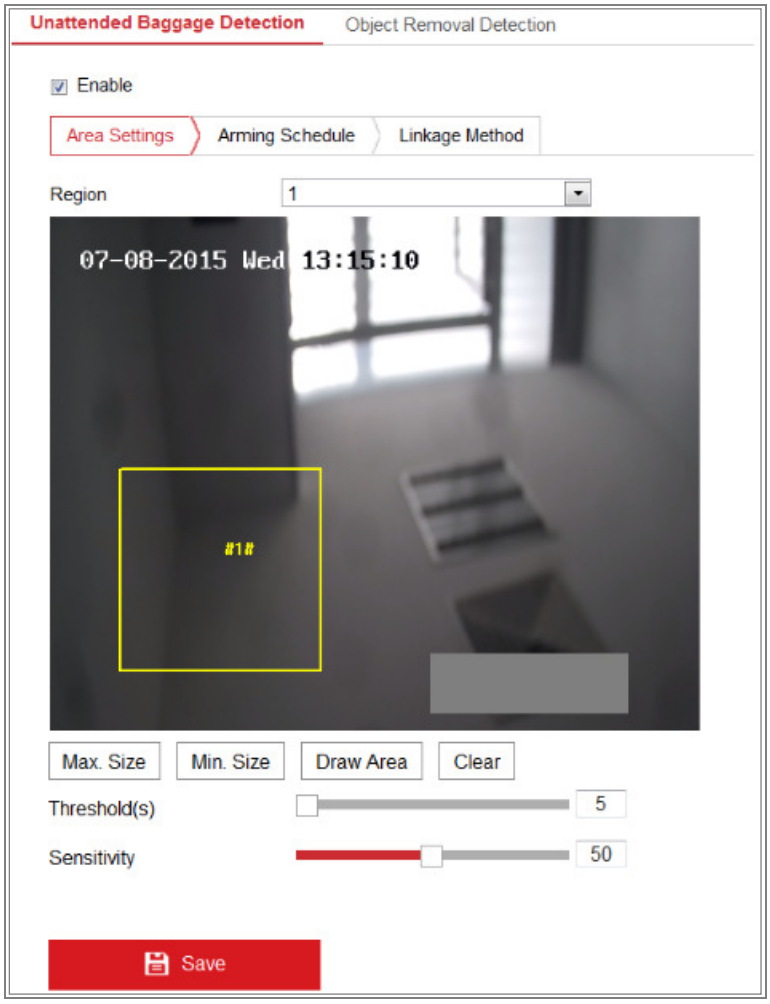


Figure 109, Unattended Baggage Detection

2. Check **Enable** checkbox to enable the function.
3. Select the **Region** from the drop-down list for detection settings.
4. Click **Area Settings** and click **Draw Area** to start the area drawing.
5. Click on the live video to specify the four vertices of the detection region, and right click to complete drawing.
6. Set the Max. Size and Min. Size for valid targets. Targets smaller or larger than the valid target size will not trigger detection.
   - **Max. Size**: The maximum size of a valid target. Targets with larger sizes would not trigger detection.
   - **Min. Size**: The minimum size of a valid target. Targets with smaller sizes would not trigger detection.
7. Click **Stop Drawing** when finish drawing.
8. Set the time threshold and detection sensitivity for unattended baggage detection.
   - **Threshold:** Range [5-100s], the threshold for the time of the objects left over in the region. If you set the value as 10, alarm is triggered after the object is left and stays in the region for 10s.

9. Drag the slider to set the sensitivity value.

    - **Sensitivity**: Range [1-100]. Sensitivity stands for the percentage of the body part of an acceptable target that enters the pre-defined region.

      Sensitivity = 100 – S_1/S_T*100

      S_1 stands for target body part that enters the pre-defined region. S_T stands for the complete target body.

      EXAMPLE: If you set the value as 60, a target is possible to be counted as an unattended baggage only when 40 percent of the body part of the target enters the region.

      NOTE: Detection sensitivity is supported only by certain models. Refer to your actual display for details.

10. Repeat the above steps to configure other regions. Up to four regions can be set. You can click the **Clear** button to clear all pre-defined regions.

11. Click **Arming Schedule** to set the arming schedule.

12. Click **Linkage Method** to select the linkage methods.

13. Click **Save** to save the settings.

10.2.10 Configuring Object Removal Detection

Purpose:
The Object Removal Detection function detects objects removed from a pre-defined region such as exhibits on display, and a series of actions can be taken when the alarm is triggered.

1. Enter the Object Removal Detection settings interface, **Configuration > Event > Smart Event > Object Removal Detection**.

Figure 110, Object Removal Detection

2. Check the **Enable** checkbox to enable the function.
3. Select the **Region** from the drop-down list for detection settings.
4. Click **Area Settings** and click **Draw Area** button to start the area drawing.
5. Click on the live video to specify the four vertices of the detection region, and right click to complete drawing.
6. Set the Max. Size and Min. Size for valid targets. Targets smaller or larger than the valid target size will not trigger detection.
   - **Max. Size**: The maximum size of a valid target. Targets with larger sizes would not trigger detection.
   - **Min. Size**: The minimum size of a valid target. Targets with smaller sizes would not trigger detection.
7. Click **Stop Drawing** when finish drawing.
8. Set the time threshold for object removal detection.
   - **Threshold:** Range [5-100s], the threshold for the time of the objects removed from the region. If you set the value as 10, alarm is triggered after the object disappears from the region for 10s.
9. Drag the slider to set the sensitivity value.

- **Sensitivity**: Range [1-100]. It stands for the percentage of the body part of an acceptable target that leaves the pre-defined region.

  Sensitivity = 100 – S_1/S_T*100

  S_1 stands for the target body part that leaves the pre-defined region. S_T stands for the complete target body.

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

  NOTE: Detection sensitivity is supported only by certain models. Refer to your actual display for details.

10. Repeat the above steps to configure other regions. Up to four regions can be set. You can click the **Clear** button to clear all pre-defined regions.
11. Click **Arming Schedule** to set the arming schedule.
12. Click **Linkage Method** to select the linkage methods.
13. Click **Save** to save the settings.

10.3 VCA Configuration

10.3.1 Behavior Analysis

Behavior Analysis detects a series of suspicious behavior, and certain linkage methods will be enabled if the alarm is triggered.

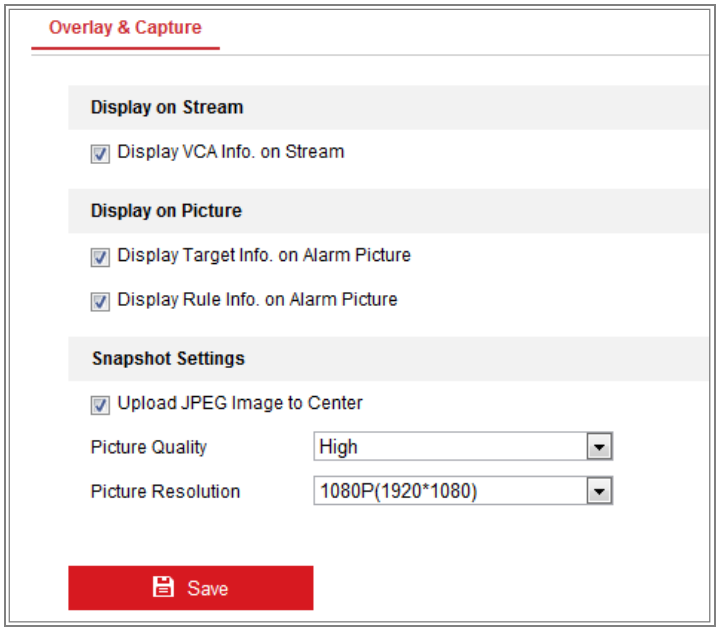


Figure 111, Behavior Analysis

- **Overlay & Capture**

  Display information includes the display on picture and display on stream.

  - **Display VCA info. on Stream**: The green frames will be displayed on the target in live view or playback.
  - **Display Target info. on Alarm Picture**: There will be a frame on the target on the uploaded alarm picture if the checkbox is checked.
  - **Display Rule info. on Alarm Picture**: The captured target and the configured area will be framed on the alarm picture.

    NOTE: Make sure rules are enabled in your local settings. Go to Configuration > Local Configuration > Rules to enable it.

  - **Snapshot Setting:** You can set the quality and resolution for the captured picture.
  - **Upload JPEG Image to Center:** Check the checkbox to upload the captured image to the surveillance center when a VCA alarm occurs.
  - **Picture Quality:** High, Medium, and Low are selectable.
  - **Picture Resolution:** CIF, 4CIF, 720P, and 1080P are selectable.

- **Camera Calibration**

  Perform the following steps to three-dimensionally measure and quantize the image from the camera, and then calculate the size of every target. The VCA detection will be more accurate if the camera calibration is configured.

  1. Check the **Camera Calibration** checkbox to enable this function.
  2. Select the calibration mode as **Input Basic Data** or **Draw on Live View Video**.
     - **Input Basic Data**: Input the mounting height, viewing angle, and horizon ratio of the camera manually.
     - **Draw on Live View Video**: Click **Draw Verification Line (Horizontal) / (Vertical)** to draw a horizontal/vertical line in the live view, and input the actual length in the **Real Length** field. With the drawn reference lines and their real length, the camera can conclude other objects appearing in live view.
  3. Click the **Horizontal Verify**  **/Vertical Verify**  button to draw a horizontal/vertical line on the live video, and click the **Start Verifying**  button to calculate the line length. Compare the calculated line length to the actual length to verify the calibration information you set.

     NOTE: If the live view is stopped, the camera calibration is invalid.

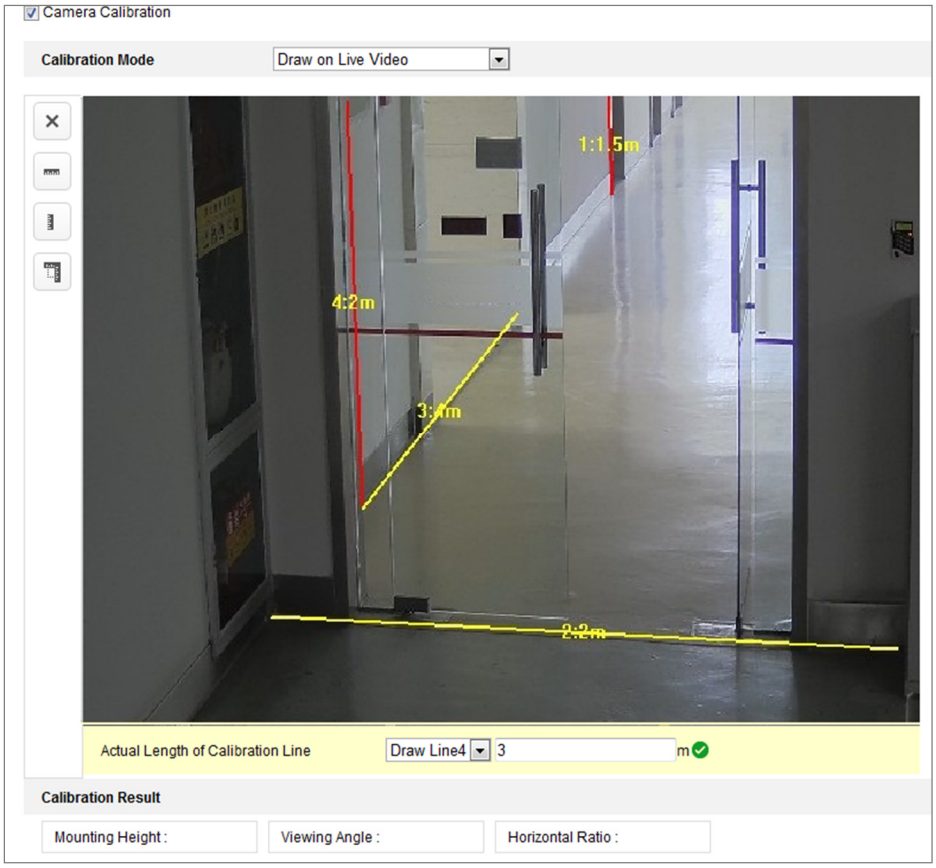


Figure 112, Draw on Live View Window

4. You can click ☒ to delete the drawn lines.
5. Click **Save** to save the settings.

- **Shield Region**

The shield region allows you to set the specific region in which the behavior analysis will not function. Up to four shield regions are supported.

1. Click the **Shield Region** tab to enter the shield region configuration interface.
2. Click the hexagons sign ⬡ to draw a shield area by left clicking end-points in the live view window, and right clicking to finish the area drawing.

   NOTES:
   - » *Polygon area with up to 10 sides is supported.*
   - » *Click ☒ to delete the drawn areas.*
   - » *If live view is stopped, there is no way to draw the shield regions.*
3. Click **Save** to save the settings.

- **Rule**

Behavior Analysis supports a series of behaviors, including line crossing detection, intrusion, region entrance, region exiting, etc.

NOTE: Please refer to each chapter for detailed information of each behavior.

1. Click **Rule** Tab to enter the rule configuration interface.
2. Check the checkbox of a single rule to enable the rule for behavior analysis.
3. Select the rule type, set the filter type, and then draw the line/area on the live video for the single rule.

