REVO

ULTRA Network Video Recorder
User Manual
RU8NVR2AX/RU16NVR2BX

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Disclaimer

> **ⓘ CAUTION!**
>
> The default password **"123456"** is intended only for your first login. We strongly recommend you set a strong password to ensure account security.
>
> - Strong: contains at least 9 characters comprising all three elements: letter, special character, and digit.
> - Weak: contains at least 8 characters from two of the four types: upper-case letter, lower-case letter, special character, and digit.

- To the maximum extent permitted by applicable law, the product described, with its hardware, software, firmware and documents, is provided on an "as is" basis.

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- Use of this manual and the product and the subsequent result shall be entirely on the user's own responsibility. In no event shall we be liable 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, or product malfunction or information leakage caused by cyber attack, hacking or virus in connection with the use of this product.

- Video and audio surveillance can be regulated by laws that vary from country to country. Check the law in your local region before using this product for surveillance purposes. We shall not be held

responsible for any consequences resulting from illegal operations of the device.

- The illustrations in this manual are for reference only and may vary depending on the version or model. The screenshots in this manual may have been customized to meet specific requirements and user preferences. As a result, some of the examples and functions featured may differ from those displayed on your monitor.
- This manual is a guide for multiple product models and so it is not intended for any specific product.
- Due to uncertainties such as physical environment, discrepancy may exist between the actual values and reference values provided in this manual. The ultimate right to interpretation resides in our company.

Safety Symbols

The symbols in the following table may be found in this manual. Carefully follow the instructions indicated by the symbols to avoid hazardous situations and use the product properly.

Symbol	Description
⚠ WARNING!	Indicates a hazardous situation which, if not avoided, could result in bodily injury or death.
ⓘ CAUTION!	Indicates a situation which, if not avoided, could result in damage, data loss or malfunction to product.
📝 NOTE!	Indicates useful or supplemental information about the use of product.

Contents

Preface

This manual describes how to use your NVR locally or on the Web interface.

In this manual, the terms IP camera and IPC refer to the same thing: network camera, which requires a connection to the network. And the IP device mentioned in this manual refers to an IP camera (also known as network camera) or a Digital Video Server (DVS).

Part I Local Operations

An NVR supports two types of operations: local operations and web-based remote operations. With local operations you connect a monitor and a mouse to the NVR and use the mouse to operate. If your NVR has buttons on the front panel or is delivered with a remote control, you may also control your NVR by pressing the front panel buttons or using the remote control.

The NVR has an embedded web server and allows web-based operations. To do this, you need a PC that has a network connection to the NVR and is installed with a web browser. You just need to navigate to the NVR's IP address and log in to the Web interface like you log in to the system locally. This section describes local operations.

1 Before You Begin

Please be aware that the parameters that are grayed out on the system user interface (UI) cannot be modified. The parameters and values displayed may vary with device model, and the figures in this manual are for illustration purpose only.

User Login

Use the default username **admin** and password **123456** for your first login.

> **CAUTION!**
>
> The default password is intended only for the first login and should be changed to a strong one containing at least nine characters including letters, digits and special characters after your first login to ensure security.

1. Right-click anywhere in the window and then choose **Menu**. The login dialog box is displayed.
2. Select the username from the drop-down list, enter your password, and then click **Login**.

Local Operations

You can refer to Initial Configuration and complete a quick configuration.

> **NOTE!**
>
> Unless otherwise specified, all operations described in this manual are performed with a mouse by the right hand. See Mouse Operations for details.

Mouse Operations

Table 1–1 Mouse Operations

Name	Action	Description
Left button	Click	● Select or confirm an item. ● Select to edit digits, symbols, upper-case or lower-case letters in a field.
	Double-click	Enter or exit full screen mode in live view.
	Drag	Draw or move a rectangle on the screen, for example, a motion detection area.
Right button	Click	● Show the shortcut menu. ● Exit zoom. ● Exit the current window when **Cancel** or **Exit** is displayed.
Wheel	Scroll up or down	Scroll up or down a list or a window; or zoom in or out on a playback progress bar.
	Long press	Restore to lowest resolution

2 Initial Configuration

Preparation

- Make sure that at least one monitor is correctly connected to the VGA or HDMI interface on the rear panel of the NVR.
- Verify that the hard disk(s) are correctly installed. For detailed steps to install a hard disk, please refer to the quick guide shipped with your NVR.
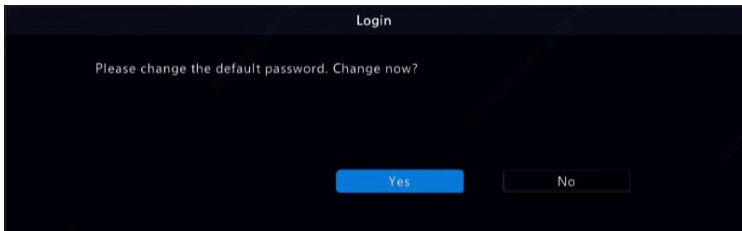
Device Login

The login page appears after the NVR starts up.
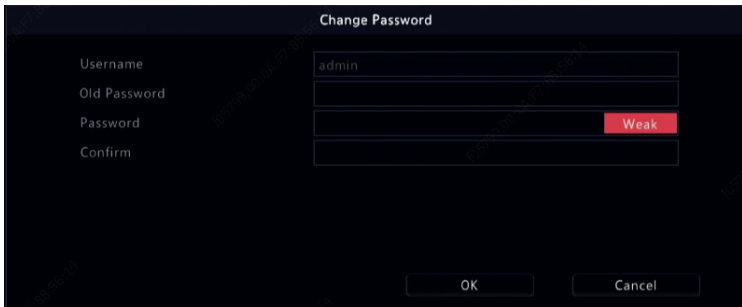
1. Enter the default admin password **123456**, click **Login**, and then click **Yes** to change the password.

2. Change the password into a strong one, then click **OK**.

3. Set the unlock pattern.
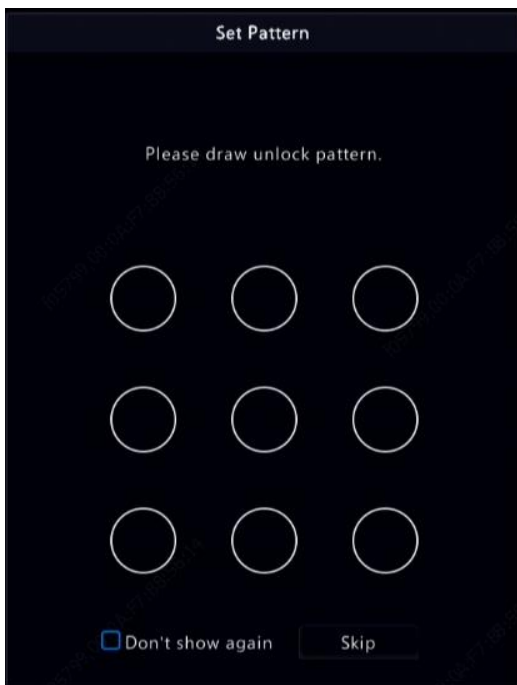
NOTE!

To disable unlock pattern, click **System > User**. See <u>User Configuration</u> for details.

Wizard

The wizard can guide you to complete the most basic setup. The following page appears after your login:

1. Enable or disable the wizard as needed and then click **Next**. You may also click ![2].
2. Select the time zone, date and time format, set the system time, and then click **Next**.
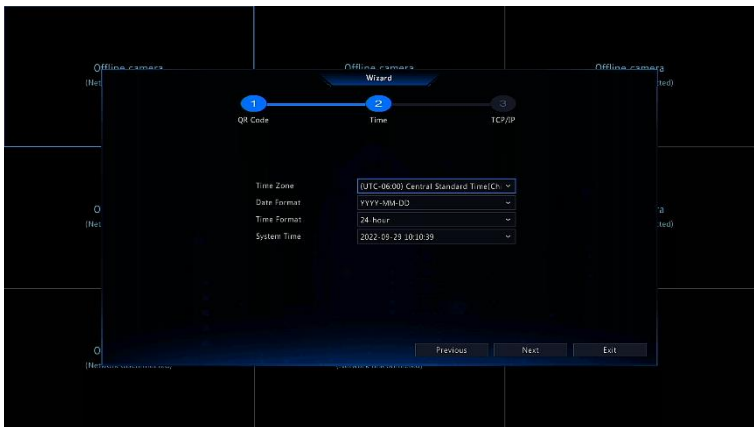
3. Complete network configuration, and then click **Next**.

3 Live View

Live View Status

The following icons are used to indicate alarms, recording status, and audio status in a live view window.

Table 3–1 Live View Window Icons

Icon	Description
⚠	Tampering alarm
🏃	Motion detection alarm
🎬	Recording
🎤	Two-way audio

Window Toolbar

Icon	Description
	Available for PTZ cameras only. Click to display the PTZ control window.
	Record live video in the window to the hard disk. Clicking stops recording.
	Click to play video recorded during the past 5 minutes and 30 seconds.
	Zoom in on an area of interest.
	Click to edit image settings.
	Click to take a snapshot. The window borders will flash white. You may view and back up snapshots under **Backup > Image**.
OSD	Click to set OSD.
	Start two-way audio with the camera. Click to stop. The sound volume is adjustable. **Note:** Correct audio input and output connections are required.
	Click to turn on audio. Clicking turns off audio. The sound volume is adjustable. **Note:** When you turn on audio in the current window, audio of the previous window is turned off.
	Rest your mouse pointer on the icon to view bitrate info; click this button to view the camera ID and IP address or to change the username and password used to connect the camera.

Screen Toolbar

Icon	Description
	Click to access the main menu.
	Select the screen layout.

Icon	Description
< >	Previous or next screen.
⟳ / ⟳	Start or stop sequence.
⟲	Playback.
▤	Rest the mouse pointer on this icon to view encoding information including frame rate, bit rate, and resolution; or click to view camera status.
⚠	Click to view device alarm status and camera status.
🖳	Rest the mouse pointer on it to view NIC card information. Or click this icon to edit basic network settings.
10:32	Rest the mouse pointer on it to view the date. Or click this icon to edit time settings.
▦	Available to certain NVR models. Click to display the cloud service window. You may scan the QR code and download an app to manage your NVR.
🔓	Click to automatically hide the toolbar, or click 🔒 to lock.

Shortcut Menu

A shortcut menu as shown below appears when you right-click in a window. Some menu items are described in <u>Shortcut Menu Description</u>.

Table 3–2 Shortcut Menu
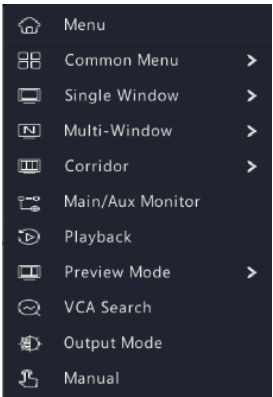
Table 3–3 Shortcut Menu Description

Menu	Description
Menu	Access the main menu. Most of operations described in this manual are performed start from the main menu; for example, click **Camera > Camera** (with **Menu >** omitted).
Common Menu	Quick access to **Camera, Net Config,** and **Backup.**
Corridor	Choose a corridor mode. Corridor mode can also be set in the **Preview Windows** drop-down list under **System > Preview.** To display images in corridor mode, the camera must be installed correctly (rotated 90° clockwise or counterclockwise), and then use the **Image Rotation** parameter under **Camera > Image** to rotate images accordingly.
Main/Aux Monitor	Switch live video from different video output.
Playback	Play the current day's recording for the camera linked to the current window.
Preview Mode	Switch between **Normal** and **Smart**. The default is **Normal** mode.

Menu	Description
VCA Search	VAC search includes face, face comparison search, vehicle search, behavior search, and people counting report.
Output Mode	Choose a video output mode, including standard, soft, bright, and vivid.
Manual	Manual settings include manual recording and manual alarm.

Sequence Operation

The sequence operation requires you to configure the screen layout, windows, linked cameras, and the sequence interval.

This example describes how to configure sequence for five cameras based on a 4-window screen layout.

1. Click **4 Windows** on the screen toolbar.

NOTE!

The number of windows that can be displayed may vary with NVR model.

2. Click **Start Sequence** on the screen toolbar. Sequence starts by displaying four windows on the first screen and then the fifth on the second at the set interval.
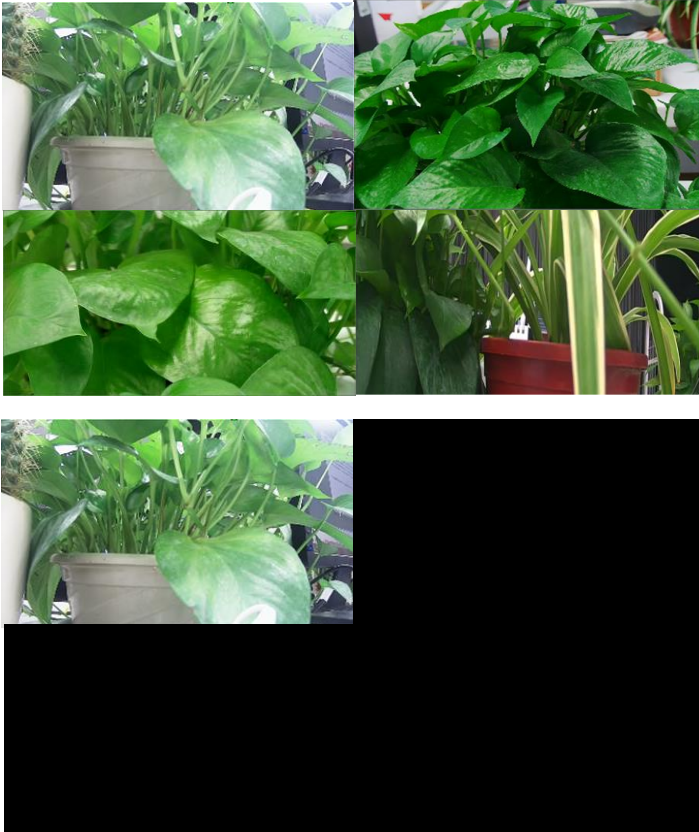
📝 **NOTE!**

- The default sequence interval is eight seconds and can be set under **System** > **Preview**.
- You may drag video to the desired window on the screen.

Zoom

Zoom in on an area of images in a window for details.

1. Click the window and then click 🔍 on the window toolbar.

2. Move your mouse to the area you want to zoom in, then use your scroll wheel to zoom in and out.

3. Right click to exit zoom.

Image Configuration

Adjust image settings to get optimal images from a camera.

1. Click the window and then click on the window toolbar.

2. Select a mode from the drop-down list according to the surveillance scenario, and then adjust contrast, hue, saturation and brightness as needed. The settings available may vary with device model.

3. Click **OK** to save the settings and exit.

Preview Configuration

Normally, live view (video) is available after you complete the basic setup by following the wizard. You can click **System > Preview** and edit preview setting as needed, including video output, image resolution, default layout, and sequence interval. The video output and the number of windows supported may vary with NVR model.

Preview Configuration

Each preview window (window for short) links to a camera. By default, window 1 links to camera D1, window 2 links to camera D2, and so on. You may want to change the link to display live video from a camera in another specified window. The following example describes how to link window 1 to camera D2 and link window 2 to camera D1.

Step 1: Click window 1 on the right, and then click **D2** under **Camera** on the left. Now **D2** appears in window 1, and **None** appears in window 2. Meanwhile, ○ is cleared for camera D1, meaning D1 is not linked to any window.

Step 2: Click window 2 on the right, and then click **D1** under **Camera** on the left. Now **D1** appears in window 2. Click **Apply** to save the settings.

Advanced Configuration

Click the **Advanced** tab and then select **Sub Stream First** so the NVR uses the sub stream to establish live video from multiple cameras simultaneously. This function is disabled by default.

4 Channel Configuration

Channel Management

This chapter describes how to add and manage IP devices in your NVR. The IP devices mentioned in this manual mainly refer to IP camera (or network camera); sometimes they can also be Digital Video Server (DVS). Before you start, make sure the IP devices are connected to your NVR via network.

> ⓘ **CAUTION!**
>
> An IP device should be connected to one NVR only. An IP device managed by multiple NVRs may cause unwanted issues.

Adding an IP Device

This section provides multiple options to add an IP device. Some options are only applicable to certain NVR models. Choose one as appropriate.

Option 1
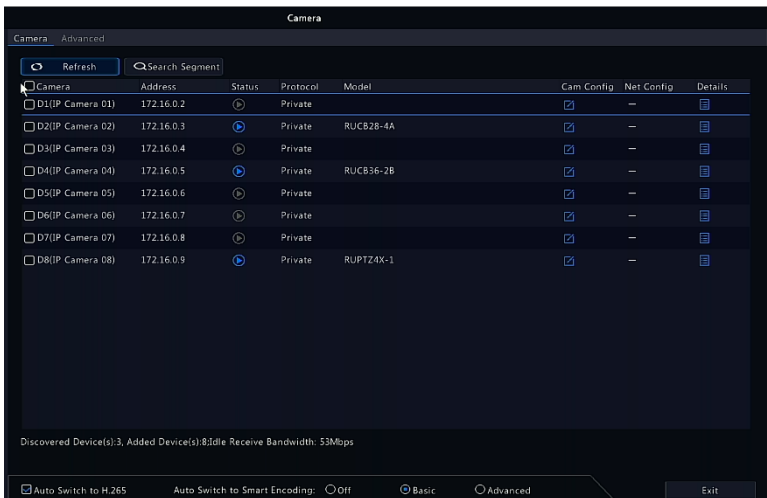
Connect an IP camera to a PoE port or a switching port with a network cable. The connected camera will be added to the NVR automatically. Check status under **Camera > Camera > Camera.** ▶ means live video from the camera is available. Click ▶ to view live video.

If the camera is connected via a network switch, click ▨ under **Cam Config** in the window displayed, set **Add Mode** to **Manual** and then complete the settings correctly.

📝 **NOTE!**

📹 appears under **Status** if the power output from a PoE port is below or above the rated power of the connected camera.

Option 2

1. Click **Camera > Camera > Camera**. The system automatically searches for IP devices and lists the discovered.

2. (Optional) To search a specified network segment, click **Search Segment** and then set the address range.

3. You may choose one of the following ways to add an IP device:

- Click **Add All** to add all the discovered IP devices allowed (depending on channels supported by the NVR).

- Click **Custom Add**. In the window displayed, enter the IP address and complete other settings, and then click **Add**. You may also click **Search Segment** and add discovered cameras in the list.

- Click ✚.

Click ✚ to add the camera.

Option 4

Use this option to add an IP device that is connected to a different router, for example, when the NVR and the IP device are connected across the Internet.

