QUALVISION

Network Video Recorder

User Manual

Legal Information

About this Manual

The Manual includes instructions for using and managing the Product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version of this Manual at the Qualvision website (***https://www.qualvision.cn***).

Please use this Manual with the guidance and assistance of professionals trained in supporting the Product.

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In The Event Of Any Conflicts Between This Manual And The Applicable Law, The Later Prevails.

Regulatory Information

FCC Information

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
FCC compliance: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Conditions
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

EU Conformity Statement

This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the EMC Directive 2014/30/EU, LVD Directive 2014/35/EU, the RoHS Directive 2011/65/EU.

2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: ***http://www.recyclethis.info***.

2006/66/EC (battery directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: ***http://www.recyclethis.info***.

Industry Canada ICES-003 Compliance

This device meets the CAN ICES-3 (A)/NMB-3(A) standards requirements.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 **Danger**	Indicates a hazardous situation which, if not avoided, will or could result in death or serious injury.
 **Caution**	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
 **Warning**	Remind the matters to be noted in the operation, improper operation may lead to data loss or equipment damage.
 **lote**	Provides additional information to emphasize or supplement important points of the main text.

Safety Instruction

- Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.
- In the use of the product, you must be in strict compliance with the electrical safety regulations of the nation and region.
- Firmly connect the plug to the power socket. Do not connect several devices to one power adapter. Power off the device before connecting and disconnecting accessories and peripherals.
- Shock hazard! Disconnect all power sources before maintenance.
- The equipment must be connected to an earthed mains socket-outlet.
- The socket-outlet shall be installed near the equipment and shall be easily accessible.
- ϟ Indicates hazardous live and the external wiring connected to the terminals requires installation by an instructed person.
- Never place the equipment in an unstable location. The equipment may fall, causing serious personal injury or death.
- Input voltage should meet the SELV (Safety Extra Low Voltage) and the LPS (Limited Power Source) according to the IEC62368.
- High touch current! Connect to earth before connecting to the power supply.
- If smoke, odor or noise rise from the device, turn off the power at once and unplug the power cable, and then please contact the service center.
- Use the device in conjunction with an UPS, and use factory recommended HDD if possible.
- This product contains a coin/button cell battery. If the battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death.
- This equipment is not suitable for use in locations where children are likely to be present.
- CAUTION: Risk of explosion if the battery is replaced by an incorrect type.
- Improper replacement of the battery with an incorrect type may defeat a safeguard (for example, in the case of some lithium battery types).
- Do not dispose of the battery into fire or a hot oven, or mechanically crush or cut the battery, which may result in an explosion.
- Do not leave the battery in an extremely high temperature surrounding environment, which may result in an explosion or the leakage of flammable liquid or gas.
- Do not subject the battery to extremely low air pressure, which may result in an explosion or the leakage of flammable liquid or gas.
- Dispose of used batteries according to the instructions.
- Keep body parts away from fan blades and motors. Disconnect the power source during servicing.
- Keep body parts away from motors. Disconnect the power source during servicing.

Preventive and Cautionary Tips

Before connecting and operating your device, please be advised of the following tips:

- The device is designed for indoor use only. Install it in a well-ventilated, dust-free environment without liquids.
- Ensure recorder is properly secured to a rack or shelf. Major shocks or jolts to the recorder as a result of dropping it may cause damage to the sensitive electronics within the recorder.
- The equipment shall not be exposed to dripping or splashing and that no objects filled with liquids shall be placed on the equipment, such as vases.
- No naked flame sources, such as lighted candles, should be placed on the equipment.
- The ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, table-cloths, curtains, etc. The openings shall never be blocked by placing the equipment on a bed, sofa, rug or other similar surface.
- For certain models, ensure correct wiring of the terminals for connection to an AC mains supply.
- For certain models, the equipment has been designed, when required, modified for connection to an IT power distribution system.
-  Identifies the battery holder itself and identifies the positioning of the cell(s) inside the battery holder.
- + identifies the positive terminal(s) of equipment which is used with, or generates direct current. + identifies the negative terminal(s) of equipment which is used with, or generates direct current.
- Keep a minimum 200 mm (7.87 inch) distance around the equipment for sufficient ventilation.
- For certain models, ensure correct wiring of the terminals for connection to an AC mains supply.
- Use only power supplies listed in the user manual or user instruction.
- The USB port of the equipment is used for connecting to a mouse, keyboard, USB flash drive, or Wi-Fi dongle only.
- Use only power supplies listed in the user manual or user instruction.
- Do not touch the sharp edges or corners.

Contents

1. Overview of NVR

1.1 Front Panel

NVR Front Panel, as shown in figure 1-1 to figure 1-8.