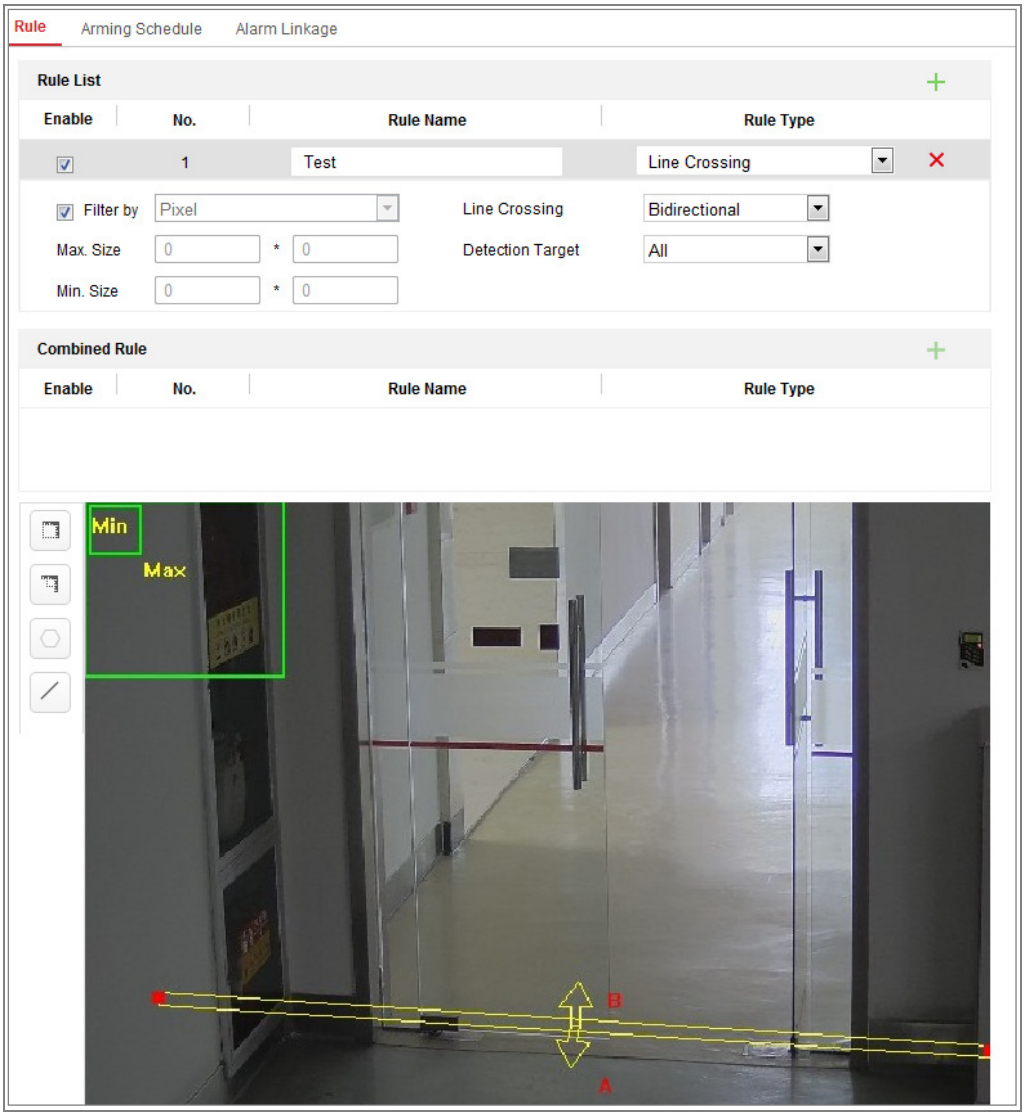


Figure 113, Configure the Rule

- **Filter type: Pixels** and **Actual Size** are selectable. If **Pixels** is selected, draw the area of maximum size and minimum size on the live video for each rule. If **Actual Size** is selected, input the length and width of the maximum size and minimum size. Only a target whose size is between the minimum value and maximum value will trigger the alarm.

NOTE: Make sure the camera calibration is configured if Actual Size is selected.

- **Detection Target:** Select **Human** or **Vehicle** as the detection target. You can also select **All** to detect all the objects as the target.
- **Draw line/area:** For line crossing detection, you have to draw a line and select the crossing direction, which is bidirectional, **A-to-B** or **B-to-A**. For other events such as intrusion, region entrance, region exiting, etc., left click on the live video to set the end points of the area and right click to finish the area drawing.

NOTE: If live view is stopped, the detection area/line cannot be drawn and the rules cannot be set.

4. Check the checkbox of the combined rule to enable the rule for behavior analysis.
5. Select two configured single rules as Rule A and Rule B of the combined rule, set the minimum and maximum time interval for the two single rules, and then select the trigger order of the single rules for alarm filtering.

   NOTES:
   » *If you select the rule type as **None**, the rule option is invalid and no behavior analysis can be configured.*
   » *Up to eight single rules and two combined rules are configurable. Line crossing, intrusion, region exiting, and region entrance are supported for the combined rules.*
6. Click **Save** to save the settings.
7. Click **Arming Schedule** tab to set the schedule time for each rule, and click **Save** to save the settings.
8. Click **Linkage Method** tab, check the checkbox of corresponding linkage method for each rule, and click **Save** to save the settings.

- **Advanced Configuration**

  - **Behavior Analysis Version:** It lists the version of the algorithms library.
  - **Parameter:** Configure the following parameters to detail the configuration.

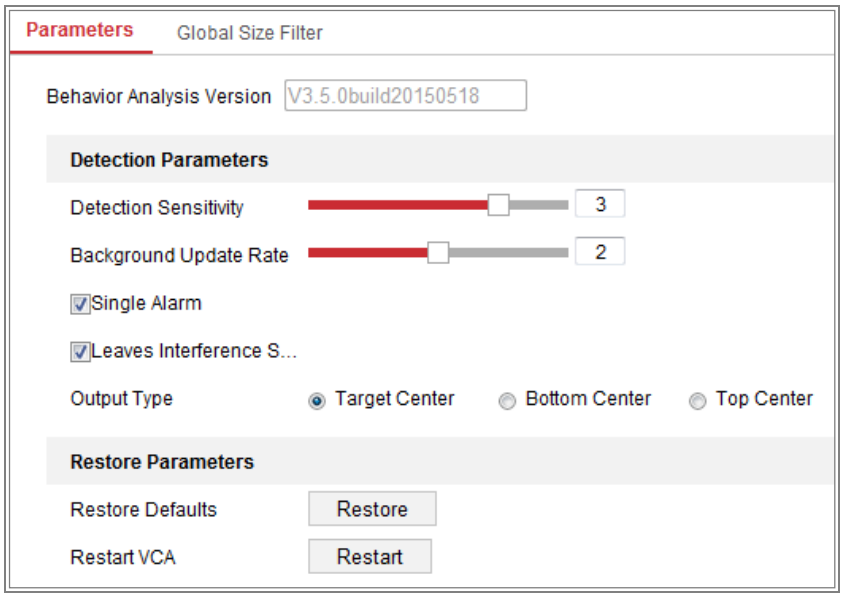


Figure 114, Advanced Configuration

> **Detection Sensitivity** [0~4]: Refers to the sensitivity of the camera to detect a target. The higher the value, the easier a target be recognized, and the greater the misinformation. The default value of 3 is recommended.

> **Background Update Rate** [0~4]: It refers to the speed of the new scene replaces the previous scene. The default value of 3 is recommended.

> **Single Alarm**: If Single Alarm is selected, the target in the configured area will trigger the alarm only once. If it is not checked, the same target will cause continuous alarms in the same configured area.

> **Leave Interference Suppression**: Check this checkbox to stop interference caused by leaves in the configured area.

> **Output Type**: Select the position of the frame. Target center, bottom center, and top centers are selectable. E.g.: The target will be in the center of the frame if target center is selected.

> **Restore Default**: Click to restore the configured parameters to the default.

> **Restart VCA**: Restart the algorithms library of behavior analysis.

- **Global Size Filter**

NOTE: Compared with the size filter under rule, which is for rules, the global size filter is for all rules.

1. Check the **Global Size Filter** checkbox to enable the function.
2. Select the **Filter Type** as **Actual Size** or **Pixel**.
   - **Actual Size**: Input the length and width of both the maximum size and the minimum size. Only targets whose size is between the minimum value and maximum value will trigger the alarm.

NOTES:

» *Camera calibration has to be configured if you select the filter by **Actual Size**.*

» *The maximum size length should be longer than the minimum size length, likewise for the width.*

- **Pixel**: Click Minimum Size to draw the rectangle of the minimum size on the live view, and click Maximum Size to draw the rectangle of the maximum size on the live view. Targets smaller than the minimum size or larger than the maximum size will be filtered out.

NOTES:

» *The drawn area will be converted to the pixel by the background algorithm.*

» *The global size filter cannot be configured if the live view is stopped.*

» *The maximum size length should be longer than the minimum size length, likewise for the width.*

3. Click **Save** to save the settings.

10.3.2 Face Capture

Face capture can capture faces that appear in the configured area, and the face feature information, including age, gender, and wearing glasses or not will be uploaded with the captured picture as well.

- **Overlay & Capture**

Display information includes the display on picture and display on stream.

- **Display VCA info. on Stream**: Green frames will be displayed on the target if in live view or playback.
- **Display Target info. on Alarm Picture**: There will be a frame on the target on the uploaded alarm picture if this checkbox is checked.
- **Snapshot Setting:** Select the picture quality for the captured picture. **Good**, **Better**, and **Best** are selectable.
- **Background Upload:** Check the of **Background Upload** checkbox to upload the background picture as well.
- **Camera Information:** You can set the **Device No.** and **Camera Info.** for the camera, which can be overlaid on the captured picture.
- **Picture Overlay Information:** You can check desired items and adjust their order to display on captured pictures.

- **Shield Region**

The shield region allows you to set a specific region in which the face capture will not function. Up to four shield regions are supported.

1. Click the hexagon sign  to draw shield areas by left clicking end-points in the live view window, and right clicking to finish the area drawing.

NOTES:

» *Polygon area (4-10 sides) is supported.*

» *Click* ☒ *to delete the drawn areas.*

» *If the live view is stopped, there is no way to draw the shield regions.*

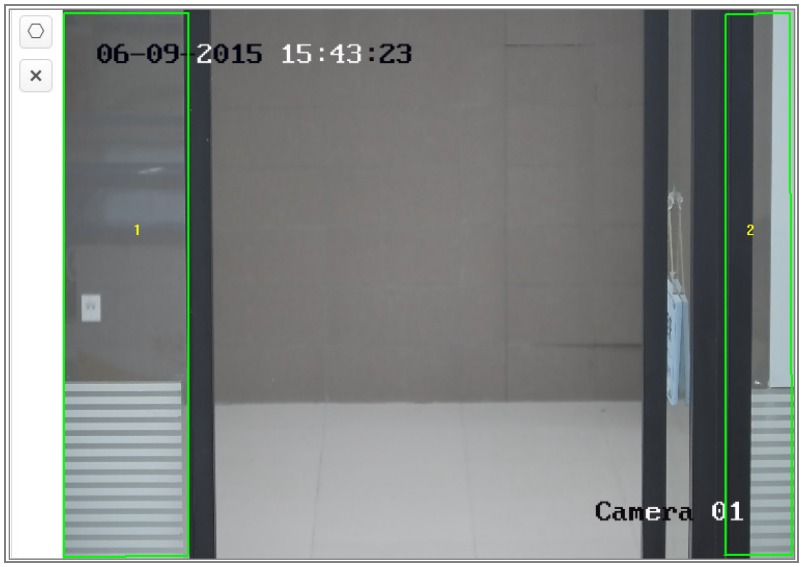


Figure 115, Draw Shield Area

2. Click **Save** to save the settings.

- **Rule**

1. Check the **Rule** checkbox to enable face capture rules.

2. Click the rectangle sign ▭ to draw the minimum pupil distance. The distance of the drawn pupil will be displayed on the box below the live view.

   The minimize pupil distance refers to the minimum square size composed by the area between two pupils, and it is the basic standard for a camera to identify a target.

3. Click the hexagon sign ⬡ to draw the detection area you want the face capture to take effect. Draw area by left clicking end-points in the live view window, and right clicking to finish the area drawing.

   NOTES:

   » *Polygon area (4-10 sides) sides is supported.*

   » *If the live view is stopped, there is no way to draw the configured area.*

4. Click **Save** to save the settings.

- **Advanced Configuration:** Configure the following parameters according to your actual environment.

  - **Face Capture Version:** It lists the version of the algorithms library.

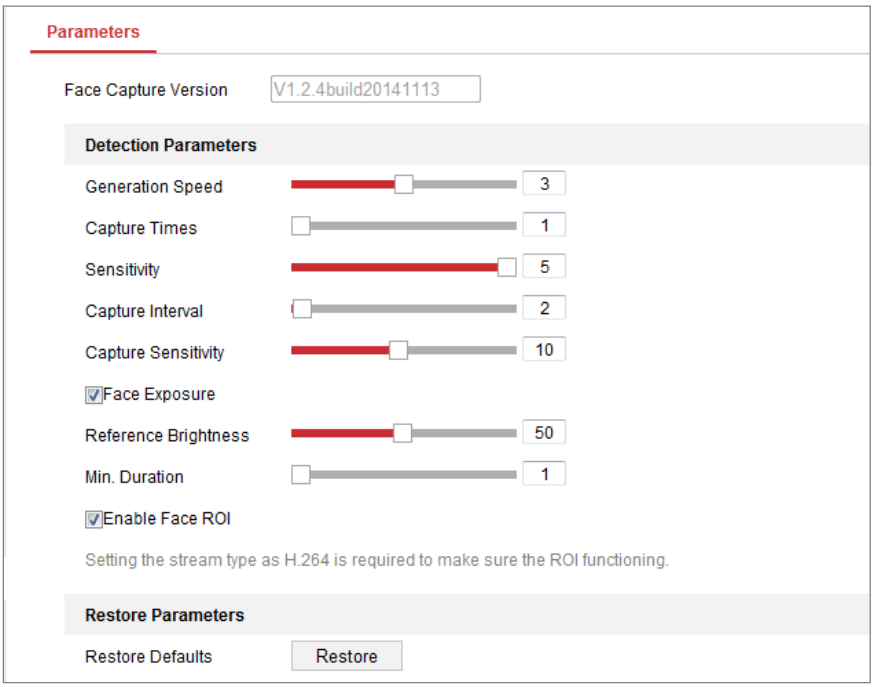


Figure 116, Face Capture

- **Detection Parameters**

Generation Speed [1-5]: The speed to identify a target. The higher the value, the faster the target will be recognized. Setting the value low, and if there is a face in the configured area from the start, this face will not be captured. It can reduce the misinformation of the faces in the wall painting or posters. The default value of 3 is recommended.