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4. Click **Camera > Camera,** click **Custom Add**.
5. Choose an option:
- By IP
   a. On the IP device's Web interface, go to **Setup > Port > Port Mapping,** find the external IP (public IP) and external port number.
   b. On the NVR: Select a protocol, enter the above-mentioned IP address and port number, enter the username and password.
   c. Click **OK**.
- By EZDDNS

a. On the IP device's Web interface, go to **Setup > Network > DDNS,** enable DDNS, select **EZDDNS**, set a domain name and get the server address.

b. On the NVR: Select a protocol, enter the above-mentioned server address, domain name, username and password.

c. Click **OK.**

- By a domain name

    a. On the IP device's Web interface, go to **Setup > Network > DDNS,** enable DDNS, select **DynDNS** or **NO-IP**, enter the domain name that you have signed up on the DNS website, enter the username and password, and then click **Save**.

    b. On the NVR: Select a protocol, enter the domain name mentioned above, enter the username and password. The port is the external port of the IP device.

    c. Click **OK.**

Option 5

Use this option only when the IP device to add supports the standard RTSP, and all you need from the IP device are just view live and playback. IP devices added in this way cannot be configured from the NVR.

1. Click **Camera > Camera.**
2. Click **Custom Add**.
3. Click to select a camera in the list, select **Custom** from the **Protocol** drop-down list, and then click the **Protocol** button.

No.	IP Address	Status	Qty	Model
1	192.168.1.32		1	DS-2CD5
2	203.1.8.11		1	IPC324ER3
3	203.1.8.167		1	IPC322SR3
4	206.0.0.127		1	HIC5631-L
5	206.0.0.130		1	HIC3531-IR
6	206.0.0.134		1	NVS-DM36X

Add Mode	IP Address ⌄
Protocol	ONVIF ⌄
IP Address	192 . 168 . 1 . 32
Port	80
Username	admin
Password	**********
Total Camera Number	1

Protocol	Search	OK	Cancel

4. In the **Protocol** window, name the protocol, enter the RTSP port number, select a transmission protocol, input the resource paths, and then click **Apply**.

📝 **NOTE!**

Contact the camera manufacturer for resource paths.

Protocol	
Custom	Custom1 ∨
Protocol Name	Custom1
Port	554
Transmission Protocol	UDP ∨
Enable Main Stream	☑
Resource Path	rtsp://<ip>:<port>/
Enable Sub Stream	☑
Resource Path	rtsp://<ip>:<port>/

Example : rtsp://<IP address>:<Port number>/<Resource path>

One channel :
rtsp://192.168.0.1:554/unicast/c1/s0/live

Multi-channel :
rtsp://192.168.0.1:554/unicast/c[%C]/s0/live Add selected camera ID
rtsp://192.168.0.1:554/unicast/c[%C+1]/s0/live Add selected camera ID+1
rtsp://192.168.0.1:554/unicast/c[%C-1]/s0/live Add selected camera ID-1
[%C±N] : %C means the remote camera ID selected, N means offset

OK   Cancel

5. Edit settings in the **Add/Modify** window as needed, including the IP address, username and password, and then click **Add**. Check status in the camera list.

Managing an IP Device

Manage IP devices under **Camera > Camera > Camera.**

- Click [icon] to edit settings including the protocol, IP address, port number, username and password. The **IP Address** field displays the IP address that the current channel links to, and you may change the address so the channel links to another device. The username and password must be consistent with that of the IP camera.

- Click [icon] to delete an IP device, or select multiple IP devices and then click **Delete**. Channels corresponding to PoE ports or switching ports cannot be deleted.

- Click ![icon] to change the IP address of an IP camera and the default gateway. A DVS' IP address cannot be editted from the NVR. $^-$ means this function is not available.

Batch Edit Password

If the password you used to add the cameras is incorrect, use this function to batch edit the password used for authentication.

![note icon] **NOTE!**

The cameras can be added to NVR successfully only when the authentication password is correct.

1. Select the cameras with the same password.
2. Click ![... More], and then select **Batch Edit Password**.
3. Enter the correct camera password.
4. Click **Confirm**, then check whether password is changed successfully in **Status** window.

![note icon] **NOTE!**

The cameras can be added to NVR successfully only when the authentication password is correct.

5. Click **OK**.

Advanced Functions

Change the password of connected IP cameras or restore factory default settings for cameras under **Camera > Camera > Advanced.**
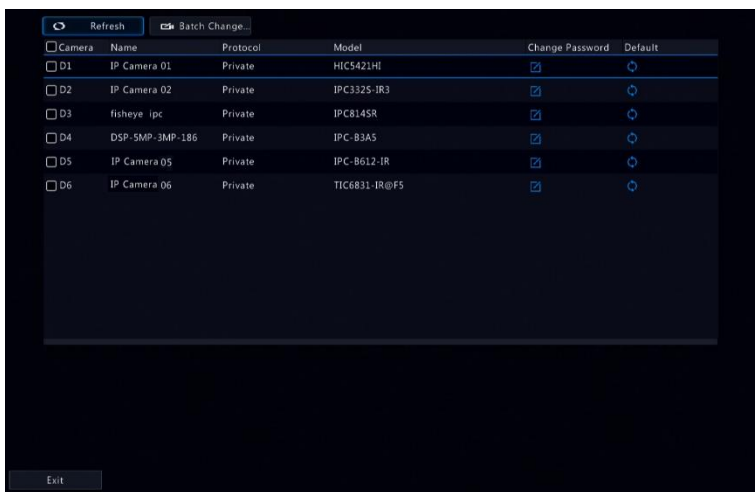
![NOTE icon] **NOTE!**

Changing camera password is available for certain cameras only.

Change Camera Password

- To change the password of a single camera, select the target camera, and click ![edit icon], enter the new password, then click **Confirm**.

- To change the password of cameras in batch, select the target cameras, and click ![Batch Change Password button]. Enter the new password, then click **Confirm**.

![NOTE icon] **NOTE!**

- Select the checkbox of Use Admin Password to change the camera's password to the admin's password of the NVR.
- You can check if the password has been successfully changed on Status window.

Restore Default Settings

Click , then click **OK** in the pop-up window, then the camera's default settings will be restored.

OSD Configuration

On Screen Display (OSD) are characters displayed with video images, for example, camera name, date and time, and people counting statistics.

1. Click **Camera > OSD;** or click on the preview window toolbar.
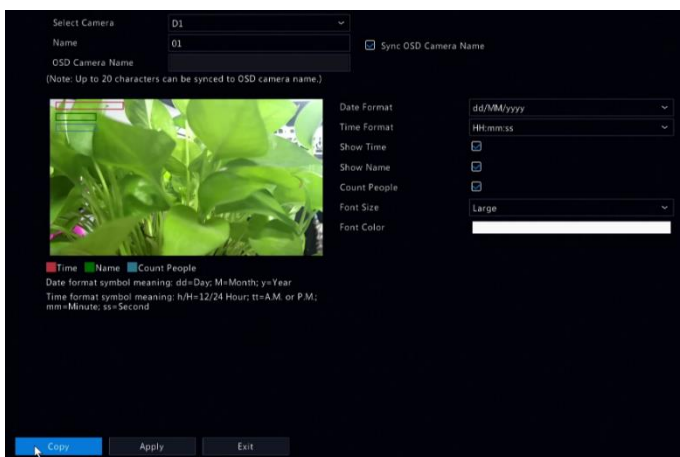
2. Select the desired camera.
3. Set camera name to display. Enable **Show Name** first, and set OSD camera name as needed:

- If camera name is less than 20 characters, and camera name and **OSD Camera Name** (i.e., the camera name you want to overlay on video image) are same:

    a. Select **Sync OSD Camera Name**, then the OSD name will be synchronized with the camera name. This function is enabled by default.

b. Enter the camera name in the **Name** field. The name will be displayed on video image.

- If camera name exceeds 20 characters, and you want to overlay a different camera name on video image:
  a. Deselect **Sync OSD Camera Name**.
  b. Enter the camera name in **Name** field.
  c. Enter the OSD camera name.
4. Set time to display. Select **Show Time**, and select date and time formats.
5. Set font size and color as needed.

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

Image Configuration

1. Click **Camera > Image.**
2. Select the desired camera and scene.
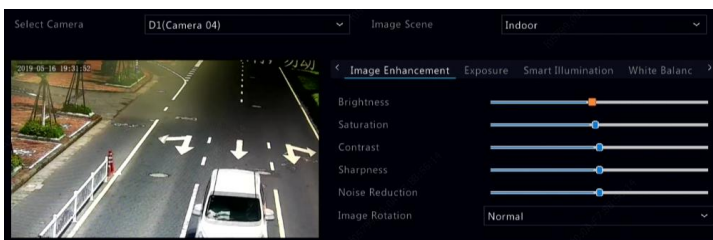
3. Adjust settings on the tabs as needed to achieve optimal images. See the following sections for detailed information.

📝 **NOTE!**

- A scene can be selected only when supported by the IP camera.
- To restore default image settings, click **Default** in the lower right corner. This function is available only when the camera is connected to the NVR via the private protocol.
- Image settings apply to both live and recorded videos.

Image enhancement

1. Click the **Image Enhancement** tab.
2. Adjust the settings as needed. Some important parameters are described in the table below.

Parameter	Description
Brightness	The greater the value, the brighter the images appear.
Saturation	The amount of color in a specified hue.
Contrast	The degree of difference between the lightest (white) and darkest (black) parts of an image. Setting a greater value increases contrast.
Hue	Purity of colors in an image.
Sharpness	Contrast of boundaries of objects in an image.
Noise Reduction	Reduce noises in images to improve image quality.

Parameter	Description
Image Rotation	• Normal: Displays images without rotation. • Flip Vertical: Displays images flipped vertically. • Flip Horizontal: Displays images flipped horizontally. • 180°: Displays images flipped vertically and horizontally. • 90° CW and 90° CCW: Display images in corridor format. The camera must be installed correctly (rotated 90° clockwise or counterclockwise).

Exposure

1. Click the **Exposure** tab.
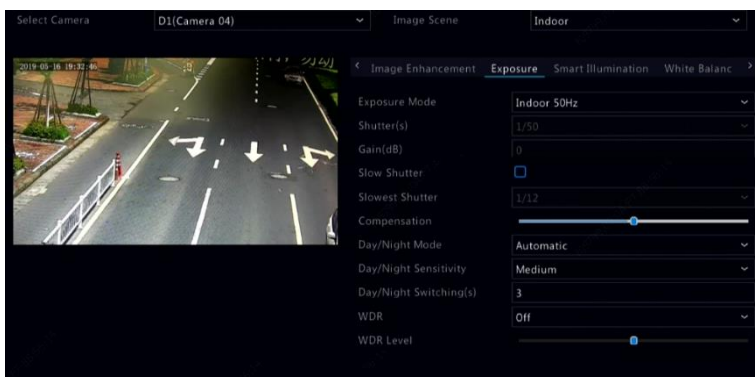
2. Adjust the settings as needed. Some important parameters are described in the table below.

Parameter	Description
Exposure Mode	Select the correct exposure mode to achieve the desired exposure effect.
Shutter(s)	Shutter is used to control the light that comes into the lens. A fast shutter speed is ideal for scenes in quick motion. A slow shutter speed is ideal for scenes that change slowly.

Parameter	Description
Gain(dB)	Control image signals so that the camera can output standard video signals in different light conditions.
Slow Shutter	Improves image brightness in low light conditions.
Slowest Shutter	Set the slowest shutter speed for the camera during exposure.
Compensation	Adjust the compensation value as required to achieve the desired image effects.
Day/Night Mode	• Automatic: In this mode, the camera can automatically switch between night mode and day mode according to the ambient lighting condition to output optimum images. • Night: The camera outputs high-quality black and white images according to the ambient lighting condition. • Day: The camera outputs high-quality color images according to the ambient lighting condition.
Day/Night Sensitivity	Light threshold for switching between day mode and night mode. A higher sensitivity value means that the camera is more sensitive to the change of light and is therefore more easily to switch between day mode and night mode.
Day/Night Switching(s)	Set the length of time before the camera switches between day mode and night mode after the switching conditions are met.
WDR	Enable WDR to ensure clear images in high contrast conditions.
WDR Level	After enabling WDR, you can improve image quality by adjusting the WDR level.

Smart Illumination

1. Click the **Smart Illumination** tab.
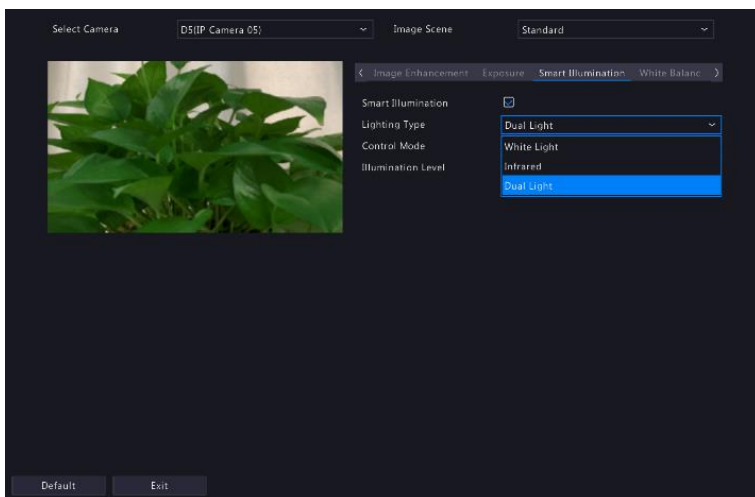
2. Adjust parameters on the right side of the image to achieve smart illumination.

Parameter	Description
Lighting Type	• Dual Light: The camera adjusts the white light or infrared automatically according to the current lighting condition. • White Light: The camera uses white light illumination. • Infrared: The camera uses infrared light illumination.
Control Mode	• Global Mode: The camera adjusts illumination brightness and exposure to achieve balanced image effects. • Overexposure Restrain: The camera adjusts illumination brightness and exposure to avoid regional overexposure. • Manual: This mode allows you to manually control the intensity of illumination.

Parameter	Description
Illumination Level	Set the intensity level of the light. The greater the value, the higher the intensity (0 means that the light is turned off). **Note:** You can set this parameter only when **Control Mode** is set to **Manual**.

> **NOTE!**
>
> This function may vary with models. Please see the actual model for details.

White balance

1. Click the **White Balance** tab.
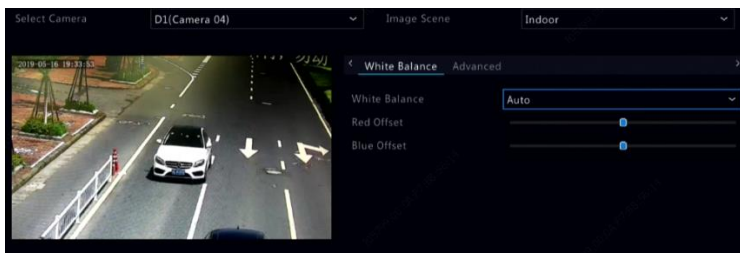
2. Adjust the settings on this tab. Some important parameters are described in the table below.

Parameter	Description
White Balance	Adjust the red or blue offset of the image: ● Auto: The camera adjusts the red or blue offset automatically according to the lighting condition (the color tends to be blue). ● Finetune: Allow you to adjust the red or blue offset manually. ● Outdoor: Suitable for outdoor environment with a relatively greater color temperature range. ● Sodium Lamp: The camera adjusts red and blue offset automatically according to the light

Parameter	Description
	condition (the color tends to be red).
	● Lock: Lock the current color temperature without change.
Red Offset	Adjust the red offset manually.
Blue Offset	Adjust the blue offset manually.

Advanced settings

1. Click the **Advanced** tab.

2. Use defog to improve image quality in foggy days.
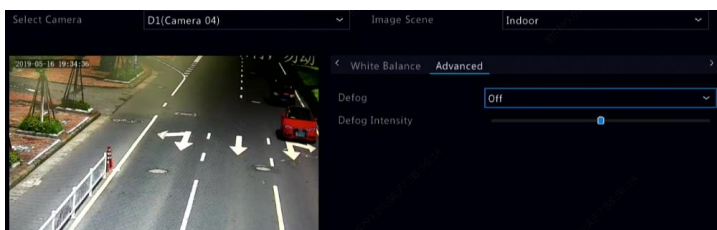
Privacy Mask Configuration

A privacy mask is an area of solid color covering certain parts of the monitored area. Privacy mask protects specified areas of images from being viewed and recorded. Multiple mask areas are allowed.

1. Click **Camera > Privacy Mask.**

2. Select the desired camera, select **Enable Privacy Mask**, click **Add Area** and then use the mouse to specify areas to mask. Up to eight areas are allowed, and the number of the areas allowed may vary with device model. The areas are differentiated by different colors.
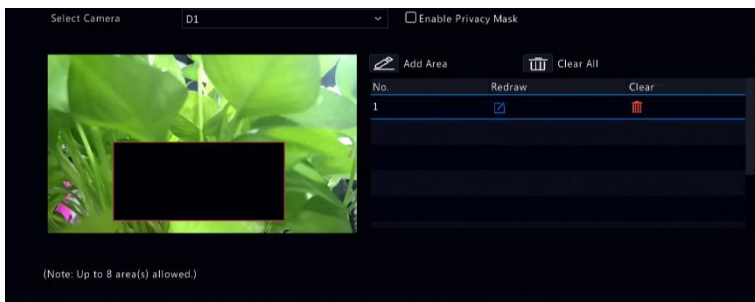
3. (Optional) To clear a mask area, click ![trash icon].

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

5 PTZ Control

PTZ (pan, tilt and zoom) control is applicable to PTZ cameras only and may vary depending on the functions and protocols supported by the PTZ cameras. Refer to PTZ camera specifications for more details.

PTZ Control Window and PTZ Management Window

1. Click ![PTZ icon] on the window toolbar. The **PTZ Control** window appears. See [PTZ Control Window Buttons](#) for detailed descriptions.

2. Click the **Set** button. The **PTZ Management** window appears (can also be opened by clicking **Camera > PTZ**).

Table 5–1 PTZ Control Window Buttons

Button	Description
![directional control pad]	Control the rotation direction of the PTZ camera or stop rotation.