Figure 1-1 Front panel of M1 case

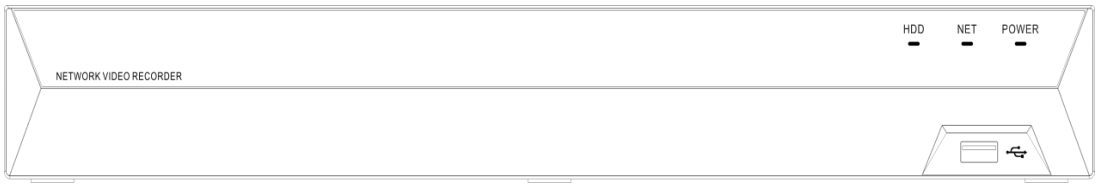


Figure 1-2 Front panel of N1 case

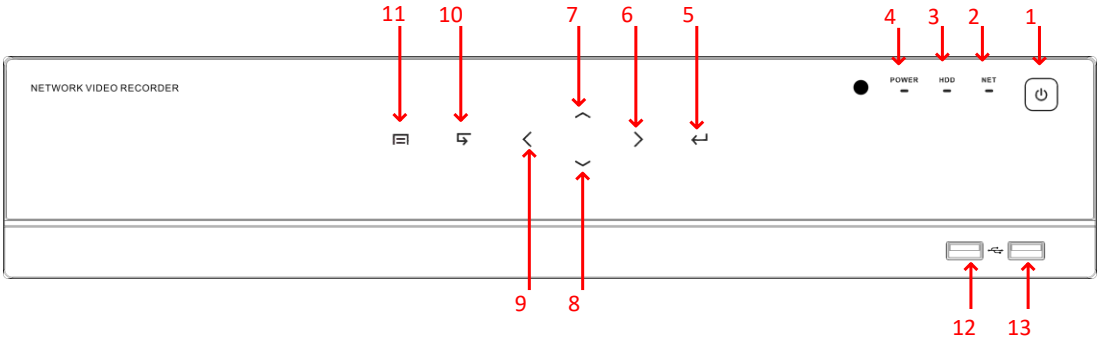


Figure 1-3 Front panel of W1 case

No.	Function Description
1	Power switch
2	Network status light
3	Hard disk status light
4	Power status light
5	Enter
6	Right
7	Up
8	Down
9	Left
10	Backspace
11	Setting Menu
12/13	USB interface

Table 1-1 Description of front panel

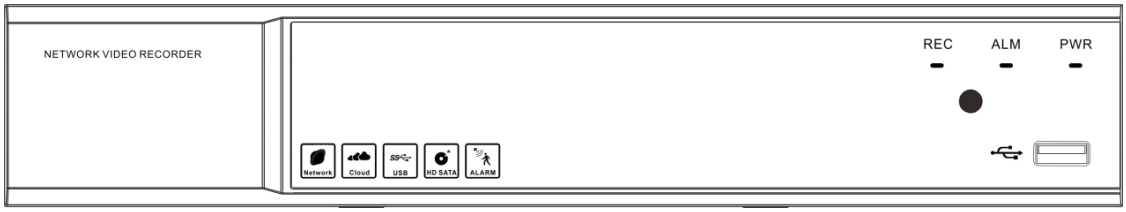


Figure 1-4 Front panel of D1&G1 case

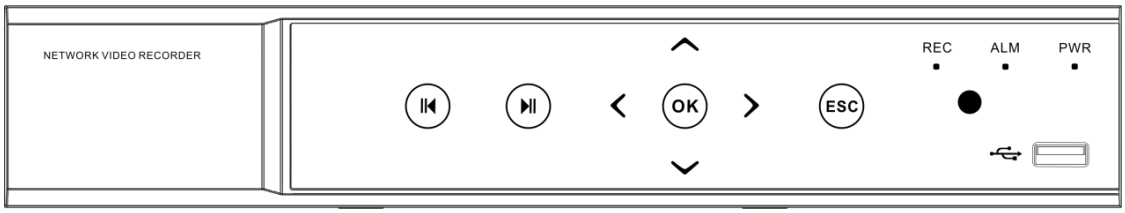


Figure 1-5 Front panel of D3 case

Figure 1-6 Front panel of D5 case

Figure 1-7 Front panel of D6 case

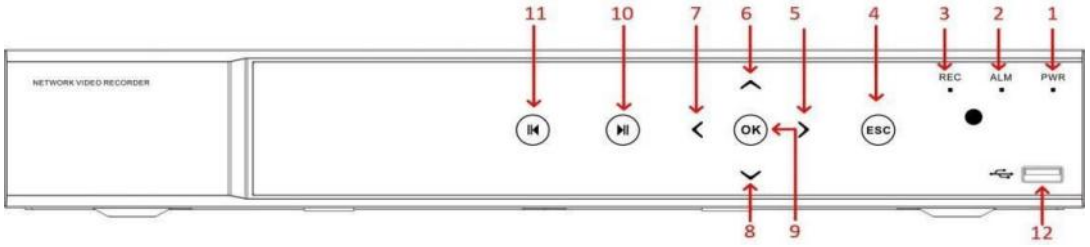


Figure 1-8 Front panel of G3 case

No.	Function Description
1	Power status light
2	Alarm status light
3	Record status light
4	Backspace
5	Right
6	Up
7	Left
8	Down
9	Enter
10	Start Playback
11	Backward Play

12	USB Interface

Table 1-2 Description of front panel

Note

All above drawings are for reference only.

1.2 Rear Panel

NVR Rear Panel, as shown in figure 1-9 to figure 1-15.