Capture Times [1-10]: Refers to the capture times a face will be captured during its stay in the configured area. The default value is 1.

Sensitivity [1-5]: The sensitivity to identify a target. The higher the value, the easier a face will be recognized, and the more misinformation. The default value of 3 is recommended.

Capture Interval [1-255 Frame]: The frame interval to capture a picture. If you set the value to 1, which is the default value, it means the camera captures the face in every frame.

Capture Sensitivity [0~20]: The threshold the camera treats the target as a face. Only when the face score generated by the algorithm is equal or higher than the value, the camera will treat the target as a face. The default value of 2 is recommended.

- **Face Capture Advanced Parameters**

Face Exposure: Check the checkbox to enable the face exposure.

Reference Brightness [0~100]: The reference brightness of a face in the face exposure mode. If a face is detected, the camera adjusts the face brightness according to the value you set. The higher the value, the brighter the face is.

Minimum Duration [1-60 min]: The minimum duration of the camera exposures the face. The default value is 1 minute.

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

Enable Face ROI: If the camera captures a face, the face area will be treated as the region of interest, and the image quality of this area will be improved.

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

10.3.3 People Counting

Purpose:
The People function is used to calculate the number of objects that enter or exit a configured area and is widely applied to entrances or exits.

NOTE: It is recommended to install the camera as close to being right above the entrance/exit as possible, and make sure it is horizontal to improve the counting accuracy.

1. Enter the Counting Configuration interface: **Configuration** > **People Counting**.

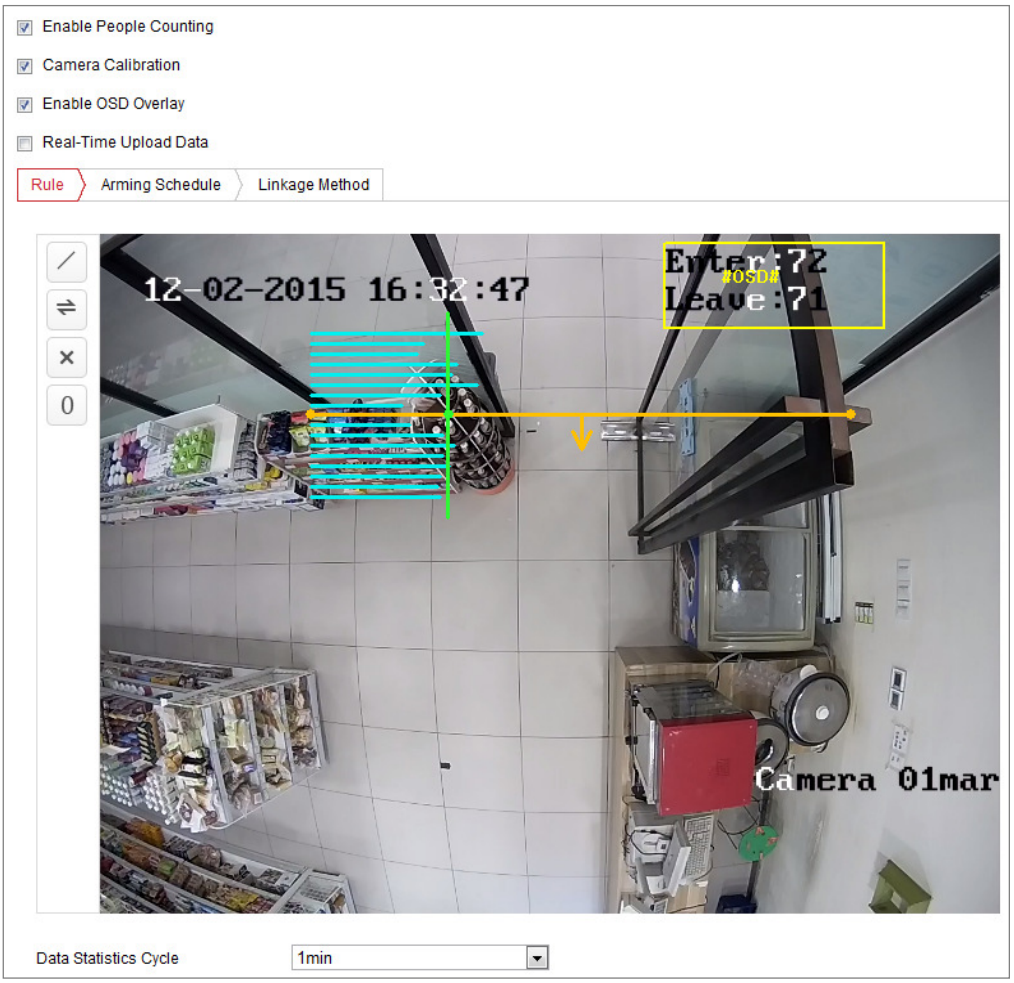


Figure 117, People Counting Configuration

2. Check **Enable People Counting** checkbox to enable the function.

3. Set the detection line. An orange line, named detection line, can be set on the live video, and objects entering or exiting past the line will be detected and counted.

   A. Click button on the left of the live view image. An orange detection line will appear on the image.

   B. Drag the detection line to adjust its position.

   C. Drag the yellow end points of the detection line to adjust its length.

      NOTES:
      - » *The detection line should be drawn at the position right below the camera, and it should cover the whole entrance/exit.*
      - » *Don't draw the line at a place where people may linger.*

   D. You can click to delete the detection line.

   E. You can click to change the direction. The yellow arrow indicates the direction of entering.

4. Check **Camera Calibration** checkbox to enable camera calibration. A calibration line (a green vertical line) and several blue horizontal lines appear in the live view image.

   - **Camera Calibration:** Set the width (usually the shoulder breadth) of a person for counting. Well-set calibration parameters will help increase the counting accuracy.
   - **Blue Horizontal Lines:** One blue line indicates the detected width (usually the shoulder breadth) of a passing person. Up to eight blue lines can be shown on each side of the detection line. These lines are reference for calibration setting.
   - **Calibration Line (Green Vertical Line):** The distance from the left endpoint to the calibration line (calibration line width) indicates the set width of a person. You can drag the calibration line to adjust the distance according to the blue line distribution.
   - **Advanced:** You can precisely adjust the position and the size of detection line and calibration line.

     A. Dragging the cursors or input values in the text fields to set the Detection Line Start Point and the Detection Line End Point.

     B. Click  to refresh the suggested calibration line width calculated by the system automatically.

     C. Drag the cursor or input a value to set the calibration width. You can set the value as suggested, or you can set according to your actual need.

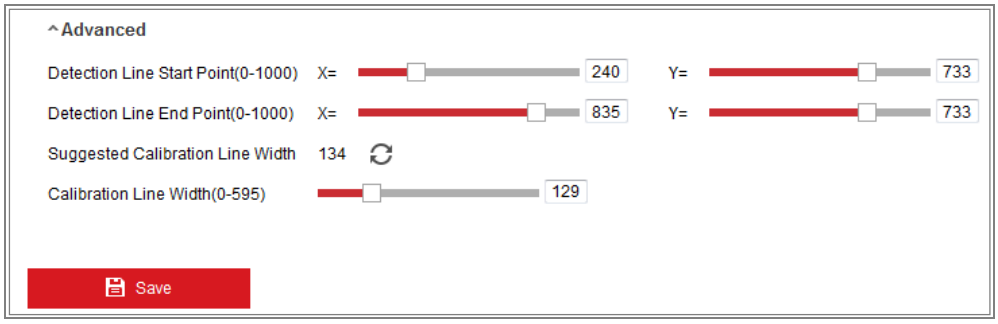


Figure 118, People Counting Configuration, Advanced

5. Counting data setting and display.

   A. Check the **Enable OSD Overlay** checkbox, and the real-time number of people who entered and exited is displayed on the live video.

   B. You can drag the OSD text frame to adjust its position according to your actual needs.

   C. If you need to upload the real-time counting data, check the **Real-Time Upload Data** checkbox.

   D. If you want manually set the counting cycle, select the desired time period from the **Data Statistics Cycle** drop-down list.

   E. To reset the counter, click the  button on the left of the live view image.

6. Click **Arming Schedule** to set the arming schedule. Refer to Task 2: Set the Arming Schedule for Motion Detection in Section 10.1.1.

7. Check **Linkage Method** tab to select the linkage method. Refer to Task 3: Set the Linkage Method for Motion Detection in Section 10.1.1.

8. Click **Save** to save the settings.

*NOTE: The people counting statistics will be calculated under the **Application** tab. Go to **Application** to check the people counting statistics.*

10.3.4 Counting

The Counting function helps to calculate the number of people who enter or exit a configured area and is widely applied to entrances and exits.

Compared with the people counting function in an iDS camera, the Counting function needs no camera calibration.

NOTE: It is recommended to install the camera be installed as close to a point right above the entrance/exit as possible, and make sure it is horizontal to improve the counting accuracy.

1. Enter the Counting Configuration interface: **Configuration > Counting**.

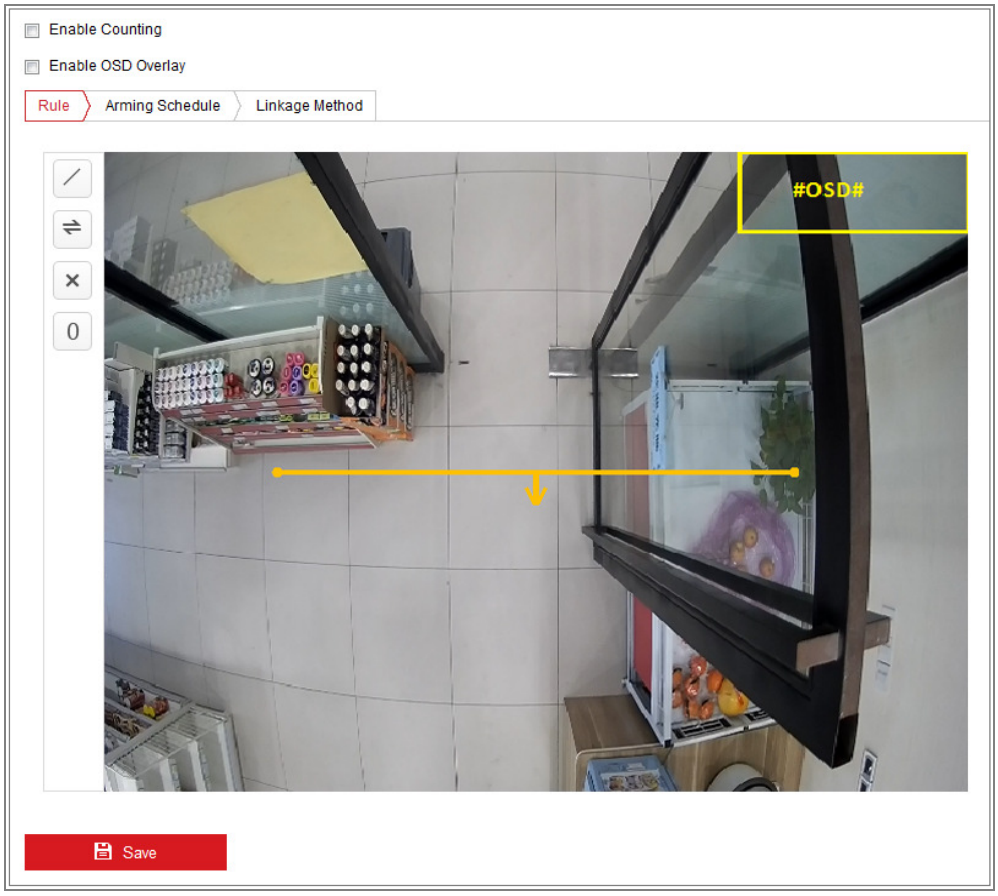


Figure 119, Counting Configuration

2. Check the **Enable Counting** checkbox to enable the function.

3. Check the **Enable OSD Overlay** checkbox, and the real-time number of people that entered and exited is displayed on the live video.

4. Set the detection line. An orange line, known as a detection line, can be set on the live video, and an object entering or exiting through the line will be detected and counted.

   A. Click  to draw a detection line, and an orange detection line will appear on the image.

   NOTES:
   - » *The detection line should be drawn at a position right below the camera, and it should cover the whole entrance/exit.*
   - » *Draw the detection line at a position that won't have many people lingering.*

   B. Click-and-drag the detection line to adjust its position.

   C. Click-and-drag the two end points of the detection line to adjust its length.

   D. Click  to delete the detection line.

   E. Click  to to change the direction.

5. Click the  button, and the number of people that entered and exited will be cleared to zero.

6. Click **Arming Schedule** to enter the arming schedule interface, and click-and-drag the mouse on the time bar to set the time.

7. Check the **Linkage Method** tab to select the linkage method.

8. Click **Save** to save the settings.

   *NOTE: The counting statistics will be calculated under the **Application** tab. Go to **Application** to check the counting statistics.*

10.3.5 Heat Map

Heat map is a graphical representation of data represented by colors. The heat map function of the camera usually is used to analyze the visit times and dwell time of customers in a configured area.