Button	Description
+ Zoom — + Focus — + Iris —	Adjust the zoom, focus, and iris of the PTZ camera. **Note:** You can also zoom in or out using the scroll wheel on your mouse.
Speed ▬▬▬▬▬■▬	Control the rotation speed of the camera. 1 means the slowest, and 9 means the fastest.
Set	Click to display the **PTZ Management** window.
☻ ✎ ⚙ ✛ ☀ ✕	● Turn on/off the light. ● Turn on/off the wiper. ● Use 3D positioning. ● Turn on/off the heater. ● Turn on/off the function to remove snow. ● Turn on/off PTZ shortcut operations. **Note:** ● Check that the 3D positioning, heater and snow removal functions are supported by the camera before using. ● Use 3D positioning to zoom in or out. Dragging from top down zooms in. Dragging the other way zooms out.
Preset	Preset button.
↱ 🗑	● Call a preset so the PTZ camera goes to the preset position. ● Delete a preset **Note:** ↱ and 🗑 are displayed for saved presets only.
Preset Patrol/ Recorded Patrol/ Auto Guard	Preset patrol, recorded patrol and auto guard. For detailed information, see <u>Setting a Preset Patrol</u>, <u>Setting a Recorded Patrol</u>, and <u>Setting Auto Guard</u>.
▷ ☐	Start or stop.

Setting and Calling a Preset

A preset position (preset for short), is a saved view used to quickly steer the PTZ camera to a specific position. A preset consists of the following settings: pan and tilt positions, zoom, focus, and iris.

1. Access the **PTZ Management** window. For the detailed steps, see PTZ Control Window and PTZ Management Window.
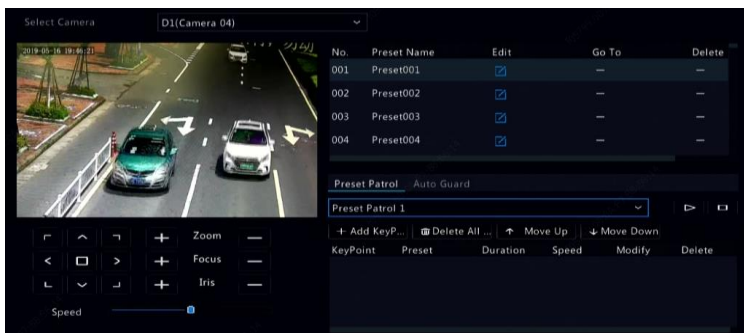
2. Add presets.

   a. Click the directional buttons to steer the PTZ camera to the desired position.

   b. Adjust the zoom, focus, and iris as needed.

   c. Select a preset number not in use, and then click ☑ under **Edit**.

   d. Repeat the above steps to add all the presets.

3. To call a preset, click ➦ for the corresponding number. The camera rotates to the preset position.

NOTE!

Presets can also be triggered by alarms. See <u>Alarm-Triggered Actions</u> for details.

Setting a Preset Patrol

Set the PTZ camera to patrol by presets (go from one preset to the next in specified order). You need to set presets first and then select some as keypoints. Up to four patrol routes (Preset Patrol 1, 2, 3 and 4) are allowed for each PTZ camera, and each patrol route can have up to eight presets (keypoints). After setting presets, follow the steps to set a preset patrol. The following takes preset patrol 1 as an example.

1. In the **PTZ Management** window, click ![plus]. A window is displayed as follows.

2. Select a preset from the drop-down list, set the duration (time the camera stays at the preset, unit: second), and then set the rotation speed (1: slowest, 9: fastest). Click **OK** to save the settings. The preset is added as a keypoint.

3. Repeat the above steps to add all presets (keypoints), and adjust the sequence of these presets by clicking ![Move Up] **Move Up** or

    ![Move Down] **Move Down**. Modify or delete a preset by clicking ![edit] or ![delete].

    Clicking ![Delete All] **Delete All ..** will delete all the added keypoints.

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4. After completing the configuration, click **Apply** to save the settings. Now keypoints for preset patrol 1 is complete.

5. Click ▷ right to the drop-down list to start preset patrol 1. To stop, click ▢.

NOTE!

The duration ranges from 0 to 1800 seconds (default: 10). The rotation speed ranges from 1 to 9 levels (default: 5).

Setting a Recorded Patrol

This function requires the camera's support. The drop-down list and the buttons on the right are hidden if this function is not supported by the camera. Currently only one recorded patrol route is allowed.

Record a patrol, including the patrol route, the time that the camera stays at a certain direction, rotation speed, zoom, focus and focus.

1. Click ○ to start recording. Steer the camera to the desired directions, adjust the zoom, focus, iris as needed during the process.

2. Click ▢ to stop recording. All the patrol actions have been recorded.

3. To start the recorded patrol, click ▷. Click ▢ to stop.

Setting Auto Guard

Use auto guard so the PTZ camera automatically operates as configured if no operation is performed by any user during a certain time period. Auto guard avoids situations where the camera is left to monitor incorrect scenes by user's negligence.

This function requires the camera's support. The **Auto Guard** tab is hidden if it is not supported.

1. Click **Auto Guard** and then select **Enable**.
2. Select the desired mode from the drop-down list and then complete other settings accordingly. Click **Apply** to save the settings.

Enable	☑
Idle State(s)	60
Mode	Preset ˅
Preset	1(Preset001) ˅

6 Recording and Snapshot

Video recording has different levels of priority, which from high to low is: event recording, manual recording, and scheduled recording.

> **NOTE!**
>
> Snapshot is supported by certain device models only.

Encoding Settings

Recording

The parameters and options displayed may vary with camera model and version. Some functions may be unavailable if the camera version is too low. In this case, you need to upgrade the camera first.

1. Click **Camera > Encoding.**

2. Select the camera and then edit settings as needed. Some parameters are described in the table below.

Table 6–1 Encoding Settings

Parameter	Description
Storage Mode	Five storage modes are available: Main Stream, Sub Stream, Main and Sub Stream, Main and Third Stream, Sub and Third Stream. **Note:** Only certain models support all the five modes.
Capture Mode	Combinations of resolutions and frame rates. **Note:** This parameter is effective only when the camera is connected to the NVR via the private protocol.
Stream Type	● Normal: main stream that is intended for scheduled recording. ● Event: main stream that is intended for recording triggered by events such as alarm inputs or motion detection alarms. ● Sub Stream: low resolution video that is intended for local or remote real-time monitoring.
Video Compression	Video compression standard, for example, H.264, H.265. The listed options depend on the standards supported by the camera.
Resolution	Image resolution.
Bitrate Type	● CBR: Constant Bit Rate (CBR) is used to maintain a specific bit rate by varying the quality of video streams. CBR is preferred when limited bandwidth is available. The disadvantage is that video quality will vary and may decrease significantly with increased motion in the scene. ● VBR: When using Variable Bit Rate (VBR), video quality is kept as constant as possible, at the cost of a varying bit rate, and regardless of whether or not there is motion in the image. VBR is ideal when high quality is a requirement, especially when there is motion

Parameter	Description
	in the picture.
Bit Rate(Kbps)	Number of bits transferred per second. Select a value or select **Custom** and then set a value as needed.
Range	Bit rate range. Currently the range is fixed.
Frame Rate(fps)	Number of frames per second.
Image Quality	This parameter is effective only when **Bitrate Type** is set to **VBR**. 9 levels are provided.
I Frame Interval	Number of frames between two adjacent I frames.
I Frame Range	Range of I frames. Currently the range is fixed.
Smoothing	Use the slider to control the sudden increase of bit rate.
Audio Stream	Enable or disable audio stream.
Smart Encoding	The advanced mode achieves higher compression ratios.

3. (Optional) Click **Copy** to apply some current settings such as bit rate and frame rate to other cameras.

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

Snapshot

Set resolution, image quality and snapshot interval for snapshots taken according to schedule or triggered by an event.

5. Click **Camera > Snapshot > Snapshot Type.**

6. Select the camera and set the parameters as needed.

Parameter	Description
Snapshot Type	Scheduled snapshot uses the **Normal** type of schedule. Event-triggered snapshot is triggered by an event such as an alarm input and a motion detection alarm. **Note:** Settings effective to event-triggered snapshot also apply to manual snapshot.
Image Quality	High, Medium or Low are available.
Snapshot Interval	The time interval between two snapshots.

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

Draw or Edit a Schedule

Make a recording schedule by drawing (pressing and dragging) or by editing (using the **Edit** button). The operations for recording and snapshot are similar, so this section only describes how to make a recording schedule.

1. Click **Storage > Recording.**

2. Select the camera from the list.

    a. Select Enable Schedule and Audio Storage.

    b. Set Pre-Record and Post-Record as needed.
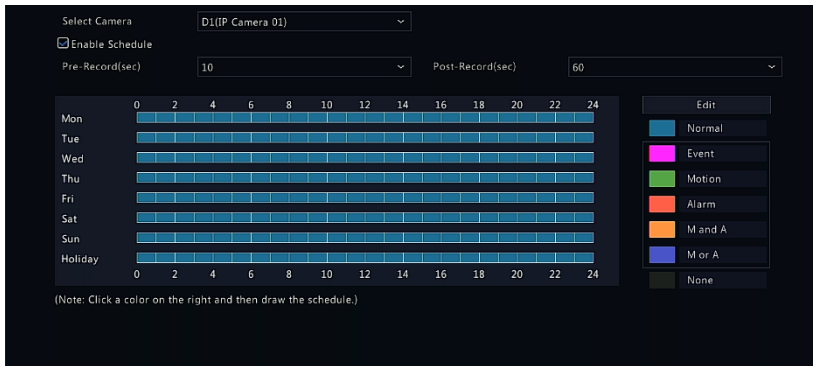
3. Click a color icon on the right under the **Edit** button and then draw a schedule on the left. You may also click **Edit** and set schedule details in the **Edit Schedule** window.

📝 **NOTE!**

When editing a schedule, you may clear the **All Day** check box and set up to eight different periods for each day. To apply the settings to other day(s), select the day(s) right to **Copy To**.

---

4. Click **Apply**.

5. (Optional) Click **Copy** to apply the same settings to other cameras.

Scheduled Recording and Snapshot

Scheduled Recording

Scheduled recording records video according to the set schedule and it is different from manual recording and alarm-triggered recording. A 24×7 recording schedule is enabled by default and may be edited as needed to record video in specified periods only.

See Snapshot

Set resolution, image quality and snapshot interval for snapshots taken according to schedule or triggered by an event.

1. Click **Camera > Snapshot > Snapshot Type.**

2. Select the camera and set the parameters as needed.

| Parameter	Description
Snapshot Type	Scheduled snapshot uses the **Normal** type of schedule. Event-triggered snapshot is triggered by an event such as an alarm input and a motion detection alarm. **Note:** Settings effective to event-triggered snapshot also apply to manual snapshot.
Image Quality	High, Medium or Low are available.
Snapshot Interval	The time interval between two snapshots.

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

Draw or Edit a Schedule for the detailed steps. Make sure the schedule type is **Normal**. The set schedule appears in blue, which stands for scheduled recording.

Scheduled Snapshot

Configure scheduled snapshot under **Storage > Snapshot.** Scheduled snapshot is similar to scheduled recording (see Scheduled Recording for details). Make sure the schedule type is **Normal**.

Motion Detection Recording and Snapshot

When enabled, a motion detection alarm occurs if an object inside the detection area moves to a certain extent (see Motion Detection for more details).

Motion Detection Recording

1. Click **Alarm > Motion.**

2. Select the camera from the list, and then select the check box to enable motion detection.

![NOTE icon] **NOTE!**

- Motion detection is enabled on the NVR by default. Unless modified, the detection area covers the full screen, and recording is triggered only for the current camera. The settings remain if you disable motion detection and then enable it.
- An alarm icon appears in the upper right corner when motion is detected.

3. In the preview window on the left side, click and drag your mouse to specify a motion detection area (red grid). Use the slider to adjust detection sensitivity.
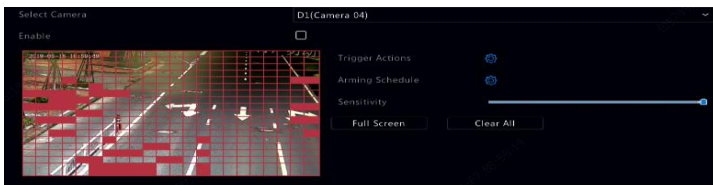
4. Configure motion detection recording: click ![icon] right to **Trigger Actions**, click the **Recording** tab, select the desired camera, and then click **OK**.

5. (Optional) Configure an arming schedule (time when actions will be triggered): click 🔘 right to **Arming Schedule** and then set time periods as needed.

6. Set a recording schedule under **Storage > Recording**. For the detailed steps, see [Snapshot]

7. [Set resolution, image] quality and snapshot interval for snapshots taken according to schedule or triggered by an event.

8. Click **Camera > Snapshot > Snapshot Type.**

9. Select the camera and set the parameters as needed.

| Select Camera	D1(IP Camera 01)	⌄
Snapshot Type	Schedule	Event
Image Quality	Medium ⌄	High ⌄
Snapshot Interval	5s ⌄	2s ⌄

Parameter	Description
Snapshot Type	Scheduled snapshot uses the **Normal** type of schedule. Event-triggered snapshot is triggered by an event such as an alarm input and a motion detection alarm. **Note:** Settings effective to event-triggered snapshot also apply to manual snapshot.
Image Quality	High, Medium or Low are available.
Snapshot Interval	The time interval between two snapshots.

10. Click **Apply** to save the settings.

11. Draw or Edit a Schedule. Make sure the schedule type is **Motion**. The set schedule appears in green, which stands for motion detection recording. The following figure shows an example.
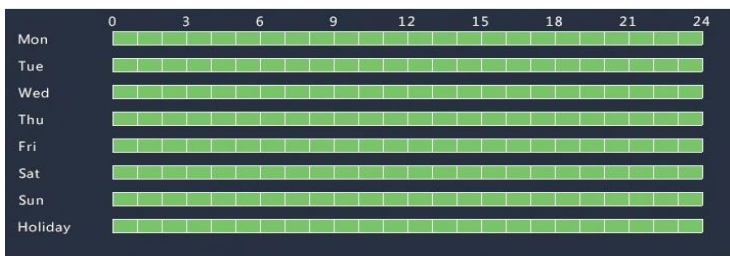
Motion Detection Snapshot

Motion detection snapshot is similar to motion detection recording. You need to enable and configure motion detection alarm first (see steps 1 to 3 in Motion Detection Recording for details), and then proceed with the following steps.

1. Set motion detection snapshot under **Alarm > Motion:** click right to **Trigger Actions**. In the window displayed, click the **Snapshot** tab, select the desired camera, and then click **OK**.

2. Set a snapshot schedule under **Storage > Snapshot.** For the detailed steps, see Snapshot

3. Set resolution, image quality and snapshot interval for snapshots taken according to schedule or triggered by an event.

4. Click **Camera > Snapshot > Snapshot Type.**

5. Select the camera and set the parameters as needed.

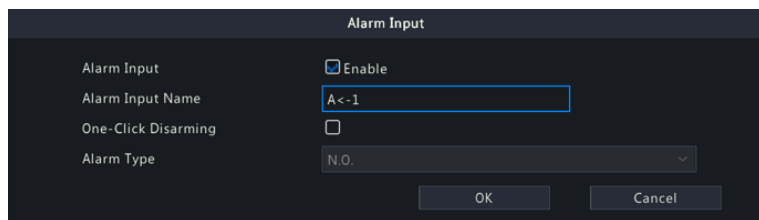| Parameter	Description
Snapshot Type	Scheduled snapshot uses the **Normal** type of schedule. Event-triggered snapshot is triggered by an event such as an alarm input and a motion detection alarm. **Note:** Settings effective to event-triggered snapshot also apply to manual snapshot.
Image Quality	High, Medium or Low are available.
Snapshot Interval	The time interval between two snapshots.

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

7. Draw or Edit a Schedule. Make sure the schedule type is **Motion**.

Alarm Triggered Recording and Snapshot

Set input alarms to trigger recording and snapshot. Alarm **Input and Output**

Alarm Input

1. Click **Alarm > Input/Output > Alarm Input**.

2. Select the desired camera, and click 🖉 to configure alarm input parameters.

Item	Description
Alarm Input	Select **Enable** to enable alarm input.
Alarm Input Name	The default name is the alarm input No. You may customize a name.
One-Key Disarming	Only **A<-1** in the **No**. column supports one-key disarming. When enabled, the NVR will block the alarm-triggered actions generated by A<-1 port.
Alarm Type	N.O./ N.C.

3. Click ⚙ under **Trigger Actions** and then set action(s) to trigger. For more details, see Alarm-Triggered Actions.

📝 **NOTE!**

- The number of cameras that can be connected may vary with NVR model.
- Actions that can be triggered may vary with alarm type.

4. Click ⚙ under **Arming Schedule** and then set the time when actions will be triggered.

![NOTE icon]

NOTE!

- The default schedule is 24×7 and you may change it as needed. Up to 8 different periods for each day are allowed. Time periods cannot overlap.
- To apply the same arming schedule to other days, select the intended day(s) right to **Copy To**.
- To apply the same settings to other cameras, click **Copy** and select the desired camera(s).

---

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

Alarm Output

1. Click **Alarm > Input/Output > Alarm Output.**

2. Select the desired camera, and click ![icon] to set the alarm output parameters.

- Select **Monostable** in the **Relay Mode** drop-down list.

Item	Description
Default Status	N.O./ N.C.
Relay Mode	Monostable, a basic pulse circuit with stable output state.
Alarm Duration	Alarms triggered by pulse output.
Pulse Duration(ms)	The duration of pulse signal. Drag the slider to adjust it within 100-900 milliseconds.

- Select **Bistable** in the **Relay Mode** drop-down list.

Item	Description
Default Status	N.O./ N.C.
Relay Mode	Bistable, an electronic circuit with two stable output states.
Alarm Duration	Custom: You may customize the alarm duration from 5 to 3600 seconds. Maximum: The alarm output lasts infinitely that needs to be turned off manually.
Pulse Duration(ms)	The duration of the alarm output after an alarm is triggered (only applicable when **Custom** is selected).

3. Click ⚙ under **Arming Schedule** and then set the time when actions will be triggered.

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

Motion Detection

When enabled, a motion detection alarm occurs if an object inside the detection area moves to certain extent, and an alarm icon appears in the upper right corner.

Motion detection is enabled on the NVR by default. Unless modified, the detection area covers the full screen, and recording is triggered only for the current camera. The settings remain if you disable motion detection and then enable it.

5. Click **Alarm > Motion.**

6. Select the desired camera and then select **Enable** to enable motion detection.

7. Use the mouse to draw a detection area, and drag the slider to set detection sensitivity, target object size, and duration. The higher the sensitivity, the more likely a moving object will be detected.
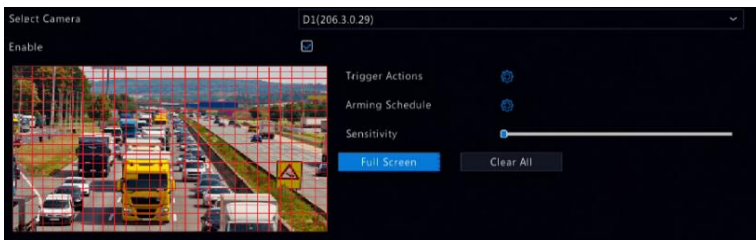
8. Click ⚙ right to **Trigger Actions** and set action(s) to trigger. For more details, see Alarm-Triggered Actions.