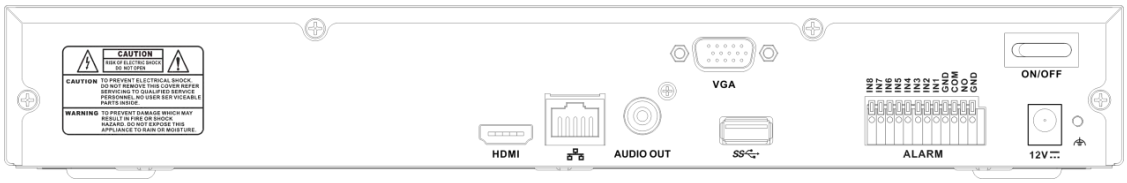


Figure 1-9 Rear panel of MX8 case

Figure 1-10 Rear panel of NX3 case

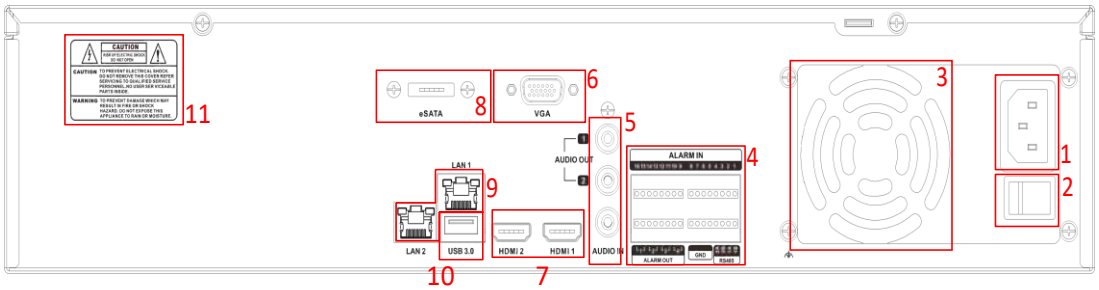


Figure 1-11 Rear panel of WX1 case

No.	Description
1	Power Input Interface
2	Power switch
3	Exhaust Fan Hole
4	Alarm in/out Interface
5	Audio in/out Interface
6	VGA interface
7	HDMI interface
8	eSATA Interface
9	RJ45 interface
10	USB 3.0 interface
11	Caution Information

Table 1-3 Description of Rear Panel

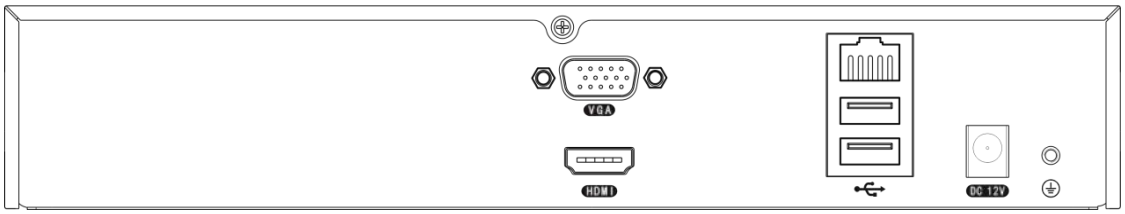


Figure 1-12 Rear panel of AXP case

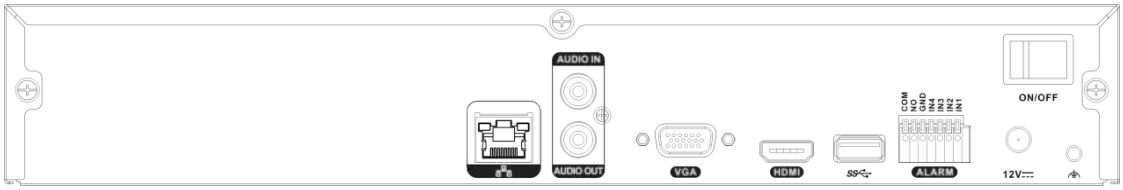


Figure 1-13 Rear panel of BXK case

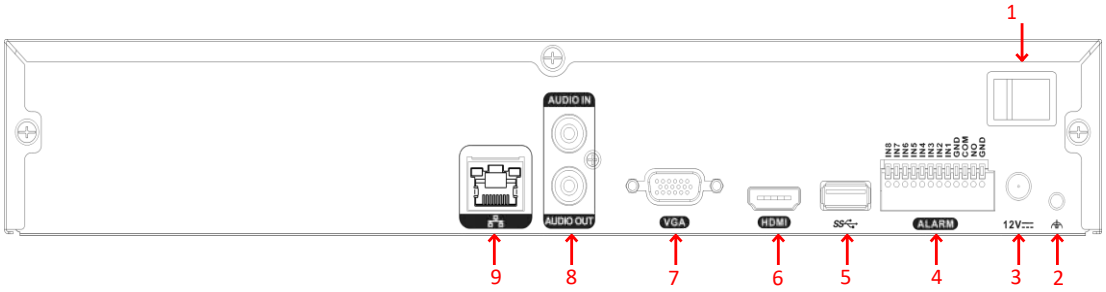


Figure 1-14 Rear panel of BXL case

No.	Description
1	Power Switch
2	Ground Hole
3	Power Input
4	Alarm Input
5	USB Interface
6	HDMI Interface
7	VGA Interface
8	Audio in/out Interface
9	RJ45 Interface