1. Enter the Heat Map configuration interface: **Configuration > Heat Map**.

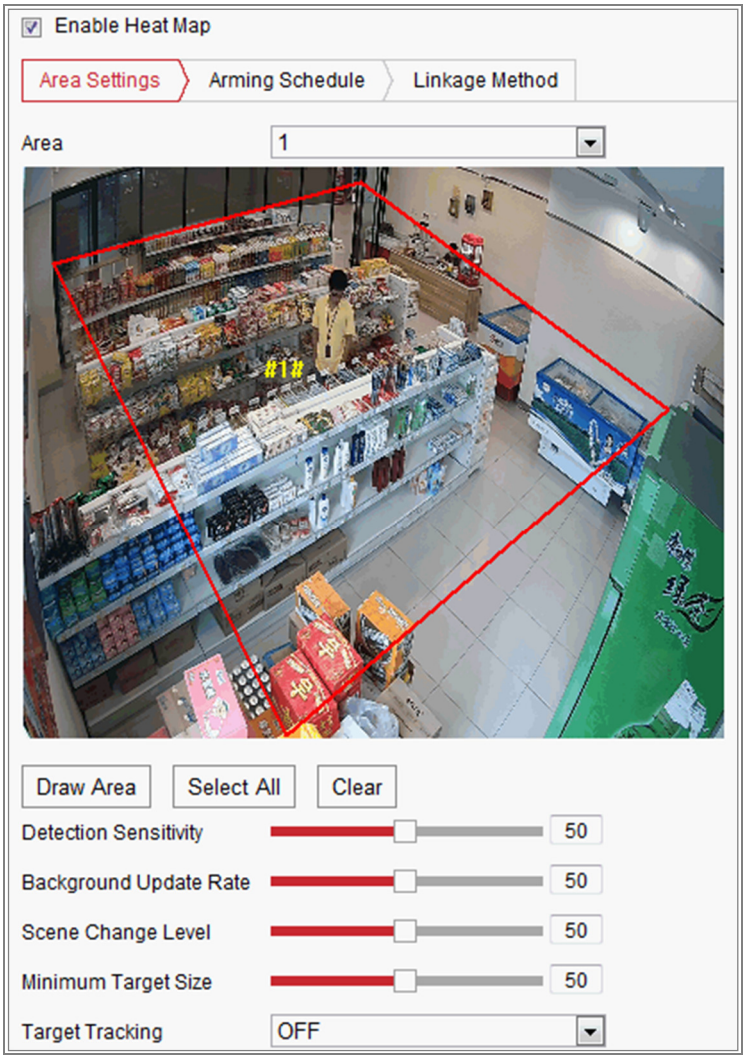


Figure 120, Heat Map Configuration

2. Check the **Enable Heat Map** checkbox to enable the function.

3. Go to **Area Settings** to draw detection area. Draw area by left clicking the end-points in the live view window, and right clicking to finish the area drawing. Up to eight areas are configurable.

   *NOTE: You can click **Select All** to select the whole live view window as the configured area or click **Delete** to delete the current drawn area.*

4. Configure the parameters for drawn area.

   - **Detection Sensitivity** [0-100]: It refers to the sensitivity of the camera identify a target. Overly high sensitivity may cause misinformation. It is recommended you set the sensitivity to the default value, 50.

   - **Background Update Rate** [0-100]: It refers to the speed of new scene replaces the previous scene. E.g., In front of a cabinet, the people besides the cabinet will be double counted if the goods moved from the cabinet, and the camera treats the cabinet (in which the goods were removed) as a new scene. The default value of 50 is recommended.

- **Scene Change Level** [0-100]: It refers to level of the camera responses to the dynamic environment, e.g., a swaying curtain. The camera may treat the swaying curtain as a target. Setting the level properly will avoid misinformation. The default level is 50.
- **Minimum Target Size** [0-100]: It refers to the size of the camera identify a target. You can set the target size according to the actual environment. The default size is 50.
- **Target Track**: Select ON or OFF to enable or disable the tracking of the target.

5. Go to **Arming Schedule** tab, and click-and-drag the mouse on the time bar to set the arming schedule.
6. Go to **Linkage Method** tab, and select the linkage method by checking the checkbox of notify the surveillance center.
7. Click **Save** to save the settings.

*NOTE: The heat map statistics will be calculated under the **Application** tab. Go to **Application** to check the heat map statistics.*

10.3.6 Road Traffic

Purpose:
Vehicle Detection and Mixed-Traffic Detection are available for road traffic monitoring. In Vehicle Detection, a passed vehicle can be detected and a picture of its license plate can be captured. The vehicle color, vehicle logo, and other information can be recognized automatically. In Mixed-Traffic Detection, a pedestrian, motor vehicle, or non-motor vehicle can be detected, and the picture of the object (for pedestrian/non-motor vehicle/motor vehicle without license plate) or license plate (for motor vehicle with license plate) can be captured. You can send an alarm signal to notify the surveillance center and upload the captured picture to an FTP server.

NOTE: Road traffic function varies by camera model.

- **Detection Configuration**

1. Select the detection type from the list. Vehicle Detection and Mixed-traffic Detection are selectable.

   NOTE: Reboot the device to activate the new settings when switching the road traffic detection type.

2. Check the **Enable** checkbox to enable the selected detection function.
3. Select the lane number in the corresponding drop-down list. Up to four lanes are selectable.
4. Click and drag the lane line to set its position or click and drag the line end to adjust the line length and angle.
5. Adjust the zoom ratio of the camera so that the size of the vehicle in the image is close to that of the red frame. Only the position of the red frame is adjustable.

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

6. Select a Province/State Abbreviation in the drop-down list when the license plate attribution cannot be recognized.

7. Set the Arming Schedule.

   A. Click **Arming Schedule** to enter the arming schedule interface.

   B. Click on the time bar and drag the mouse to select the time period. Click **Delete** or **Delete All** to delete the configured schedule.

   C. Move the mouse to the end of each day, a copy dialogue box pops up, and you can copy the current settings to other days.

   D. Click **Save** to save the settings.

   NOTE: The time of each period cannot overlap. Up to eight periods can be configured for each day.

8. Set the linkage method. Notify surveillance center and upload to FTP/Memory Card/NAS are selectable.

   - **Notify Surveillance Center:** Send an exception or alarm signal to remote management software when an event occurs.

   - **Upload to FTP/Memory Card/NAS:** Capture the image when an alarm is triggered and upload the picture to an FTP server, and save the picture on the local SD card or connected NAS.

9. Click the **Save** button to activate the settings.

10.3.7 Queue Management

Queue Management is a function to detect the number of queued-up people and the waiting time of each person.

The camera also generates reports to compare the efficiency of different queuing-ups and display the changing status of one queue.

To use the function, set up detection rules first. To see the statistics of queue management, go to **Application**.

NOTE: Queue management is supported only by certain camera models.

1.1.1.1 Rule Settings

The camera supports **Regional People Queuing-Up** and **Waiting Time Detection**. Check checkbox to enable the desired function.

- **Regional People Queuing-Up**: The function detects and calculates queued-up people in defined regions, and triggers an alarm when the number of people exceeds the set thresholds.

- **Waiting Time Detection**: The function detects and calculates the waiting time of each person that enters the detection area, and triggers an alarm when the waiting time exceeds the set thresholds.

1. Area Settings.

A. **Add a Region.** A region is the defined area in which the detections are active. When drawing the regions, note that a valid region-entering action of a target is that his/her head and shoulder enter the region.

   i. Click **Add Region**.

   ii. (Optional) Select a color for the region from the color drop-down list.

   iii. Draw a region by right clicking to determine the region boundary. Up to 10 edges are supported for a region.

B. **Move the Region:** Select and drag the region.

C. **Adjust the Region Boundary:** Select the region and drag the endpoint of the region edge.

D. **Delete the Region:** Select the region and click **Delete.**

NOTES:

» *When you are drawing regions, avoid region overlapping.*

» *A region should cover as much space as a queue may take.*

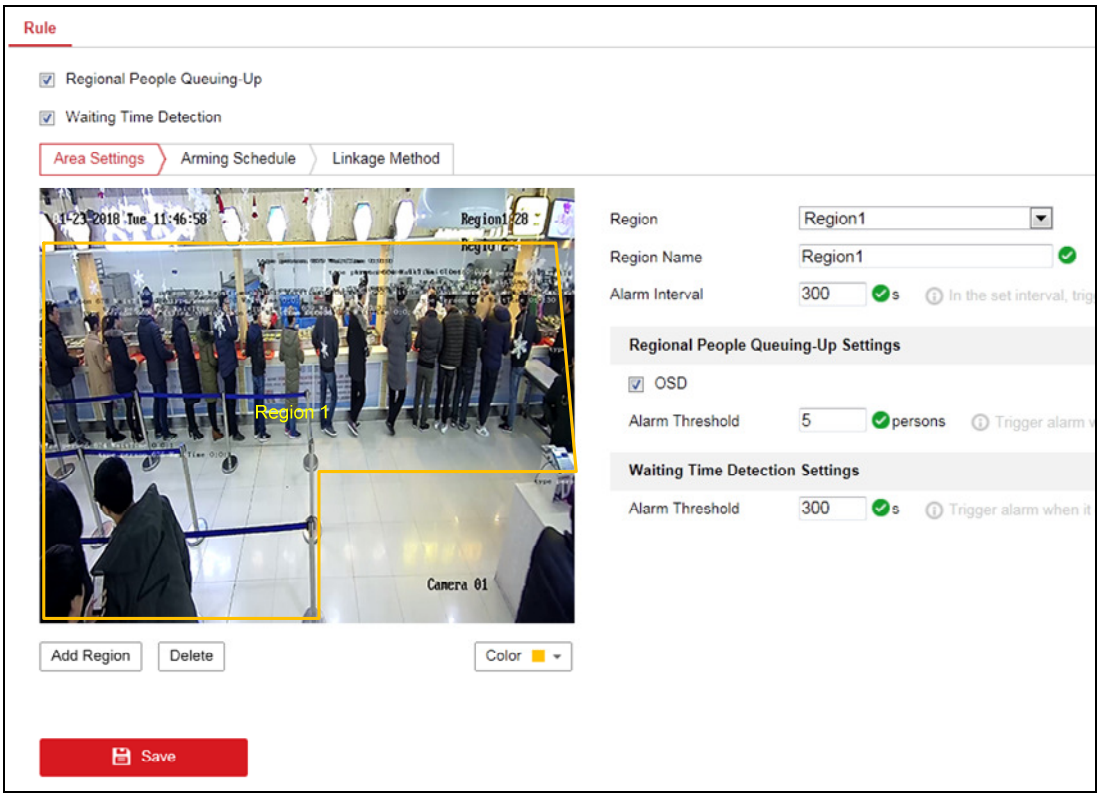


Figure 121, Queue Management, Rule Settings

E. Set parameters for the added region.

   i. Set the region name and alarm interval.

   Region Name: It is displayed as OSD information.

   Alarm Interval: In the set alarm interval, alarms of the same type trigger only one notification.

ii. Set people queuing-up settings.

Check **OSD** to display the region name and its real-time queuing-up people number.

F. **Alarm Threshold:** When the number of people in the region exceeds the set threshold, an alarm is triggered.

i. Set alarm threshold for waiting time detection. When waiting time of a person in the region exceeds the set value, an alarm is triggered.

G. Repeat above steps to set up other regions if needed. Up to three regions are supported.

2. **Arming Schedule:** Set the arming schedule for the function. In the armed periods, the function is active. Refer to Task 2 in *Section 10.1.1*

3. **Linkage Method.** Set linkage method. For triggered alarm information, you can set the linkage action as a response to forward the information or trigger other actions. Refer to Task 3 in *Section 10.1.1*

Chapter 11 Storage Settings

Before you start:

To configure record settings, please make sure that you have the network storage device or local storage device configured.

11.1 Configuring Record Schedule

Purpose:

There are two kinds of recording for the cameras: manual recording and scheduled recording. In this section, you can follow the instructions to configure the scheduled recording. By default, the record files of scheduled recording are stored in the local storage or in the network disk.

1. Enter the Record Schedule Settings interface: **Configuration > Storage > Schedule Settings > Record Schedule**.

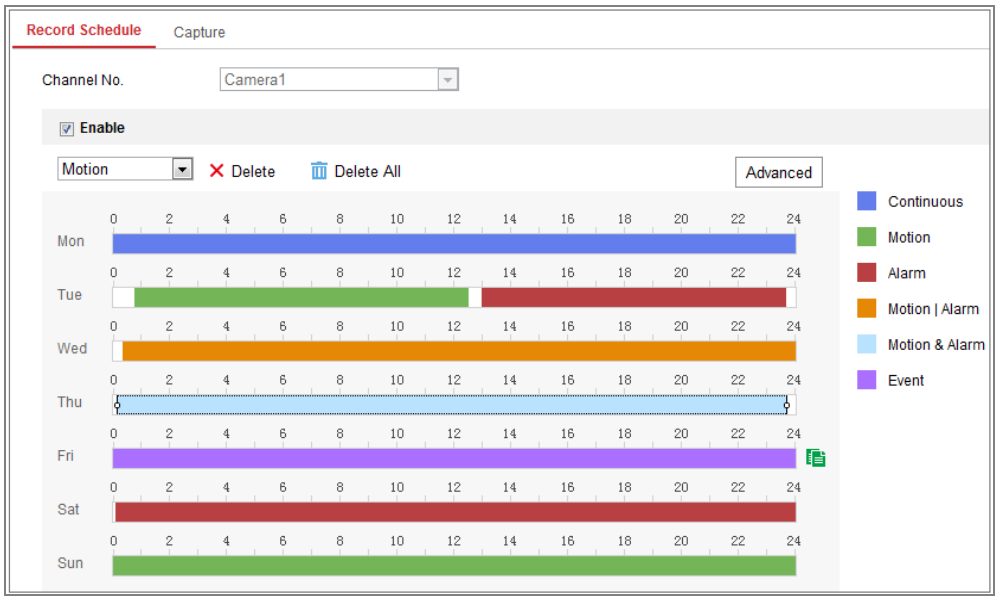


Figure 122, Recording Schedule Interface

2. Check the **Enable** checkbox to enable scheduled recording.

3. Click **Advanced** to set the camera record parameters.

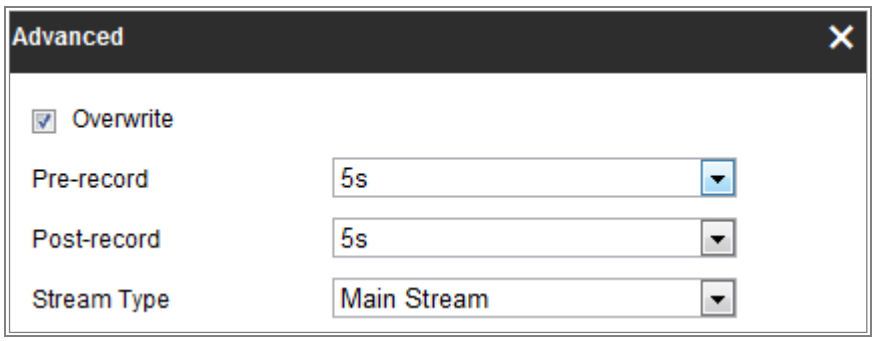


Figure 123, Record Parameters

- **Pre-record:** The time you set to start recording before the scheduled time or the event. For example, if an alarm triggers recording at 10:00, and the pre-record time is set as 5 seconds, the camera starts to record at 9:59:55.