> 📝 **NOTE!**
> - The number of cameras that can be connected may vary with NVR model.
> - Actions that can be triggered may vary with alarm type.

9. (Optional) Click ⚙ right to **Arming Schedule** and then set the time when actions will be triggered.

> 📝 **NOTE!**
> - The default schedule is 24×7. You may change it as needed and set up to eight different periods for each day. Time periods cannot overlap.
> - To apply the same arming schedule to other days, select the intended day(s) right to **Copy To**.

10. Click **Apply** to save the settings.
11. (Optional) Click **Copy** to apply the same settings to other cameras.

Tampering Detection

A tampering detection alarm occurs when the camera lens is covered.

Click Alarm > Tampering.

Select the desired camera and then select **Enable** to enable tampering detection.

12.

13. **Click** **right to** Trigger Actions and set action(s) to trigger. For more details, see Alarm-Triggered Actions.

14. (Optional) Click right to **Arming Schedule** and then set the time when actions will be triggered.

15. (Optional) Click **Copy to** apply the same settings to other cameras.

16. Click Apply to save the settings.

17. Human Body Detection

Human body detection alarms occur when the presence of human beings is detected in the specified area. Only certain cameras support this function.

18. Click **Alarm > Human Body Detection.**

19. Enable human body detection by selecting the check box

20. Click , and then draw detection area.

📝 **NOTE!**

Only one detection area is allowed for each camera.

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21. Set detection sensitivity. **The** higher the sensitivity, the more likely a human body will be detected.
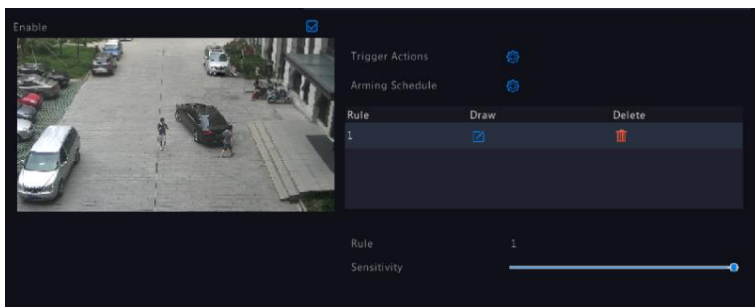
22. Click ⚙ right **to** Trigger Actions and set action(s) to trigger. For more details, see Alarm-Triggered Actions.

23. (Optional) Click ⚙ right to **Arming Schedule** and then set the time when actions will be triggered.

24. Click **Apply** to save the settings.

Video Loss

A video loss alarm occurs when the NVR loses video signals from a camera. Video loss alarm is enabled by default.

1. Click **Alarm > Video Loss**. To disable video loss alarm for a channel, click ✅, which then changes to ⚪.

2. Click ⚙ under **Trigger Actions** and set action(s) to trigger. For more details, see Alarm-Triggered Actions.

📝 **NOTE!**

Video loss alarm cannot trigger recording, preset, and preview (live view) actions for the current camera.
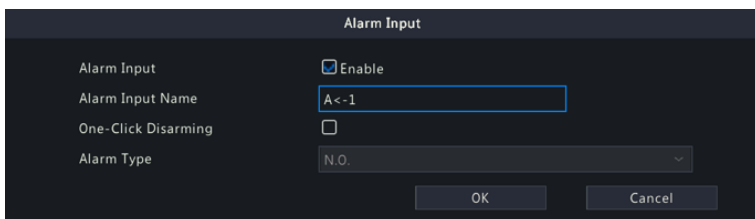
3. Click ⚙ under **Arming Schedule** and then set the time when actions will be triggered.

4. (Optional) Click **Copy** to apply the same settings to other cameras.

Alarm Triggered Recording

1. Click **Alarm > Input/Output > Alarm Input.**

2. Set alarm input: click for the desired camera. In the window displayed, select **Enable** and **One-Click Disarming**, set alarm input name, select N.O. (normally open) or N.C. (normally closed) trigger mode, and then click **OK**.

Alarm Input	
Alarm Input	☑ Enable
Alarm Input Name	A<-1
One-Click Disarming	☐
Alarm Type	N.O.
	OK Cancel

NOTE!

To apply the same settings to other camera(s), click **Copy** and then select the desired camera(s).

1. Set alarm triggered recording: click under **Trigger Actions**. In the window displayed, click the **Recording** tab, select the desired camera, and then click **OK**.
2. Set a schedule under **Storage > Recording**. For the detailed steps, see Snapshot
3. Set resolution, image quality and snapshot interval for snapshots taken according to schedule or triggered by an event.
4. Click **Camera > Snapshot > Snapshot Type.**
5. Select the camera and set the parameters as needed.

Select Camera	D1(IP Camera 01)	
Snapshot Type	Schedule	Event
Image Quality	Medium	High
Snapshot Interval	5s	2s

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Parameter	Description
Snapshot Type	Scheduled snapshot uses the **Normal** type of schedule. Event-triggered snapshot is triggered by an event such as an alarm input and a motion detection alarm. **Note:** Settings effective to event-triggered snapshot also apply to manual snapshot.
Image Quality	High, Medium or Low are available.
Snapshot Interval	The time interval between two snapshots.

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

7. Draw or Edit a Schedule. Make sure the schedule type is **Alarm**. The set schedule appears in red, which stands for alarm-triggered recording. The following shows an example.
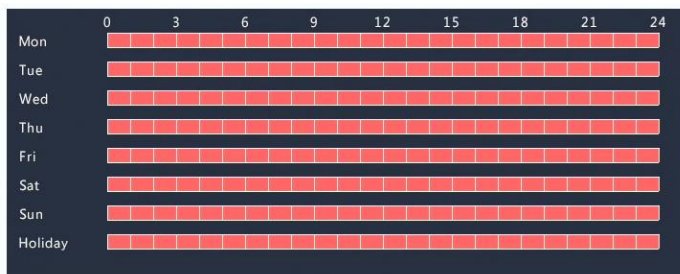
Alarm Triggered Snapshot

Alarm triggered snapshot is similar to alarm triggered recording. You need to enable and configure alarm input first (see steps 1 to 2 in Alarm Triggered Recording for details) and then proceed with the following steps.

1. Set alarm triggered snapshot: Click under **Trigger Actions**. In the window displayed, click the **Snapshot** tab, select the desired camera, and then click **OK**.

2. Set a snapshot schedule under **Storage > Snapshot**. For the detailed steps, see Snapshot

3. Set resolution, image quality and snapshot interval for snapshots taken according to schedule or triggered by an event.

4. Click **Camera > Snapshot > Snapshot Type.**

5. Select the camera and set the parameters as needed.

Parameter	Description
Snapshot Type	Scheduled snapshot uses the **Normal** type of schedule. Event-triggered snapshot is triggered by an event such as an alarm input and a motion detection alarm. **Note:** Settings effective to event-triggered snapshot also apply to manual snapshot.
Image Quality	High, Medium or Low are available.
Snapshot Interval	The time interval between two snapshots.

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

7. Draw or Edit a Schedule. Make sure the schedule type is **Alarm**.

Manual Recording and Snapshot

Manual Recording

Right click on the preview window, select **Manual** in the shortcut menu. Click the **Manual Recording** tab, select the desired camera and then click **Start**. To stop manual recording, select the camera and then click **Stop**.
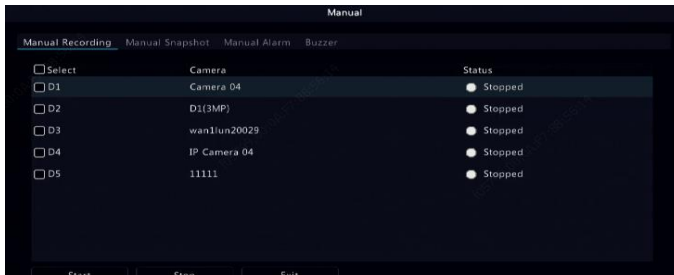
Manual Snapshot

Manual snapshot is similar to manual recording. Right click and select **Manual > Manual Snapshot,** select the desired camera, and then click **Start**. Click **Stop** to stop.

Holiday Recording and Snapshot

Holiday recording and snapshot allows you to specify certain time periods as holidays for scheduled recording and snapshot. First you specify certain date(s) as holidays, and then configure recording or snapshot schedules on these days.

Holiday Recording

1. Click **System > Time > Holiday.**

2. Click the **Add** button in the lower right corner. The **Holiday** window is displayed. Complete the settings including the holiday name, start

and end dates. By default a holiday is enabled when added and does not repeat.

3. Click **OK**. The holiday appears in the list.

4. Click **Storage > Recording** and then set a recording schedule as described in Snapshot

5. Set resolution, image quality and snapshot interval for snapshots taken according to schedule or triggered by an event.

6. Click **Camera > Snapshot > Snapshot Type.**

7. Select the camera and set the parameters as needed.

| Parameter	Description
Snapshot Type	Scheduled snapshot uses the **Normal** type of schedule. Event-triggered snapshot is triggered by an event such as an alarm input and a motion detection alarm. **Note:** Settings effective to event-triggered snapshot also apply to manual snapshot.
Image Quality	High, Medium or Low are available.
Snapshot Interval	The time interval between two snapshots.

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

9. Draw or Edit a Schedule. Make sure **Holiday** is selected in the **Select Day** drop-down list. In the following example, motion detection recording is enabled on the set holiday.
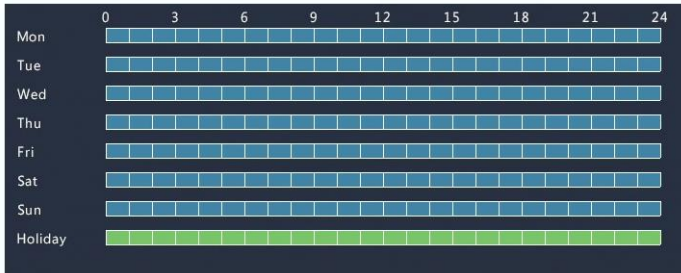
Holiday Snapshot

Holiday snapshot is similar to holiday recording. First you set holidays under **System > Time > Holiday,** and then configure a snapshot schedule under **Storage > Snapshot.** Set a snapshot schedule as described in Scheduled Recording. Make sure **Holiday** is selected from the **Select Day** drop-down list.

Other Recording and Snapshot Types

Other recording and snapshot types:

- Event: Including the types below and VCA. Any of these types will trigger event recording/snapshot.

- Motion detection AND alarm triggered (M and A for short): recording or snapshot is triggered only when a motion detection alarm AND an input alarm occur simultaneously.

- Motion detection OR alarm triggered (M or A for short): recording or snapshot is triggered when a motion detection alarm OR an input alarm occurs.

When you choose an Event type of recording or snapshot, make sure you have enabled the corresponding alarm function and configured alarm-triggered recording/snapshot. The configuration steps are similar. See Motion Detection Recording and Snapshot for more details.

7 Playback

Instant Playback

Instant playback plays the video recorded during the last 5 minutes. If no recording is found, it means there is no recording during this period.
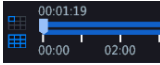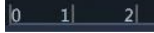
1. Click the desired window, and then click on the toolbar to start instant playback.

2. You may drag the slider to control the progress. Pause and resume as needed.

Playback Toolbar

Table 7–1 Playback Toolbar Buttons

Button	Description
00:01:19 00:00 02:00	Show playback progress. **Note**: - A small window displaying video of the selected window is displayed as you drag the slider, helping locate the part of the video you want to view. - The first progress bar indicates playback progress of the video playing in the highlighted window. The second indicates the overall playback progress for all the selected cameras.
0 1 2	Timeline.
24 h	Zoom in or out on the timeline. **Note:** Alternatively, scroll your mouse wheel.
▷ / ⏸ / □ / ◁	Play, pause, stop, and reverse.
⏪ / ⏩	Rewind or forward 30 seconds.
◀◀ / ▶▶	Slow down or speed up. **Note:** Click ▶▶ to restore the normal playback speed after clicking ◀◀, and vice versa.
▷	Forward by frame.
✂ / ✂	Start or stop clipping video.
📷	Take a snapshot. The window borders will flash white.
🔒	Lock.

Button	Description
	Manage files (clips, snapshots, locked files, tags).
	Zoom in on images. For more details, see Zoom.
	Set fisheye mounting mode and display mode.
/	Turn off/on audio.
	Adjust sound volume for the current window.

Playback by Camera and Date

Use this method to search and play recordings by camera and date.

1. Click on the preview window, then right click and choose **Playback** to start playback.

📝 **NOTE!**

In playback window, you can select multiple cameras for synchronous playback. Clicking **Max. Camera** selects the maximum number of cameras allowed, and clicking **Close All** stops playback for all cameras. The performance varies with NVR model.

---

2. Select the desired date on the calendar and then click ▶ to start playback. Double-clicking the date will start playback directly.

📝 **NOTE!**

- The calendar uses different flags to indicate different recording types. No flag means no recording. The blue flag means normal recording. The red flag means event-triggered recording.
- In the drop-down list right to playback mode: **HD** means video recorded with the main or sub stream; **SD** means video recorded with the third stream.

Playback in Corridor Mode

Play recordings in corridor mode in multiple windows.

1. In the playback window, select **Corridor** above the progress bar.

2. Select cameras and then double-click the desired date to start playback.

Playback by Tag

Add tags named with keywords such as event name and location to a recording and use tags to quickly locate the part of the video you need during playback.

Adding a Tag

1. Right-click and then click choose **Playback**.

2. Click on the window toolbar, and then set the tag name.

3. To manage the added tags, click on the screen toolbar, and then rename or delete tags as needed.

Playback by Tag

1. In the playback window, click **Video Retrieval**, select **Tag Search** from the drop-down list in the upper left corner.

2. Select cameras, set the time period, and then click **Search**. Search results, if there are any, are displayed with names of cameras and tags.

3. Click for the desired tag to start playback. You may use the **Start Before** and **Stop After** drop-down lists to set when the tagged video starts and ends.

Playback by Motion Detection

Search for and play recordings triggered by motion detection during a specified time period.

NOTE!

Make sure motion detection is enabled and alarm-triggered recording has been configured before you use this function. See Motion Detection and Alarm-Triggered Actions for details.

1. In the playback window, click **Video Retrieval**, select **Motion** from the drop-down list in the upper left corner.
2. Select the desired camera, set the time period, and then click **Search**.
3. Click ▶ for the desired recording to start playback.

Playback by Video Loss

Search for and play recordings triggered by video loss during a specified time period.

NOTE!

Make sure video loss alarm is enabled and alarm-triggered recording has been configured before you use this function. See Video Loss and Alarm-Triggered Actions details.

1. In the playback window, click **Video Retrieval**, select **Video Loss** from the drop-down list in the upper left corner.
2. Select the desired camera, set the time period, and then click **Search**.
3. Click ▶ for the desired recording to start playback.

Playback by Smart Search

This function provides an efficient way to review recordings containing smart search results such as detected motions. In smart playback mode, the system analyzes recordings for smart search results. If such results are detected, the progress bar is highlighted in green, and the video plays at the normal speed, allowing you enough time to catch details; otherwise, the video plays at 16x speed to save time.

1. In the playback window, select **Smart** above the progress bar.

2. Click ▶ for the desired camera to start smart playback.

3. Click ⊕. The smart search window is displayed. By default, the full screen is the smart search area. To clear all, click ⬚; to restore the full-screen search area, click ⬚.

4. Set smart search rules, including detection area and sensitivity.

5. Click 🔍 to start search. To quit, click ⬚

Playback by External File

Use this function to play recordings stored in an external storage device, for example, a USB drive or a portable USB hard drive.

1. In the playback window, click ⬚ on the screen toolbar.

2. Click **Refresh** and then wait for the NVR to read the external storage device.

3. Select the desired recording file and then click ▶ to start playback.

Playback by Image

Specify an image type (for example, Normal or Motion) to search for and play images from one or more cameras during a specified time period.

1. In the playback window, click **Video Retrieval**, select **Picture Search** from the drop-down list in the upper left corner.

2. Select a type from the **Type** drop-down list in the upper right corner.

3. Select the desired camera(s), set the desired time period, and then click **Search**.

4. Click the desired file to start playback.

File Management

File management allows you to manage video clips, tags, snapshots taken during playback, and lock or unlock files.

1. Take snapshot during playback.

    a. In the playback page, play the recording until the desired image appears.

    b. Click ▣ in the playback window to take a snapshot.

    c. Click ☐ and then click the **Playback Image** tab to view the snapshot.

    d. Select the desired image file(s) and then click **Backup** to save them to the storage device.

> **NOTE!**
>
> The image resolution depends on the resolution from the output interface and the number of windows displayed when the snapshot is taken.

2. Lock files.

Use this function to lock a recording file so it will not be overwritten. To lock a recording file will prevent all the files stored in the same disk partition (254.4MB in size) from being overwritten.

    a.   Play the recording you want to lock.

    b.   Click in the playback window.

    c.   Click and then click the **Locked File** tab to view the locked

        file. To unlock a file, click , and the icon changes to . To

        back up a file, select the file and then click **Backup**.

8 Backup

Recording Backup

Backup, also known as recording backup, is the process of querying video stored on a hard disk of the NVR and then saving to a USB storage device or a DVD-R disc as a file.

Recording backup has the following conditions:

- Back up using a USB storage device: format the partition in FAT32 or NTFS format; connect the storage device correctly to the NVR.
- Permission is required.
- The recording to back up is stored on a hard disk of the NVR.

> **NOTE!**
>
> The default file format is .mp4 when you back up recordings to a USB storage device.

Normal Backup

1. Click **Backup > Recording.** All cameras are selected by default.
2. Set search conditions and then click **Search**. Search results are displayed.

> **NOTE!**
>
> You can lock/unlock and play recording files in this window.

3. Select the desired recording(s) and then click **Backup**.
4. Select a partition.
- Back up to USB storage device

Set the destination in the USB storage device and then click **Backup**. The recording(s) will be saved to the specified directory.

NOTE!

- You may want to create a new folder for the recording(s) by clicking **New Folder**.

- If the connected storage device has a capacity that is greater than 2T, clicking **Format** will format the device to NTFS file system; if the capacity is 2T or less, the device will be formatted to FAT32 or NTFS. Only certain devices can format a storage device that has a greater capacity than 2T.