Table 1-4 Description of Rear Panel

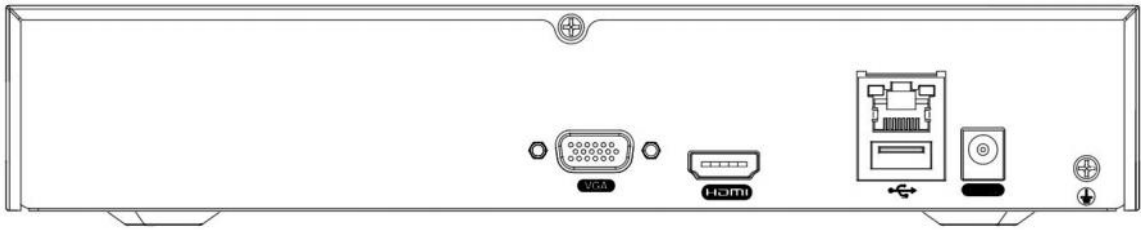


Figure 1-15 Rear panel of 7CL series

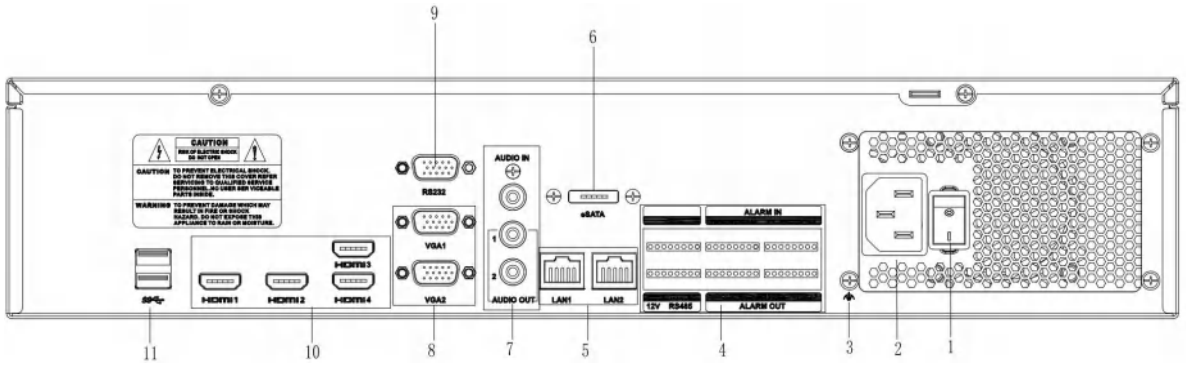


Figure 1-16 Rear panel of 6RA64P-W18 NVR

No.	Description
1	Power Switch
2	Power Input
3	Ground
4	Alarm Input
5	Network port
6	e SATA port
7	Audio IN/OUT RCA
8	VGA port
9	RS232 port
10	HDMI port
11	USB port

Table 1-5 Description of Rear Panel

Note

All above drawings are for reference only.

1.3 IR Remote Control Operations

The NVR may also be controlled with the included IR remote control, as shown bellow.Batteries (2×AAA) must be installed before operation. The IR Remote is set at the factory to control the NVR (using default Device No.) without any additional.

Steps:

Device No. is the default universal device identification number shared by the NVRs.

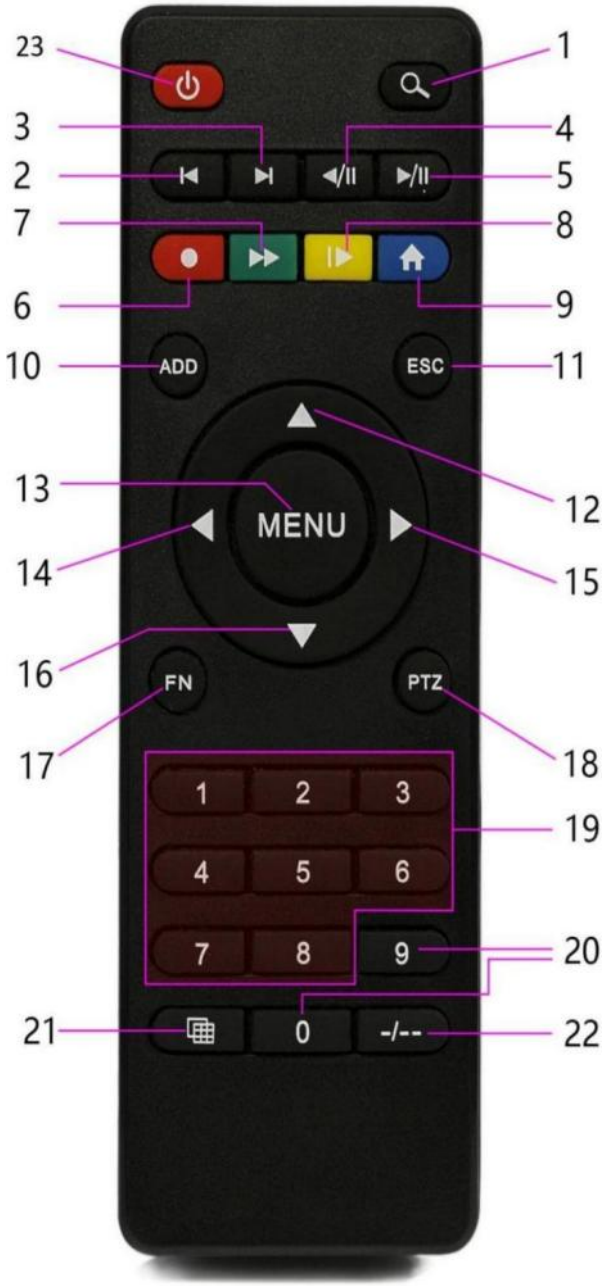


Figure 1-17 Remote Controller

Note

The remote control can only be adapted to 6 series NVR.

No.	Item	Description
1		Enter the Playback Interface
2		Backward One Frame
3		Control Step-Frame
4		Backward Playback Control Button
5		Control Playback Status
6		Quick Control All Channels Record Type
7		Control Playback Speed
8		Slow Down Playback
9		Back to Preview
10	ADD	Set Address to Match of NVR
11	ESC	Back to Preview
12/16/		Choose Function Area On the Menu/Switch Preview Channels
14/15		Choose Function Area On the Menu/Switch Preview Channels
13	MENU	Enter the Setting Menu
17	FN	Switch Control Area
18	PTZ	Quick Button of PTZ Control
19/20	Number Area	Enter Numbers/Switch Preview Channels
21		Switch Preview Channel Number
22		Choose Input Number Digits Once
23	Shutdown	Shutdown/Restart/Logout/Switch user

Table 1-6 Description of IR remote control

1.4 HDD Installation

Before installing Hard Disk (HDD), please make sure the power is disconnected with the NVR. Each capacity of Hard Disk please refer to NVR's specifications. NVR without Hard Disk still support monitoring, but no recording or playback. If you correctly install the Hard Disk, the HDD indicator will blink regularly when the NVR is on work.