  The Pre-record time can be configured as No Pre-record, 5s, 10s, 15s, 20s, 25s, 30s or not limited.

- **Post-record**: The time you set to stop recording after the scheduled time or the event. For example, if an alarm triggered recording ends at 11:00, and the post-record time is set as 5 seconds, the camera records until 11:00:05.

  The Post-record time can be configured as 5s, 10s, 30s, 1 min, 2 min, 5 min or 10 min.

- **Stream Type:** Select the stream type for recording.

  NOTE: The record parameter configurations vary by camera model.

4. Select a **Record Type**. The record type can be **Continuous**, **Motion Detection**, **Alarm**, **Motion | Alarm**, **Motion & Alarm**, and **Event**.

   - **Continuous:** If you select **Continuous**, the video will be recorded automatically according to the time of the schedule.

   - **Record Triggered by Motion Detection:** If you select **Motion Detection**, the video will be recorded when motion is detected.

     Besides configuring the recording schedule, you have to set the motion detection area and check the Trigger Channel checkbox in the **Linkage Method of Motion Detection Settings** interface. For detailed information, refer to the ***Task 1: Set the Motion Detection Area*** in the *Section 10.1.1.*

   - **Record Triggered by Alarm:** If you select **Alarm**, the video will be recorded when the alarm is triggered via the external alarm input channels.

     Besides configuring the recording **schedule**, you have to set the **Alarm Type** and check the **Trigger Channel** checkbox in the **Linkage Method** of **Alarm Input Settings** interface. For detailed information, refer to *Section 10.1.3*.

   - **Record Triggered by Motion & Alarm:** If you select **Motion & Alarm**, the video will be recorded when the motion and alarm are triggered at the same time.

     Besides configuring the recording schedule, you have to configure the settings on the **Motion Detection** and **Alarm Input Settings** interfaces. Please refer to Section *10.1.1* and *Section 10.1.3* for detailed information.

   - **Record Triggered by Motion | Alarm:** If you select **Motion | Alarm**, the video will be recorded when the external alarm is triggered or the motion is detected.

     Besides configuring the recording schedule, you have to configure the settings on the **Motion Detection** and **Alarm Input Settings** interfaces. Please refer to *Section 10.1.1* and *Section 10.1.3* for detailed information.

   - **Record Triggered by Events:** If you select **Event**, the video will be recorded if any of the events is triggered. Besides configuring the recording schedule, you have to configure the event settings.

5. Select the record type, and click-and-drag the mouse on the time bar to set the record schedule.

6. Click **Save** to save the settings.

11.2 Configure Capture Schedule

Purpose:
You can configure the scheduled snapshot and event-triggered snapshot. The captured picture can be stored in the local storage or network storage.

1. Enter the Capture Settings interface: **Configuration** > **Storage** > **Storage Settings** > **Capture**.

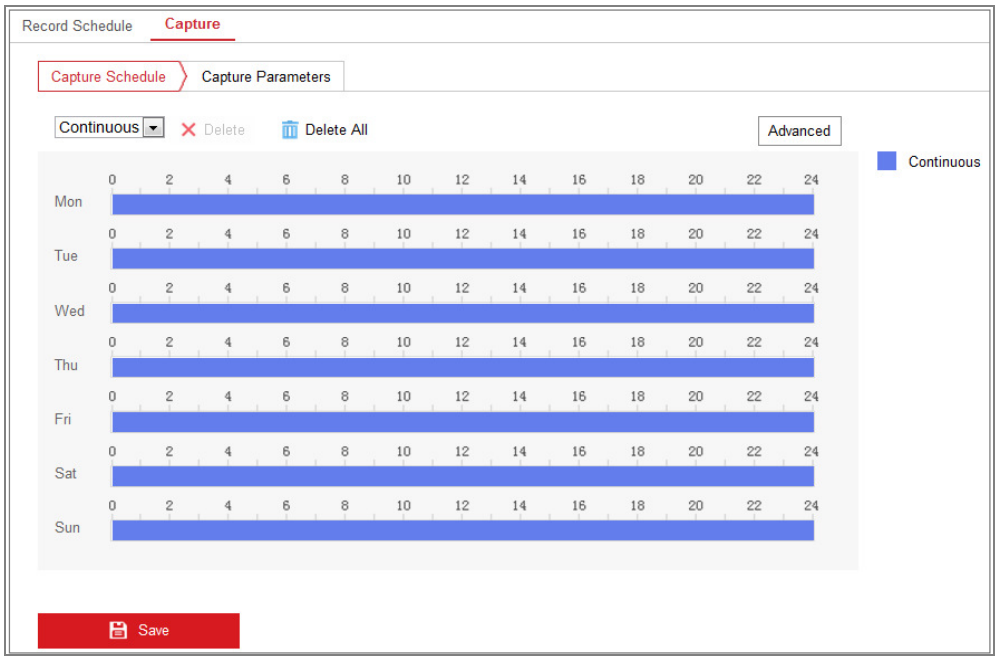


Figure 124, Capture Configuration

2. Go to **Capture Schedule** tab to configure the capture schedule by click-and-dragging the mouse on the time bar. You can copy the record schedule to other days by clicking the green copy icon on the right of each time bar.

3. Click **Advanced** to select stream type.

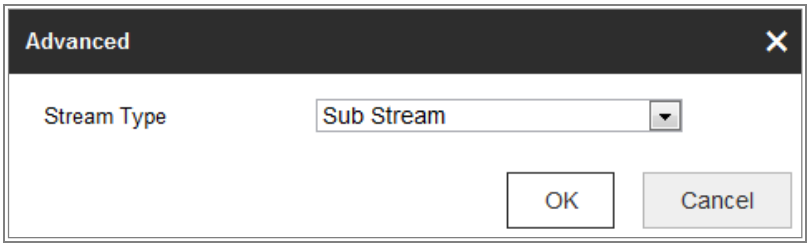


Figure 125, Advanced Setting of Capture Schedule

4. Click **Save** to save the settings.

5. Go to **Capture Parameters** tab to configure the capture parameters.

A. Check the **Enable Timing Snapshot** checkbox to enable continuous snapshot.

B. Select the picture format, resolution, quality, and capture interval.

C. Check the **Enable Event-triggered Snapshot** checkbox to enable event-triggered snapshot.

D. Select the picture format, resolution, quality, capture interval, and capture number.

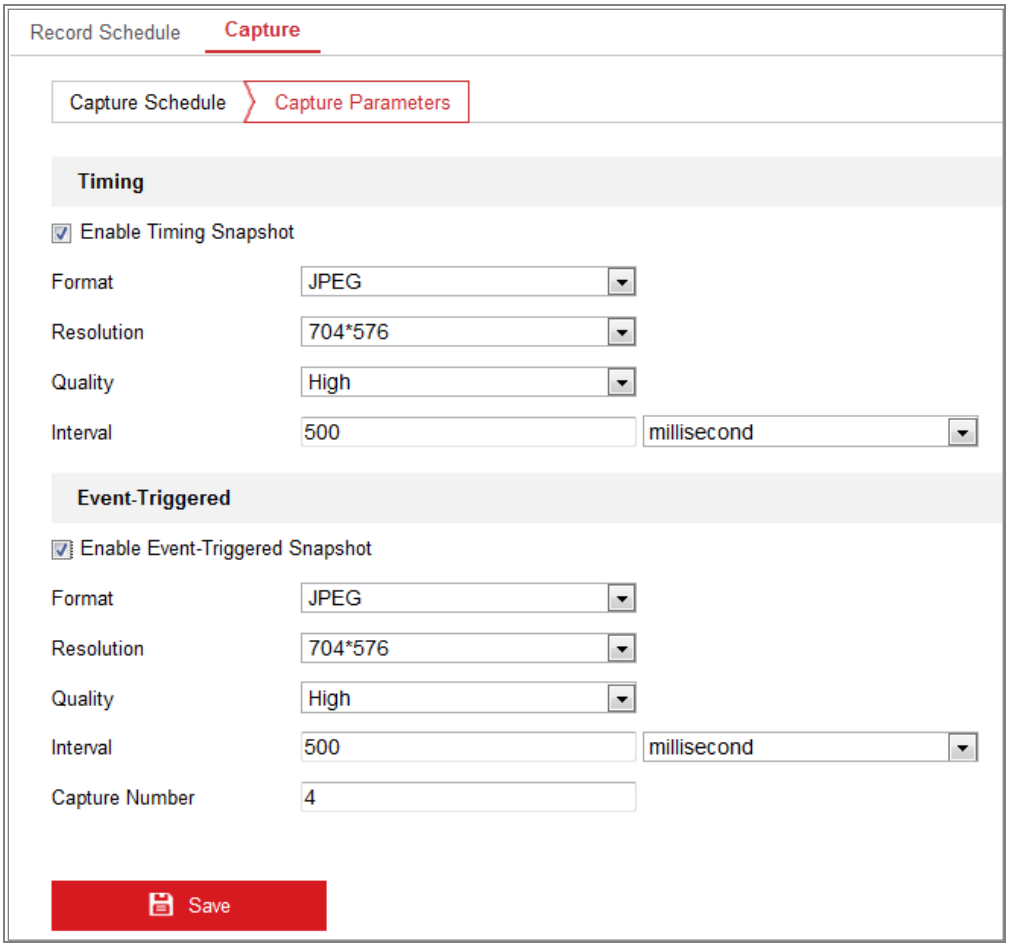


Figure 126, Set Capture Parameters

6. Set the time interval between two snapshots.

7. Click **Save** to save the settings.

11.3 Configuring Net HDD

Before you start:
The network disk should be available within the network and properly configured to store the recorded files, log files, pictures, etc.

1. Add Net HDD.

A. Enter the Net HDD settings interface, **Configuration** > **Storage** > **Storage Management** > **Net HDD**.

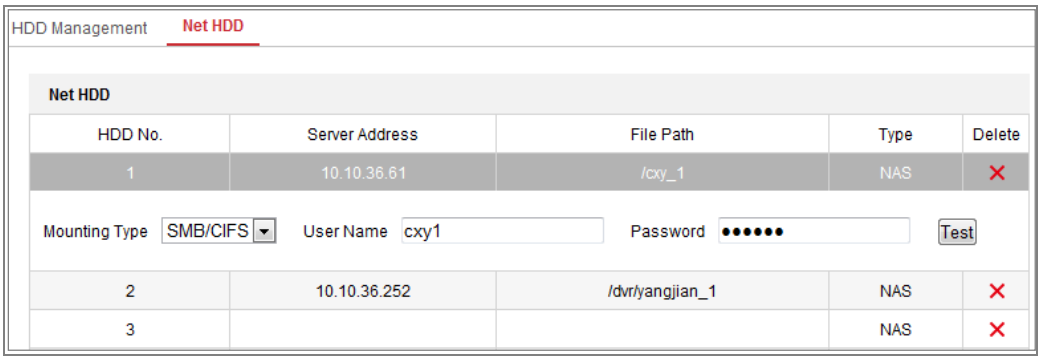


Figure 127, Add Network Disk

B. Enter the IP address of the network disk, and enter the file path.

C. Select the mounting type. **NFS** and **SMB/CIFS** are selectable, and you can set the user name and password to guarantee the security if SMB/CIFS is selected.

NOTE: Please refer to the NAS User Manual for creating the file path.

For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers and special characters) in order to increase the security of your product.

Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

D. Click **Save** to add the network disk.

2. Initialize the added network disk.

A. Enter the HDD Settings interface, **Configuration > Storage > Storage Management > HDD Management**, in which you can view the capacity, free space, status, type, and property of the disk.