- A progress bar (e.g., **Exporting** *X/Y*) is displayed to indicate the progress, where *X* indicates the current number being backed up, and *Y* indicates the total number of recordings. To cancel the operation, click **Cancel**.

- A backup file is named in this format: *camera name-recording start time*.file extension. For example, Ch9-20150630183546.mp4.

- Back up to a DVD-R disc

Set the destination and then click **Backup**. The recording(s) will be saved to the specified directory.

NOTE!

- Before you start burning, check that the video to back up was not compressed using smart encoding.

- Clicking **Cancel** before burning is finished will cause the disc unusable.

- When burning is finished, wait for the drive to eject itself. Do not eject the drive manually.

- The NVR does not support playback of recordings saved on a disc.

Video Clip Backup

A recording can be clipped and saved to a USB storage device.

1. Open the playback window. For the detailed steps, see [Playback](#).

2. After playback starts, click ✂ on the playback toolbar to clip videos.

3. Click 🗁 and then click the **Video Clip** tab to view video clips.

4. Select the desired video clip(s) and then click **Backup**.
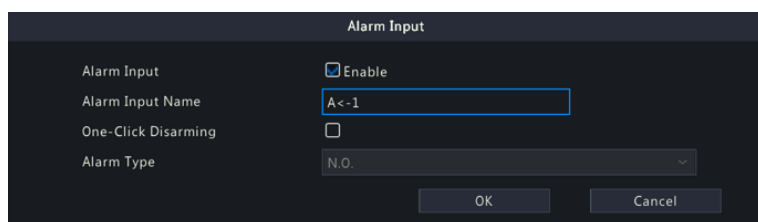
5. Select a destination in the USB storage device and then click **Backup**. The selected video clips are saved to the specified directory.

9 Alarm

Alarm Input and Output

Alarm Input

1. Click **Alarm > Input/Output > Alarm Input**.

2. Select the desired camera, and click to configure alarm input parameters.

	Alarm Input
Alarm Input	☑ Enable
Alarm Input Name	A<-1
One-Click Disarming	☐
Alarm Type	N.O.
	OK Cancel

Item	Description
Alarm Input	Select **Enable** to enable alarm input.
Alarm Input Name	The default name is the alarm input No. You may customize a name.
One-Key Disarming	Only **A<-1** in the **No**. column supports one-key disarming. When enabled, the NVR will block the alarm-triggered actions generated by A<-1 port.
Alarm Type	N.O./ N.C.

3. Click ⚙ under **Trigger Actions** and then set action(s) to trigger. For

   more details, see Alarm-Triggered Actions.

 NOTE!

- The number of cameras that can be connected may vary with NVR model.
- Actions that can be triggered may vary with alarm type.

4. Click ⚙ under **Arming Schedule** and then set the time when

   actions will be triggered.

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

Alarm Output

1. Click **Alarm > Input/Output > Alarm Output.**

2. Select the desired camera, and click 🔲 to set the alarm output parameters.

- Select **Monostable** in the **Relay Mode** drop-down list.

Item	Description
Default Status	N.O./ N.C.
Relay Mode	Monostable, a basic pulse circuit with stable output state.
Alarm Duration	Alarms triggered by pulse output.
Pulse Duration(ms)	The duration of pulse signal. Drag the slider to adjust it within 100-900 milliseconds.

- Select **Bistable** in the **Relay Mode** drop-down list.

Item	Description
Default Status	N.O./ N.C.
Relay Mode	Bistable, an electronic circuit with two stable output states.
Alarm Duration	Custom: You may customize the alarm duration from 5 to 3600 seconds. Maximum: The alarm output lasts infinitely that needs to be turned off manually.
Pulse Duration(ms)	The duration of the alarm output after an alarm is triggered (only applicable when **Custom** is selected).

3. Click under **Arming Schedule** and then set the time when actions will be triggered.

 NOTE!

- The default schedule is 24×7 and you may change it as needed. Up to 8 different periods for each day are allowed. Time periods cannot overlap.
- To apply the same arming schedule to other days, select the intended day(s) right to **Copy To**.
- To apply the same settings to other cameras, click **Copy** and select the desired camera(s).

---

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

Motion Detection

When enabled, a motion detection alarm occurs if an object inside the detection area moves to certain extent, and an alarm icon appears in the upper right corner.

Motion detection is enabled on the NVR by default. Unless modified, the detection area covers the full screen, and recording is triggered only for the current camera. The settings remain if you disable motion detection and then enable it.

1. Click **Alarm > Motion.**

2. Select the desired camera and then select **Enable** to enable motion detection.

3. Use the mouse to draw a detection area, and drag the slider to set detection sensitivity, target object size, and duration. The higher the sensitivity, the more likely a moving object will be detected.
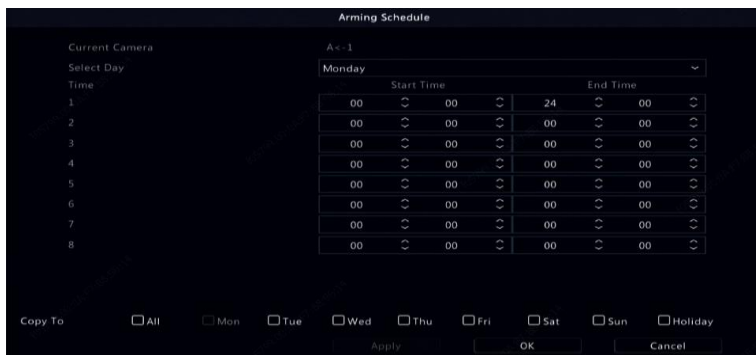

4. Click ⚙ right to **Trigger Actions** and set action(s) to trigger. For more details, see Alarm-Triggered Actions.

NOTE!

- The number of cameras that can be connected may vary with NVR model.
- Actions that can be triggered may vary with alarm type.

---

5. (Optional) Click ⚙ right to **Arming Schedule** and then set the time when actions will be triggered.

> **NOTE!**
> - The default schedule is 24×7. You may change it as needed and set up to eight different periods for each day. Time periods cannot overlap.
> - To apply the same arming schedule to other days, select the intended day(s) right to **Copy To**.

6. Click **Apply** to save the settings.
7. (Optional) Click **Copy** to apply the same settings to other cameras.

Tampering Detection

A tampering detection alarm occurs when the camera lens is covered.

1. Click **Alarm > Tampering.**
2. Select the desired camera and then select **Enable** to enable tampering detection.

3. Click ⚙ right to **Trigger Actions** and set action(s) to trigger. For more details, see Alarm-Triggered Actions.

4. (Optional) Click ⚙ right to **Arming Schedule** and then set the time when actions will be triggered.

5. (Optional) Click **Copy** to apply the same settings to other cameras.
6. Click **Apply** to save the settings.

Human Body Detection

Human body detection alarms occur when the presence of human beings is detected in the specified area. Only certain cameras support this function.

1. Click **Alarm > Human Body Detection.**
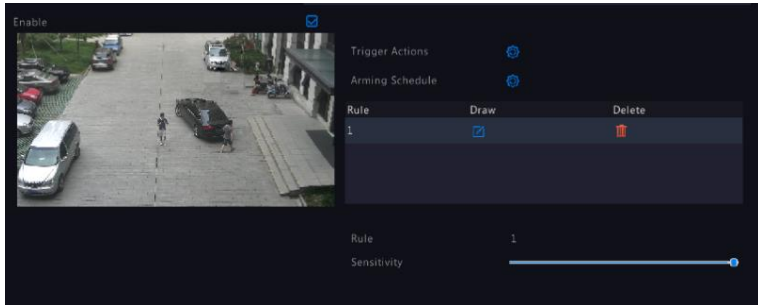
2. Enable human body detection by selecting the check box
3. Click ![icon], and then draw detection area.

![note icon] **NOTE!**

Only one detection area is allowed for each camera.

4. Set detection sensitivity. The higher the sensitivity, the more likely a human body will be detected.

5. Click ![icon] right to **Trigger Actions** and set action(s) to trigger. For more details, see [Alarm-Triggered Actions](#).

6. (Optional) Click ![icon] right to **Arming Schedule** and then set the time when actions will be triggered.

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

Video Loss

A video loss alarm occurs when the NVR loses video signals from a camera. Video loss alarm is enabled by default.

8. Click **Alarm > Video Loss**. To disable video loss alarm for a channel, click ✅, which then changes to ⭕.

9. Click ⚙️ under **Trigger Actions** and set action(s) to trigger. For more details, see [Alarm-Triggered Actions](#).

> **NOTE!**
>
> Video loss alarm cannot trigger recording, preset, and preview (live view) actions for the current camera.

10. Click ⚙️ under **Arming Schedule** and then set the time when actions will be triggered.

11. (Optional) Click **Copy** to apply the same settings to other cameras.

Alert

The NVR reports an alert when an event occurs in the system. The following are some alerts and their definitions in the system.

- **Running Out of Space:** Less than 10% of disk space remains.

- **Space Used Up:** No disk space.

- **Disk Offline:** A disk is not properly connected or is damaged.

- **Disk Abnormal:** A disk can be detected but cannot be accessed.

- **Illegal Access:** A failed login attempt for a username that does not exist or a password that is incorrect. When more than five failed login attempts, the NVR will be locked and trigger an alarm. Please wait and try again after one minute.

- **Network Disconnected:** Network connection is lost.

- **IP Conflict:** Devices on the network use the same IP address.

- **Recording Abnormal:** Storage resource cannot be found, for example, when all hard disks are removed, or when there is no disk in disk group 1 (see Disk Group for more information).

Perform the following steps to configure an alert:

1. Click **Alarm > Alert.**

2. Select an alert type, select the desired actions, and then select the camera(s) for which you want to enable alarm output.

Alert Type	IP Conflict	⌄
Buzzer	☐	
Send Email	☐	
Pop-up Window	☐	
Trigger Alarm Output	☐ All	
Select		Alarm Output No.
☐		A->1
☐		A->2
☐		A->3
☐		A->4
☐		D1->1
☐		D2->1
☐		D3->1
☐		D4->1
☐		D5->1

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

Audio Detection

An audio detection alarm occurs when a camera detects a sudden change in sound volume.

1. Click **Alarm > Audio Detection.**

2. Select the camera and then select **Enable** to enable audio detection.

| Select Camera	D1(Camera 04)	⌄
Enable	☑	
Trigger Actions	⚙	
Arming Schedule	⚙	
Detection Type	Sudden Rise	⌄
Difference	———————————●————————	

3. Click ⚙ right to **Trigger Actions** and set action(s) to trigger. For more details, see Alarm-Triggered Actions.

4. (Optional) Click ⚙ right to **Arming Schedule** and then set the time when actions will be triggered.

5. Select a detection type and adjust the settings as needed.

Detection Type	Description
Sudden Rise	An alarm occurs when the rise of volume exceeds the set value.
Sudden Fall	An alarm occurs when the fall of volume exceeds the set value.
Sudden Change	An alarm occurs when the volume rises or falls suddenly, and the amplitude exceeds the set value.
Threshold	An alarm occurs when the volume exceeds the set value.

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

Buzzer

The buzzer can be triggered by alarms to alert the user. Follow the steps to set how long the buzzer will buzz after it is triggered.

1. Click **Alarm > Buzzer.**

Alarm Duration	○ Maximum	⊙ Custom
Custom Duration(sec)	30	

2. Set the duration as needed. The range is from 1 to 600 seconds.

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

Doorbell Call

Doorbell calling alarms are enabled by default on the NVR when a doorbell is connected. To disable doorbell calling alarm or change alarm settings, click **Alarm > Doorbell Call**.

Audio Detection

An audio detection alarm occurs when a camera detects a sudden change in sound volume.

1. Click **Alarm > Audio Detection.**

2. Select the camera and then select **Enable** to enable audio detection.

3. Click ⚙ right to **Trigger Actions** and set action(s) to trigger. For more details, see Alarm-Triggered Actions.

4. (Optional) Click ⚙ right to **Arming Schedule** and then set the time when actions will be triggered.

5. Select a detection type and adjust the settings as needed.
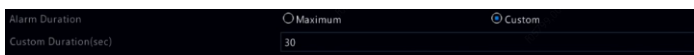
Detection Type	Description
Sudden Rise	An alarm occurs when the rise of volume exceeds the set value.
Sudden Fall	An alarm occurs when the fall of volume exceeds the set value.
Sudden Change	An alarm occurs when the rise or fall of volume exceeds the set value.
Threshold	An alarm occurs when the volume exceeds the set value.

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

Alarm-Triggered Actions

An alarm can trigger actions, for example, buzzer, recording, and preview. The supported actions may vary with NVR model.

Alarm-Triggered Buzzer

The NVR makes a buzzing sound when an alarm occurs.

Alarm-Triggered E-mail

The NVR e-mails an alarm message to a specified email address when an alarm occurs.

Alarm-Triggered Pop-up Window

A window pops up when an alarm occurs.

Alarm-Triggered Recording

The NVR records video from a specified camera when an alarm occurs.

Alarm-Triggered Snapshot

The NVR takes a snapshot when an alarm occurs.

Alarm-Triggered Preset

A PTZ camera rotates to a preset position when an alarm occurs.

Alarm-Triggered Preview

The NVR plays live video in full screen when an alarm occurs.

Alarm-Triggered Alarm Output

The NVR outputs an alarm to trigger actions by a third-party device when an alarm occurs.

Manual Alarm

Manual Alarm Output

Follow the steps to trigger or clear an alarm output manually.

1. Right click and select **Manual > Manual Alarm.**

2. To trigger an alarm output manually, select the desired channel and then click **Trigger**. To clear an alarm output manually, select the desired channel and then click **Clear**.

Manual Buzzer

Follow the steps to stop the buzzer manually.

1. Right click and select **Manual > Buzzer.**

2. Select the buzzer (in Started status) and then click **Stop**.

10 VCA

VCA Configuration

VCA means Video Content Analysis. VCA functions include face recognition, perimeter protection, and exception detection.

1. Click **VCA > VCA Config**.

2. Choose **Camera Side Analysis** or **NVR Side Analysis**.

●   Camera Side Analysis: The analysis is performed by the camera.

●   NVR Side Analysis: The analysis is performed by the NVR.

NOTE!

●   The checkbox of a function that is grayed out means that the function is not supported by the camera or the NVR.

●   NVR Side Analysis depends on device capability. Click **VCA Config** > **Intelligence Usage** to view details.

---

3. Click to enter the configuration page of that function.

Face Detection

Face detection is used to detect and capture human faces in a specified surveillance area. **Only certain cameras support this function**.
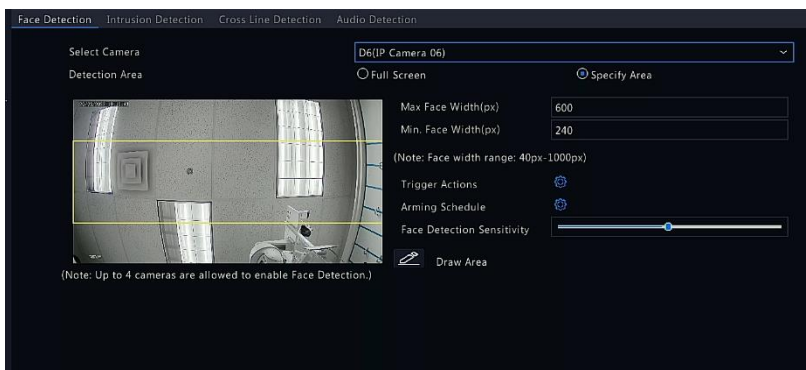
1. Select the detection area. You may choose full screen or specify an area to detect. If you select **Specify Area**, click **Draw Area** and then draw a detection area using the mouse.

2. Set face detection sensitivity. The higher the sensitivity, the more likely a face will be detected.

> **NOTE!**
>
> The lower the sensitivity, the less likely a side face or blurring face will be detected. Adjust detection sensitivity as needed to achieve optimal effects.

3. Configure trigger actions. Click ⚙ right to **Trigger Actions** and set action(s) to trigger. For more details, see Alarm-Triggered Actions.

4. Configure an arming schedule. Click ⚙ right to **Arming Schedule** and then set the time when actions will be triggered.

5. (Optional) Click ⚙ right to **Advanced**, and complete the settings.

- Min. Pupillary Distance: the minimum resolution between two pupils. The face with pupillary distance smaller than the value will not be captured.
- Number of Snapshots: the total number of snapshots to take for a face during the detection. Up to 30 snapshots are allowed.
- Face Selection: Enable face selection, choose selection mode, then complete the settings.
  - ➢ Effect Priority: During the face' stay in the surveillance area, select and upload the face snapshots with best image quality. You can set the number of snapshots.
  - ➢ Speed Priority: Upload the best face snapshots within the time period from when the face enters the surveillance area to when the set time is up.
  - ➢ Periodic Priority: From the time when the face enters the surveillance area, select and upload one snapshot in every set time period.

Cross Line Detection

Cross line detection is used to detect and capture objects crossing a virtual line in a specified direction.

Camera Side Analysis

Cameras that support smart intrusion prevention (SIP) can detect cross line behaviors for motor vehicles, non-motor vehicles, and pedestrians.

> **NOTE!**
>
> - Make sure the intelligent server of the camera is enabled by default and the platform communication type is in LAPI mode before connecting the camera.
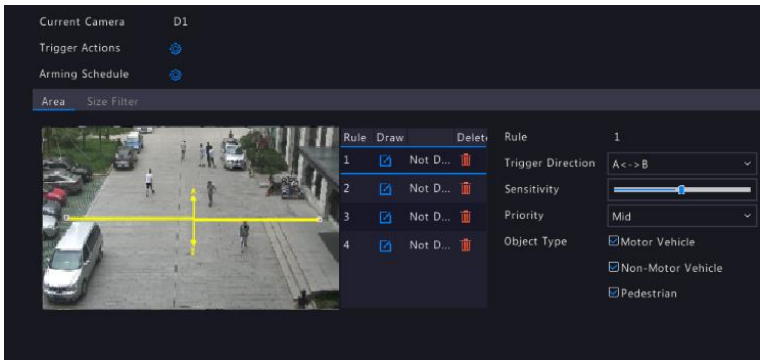
1. Configure cross line detection.

   a. Click **VCA** > **VCA Config**. Click ⚙ right to **Cross Line Detection** to configure the parameters.

   b. Select a camera added by REVO protocol, and select the **Enable** check box.

   c. Click ◪ to draw a line in the left preview window.

   d. Set the parameters.