Please turn off the power and then start the installation of HDD. The pictures of the installation are only for

reference.

1 or 2 HDD(s) Series

Figure 1-18 Remove the cover

Figure 1-19 Fix the HDD

Figure 1-20 Connect the power and data cables

Figure 1-21 Install the cover and screws

4 or 8 HDD(s) Series

Figure 1-22 Remove the cover

Figure 1-23 Connect the power and data cables

Figure 1-24 Fix the HDD

Figure 1-25 Install the cover and screws

Note

- If user requires higher performance HDD, it is strongly recommended to use special hard drive for security and protection
- Please do not take out hard drive when NVR is running!

1.5 SSD Installation

Before installing Hard Disk (SSD), please make sure the power is disconnected with the NVR. Each capacity of Hard Disk please refer to NVR's specifications. NVR without Hard Disk still support monitoring, but no recording or playback. If you correctly install the Hard Disk, the SSD indicator will blink regularly when the NVR is on work.

Please turn off the power and then start the installation of SSD. The pictures of the installation are only for reference.

Figure 1-26 Remove the cover

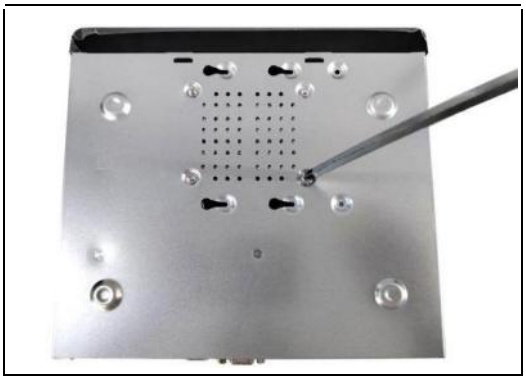


Figure 1-27 Fix the SSD

Figure 1-28 Connect the power and data cables Figure 1-29 Install the cover and screws

Note

7CL series NVR are compatible with SSD hard drive.

1.6 IP Camera and Monitor Connection

Transmit signals of IP camera to NVR by the network cable, and connect VGA port and HDMI port for output.

Note

This may not be applicable to all installation environments.

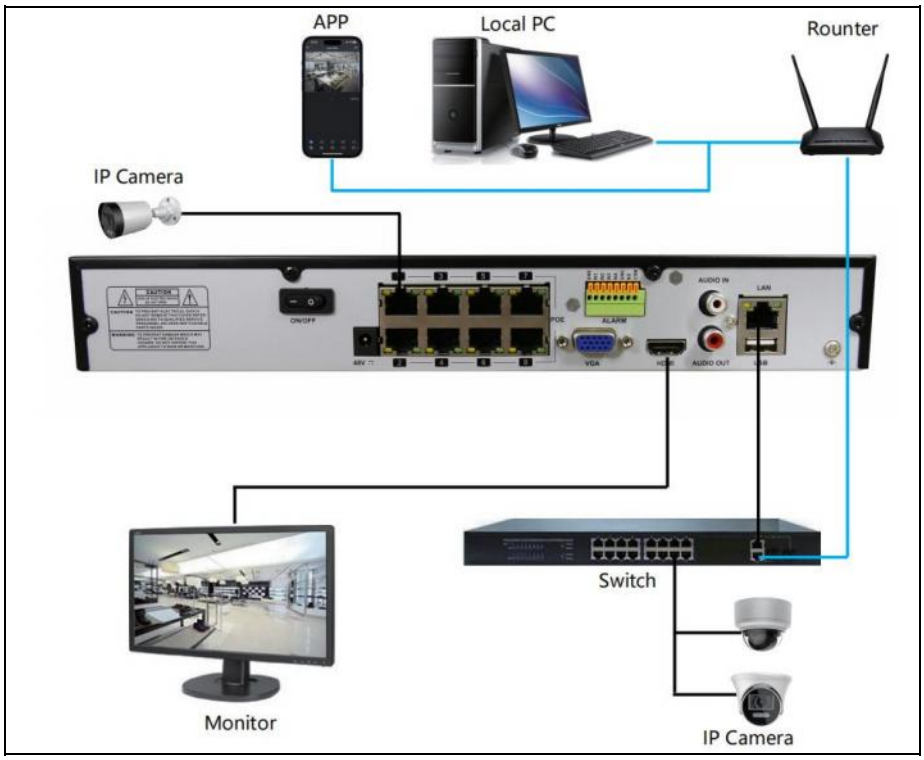


Figure 1-30 Device connection

1.7 Power Supply Connection

Please use attached power adapter to connect NVR. Before power on, make sure the cables on the audio I/O ports and network port are well connected.

Figure 1-31 Power Supply Connection

1.8 USB Mouse Operation

A regular 3-button (Left/Right/Scroll-wheel) USB mouse can also be used with this NVR. To use a USB mouse:

1. Plug USB mouse into one of the USB interfaces on the front panel of the NVR.
2. The mouse should automatically be detected. If in a rare case that the mouse is not detected, the possible reason may be that the two devices are not compatible, please refer to the recommended the device list from your provider.