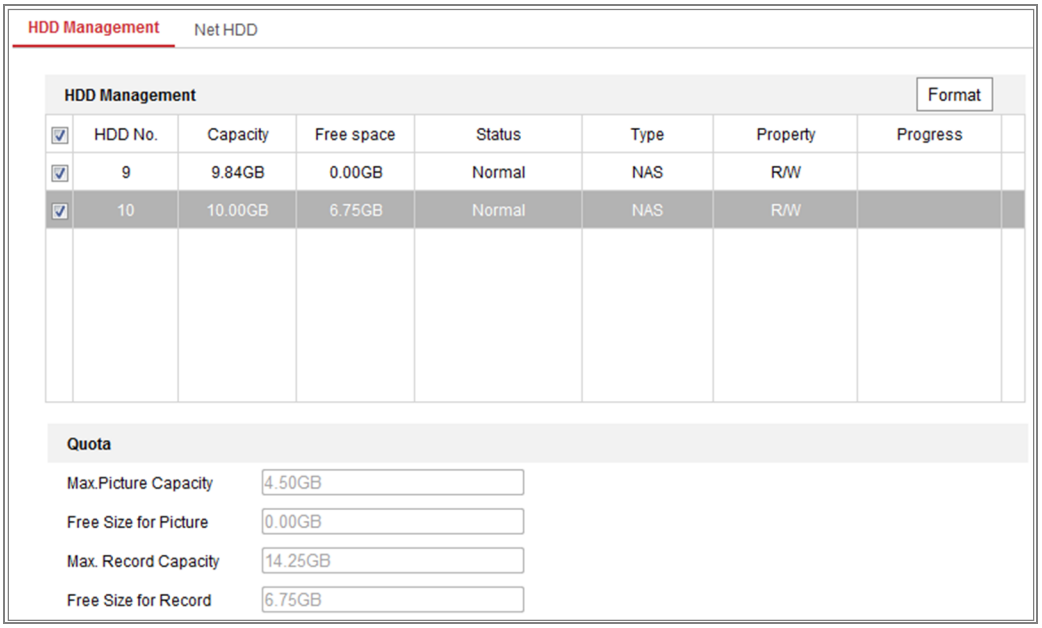


Figure 128, Storage Management Interface

B. If the status of the disk is **Uninitialized**, check the corresponding checkbox to select the disk and click **Format** to start initializing the disk. When the initialization completed, the status of disk will become **Normal.**

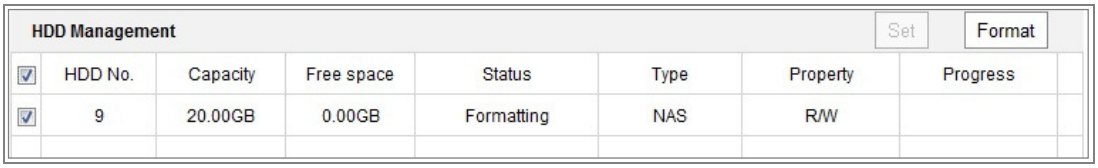


Figure 129, View Disk Status

3. Define the quota for record and pictures.

A. Input the quota percentage for picture and for record.

B. Click **Save** and refresh the browser page to activate the settings.

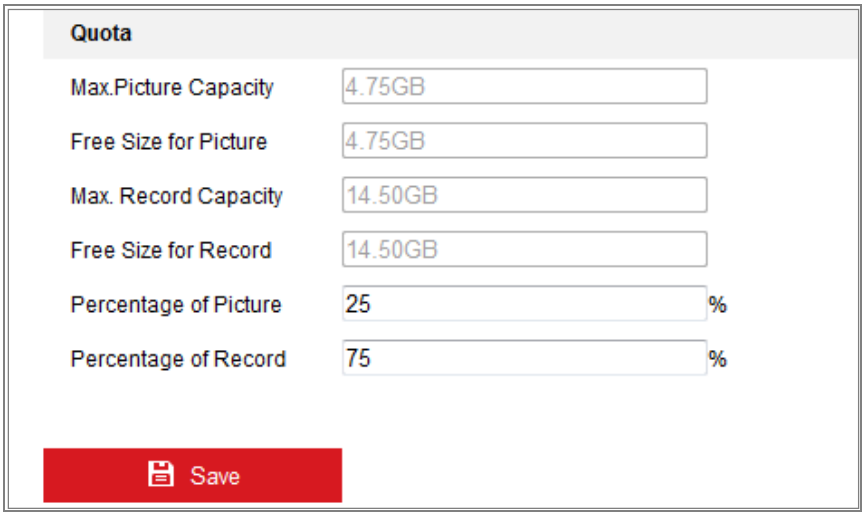


Figure 130, Quota Settings

NOTE: Up to eight NAS disks can be connected to the camera.

11.4 Memory Card Detection

Purpose:
With memory card detection, you can view the memory card status, lock your memory card, and receive notification when your memory card is detected to be abnormal.

NOTE: The Memory Card Detection function is supported only by certain types of memory cards and camera models. If this tab page doesn't show on your Web page, it means either that your camera doesn't support the function, or your installed memory card is not supported for this function. You can contact the dealer or the retailer for the information of memory cards that supports the function.

1. Enter Memory Card Detection configuration interface: **Configuration > Storage > Storage Management > Memory Card Detection**.

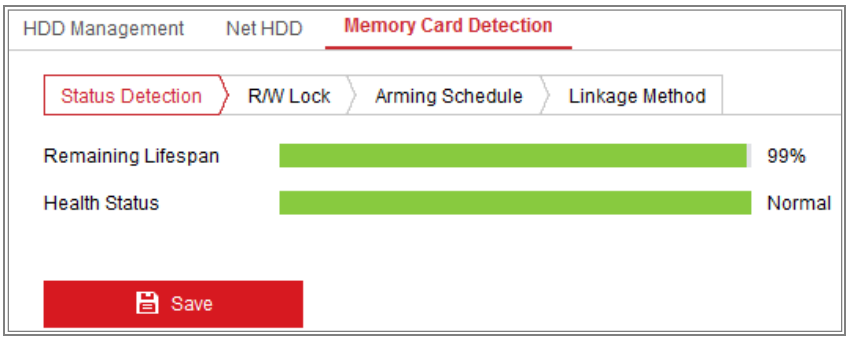


Figure 131, Memory Card Detection

2. View the memory card status on the **Status Detection** tab.

   - **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.

   NOTE: It is recommended that you change the memory card when the health status is other than "good."

3. Click the **R/W Lock** tab to add a lock to the memory card. With the R/W lock added, the memory card can only be read, and written to only when unlocked.

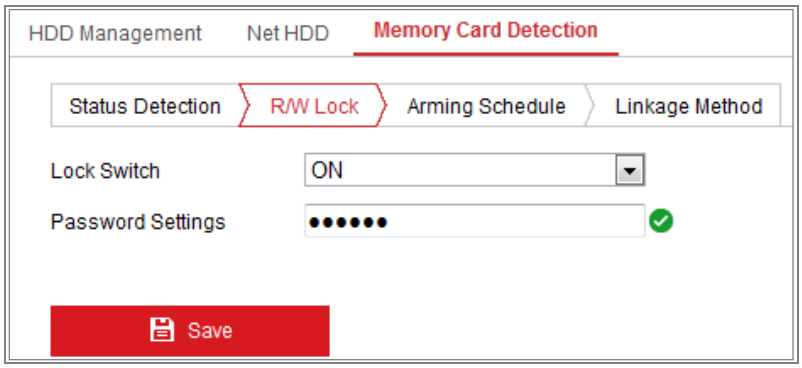


Figure 132, R/W Lock Setting

- **Add a Lock**

  A. Set the **Lock Switch** to **ON**.

  B. Input the password.

  C. Click **Save** to save the settings.

- **Unlock**

  - If you use the memory card on the camera that locked 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 camera, you can go to the **HDD Management** interface to unlock the memory card. Select the memory card, and click the **Unlock** button shown next to the **Format** button, then input the correct password to unlock it.

  NOTES:
  » *The memory card can only be read from and written to when it is unlocked.*
  » *If the camera that added a lock to the memory card is restored to the factory settings, you can go to the HDD Management interface to unlock the memory card.*

- **Remove the Lock**

  A. Set the **Lock Switch** to **OFF**.

  B. Input the correct password in the **Password Settings** text field.

  C. Click **Save** to save the settings.

4. Set the **Arming Schedule** and **Linkage Method** to receive notification when the health status of the memory card is other than good. Refer to ***Task 2: Set the Arming Schedule for Motion Detection*** and ***Task 3: Set the Linkage Method for Motion Detection*** in *Section 10.1.1.*

5. Click **Save** to save the settings.

11.5 Configuring Lite Storage

Purpose:
When there is no moving object in the monitoring scenario, the frame rate and bitrate of the video stream can be reduced to lengthen the storage time of the memory card.

NOTES:
- *The Lite Storage function varies by camera model.*
- *The video files recorded in lite storage mode will be played back in full frame rate (25fps/30fps), and thus the playback process is speeded up to the eye.*

1. Enter the Lite Storage interface: **Configuration > Storage > Storage Management > Lite Storage**.
2. Check the **Enable** checkbox to enable the lite storage function.
3. Input the storage time in the text field. You can view the available space of the SD card on the page.
4. Click **Save** to save the settings.

Chapter 12 Playback

Purpose:

This section explains how to view remotely recorded video files stored in the network disks or memory cards.

1. Click **Playback** on the menu bar to enter the playback interface.

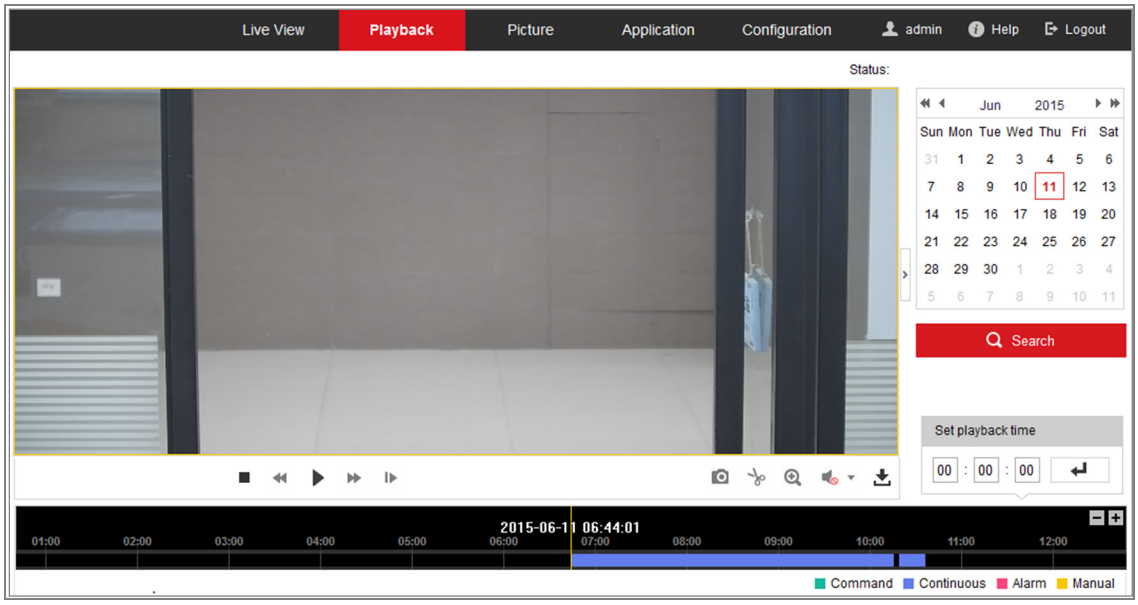


Figure 133, Playback Interface

2. Select the date and click **Search**.

Figure 134, Search Video

3. Click ▶ to play the video files found on this date. The toolbar on the bottom of Playback interface can be used to control the playing process. You can also input the time and click ↵ to locate the playback point in the **Set playback time** field. You can also click − + to zoom out/in the progress bar.

   The different colors of the video on the progress bar stand for the different video types.

Figure 135, Playback Toolbar

Table 12-1 Description of the buttons

Button	Operation	Button	Operation
	Play		Capture a picture
	Pause	/	Start/Stop clipping video files
	Stop	/	Audio on and adjust volume/Mute
	Speed down		Download
	Speed up		Playback by frame
/	Enable/Disable digital zoom		

NOTE: *You can choose the file paths locally for downloaded playback video files and pictures in the **Local Configuration** interface.*

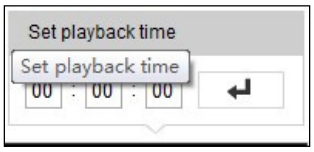


Figure 136, Set Playback Time

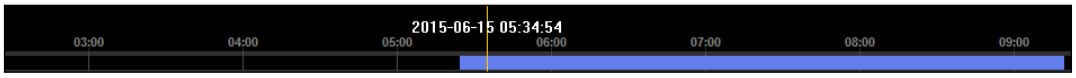


Figure 137, Progress Bar

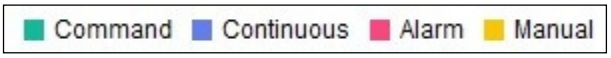


Figure 138, Video Types

Chapter 13 Picture

Click **Picture** to enter the picture searching interface. You can search, view, and download the pictures stored in the local storage or network storage.

NOTES:

» *Make sure HDD, NAS or memory card are properly configured before you process the picture search.*

» *Make sure the capture schedule is configured. Go to **Configuration > Storage > Schedule Settings > Capture** to set the capture schedule.*

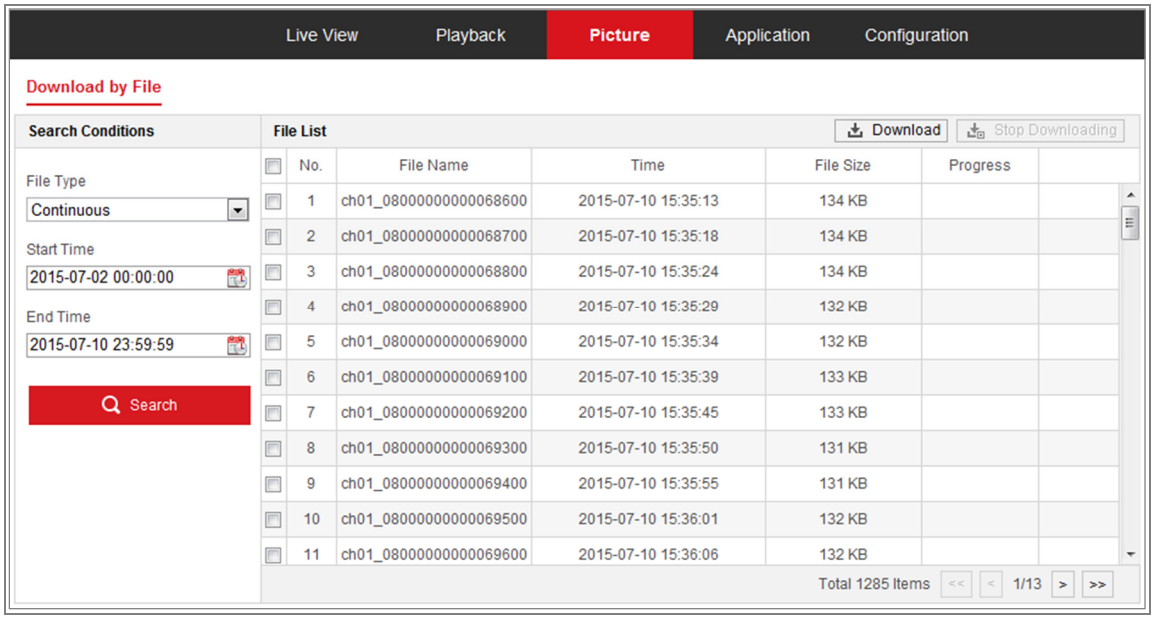


Figure 139, Picture Search Interface

1. Select the file type from the drop-down list. **Continuous**, **Motion**, **Alarm**, **Motion | Alarm**, **Motion & Alarm**, **Line Crossing**, **Intrusion Detection**, and **Scene Change Detection** are selectable.