Item	Description
Sensitivity	The higher the sensitivity, the more likely cross line behaviors will be detected, and the more likely false alarms will occur. The default value is 50. You may

Item	Description
	adjust it as needed to achieve optimal effects.
Trigger Direction	• A<>B: Triggers a snapshot when the object crosses the line from A to B. • B<>A, Triggers a snapshot when the object crosses the line from B to A.
Priority	Set the priority when there are several rules, including high, medium and low. Areas with high priority will be detected preferentially.
Object Type	Choose the detection object, including motor vehicle, non-motor vehicle, and pedestrian.

    e. Set the size filter.

In the **Size Filter** tab, select a filter type and click to set the percentage of the object size against the detection area size in the left preview window. Valid range for the maximum size and minimum size is 20-9999 (assume the image size is 10000x10000). Only objects in the range of Max. Size and Min. Size will be captured.

    f. Set alarm-triggered actions. Click to go to the **Trigger Actions** page.

Item	Description
Alarm Sound	This item is available for cameras that support alarm sound. Enable **Alarm Sound**, and select an alarm audio. The camera plays the alarm sound when an alarm occurs. The number of default audios may vary. Up to 5 audio files can be imported on the camera's web interface.
Alarm Light	This item is available for cameras that support alarm light. Enable **Alarm Light**. The camera triggers alarm light when an alarm occurs.
Others	See Alarm-Triggered Actions for details.

     g. Modify the arming schedule.

Click 🔧 right to **Arming Schedule** and then set the time when actions will be triggered. Click **OK** to return to the **Cross Line Detection** page.

     h. Click **Apply** to save the settings.

2.   View captured snapshots in real time.

     a. To preview the captured snapshots in real time, right-click to return to the preview page, and right-click again to select **Preview Mode** > **Smart**, you can view snapshots in the right side of the preview page.

b. Click a thumbnail image to view more details.

Table 10-1 Button Description

Button	Description
📋	This button appears only when snapshots triggered by SIP are displayed. To stop refreshing the snapshots, click ⌄ right and deselect **Perimeter**.
⊘	Click to search snapshots and recordings.
📷	Click to configure VCA.
🧹	Only clear the snapshots displayed in the preview page but not delete the captured snapshots.

3. Search the captured snapshots and recordings.

  a. Select **VCA** > **VCA Search** to go to the **Behavior Search** page.

  b. Select the desired camera, time, event type, and object type, and click **Search**.

Intrusion Detection

Intrusion detection is used to detect objects entering specified area(s), and take a snapshot when the time threshold and percentage exceed the set value.

Camera Side Analysis

Cameras that support SIP can detect intrusion behaviors for motor vehicles, non-motor vehicles, and pedestrians.

NOTE!

- Make sure the intelligent server of the camera is enabled by default and the platform communication type is in LAPI mode before connecting the camera.
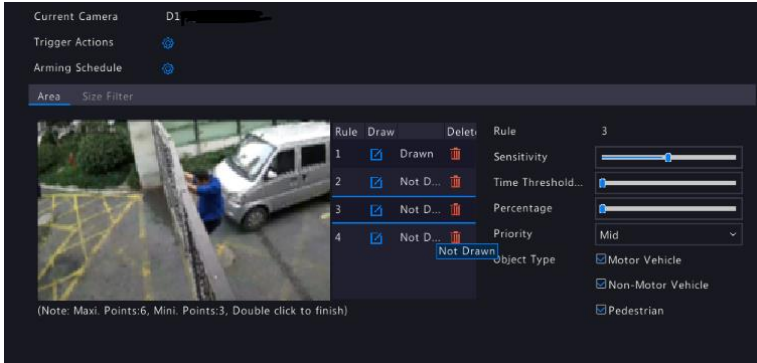
1. Configure intrusion detection.

   a. Click **VCA** > **VCA Config**. Click ⚙ right to **Intrusion detection** to configure the parameters.

   b. Select a camera added by REVO protocol, and select the **Enable** check box.

   c. Click 📝 to draw an area in the left preview window.

NOTE!

Up to 4 detection areas are allowed, and up to 6 vertices in an area.

   d. Set the parameters.

Item	Description
Sensitivity	The higher the sensitivity, the more likely intrusion behaviors will be detected, and the more likely false alarms will occur. The default value is 50. You may adjust it as needed to achieve optimal effects.
Time Threshold(s)	Set the time threshold that an object stays in the detection area. If the time that the object stays in the detection area exceeds the threshold, an alarm will be

Item	Description
	triggered.
Percentage	Set the percentage of the size of the object against the size of the detection area. An alarm occurs when the percentage of the size of the object exceeds the set value.
Priority	Only available for cameras that support auto tracking. Set the priority when there are several rules, including high, medium and low. Areas with high priority will be detected preferentially.
Object Type	Choose the detection object, including motor vehicle, non-motor vehicle, and pedestrian.

    e.   Set the size filter.

In the **Size Filter** tab, select a filter type and click to set the percentage of the object size against the detection area size in the left preview window. Valid range for the maximum size and minimum size is 20-9999 (assume the image size is 10000x10000). Only objects in the range of Max. Size and Min. Size will be captured.

    f.   Set alarm-triggered actions. Click to go to the **Trigger Actions** page.

Item	Description
Alarm Sound	This item is available for cameras that support alarm sound. Enable **Alarm Sound**, and select an alarm audio. The camera plays the alarm sound when an alarm occurs. The number of default audios may vary. Up to 5 audio files can be imported on the camera's web interface.
Alarm Light	This item is available for cameras that support alarm light. Enable **Alarm Light**. The camera triggers alarm light when an alarm occurs.
Others	See <u>Alarm-Triggered Actions</u> for details.

g. Modify the arming schedule.

Click ⚙ right to **Arming Schedule** and then set the time when actions will be triggered. Click **OK** to return to the **Intrusion Detection** page.

h. Click **Apply** to save the settings.

2. View captured snapshots in real time.

a. To preview the captured snapshots in real time, right-click to return to the preview page, and right-click again to select **Preview Mode** > **Smart**, you can view snapshots in the right side of the preview page.
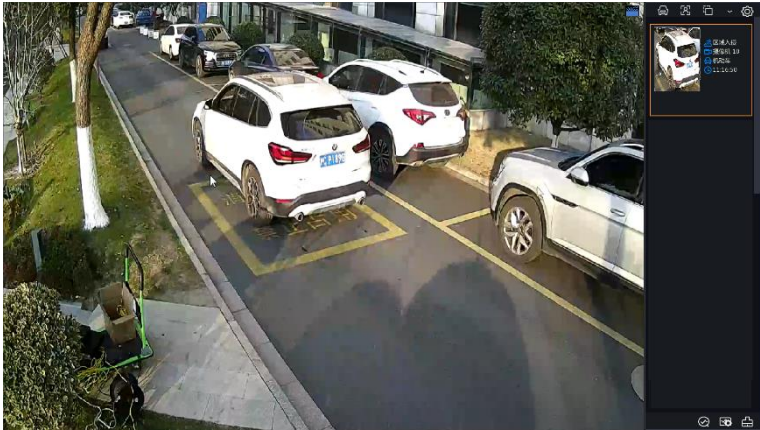
      b.   Click a thumbnail image to view more details.

Table 10-2 Button Description

Button	Description
▣	This button appears only when snapshots triggered by SIP are displayed. To stop refreshing the snapshots, click ⌄ right and deselect **Perimeter**.
⊘	Click to search snapshots and recordings.
⊡	Click to configure VCA.
⛏	Only clear the snapshots displayed in the preview page but not delete the captured snapshots.

2.   Search the captured snapshots and recordings.

      a.   Select **VCA** > **VCA Search** to go to the **Behavior Search** page.

      b.   Select the desired camera, time, event type, and object type, and click **Search**.

Enter Area Detection

Enter area detection is used to detect and capture objects entering specified area(s).

Camera Side Analysis

Cameras that support SIP can detect entry behaviors for motor vehicles, non-motor vehicles, and pedestrians.

📝 **NOTE!**

- Make sure the intelligent server of the camera is enabled by default and the platform communication type is in LAPI mode before connecting the camera.
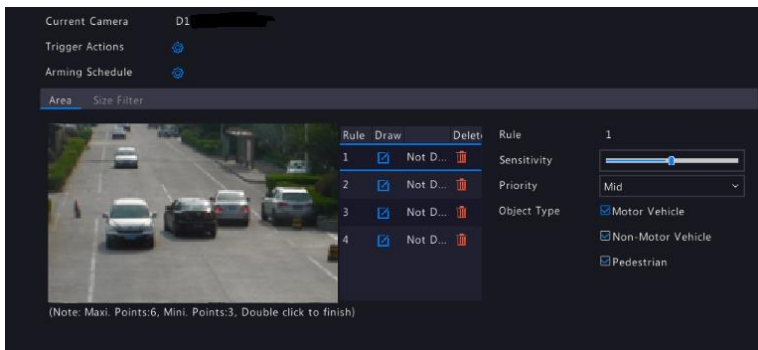
1. Configure enter area detection.

   a. Go to **VCA** > **VCA Config**. Click ⚙ right to **Enter Area Detection** to configure the parameters.

   b. Select a camera added by REVO protocol, and select **Enable** check box.

   c. Click 🔲 right to draw an area in the left preview window.

NOTE!

Up to 4 areas are allowed, and up to 6 vertices in an area.

d. Set the parameters.

Item	Description
Sensitivity	The higher the sensitivity, the more likely entry behaviors will be detected, and the more likely false alarms will occur. The default value is 50. You may adjust it as needed to achieve optimal effects.
Priority	Only available for cameras that support auto tracking. Set the priority when there are several rules, including high, medium and low. Areas with high priority will be detected preferentially.
Object Type	Choose the detection object, including motor vehicle, non-motor vehicle, and pedestrian.

e. Set the size filter.

Select a filter type, and click to set the percentage of an object size against the detection area size in the left preview window. Valid range for maximum size and minimum size is 20-9999 (assume the image size is 10000x10000). Only objects in the range of Max. Size and Min. Size will be captured.

f. Set alarm-triggered actions. Click ⚙ to go to the **Trigger Actions** page.

Item	Description
Alarm Sound	Enable **Alarm Sound**, and select an alarm audio. The camera plays the alarm sound when an alarm occurs. The number of default audios may vary. Up to 5 audio files can be imported on the camera's web interface.
Alarm Light	This item is available for cameras that support alarm light. Enable **Alarm Light**. The camera triggers alarm light when an alarm occurs.
Others	See [Alarm-Triggered Actions](#) for details.

g. Modify the arming schedule.

Click ⚙ right to **Arming Schedule** and then set the time when actions will be triggered. Click **OK** to return to the **Enter Area Detection** page.

h. Click **Apply** to save the settings.

2. View captured snapshots in real time.

a. To preview the captured snapshots in real time, right-click to return to the preview page, and right-click again to select **Preview Mode** > **Smart**, you can view snapshots in the right side of the preview page.

  b. Click a thumbnail image to view more details.

Table 10-3 Button Description

Button	Description
	This button appears only when snapshots triggered by SIP are displayed. To stop refreshing the snapshots, click right and deselect **Perimeter**.
	Click to search snapshots and recordings.
	Click to configure VCA.
	Only clear the snapshots displayed in the preview page but not delete the captured snapshots.

3. Search the captured images and recordings.

  a. Select **VCA** > **VCA Searc**h to go to the **Behavior Search** page.

  b. Select the desired camera, time, event type, and object type, and click **Search**.

Use the NVR to detect cross line behaviors for motor vehicles, non-motor vehicles, and pedestrians.

The operation steps are basically the same as those of camera side analysis, and some of the different steps are explained in the following.

1. Configure enter area detection.

Item	Description
Sensitivity	See Camera Side Analysis.
Priority	Set the priority when there are several rules. The rule with high priority will be detected preferentially.
Object Type	Object type includes motor vehicle, non-motor vehicle, and pedestrian.
Filter Type	See Camera Side Analysis.

2. View captured snapshots in real time.

To preview the captured snapshots, select **Preview Mode** > **Smart**. The snapshot in the preview page is displayed as follows.

● The captured snapshot displayed on the right side is the original image, not the clipped thumbnail image.

● The detailed information about thumbnail images only includes event type (enter area detection) and capture time, and not includes object type (motor vehicles, non-motorized vehicles, pedestrians) and channel number.

Leave Area Detection

Leave area detection is used to detect and capture objects leaving specified area(s).

Camera Side Analysis

Cameras that support SIP can detect leave area behaviors for motor vehicles, non-motor vehicles, and pedestrians.

> 📝 **NOTE!**
>
> - Make sure the intelligent server of the camera is enabled by default and the platform communication type is in LAPI mode before connecting the camera.
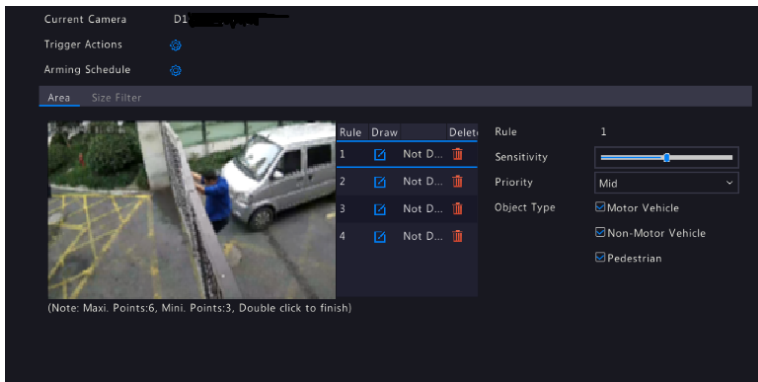
For details, see Camera Side Analysis in Enter Area Detection.

VCA Search

VCA searches for data of each VCA function. Only certain NVR models support this function. The search result, application scenario and settings vary with the VCA function.

Behavior Search

Use behavior search to search for recordings triggered by detected behaviors.

1. Click **VCA > VCA Search > Behavior.**

2. Select camera(s), set a search period, select a search type, and then click **Search**. Search results are displayed.

3. The search results are displayed as thumbnail images or in a table. Back up search results as needed.

People Counting

Use people counting to count people entering and/or leaving an area during a specified period (day, week or year).

1. Click **VCA > VCA Search > Counting.**

2. Select the camera, counting type (people entered or left), report type (daily, weekly, monthly or yearly), set a time period, and then click **Count**. Search results are displayed. You may choose to display search results in a chart or table. When you click a bar, statistics of the selected camera(s) are displayed

3. (Optional) To save the counting statistics to a connected USB storage device, click **Backup**.

11 Network Configuration

Network configuration is required if your NVR operates in a network.

📋 **NOTE!**

The default IP address is 192.168.1.30 for NIC 1 and 192.168.2.30 for NIC 2, and likewise.

Basic Configuration

TCP/IP

1. Click **Network > Basic**.

2. Set the network parameters as needed. DHCP is enabled by default.

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

📝 **NOTE!**

● If your NVR has a PoE port or a switching port, you can configure an internal NIC IPv4 address.

P2P

The NVR allows access from the cloud website or from the mobile surveillance app. You need to sign up for a cloud account at www.myrevocloud.com or "**REVO ULTRA"** mobile App first.

1. Click **Network** > **Basic** > **P2P**.

2. P2P is enabled by default.

3. To add the NVR to cloud at the cloud website: Log in to your account at www.myrevocloud.com and then add the NVR by entering the register code and device name.

4. To add the NVR to cloud using the app: Scan the QR code with the **REVO ULTRA** app. You need to download and install the app on your mobile phone first.
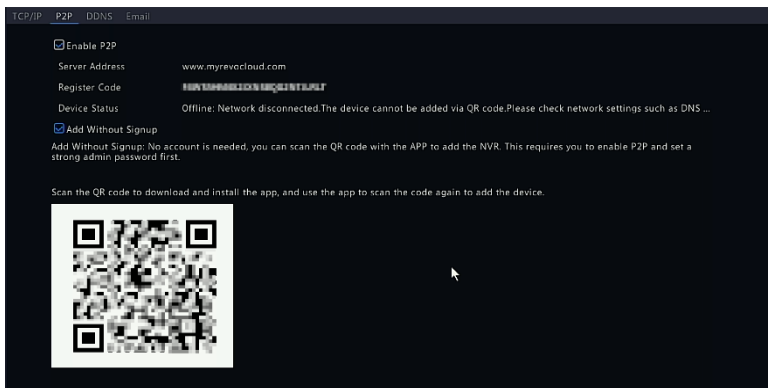
> **NOTE!**
>
> - You may access the NVR through cloud if the device status is **Online**. The username is your cloud account name, and the device name is the name you entered at the cloud website.
> - If the device is offline, the possible causes will be displayed for your reference.
> - To delete the NVR from cloud, click **Delete**.

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

DDNS

If your NVR is connected to the Internet through PPPoE, the IP address of the network changes every time it connects to the ISP server without your awareness. This is inconvenient when you remotely access your NVR with an IP address. To avoid this issue, you can register with an DDNS server to obtain a domain name for your NVR and then access your NVR by visiting the domain name instead of an IP address (http://*DDNS server address/NVR's domain name*) using a web browser.

1. Click **System > Network > DDNS.**
2. Enable DDNS, select a DDNS type, and then complete other settings.
- If the DDNS type is **DynDNS** or **No-IP**, enter the domain name, username and password. The domain name is the one that you have successfully registered at a domain name registration website (e.g., DynDNS). The username and password are those of the account you have registered at the domain name registration website (e.g., DynDNS).
- If the DDNS type is **MyDDNS**, enter a valid domain name for your NVR and then click **Test** to see if the domain name is available.
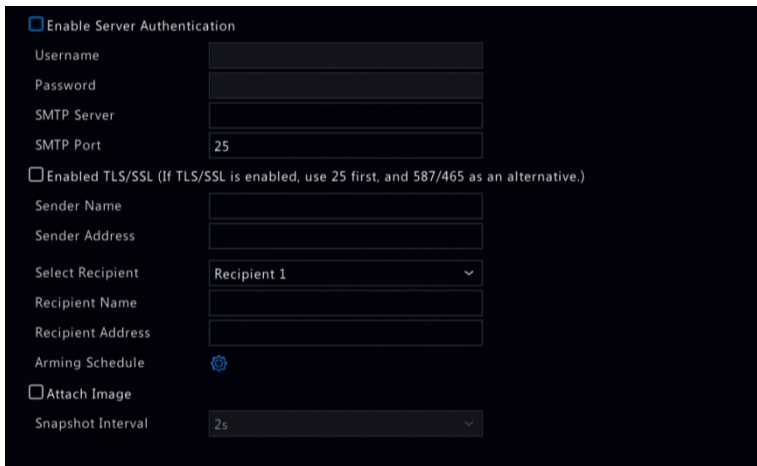3. Click **Apply** to save the settings.