Items	Action	Description
Left-Click	Single-Click	Live view: Select channel and show the quick set menu. Menu: Select and enter.
	Double-Click	Live view: Switch between single-screen and multi-screen.
	Click and Drag	Live view: Drag channel/timebar. Alarm: Select target area. Digital zoom-in: Drag and select target area.
Right-Click	Single-Click	Live view: Show Setting Menu. Menu: Exit current menu to upper level menu.
Left&Right-Click	At the same time click	Hold 5 seconds, change device resolution into the lowest.
Scroll-Wheel	Scrolling up	Menu: change the settings value to high.
	Scrolling down	Menu: change the settings value to low.

Table 1-7 Key functions of USB Mouse Operation

1.9 Input Method Description

Figure 1-32 Soft key board (1)

Figure 1-33 Soft key board (2)

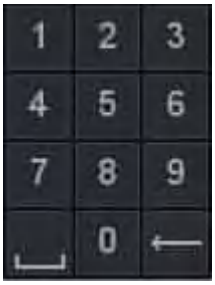


Figure 1-34 Soft key board (3)

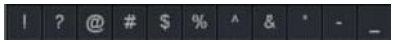
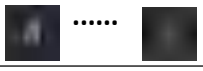
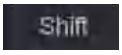
Icon	Description
	Symbols
	Number
	Enter
	Space
	English letter
	Backspace
	Lowercase/Uppercase

Table 1-8 Description of the Soft Keyboard Icons

2. Startup

2.1 Starting Up and Shutting Down the NVR

Purpose

Proper startup and shutdown procedures are crucial to expanding the life of the NVR.

Before you start

Check that the voltage of the extra power supply is the same with the NVR's requirement, and the ground connection is working properly.

Starting up the NVR

Steps:

1. Check the power supply is plugged into an electrical outlet. It is HIGHLY recommended that an Uninterruptible Power Supply (UPS) be used in conjunction with the device. The Power indicator LED on the front panel should be on, indicating the device gets the power supply.
2. Turn on the power switch on the rear panel if the device starts up for the first time, or press the button on the front panel (Not required if not). The Power indicator LED should blink or be always on indicating that the unit begins to start up.
3. After the startup you will hear a beep， the Power indicator LED stays on. A splash screen with the status of the HDD appears on the monitor. The row of icons at the bottom of the screen shows the HDD status. 'X' means that the HDD is not installed or cannot be detected.

Shutting down the NVR

Steps:

1. Right click then enter the **Shutdown** menu.
2. Go to **Quick Menu → Shutdown.**

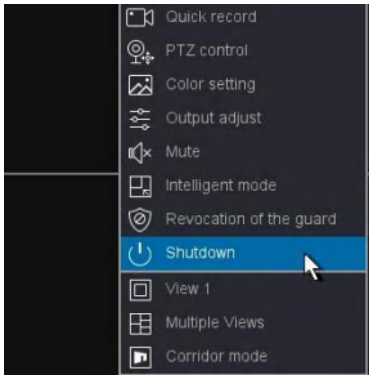


Figure 2-1 Quick Menu

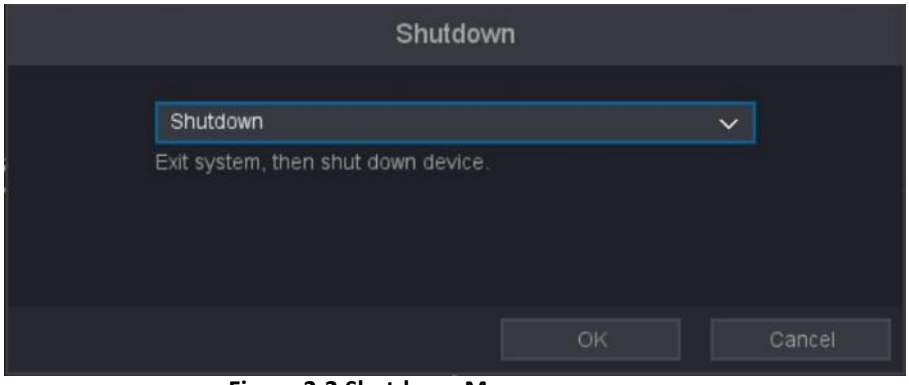


Figure 2-2 Shutdown Menu

3. Select shutdown in the drop-down box.
4. Click the **OK** button.

Figure 2-3 Shutdown Attention

Rebooting the NVR

In the Shutdown menu, you can also reboot the NVR.

Steps:

1. Right click then enter the Shutdown menu by clicking **Menu → Shutdown**.

2. Select the Logout button to lock the NVR or the Reboot button to reboot the NVR in the drop-down box.

2.2 Active Your Device

For the first-time access, you need to activate the video recorder by setting the admin password. No operation is allowed until activation is done. You can also activate the video recorder via web browser or Device Manager.

Before You Start

Power on your device.

Steps:

1. Input the same password in **Password and Confirm**.

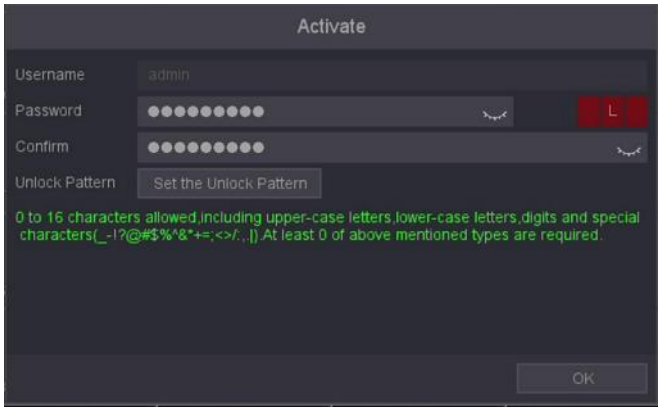


Figure 2-4 Active

Warning

Strong Password recommended-We highly recommend you create a strong password of your own choosing (Using a minimum of 8 characters, including at least three of the following categories: upper case letters, lower case letters, numbers, and special characters.) in order to increase the security of your product. And we recommend you reset your password regularly, especially in the high standard security system, resetting the password monthly or weekly can provide better protect to your products.