2. Select the start time and end time.

3. Click **Search** to search the matched pictures.

4. Check the checkbox of the pictures and then click **Download** to download the selected pictures.

NOTE: Up to 4000 pictures can be displayed at one time.

Chapter 14 Application

Click **Application** to enter the statistics counting interface. You can search, view, and download the counting data stored in the local storage or network storage.

NOTE: Application function varies by camera model.

14.1 Face Capture Statistics

After you enable the Face Capture function, you can view and download the captured face data from the **Application** tab. To get more intuitional results, you can display the data in different charts.

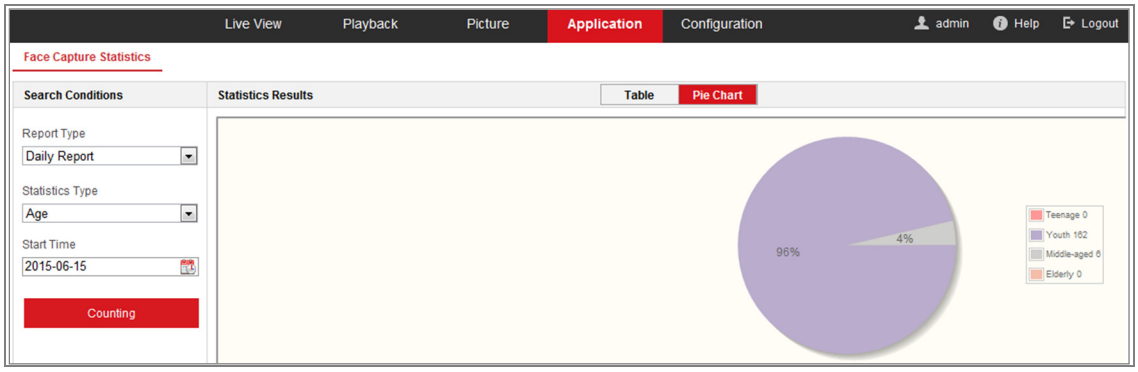


Figure 140, Application Interface

1. Select the report type. Daily report, weekly report, monthly report, and annual report are selectable.
2. Select the statistics type.
3. Select the start time, and click **Counting**. The counting result displays in the statistic result area. Click **Table** or **Pie Chart** to display the result in different way.

NOTE: If you list the counting results in a table, you can export the data to a Microsoft Excel file.

14.2 People Counting Statistics

After you enable the people counting function, you can view and download the people counting data from application tab. To get more intuitional results, you can display the data in different charts.

1. Select the report type. Daily report, weekly report, monthly report, and annual report are selectable.

NOTE: Daily report calculates the data on the date you selected; weekly report calculates for the week your selected date belongs to; monthly report calculates for the month your selected date belongs to; and the annual report calculates for the year your selected date belongs to.

2. Select the statistics type. **People Entered**, and **People Exited** are selectable.

3. Select the start time, and click **Counting**. The counting result displays in the statistic result area. Click **Table**, **Bar Chart**, or **Line Chart** to display the result in different way.

   *NOTE: If you select table to display the statistics, there is an **Export** button to export the data to a Microsoft Excel file.*

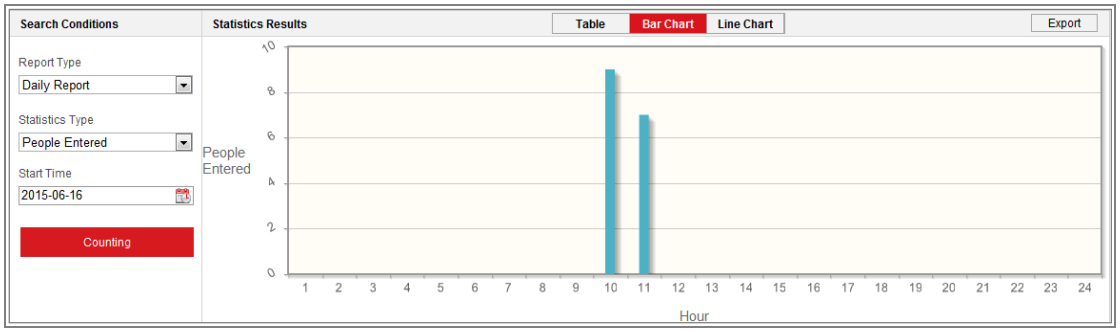


Figure 141, People Counting

14.3 Heat Map Statistics

After you enable the heat map function, you can view and download the heat map data from application tab. To get more intuitional results, you can display the data in different charts.

1. Select the report type. **Daily report**, **weekly report**, **monthly report**, and **annual report** are selectable.

   NOTE: Daily report calculates the data on the date you selected; weekly report calculates for the week your selected date belongs to; monthly report calculates for the month your selected date belongs to; and the annual report calculates for the year your selected date belongs to.

2. Select the start time, and click **Counting** to list the heat map data.

3. Select **Space Heat Map** or **Time Heat Map** to display the results.

   *NOTE: If you select the time heat map to list the statistics, there is an **Export** button to export the data in a Microsoft Excel file.*

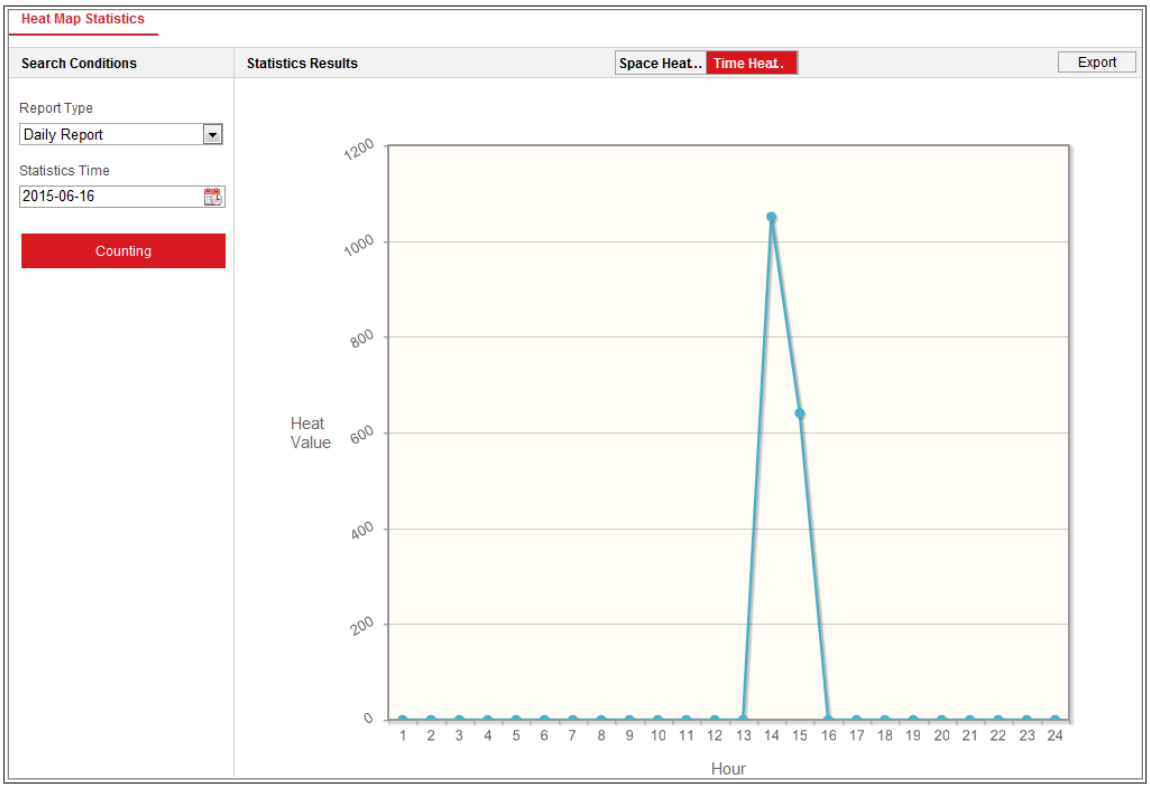


Figure 142, Time Heat Map

NOTE: It is recommended that you do not adjust the electronic lens after the installation is completed, which may cause the inaccuracy of the data to some degree.

14.4 Counting Statistics

After you enable the counting function, you can view and download the counting data from application tab. To get more intuitional results, you can display the data in different charts.

1. Select the report type. **Daily report**, **weekly report**, **monthly report**, and **annual report** are selectable.

   NOTE: Daily report calculates the data on the date you selected; weekly report calculates for the week your selected date belongs to; monthly report calculates for the month your selected date belongs to; and the annual report calculates for the year your selected date belongs to.

2. Select the statistics type. People entered and people exited are selectable.

3. Select the start time and click **Counting** to list the heat map data.

4. Select **Table**, **Bar Chart**, or **Line Chart** to display the results.

   *NOTE: If you select the table to list the statistics, there is an **Export** button to export the data to a Microsoft Excel file.*

14.5 Queue Management Statistics

Purpose:
Queue management supports data analysis and report output from multiple dimensions.

- **Commonly Used Data Analysis**

  - To see queuing-up people number of a certain waiting time level in a queue/region, use queuing-up time analysis, check a target region, and set a waiting time level.

  - To compare queuing-up people number of a certain waiting time level in multiple queues/regions, use queuing-up time analysis, check target regions, and set a waiting time level.

  - To compare queuing-up people number of different waiting time levels in multiple queues/regions, use queuing-up time analysis, check target regions, and set waiting time levels.

  - To see the time and duration that a queue stays a certain length in a queue/region, use queue status analysis, check a target region, and set a queue length level.

  - To compare the time and duration that a queue stays a certain length in multiple queues/regions, use queue status analysis, check target regions, and set a queue length level.

  - To compare the time and duration that a queue stays at different length in multiple queues/regions, use queue status analysis, check target regions, and set queue length levels.

14.5.1 Queuing-Up Time Analysis

Purpose:
Queuing-Up Time Analysis calculates the number of people of different waiting time levels. Regional comparison and multiple waiting time level comparison are supported.

1. Select Statistic Type.

   - **Regional Comparison:** Compares number of queued-up people of different regions.

     A. Check one or more regions.

     B. Set waiting time level. Check desired time range radio button and input value.

        EXAMPLE: If you want to see the number of people who wait longer than 10 minutes, check the third radio button and input 600 in the corresponding text field.

   - **Multi-Level Comparison:** Compares number of queued-up people of different waiting time levels.

     A. Check one or more regions.

     B. Set waiting time level. Check one or more desired time range checkboxes and input values.

EXAMPLE: If you want to compare the number of people who wait longer than 10 minutes and who wait less than three minutes, check the first and the third radio button and input 600 and 180 in the corresponding text fields.

2. Select **Report Type**. **Daily report**, **weekly report**, **monthly report**, and **custom** are supported.
3. Select **Statistics Time**.
4. Click **Counting** to generate report.
5. (Optional) Click **Export** in the upper right corner to export the data in the desired format (**.txt** and **.xls** are selectable.).

14.5.2 Queue Status Analysis

Purpose:
Queue Status Analysis calculates the time and duration that a queue stays a certain length. Regional comparison and multiple queue length level comparison are supported.

1. Select Statistic Type.
   - **Regional Comparison:** Compares the time and duration that a queue stays at a certain length in different regions.
     A. Check one or more regions.
     B. Set queue length level. Queue length here means the people number in the region.

     EXAMPLE: If you want to see how long the queue keeps more than 10 persons in a region, check the third radio button and input 10 in the corresponding text field.
   - **Multi-Level Comparison:** Compares the time and duration of the queue at different queue length levels.
     A. Check one or more regions.
     B. Set the queue length level. Check one or more desired range checkboxes and input values.
2. Select **Report Type**. **Daily report**, **weekly report**, **monthly report**, and **custom** are supported.
3. Select **Statistics Time**.
4. Click **Counting** to generate the report.
5. (Optional) Click **Export** in the upper right corner to export the data in the desired format (**.txt** and **.xls** are selectable.).

14.5.3 Raw Data

Storage of Raw Data
Queue management raw data is saved in the local storage of the device.

With an on-board memory card installed, the device can save up to one month's data.

With NO memory card installed, the device can save only up to one week's data.

- **Raw Data Exporting**

  Exporting of queue management raw data is not available on a Web browser. For further analysis, you can get the data via RTSP protocol.

14.6 Open Platform

Purpose:
Open platform allows you to install an application for third-party function development.

NOTE:
» *Only certain camera models support this function, and the actual display may vary by camera model.*
» *When you use the open platform function, it is not recommended to set your IP address and the camera IP address to 192.168.252.X.*

1. Enter the Record Schedule Settings interface: **Configuration** > **Open Platform**.
2. Click **Install Apps**.
3. Click **Browse** to select the imported application package.