Email

After Email is enabled as a triggered action (in Trigger Actions windows) and configured properly, the NVR sends an email notification to specified email address(es) if an alarm occurs within the time period(s) set in the arming schedule. The email contains basic alarm information such as alarm type, alarm time, camera ID, and camera name, etc.

Before using this function, make sure the NVR has a functional connection to an SMTP server with which you have a valid email account. Depending on the intended recipients, a connection to the Internet may be required. Only certain NVR models support this function.

1. Click **Network > Basic > Email.**
2. Configure the related parameters. If server authentication is required, you need to enter the correct username and password. Click **Test** to send a test email. Enter a valid SMTP server address and port number, and then select **Enable TLS/SSL** if required.

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

Platform Configuration

SNMP

Use SNMP to connect to a platform and obtain system time.

1. Click **Network > Platform > SNMP.** Select **Enable SNMP**.

Enable SNMP	
SNMP Type	SNMPv2
Read Community Name	public
Write Community Name	private
Trap Community Name	private
Trap Address	. . .
Trap Port	162
SNMP Port	161

2. Select an SNMP type.
- SNMPv2
   a. Set **Read Community Name** and **Write Community Name**, which are used by the platform to read data on NVR.
   b. Set trap community name and trap address.
- SNMPv3
   a. Set authentication password (for the platform to access the NVR) and encryption password (for encrypting data sent from the NVR to the platform).
   b. Set trap community name and trap address.
3. Click **Apply**.

Advanced Configuration

PPPoE

The NVR allows access through Point-to-Point over Ethernet (PPPoE).

1. Click **Network > Advanced > PPPoE.**

2. Enable PPPoE by selecting the check box.

3. Enter the username and password provided by your Internet Service Provider (ISP). Network information including IP address appears when dial-up succeeds.

NOTE!

If your NVR has multiple NICs, PPPoE dial-up will be implemented through the NIC specified as the default route.

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

Port

Normally the default port numbers need no modification. This function is mainly used together with the port mapping function. See Adding an IP Device for more details.

1. Click **Network > Advanced > Port**.

2. Configure ports as planned. Each port number must be unique.

HTTP Port	80
RTSP Port	554
HTTPS Port	443
RTSP URL Format	rtsp://<ip>:<port>/unicast/c<channel number>/s<stream type>/live
	<channel number>: 1-n
	<stream type>: 0(main stream) or 1(sub stream)

NOTE!

- A valid port number ranges from 1 to 65535, among which 21, 23, 2000, 3702 and 60000 are reserved.
- An RTSP URL can be used to view live video of a channel of the current NVR from another NVR. See Option 5 in Adding an IP Device for more information.

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

Port Mapping

Two port mapping methods are available:

*   Universal Plug and Play (UPnP)

*   Internal and external mapping

UPnP

UPnP enables the NVR to discover other devices on the network and establish network services such as data sharing and communication.

To use UPnP in your NVR, you must enable UPnP in the connected router. With UPnP enabled for Network Address Translation (NAT), the ports on the NVR can be mapped automatically to the router, and computers can access your NVR from outside the LAN.

1. Click **Network > Advanced.**

2. UPnP is enabled by default. Select the desired mapping type from the drop-down list. To map ports manually, select **Manual** and then set external ports for the router.

📝 **NOTE!**

*   Automatic mapping (Auto) is recommended. Ports will conflict if not configured properly.
*   For an NVR with multiple NICs, port mapping should be configured based on the NIC specified as the default route.

Port Type	External IP Address	External Port	Internal Port	UPnP Status
HTTP Port	N/A	80	80	Inactive
RTSP Port	N/A	554	554	Inactive
HTTPS Port	N/A	443	443	Inactive

Enable Port Mapping
Mapping Mode   UPnP   Manual
UPnP Mapping   Auto
HTTP Port   80
RTSP Port   554
HTTPS Port   443

3. Click **Refresh** and check that Active is displayed for these ports under UPnP Status.

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

Manual Port Mapping

If your router does not support UPnP, then you need to configure internal
and external ports manually.

NOTE!

- The principle of port mapping is that the internal and external ports of the
  NVR are consistent with that of the router.
- Some routers may require the same internal and external ports for the
  NVR and the router.

1. Click **Network > Advanced.**

2. Select **Manual** for **Mapping Mode**, and then set external ports
   manually.

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

NOTE!

After port mapping is completed, you may access the Web client of your
NVR by entering the following information in the address bar of your
web browser: router's WAN port IP address: external HTTP port. For
example, if 10.2.2.10 is the IP address and 82 is the HTTP port, then you
enter http://10.2.2.10:82.

Multicast

Multicast can be used to realize live view when the number of connecting
Web clients exceeds the limit the NVR can accommodate.

1. Click **Network > Advanced > Multicast.**
2. Select the check box to enable multicast, and then enter the multicast IP and port number.

3. Click **Apply** to save the settings.
4. Log in to the Web client and set **Live View Protocol** to **Multicast** under **Setup > Client.**

![NOTE icon] **NOTE!**

Set the multicast IP correctly. Multicast address is class D address with the range 224.0.0.0 through 239.255.255.255; some are for special use:

- 224.0.1.0--238.255.255.255 can be used on the Internet.
- 224.0.0.0-244.0.0.255: only for use on LAN.
- 224.0.0.1: all-hosts group address, which refers to all the multicast-capable hosts and routers on a physical network.
- 224.0.0.2: for all routers on this subnet.
- 224.0.0.5: for all OSPF routers.
- 224.0.0.13: for all PIMv2 routers.
- 239.0.0.0--239.255.255.255 are for private use like 192.168.x.x.

FTP

Use this function to automatically upload images to a preconfigured FTP server. Only certain NVR models support this function.

1. Click **Network > Advanced > FTP.**
2. Select the check box to enable FTP.
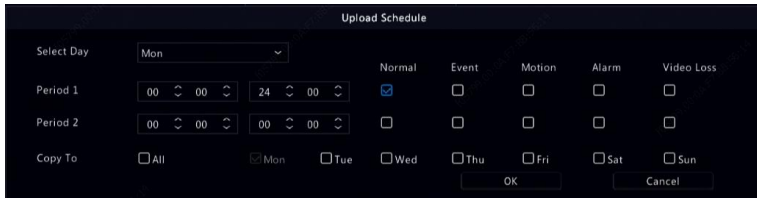3. Enter the IP address of the FTP server, username and password, remote directory, and upload interval.

4. Select the desired camera and then click ⚙ right to **Upload Schedule**. In the **Upload Schedule** window, select the desired image type and set time periods.

		Upload Schedule					
			Normal	Event	Motion	Alarm	Video Loss
Select Day	Mon ⌄						
Period 1	00 ⌃⌄ 00 ⌃⌄	24 ⌃⌄ 00 ⌃⌄	☑	☐	☐	☐	☐
Period 2	00 ⌃⌄ 00 ⌃⌄	00 ⌃⌄ 00 ⌃⌄	☐	☐	☐	☐	☐
Copy To	☐ All	☑ Mon ☐ Tue	☐ Wed	☐ Thu	☐ Fri	☐ Sat	☐ Sun
					OK		Cancel

5. (Optional) Apply the same settings to other cameras by clicking ⚙ right to **Copy** and then selecting desired cameras.

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

12 Disk Configuration

Disk Management

View disk information, including total and free disk space, disk status, disk type, disk usage, and disk property. Admin users can format disks and edit disk property

1. Click **Storage > Hard Disk.**

2. To edit disk property, click 🔧 , and then modify disk usage (recording/snapshot or backup) and disk property (**Read/Write, Read Only** or **Redundant**) as needed.

![note icon] **NOTE!**

- Disk property can be edited if the disk is used for recording/snapshot.

3. To format a disk, select the disk and then click **Format**. A confirmation message appears. Click **Yes**.

![note icon] **NOTE!**

- Local disks will be formatted automatically when installed. Extended disks will not.
- Format a disk with caution. All data will be removed.

Disk Group

Assign hard disks to a disk group and use the disk group to store recordings and snapshots of specified cameras. Different arrays can be assigned to different disk groups.

Redundant disks cannot be assigned to any disk group. Disk group information will be initialized if any disk in the group is formatted.

4. Click **Storage > Disk Group.**
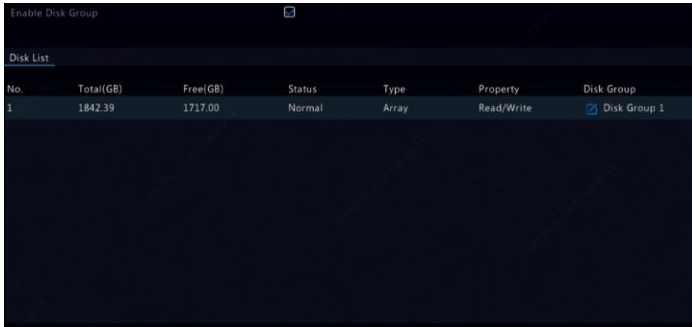
5. Select **Enable Disk Group**. By default all disks belong to Disk Group.

6. Click for the disk to edit, and then select a group to which the disk will be assigned.

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

Space Allocation

Allocate space to store videos and snapshots of a specified camera.

1. Click **Storage > Allocate Space.**

2. Select the desired camera and then set the maximum recording space and maximum image space. You can select a disk group only when disk group is enabled under **Storage > Disk Group.** For more information, see Advanced Configuration.

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

4. (Optional) Click **Copy** to apply the same settings to other camera(s).

Advanced Configuration

Set whether to overwrite recordings or snapshots when storage is full.

1. Click **Storage > Advanced.**

2. Choose an option.

Option	Allocated Space	Description
Overwrite	0	The camera shares unallocated space, and its oldest recordings/snapshots will be overwritten when the space is used up.
	Other values	The camera's oldest recordings/snapshots will be overwritten when its allocated space is used up.

Option	Allocated Space	Description
Stop	0	The camera shares unallocated space, and its oldest recordings/snapshots will still be overwritten when the space is used up.
	Other values	The camera's new recordings/snapshots will not be saved when its allocated space is used up.

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

13 System Configuration

Basic Configuration

1. Click **System > Basic.**

2. Configure the parameters.

NOTE!

- Only admin can set **Enable Password**.
- If **Enable Password** is not selected, no password is required for local login at system startup. However, a username and password are still required when you log in after a logout.
- You may also set startup Wizard here by clicking **Wizard**.

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

Time Configuration

Time

1. Click **System > Time > Time.**
2. Select the correct time zone, and then set date and time formats and the system time. The following shows an example.

3. To use Network Time Protocol (NTP), enable auto update, set the address and port number of the NTP server, and the update interval.
4. Click **Apply** to save the settings.

DST

1. Click **System > Time > DST.**
2. Enable DST by selecting the check box, and then set the start time, end time, and DST bias correctly.
3. Click **Apply** to save the settings.

Time Synchronization

Use this function to synchronize camera time with the NVR. Time sync is enabled by default, and cameras will synchronize time with the NVR after getting online, and then synchronize once every 30 minutes.

1. Click **System > Time > Time Sync.**
2. Select **Sync Camera Time** and then click **Apply**.

> **CAUTION!**
>
> Use this function with caution if you have more than one NVR on the network. An IP camera synchronizing time with multiple NVRs at the same time will cause chaotic recordings.

User Configuration

Add, delete users or edit user permissions. Only admin can perform these operations. Device password is required for user configuration.

A user type is a set of permissions in the system. When a user type is assigned to a user, this user has all the permissions specified for the user type.

There are four user types in the system:

- Admin: Default super administrator in the system, has full system access. Its initial password is **123456**.
- Default: Default user reserved in the system, cannot be created or deleted, and only has access to live view and two-way audio. If the default user is denied access, the corresponding channel is locked when no user is logged in, and ▣ appears in the window.
- Operator: Has basic permissions and access to cameras.
- Guest: Only has access to cameras by default.

1. Click **System > User.**

2. To add a user, click **Add**, and then set the username and password, select user type, permissions and whether to enable unlock pattern as needed. Click **OK** to save the settings.

Username	User Type	Edit	Delete
admin	Administrator	☑	—
default	Reserved User	☑	—

3. To edit or delete a user, click ☑ or 🗑 as needed. If you change the password for a user, the new password takes effect at the user's next login.

Security Configuration

IP Address Filtering

Use this function to enhance security by allowing or forbidding access to the NVR from specified IP addresses.

1. Click **System > Security > IP Address Filtering.**
2. Select **Enable IP Address Filtering**, select **Blocklist** or **Allowlist** from the drop-down list, set the start and end IP addresses, and then click **Add**.

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

ONVIF Authentication

Enable ONVIF authentication under **System > Security > ONVIF Auth** so a username and password will be required for ONVIF-based device access.

Select the check box and then click **Apply**.

ARP Protection

ARP protocol is used to associate an IP address to a hardware MAC address. ARP attacks mainly occur on LAN, in which attackers use forged IP and MAC addresses. APR protection prevents this kind of attacks by verifying the gateway's MAC address in all access requests.

Note that changing the NIC working mode will disable ARP protection automatically.

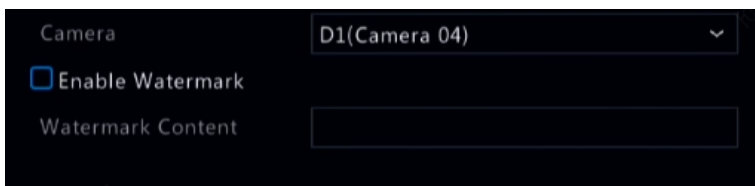1. Click **System > Security > ARP Protection.**

2. Select the desired NIC and then select **Enable ARP Protection**.

3. Obtain the gateway's MAC address automatically, or select **Custom** and input the MAC address.

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

Video Watermark

Encrypt custom information in videos to prevent unauthorized alteration.

1. Click **System > Security.**

2. Select the desired camera and then select **Enable Watermark.**

3. Enter watermark content.

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

14 System Maintenance

System Information

Click **Maintain > System Info** to view the basic NVR information for maintenance purpose.

Basic Info

View the basic information such as the device model, serial number, firmware version, build date and operation time.

Basic Info	
Model	RU8NVR2
Serial No.	210235XCMVF21A000124
Firmware Version	NVR-B3610.23.9.C02510.210902
Build Date	2021-09-02
Operation Time	0 Day(s) 0 Hour(s) 21 Minute(s)

Camera Status

Click the **Camera** tab to view camera status (online or offline with possible offline cause) and status of alarm functions such as motion detecion, tampering, video loss and audio detection. **Off** means disabled, and **On** means enabled.

Camera ID	Name	Status	Motion	Tampering	Video Loss	Audio
D1	IP Camera 01	Offline(Network Disconnected)	On	Off	On	Off
D2	IP Camera 02	Online	Triggered	Off	On	Off
D3	IP Camera 03	Offline(Network Disconnected)	On	Off	On	Off
D4	IP Camera 04	Online	Triggered	Off	On	Off
D5	IP Camera 05	Offline(Network Disconnected)	On	Off	On	Off
D6	IP Camera 06	Offline(Network Disconnected)	On	Off	On	Off
D7	IP Camera 07	Offline(Network Disconnected)	On	Off	On	Off
D8	IP Camera 08	Online	On	Off	On	Off

Recording Status

Click the **Recording** tab to view recording status and stream settings.

Camera ID	Name	Type	Status	Diagnosis	Stream Type	fps	kbps	Resolution
D1	Camera 04	Normal	Ongoing	Normal	Main Stream	25	2590	1920X1080
D2	D1(3MP)	Normal	Ongoing	Normal	Main Stream	20	530	2592X1520
D3	wan1lun20029	Event	Ongoing	Normal	Main Stream	15	496	3000X3000
D4	IP Camera 04	Event	Ongoing	Normal	Main Stream	30	271	1920X1080
D5	11111	Normal	Ongoing	Normal	Main Stream	25	162	1920X1080

Online User

Click the **Online User** tab for information about users who are currently logged in.

No.	Username	IP Address	Login Time
1	admin	127.0.0.1	2019-05-17 09:11:47

Disk Status

Click the **Disk** tab to view the hard disk status and disk properties.

Disk No.	Total(GB)	Free(GB)	Status	Vendor	Property
1	1842.39	1716.50	Normal		Read/Write

Total Capacity(GB)	1842.39
Free Space(GB)	1716.50

Network Information

Network Traffic

Click **Maintain > Network Info > Network Traffic** to view network traffic information.
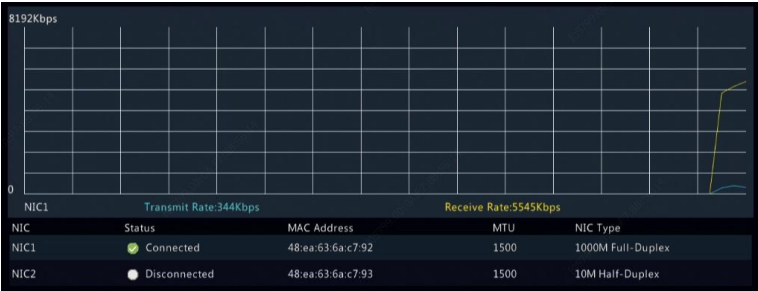
Network Detection

1. Click **Maintain** > **Network Info** > **Net Detect**.

2. To test network delay and packet loss rate, enter the test address and then click **Test**.

🖊 **NOTE!**

The test packet size is 3000 bytes by default and can be changed as needed.

1. View test results.

The system will automatically pack the data when the test ends or test duration is up. You can view the packet loss rate and network latency of the current camera in a chart.

2. To capture and save packets, select the USB storage device, specify the port number and IP address, and then click right to the desired NIC. The captured packets are saved as a backup file in the root directory of the USB storage device. You may click **Open** to view the file.

3. Export test results.

    a. Click **Export** to the **Backup** page**.**

    b. Select a partition and export format. Click **Backup** to export the network test results to the USB storage device.

 NOTE!

- The packet size is 1520 byes by default and can be changed as needed.
- The backup file of the captured packets is named in *NIC name_time*.pcap format.
- Packets cannot be captured if it is already started on the Web interface.
- If you use PPPoE, a virtual NIC will appear in the list after the dial-up succeeds, and you may capture packets sent to and from this NIC.

Network Settings

Click **Maintain > Network Info > Network** to view network settings.

Network Statistics

Click **Maintain > Network Info > Network Statistics.** Bandwidth usage statistics are displayed.

Type	Bandwidth
IP Camera	7936Kbps
Remote Live View	0bps
Remote Playback	0bps
Idle Receive Bandwidth	312Mbps
Idle Send Bandwidth	320Mbps

> **NOTE!**
> - Insufficient receiving bandwidth (**Idle Receive Bandwidth**) may cause the connected cameras to be offline.
> - When the sending bandwidth (**Idle Send Bandwidth**) is insufficient, remote live view, playback or download may fail on the NVR.