2. Optional: You can also set the Pattern Lock by click **Set the Unlock Pattern**.

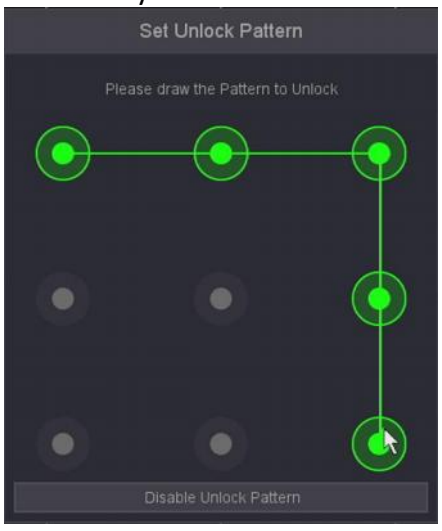


Figure 2-5 Set Unlock Pattern

3. Message 'Save successful', the password setting is complete.

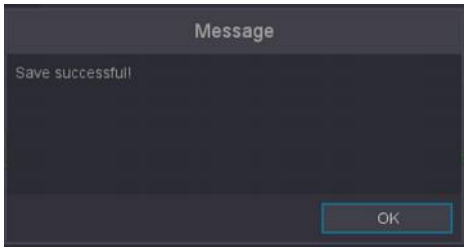


Figure 2-6 Set Message

4. Configure at least one password reset method: add a reserved email or set security questions.

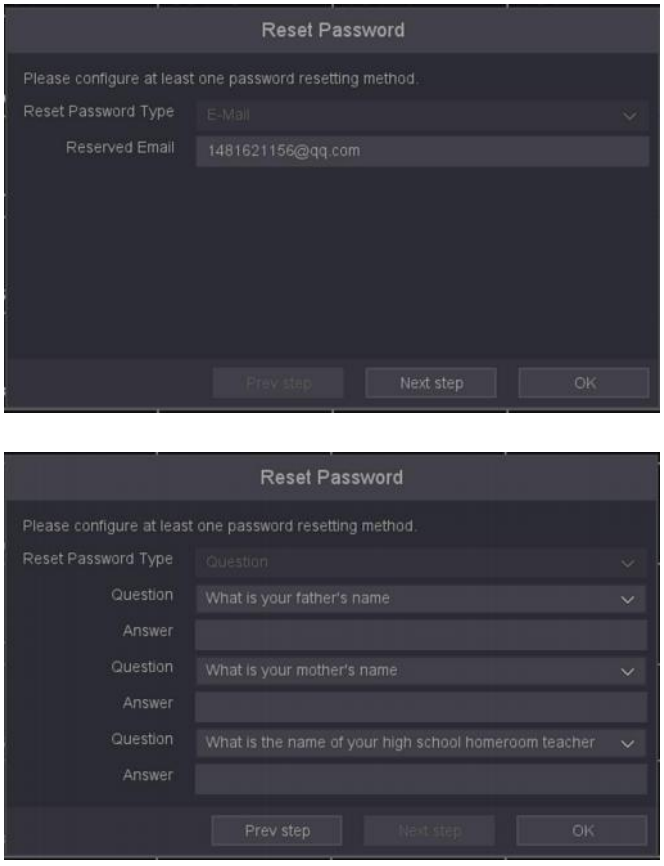


Figure 2-7 Reset Password

5. Click **OK**.

2.3 Using the Startup Wizard

Steps:

1. By default, the **Startup Wizard** starts once the NVR has loaded, as shown bellow.

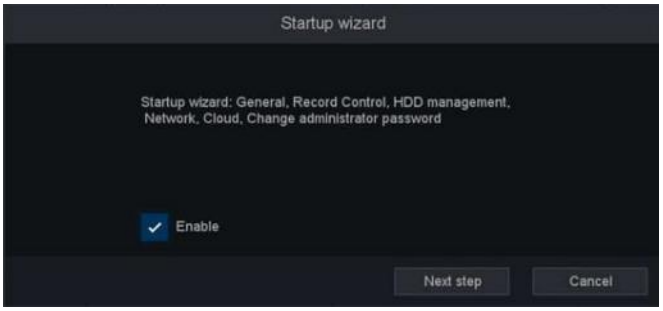


Figure 2-8 Startup Wizard

Note

The Startup Wizard can guide you through some important settings of the NVR. If you don't want to use the Startup Wizard at that moment, click the exit button. You can also choose to use the Startup Wizard next time by leaving the 'enable' checkbox checked.