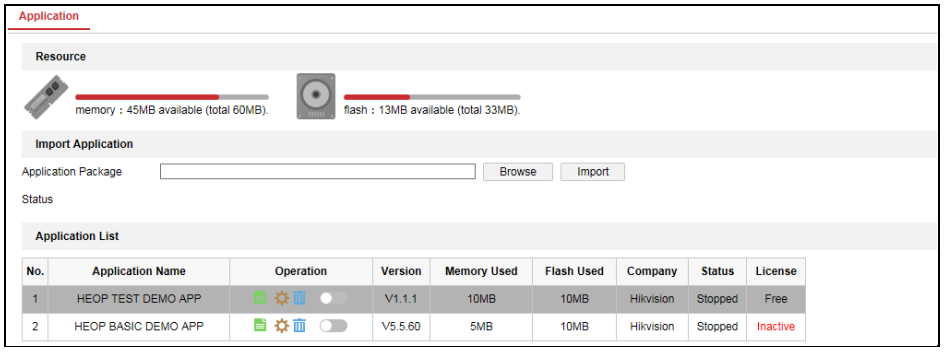


Figure 143, Open Platform

4. Click **Import**. Then the application is installed successfully.
5. The installed applications and their related information are displayed in the list such as the version, memory used, flash used, company, status, and license.
6. In the Operation list, you can click the following to perform the stated tasks:
   - to export the log
   - to set the permission
   - to delete the application

- to enable or disable the application

*NOTE: If you click , there are two checkboxes, **Get Video Stream** and **Camera Setting Authorization**.*

- If the third-party application needs to get the video stream, check the checkbox to enable **Get Video Stream.**
- If the third-party application needs to get or set the camera parameters, check the checkbox to enable **Camera Setting Authorization.**

7. If you have installed the application, you can select the desired application to view the license or click **Browse** to import the license for each application. There are four license status: **free**, **inactive**, **activated**, and **expired**. Free means that the application is free for use and you need not to import a license key, inactive means you should import a license key before using the application.

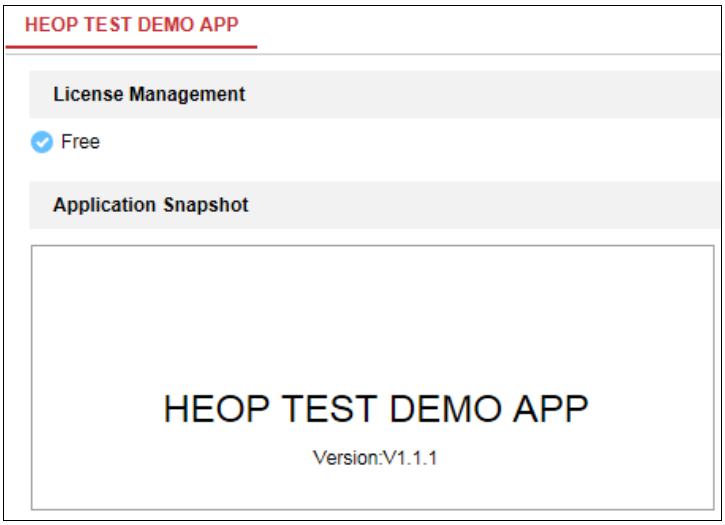


Figure 144, Import License

NOTES:

» *Before you import the application package, make sure the following requirements are met.*

- *The imported applications cannot have the same name.*
- *The flash memory size of the imported application should be less than the free flash memory of the device.*
- *The memory size of the imported application should be less than the free memory of the device.*

Appendix

Appendix 1 SADP Software Introduction

- **Description of SADP**

  SADP (Search Active Devices Protocol) is a user-friendly and installation-free online device search tool. It searches the active online devices within your subnet and displays the information of the devices. You can also modify the basic network information of the devices using this software.

- **Search Active Devices Online**

  - **Search Online Devices Automatically**

    After launching the SADP software, it automatically searches the online devices every 15 seconds from the subnet where your computer is located. It displays the total number and information of the searched devices in the Online Devices interface. Device information including the device type, IP address, port number, etc. will be displayed.

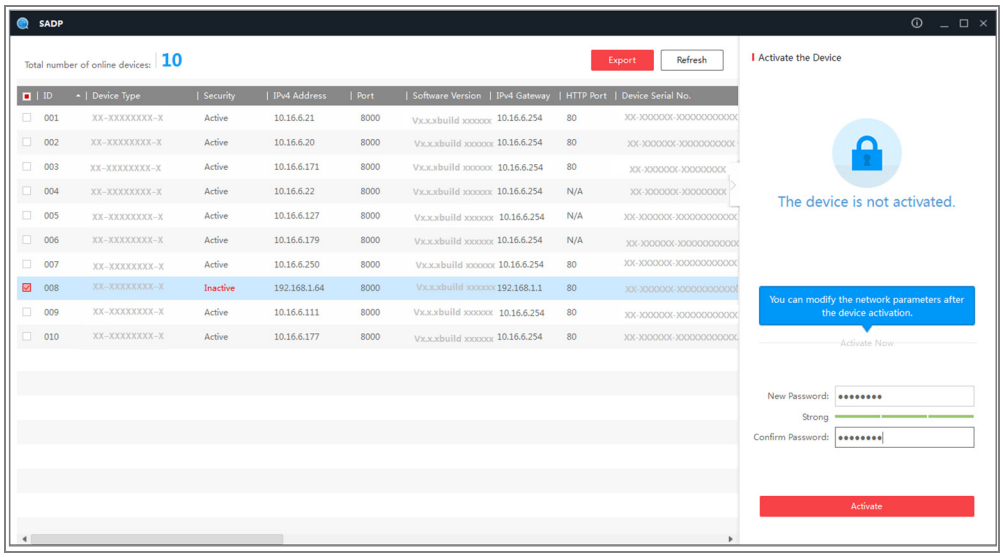


Figure 145, Searching Online Devices

NOTE: DeviceS can be searched and displayed on the list 15 seconds after going online; it will be removed from the list in 45 seconds after it goes offline.

  - **Search Online Devices Manually**

    Click Refresh to refresh the online device list manually. Newly searched devices will be added to the list.

NOTE: You can click ▲ or ▼ on each column heading to order the information; you can click ▶ to expand the device table and hide the network parameter panel on the right side, or click ◀ to show the network parameter panel.

- **Modify Network Parameters**

1. Select the device to be modified in the device list, and the network parameters of the device will be displayed in the **Modify Network Parameters** panel on the right.

2. Edit the modifiable network parameters (e.g., IP address and port number).

3. Enter the password of the admin account of the device in the **Admin Password** field and click Modify to save the changes.

For your privacy and to better protect your system against security risks, we strongly recommend the use of strong passwords for all functions and network devices. The password should be something of your own choosing (using a minimum of eight characters, including at least three of the following categories: upper case letters, lower case letters, numbers and special characters) in order to increase the security of your product.

Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

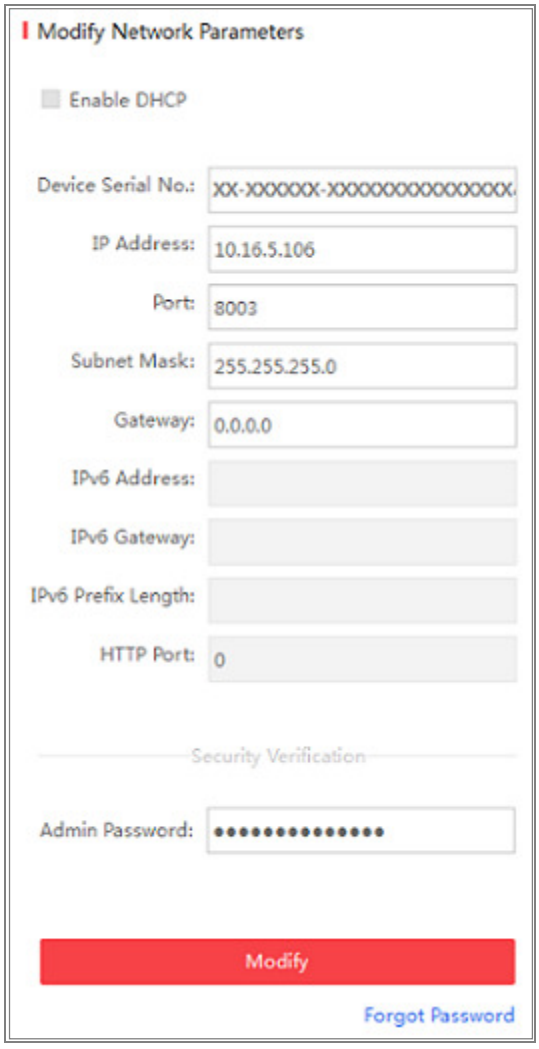


Figure 146, Modify Network Parameters

Appendix 2 Port Mapping

The following settings are for a TP-LINK router (TL-WR641G). The settings vary depending on different models of routers.

1. Select the **WAN Connection Type**, as shown below:

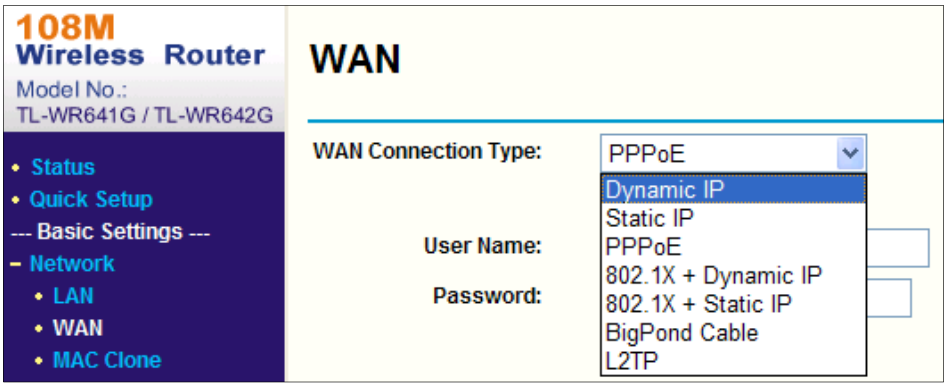


Figure 147, Select the WAN Connection Type

2. Set the **LAN** parameters of the router as in the following figure, including IP address and subnet mask settings.

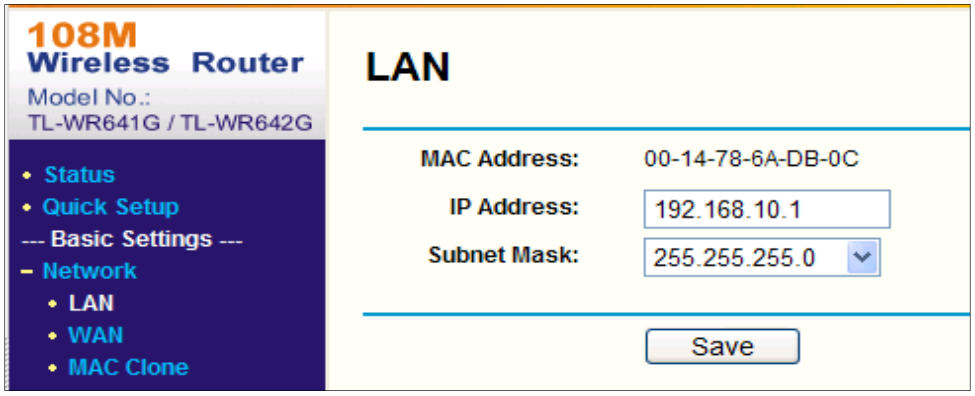


Figure 148, Set the LAN Parameters

3. Set the port mapping in the virtual severs of **Forwarding**. By default, camera uses port 80, 8000, and 554. You can change these port values with a Web browser or client software.

   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. Refer to the steps as below:

4. As the settings mentioned above, map port 80, 8000, 554, and 8200 for the network camera at 192.168.1.23.

5. Map port 81, 8001, 555, and 8201 for the network camera at 192.168.1.24.

6. Enable **ALL** or **TCP** protocols.

7. Check the **Enable** checkbox and click **Save** to save the settings.

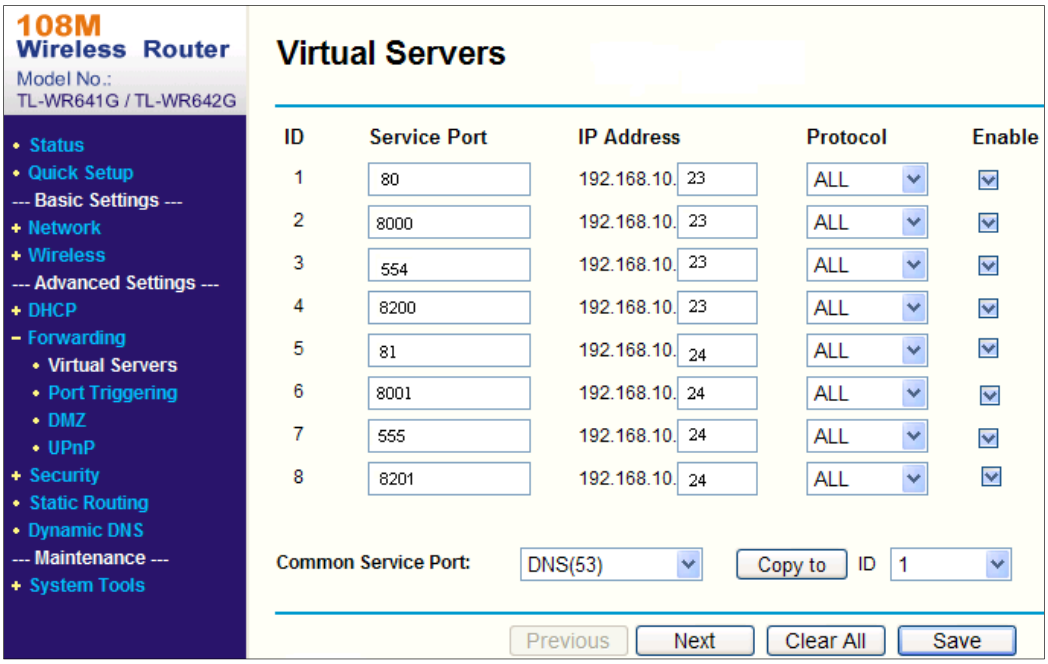


Figure 149, Port Mapping

NOTE: The network camera port 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.