Log Query

Logs contain information about user-performed operations and device status. By analyzing logs, you can keep track of device operation status and view detailed alarm information.

1. Click **Maintain > Log > Log Search.**

2. Set query conditions, including the start and end times, main type and sub type.

3. Click **Query**.

Start Time	2019-05-17 00:00:00 ˅					
End Time	2019-05-17 23:59:59 ˅					
Main Type	All ˅					
Sub Type	All Types ˅					
Username	Operation Time	Camera	Play	Main Type	Sub Type	Details
	2019-05-17 10:18:26	D3	▶	Alarm	Motion Detection Started	📄
admin	2019-05-17 10:18:10		—	Operation	Quick Search IP Camera	📄
	2019-05-17 10:17:54	D3	▶	Alarm	Motion Detection Ended	📄
	2019-05-17 10:17:34	D3	▶	Alarm	Motion Detection Started	📄
	2019-05-17 10:17:26	D3	▶	Alarm	Motion Detection Ended	📄
	2019-05-17 10:17:22	D4	▶	Alarm	Motion Detection Started	📄
	2019-05-17 10:17:21	D4	▶	Alarm	Motion Detection Ended	📄
	2019-05-17 10:16:21	D3	▶	Alarm	Motion Detection Started	📄

< > 1 / 452 →

4. If ▶ is displayed under **Play**, you may click ▶ to view the recording that started one minute before the alarm time and ended ten minutes after the alarm time. ▬ means this function is not available.

5. To export logs to an external storage device, click **Export**, set the export destination and format, and then click **Backup**.

System Restoration

Use this function to restore some or all factory default settings. The NVR will restart automatically to complete this operation. Recordings and operation logs will not be deleted.

1. Click **Maintain > Restore.**

2. Click **Default** to restore factory default settings except network and user settings, or click **Factory Default** to restore all factory default settings.

Automatic Maintenance

Set the NVR to restart as scheduled and delete files (including recordings and snapshots) as needed. Only admin can perform this operation.

1. Click **Maintain > Auto-Function.**

2. Set an auto-restart time, and choose a way to delete files automatically.

| Auto-Restart | Never | 02:00 | |
| Auto-Delete File(s) | Never | | day(s) ago |

Note: Auto-Delete File(s) automatically deletes recordings and images saved on hard disk.

(i) **CAUTION!**

Files deleted automatically cannot be recovered.

System Upgrade

Upgrade the device locally (using an upgrade file saved in a USB storage device) or by cloud (through a cloud server).

(i) **CAUTION!**

Make sure power is not interrupted during upgrade. A power failure during system upgrade may cause startup failure. Use an Uninterrupted Power Supply (UPS) if necessary.

NVR Upgrade

1. Click **Maintain > Upgrade**.

2. Choose **Cloud** or **Local**.

● Cloud upgrade

Click **Check for Update** to see whether a new version is available. Click **Upgrade** to start upgrade if a newer version is displayed.

- Local upgrade

Select the directory where the upgrade file is, click **Upgrade** to start upgrade.

Camera Upgrade

Click **Check** to see if the version of the connected IP camera is up to date.

You may upgrade cameras by cloud (🔵) or by disk (🔵) one by one, or select multiple cameras and then click **Upgrade by Cloud** or **Upgrade By Disk** to upgrade cameras in batches.

Hard Disk Detection

S.M.A.R.T. Test

Click **Maintain > HDD > S.M.A.R.T. Test** to do S.M.A.R.T. test.

S.M.A.R.T. (enabled by default) checks the head, platter, motor, and circuit of hard disks to evaluate their health status. The overall evaluation results include **Healthy, Failure,** and **Bad Sectors**. It is recommended to replace the disk immediately if the status is **Failure**.

☐ Continue to use the disk when it fails to pass evaluation.								
Select Disk	Slot1	⌄						
Test Type	Short	⌄						
Test Status	Not tested		Disk Temperature(℃)		34			
Vendor	TOSHIBA		Operation Time(day)		501			
Model	TOSHIBA MD04ABA400V		Self-Evaluation		Pass			
Firmware Version	FP1T		Overall Evaluation		Healthy			
ID	Attribute Name		Status	Flag	Threshold	Value	Worst	Raw Value
1	Raw_Read_Error_Rate		Healthy	0x000b	50	100	100	0
2	Throughput_Performance		Healthy	0x0005	50	100	100	0
3	Spin_Up_Time		Healthy	0x0027	1	100	100	5228
4	Start_Stop_Count		Healthy	0x0032	0	100	100	25
5	Reallocated_Sector_Count		Healthy	0x0033	50	100	100	0

> **NOTE!**
> - Some hard disks only support some of the test items.
> - The system provides three test types: Short, Extended, and Conveyance. Extended tests detect more thoroughly and thus take longer time than Short tests. Conveyance tests mainly detect data transmission problems.

> **CAUTION!**
> Using a faulty disk is risky. Faulty disks should be replaced immediately. Contact your local dealer for information about hard disks.

Bad Sector Detection

Bad sector detection checks for bad sectors in hard disks.

1. Click **Maintain > HDD > Bad Sector Detect.**

2.   Select the desired disk and detection type, and then click **Detect** to start detection. Click **Stop** if you want to stop.

ⓘ   **CAUTION!**

The detection stops automatically when the error count reaches 100.

One-Click Collect

Collect the diagnosis information of IPC and NVR with one click.

IPC diagnosis info	All	✓ NVR Diagnosis Info
Collect Time	3 day	
Export	Information to collect includes NVR diagnosis info, IPC diagnosis info, and operation logs.The export may take a long time if you choose All.	

15 Shutdown

There are two ways to shut down the NVR.

- Long-press the power button ⊚ on the front panel for around

  three seconds till an on-screen message appears, and then click **Yes**,

  the NVR will be shut down.

NOTE!

This shutdown operation can be performed only when you have logged in to the system.

- Press the button switch on the rear panel will shut down the NVR.

CAUTION!

Unsaved settings will be lost if the NVR is shut down unexpectedly, for example, due to a power failure. An incorrect shutdown during a system upgrade may cause startup failures.

Part II Web-Based Operations

1 Before You Begin

You may access and manage your NVR remotely using a web browser on a PC (through the Web interface). Check the following before you begin:

- Access will be authenticated during login, and operation permissions will be required.

- The PC is operating properly and has a network connection to the NVR.

- The PC uses an operating system of Windows 7 or later.

- Chrome 60 or later is recommended. You may also use Firefox 60 or later, Microsoft Internet Explorer 10.0 or later, Edge 79 or later.

- A 32-bit or 64-bit Web browser is required if you are using a 64-bit operating system.

> **NOTE!**
> - The parameters that are grayed out on the Web GUI cannot be modified. The parameters and values displayed may vary with NVR model.
> - The figures are for illustration purpose only and may vary with NVR model.

2 Login

2-1 with IP address

1. Open a Web browser on your PC and browse to the login page by entering the IP address (**192.168.1.30** by default) of your NVR.

    You may need to install a plug-in as prompted at your first login. Close the Web browser when the installation starts.

2. In the login dialog box, enter the correct username and password (**123456** for admin) and then click **Login**.

> ⓘ **CAUTION!**
>
> The default password is intended only for your first login. We strongly recommend you set a strong password to ensure account security.
>
> - Strong: contains at least 8 characters from at least three of the four types: upper-case letter, lower-case letter, special character, and digit.
> - Weak: contains at least 8 characters from two of the four types: upper-case letter, lower-case letter, special character, and digit.

2-2 with Cloud Account

Register an account through www.myrevocloud.com and add the NVR to your account by entering the register code and device name (see P2P section on page 126).

3 Live View
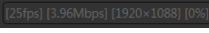
The **Live View** page is displayed when you are logged in. The following figure shows an example.
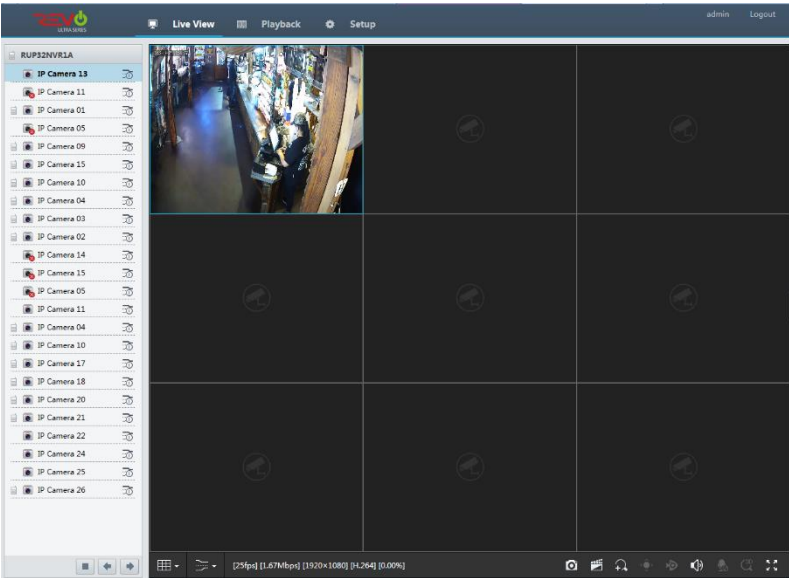
Table 3–1 Live View Window Control Buttons

Button	Description	Button	Description
	Two-way audio	/	Main/Sub stream
/	Start or stop live view in all windows	/	Previous and next screen
	Switch screen layout		Full screen

Button	Description	Button	Description
⊒	Select stream type	[25fps] [3.96Mbps] [1920×1088] [0%]	Shows the current frame rate, bit rate, resolution, and packet loss rate
📷	Take a snapshot	⊕	Start zoom
🎞	Local recording	🔊 / 🔇	Turn on or off audio; adjust sound volume.
🎤 / 🎤	Adjust MIC volume	C⁹	3D positioning
◈‹ / ◈›	Open or close the control panel	_	_

📝 **NOTE!**

- The ▦ icon means two-way audio is available. Click to start two-way audio with the NVR or a camera (depending on where the icon is displayed).
- Only the main stream �📅 is displayed when the camera is offline or it supports only one stream.
- Snapshots are saved in a snapshot file folder named by the IP address, and the snapshot file is named in this format: *Camera ID_ time*. By default, snapshots are saved in this directory: \Snap\IP*Camera ID_time*. The time is in YYYYMMDDHHMMSSMS format.
- Local recordings are saved in a recording file folder named by the IP address, and the recording file is named in this format: *C*amera ID_S *recording start time*_E *recording end time*. By default, recordings are saved in this directory: \Record*IP**Camera ID_*S *recording start time*_E *recording end time*. The recording start and end times are in YYYYMMDDHHMMSSMS format.

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4 Playback

Click **Playback** on the top to show the **Playback** page. The following figure shows an example.
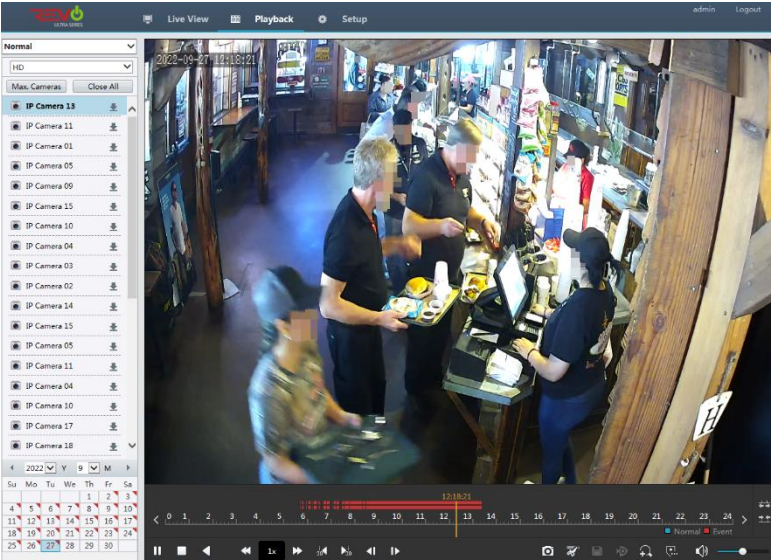
Table 4–1 Playback Control Buttons

Button	Description	Button	Description
▶ / �II	Play/Pause	■	Stop
◀	Reverse	◀◀ / ▶▶	Slow down or speed up
⏮30 / ⏭30	Rewind or forward 30 seconds	◀I / I▶	Rewind or forward by frame
< / >	Previous or next period	✂ / ✂	Clip video/pause
💾	Save video clip	📷	Take a snapshot
🔍	Zoom	🔊 ━━●━	Adjust sound

Button	Description	Button	Description
			volume; turn on or off sound

5 Configuration

Click **Setup** on the top, and then click the menus on the left to configure parameters.

Appendix A Typical Applications

Typical Application 1

The NVR, IP cameras, and PC are connected on a private network (or LAN). The IP cameras can be connected to the NVR directly or via a switch. And you manage the NVR and the connected IP cameras through the monitor or using a web browser on the PC.

Typical Application 2
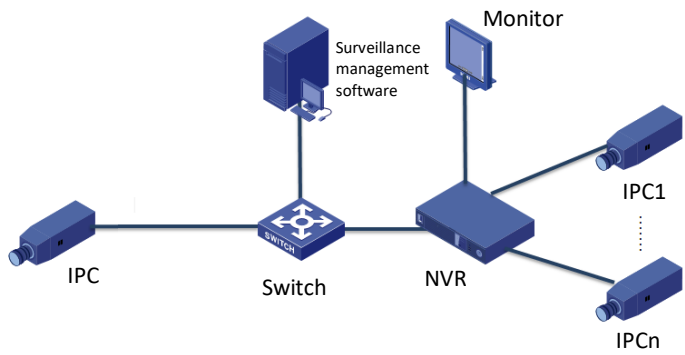
The NVR, IP cameras, and PC are connected on a private network (or LAN). The IP cameras can be connected to the NVR directly or via a switch. The PC is installed with surveillance management software. You can manage the NVR and the connected IP cameras using the surveillance software or through the monitor.

Typical Application 3
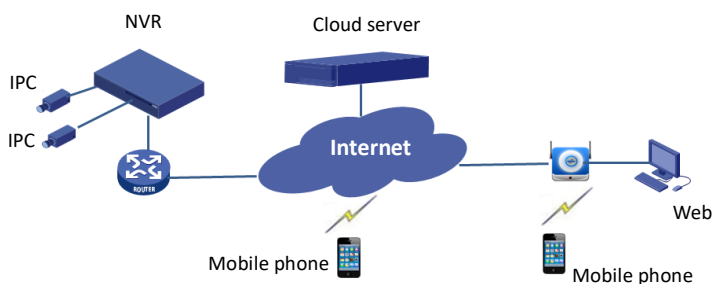
The NVR and the connected IP cameras are located on a private network (or LAN), and you manage these devices through the cloud server, a cloud solution for device management over Internet. After registering a cloud account and properly configuring your network devices (including router), you can manage your NVR and the connected IP cameras from a PC or a mobile phone.

Appendix B Acronyms

Acronym	Description
CBR	Constant Bit Rate
DDNS	Dynamic Domain Name Service
DHCP	Dynamic Host Configuration Protocol
DST	Daylight Saving Time
DVS	Digital Video Server
FTP	File Transfer Protocol
HDMI	High Definition Multimedia Interface
HTTPS	Hypertext Transfer Protocol Over Secure Sockets Layer
IPC	IP Camera
JPEG	Joint Photographic Experts Group
MTU	Maximum Transfer Unit
NAT	Network Address Translation
NIC	Network Interface Card
NTP	Network Time Protocol
NVR	Network Video Recorder
ONVIF	Open Network Video Interface Forum
PoE	Power over Ethernet
PPPoE	Point-to-Point Protocol over Ethernet
PTZ	Pan, Tilt, Zoom
P2P	Peer-to-Peer
RTSP	Real-Time Streaming Protocol
SDK	Software Development Kit
S.M.A.R.T.	Self-Monitoring, Analysis and Reporting Technology
UPnP	Universal Plug-and-Play
USB	Universal Serial Bus
VGA	Video Graphics Array
VBR	Variable Bit Rate

Appendix C FAQs

Problem	Possible Cause and Solution
Forgot the login password	Click **Forgot Password** in the login page as admin, then follow the on screen instructions to retrieve password.
The Web plugin (ActiveX) cannot be loaded.	• Close your web browser when the installation starts. • Disable the firewall and close the anti-virus program on your computer. • Enable your Internet Explorer (IE) to check for newer versions of the stored pages every time you visit the webpage (**Tools > Internet Options > General > Settings**). • Add your NVR's IP address to the trusted sites in your IE (**Tools > Internet Options > Security**). • Add your NVR's IP address to the Compatibility View list in your IE (**Tools > Compatibility View Settings**). • Clear your IE's cache.
No images are displayed in live view on the Web interface.	Check if the bit rate is 0Mbps in the live view window. • If yes, check if the firewall has been disabled, and the anti-virus program has been stopped on your computer. • If not, maybe it is because the graphics card driver on your computer is not working properly. Try installing the driver again.

Problem	Possible Cause and Solution
A camera is offline, and **No Link** is displayed.	Click **Maintain > System Info > Camera.** The cause is displayed under **Status**. Common causes include disconnected network, incorrect username or password, weak password, insufficient bandwidth. • Check network connection and network configurations. • If it indicates incorrect username or password, check that the camera password set in the NVR is the one used to access the camera's Web interface. • If it indicates denied access for weak password, log in to the camera's Web interface and set a strong password. • If it indicates insufficient bandwidth, delete other online IP devices in the NVR.
The NVR displays live video for some cameras and **No Resource** for others.	• Set the camera to encode the sub stream, and decrease its resolution to D1. • Set the NVR to use the sub stream first for live view.
A camera goes online and offline repeatedly.	• Check if network connection is stable. • Upgrade the firmware for the camera and the NVR. Contact your dealer for the latest versions.
Live view is normal, but the recording cannot be found.	• Check that a recording schedule has been properly configured. • Check if the time and time zone configured in the NVR are correct. • Check if the hard disk storing the recording has been damaged. • Check if the desired recording has been overwritten.

Problem	Possible Cause and Solution
Motion detection is not effective.	• Check that motion detection is enabled, and the motion detection area is properly configured. • Check that detection sensitivity is properly set. • Check that the arming schedule is properly configured.
A hard disk cannot be identified by the NVR.	• Use the power adapter delivered with your NVR. • Power down the NVR and then mount the hard disk again. • Try another disk slot. • The disk is not compatible with your NVR. Contact your dealer for a list of compatible disk models.
The mouse does not work.	• Use the mouse delivered with your NVR. • Make sure no cable is extended.