2. Click **Next step** button to enter the Set Administrator Password window.

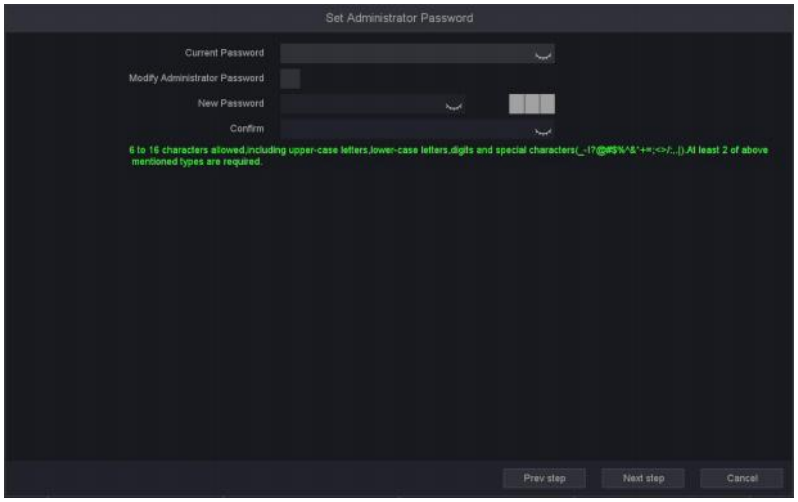


Figure 2-9 General

3. Click **Next Step** button to enter the general settings window, as shown bellow.

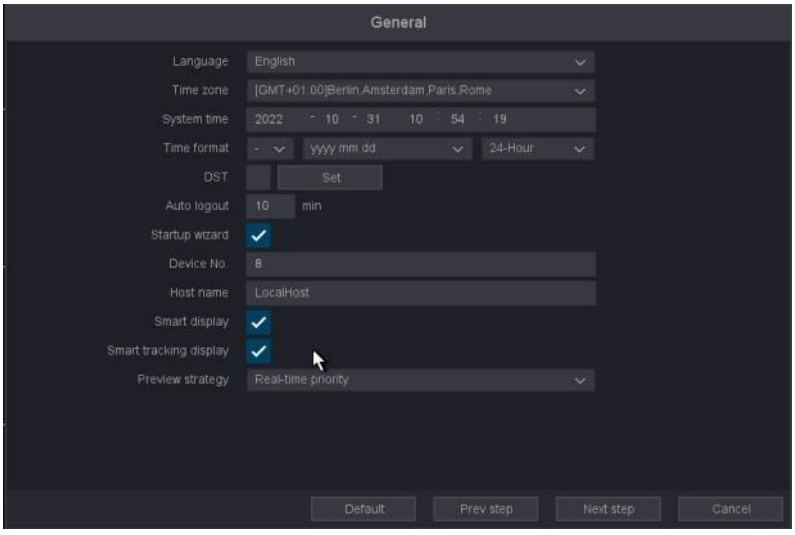


Figure 2-10 General

4. After the general settings, click **Next Step** button which takes you back to the record control **Setup Wizard** window, as shown bellow.

Figure 2-11 Record

5. After the record control settings, click **Next Step** button which takes you to the **HDD Manage** Setup Wizard window, as shown bellow.

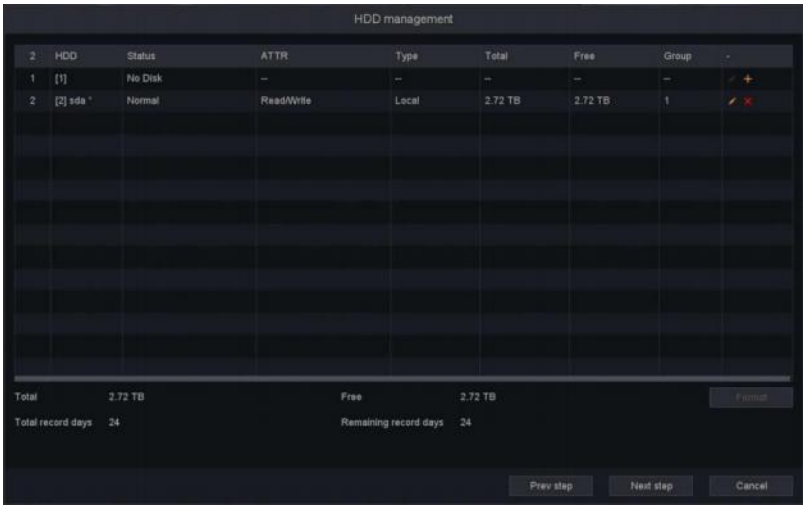


Figure 2-12 HDD Manage

6. Click **Next Step** button. You enter the Network Setup Wizard window, as shown bellow.

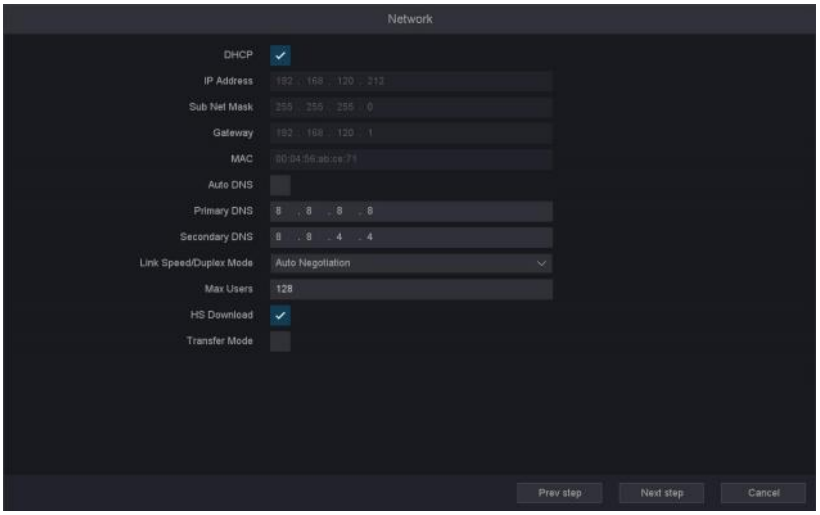


Figure 2-13 Network

Note

NVR with dual Ethernet port can select Lan1 or Lan2 to configure the network parameters individual.
Default Route recommend use the port connect to the router.

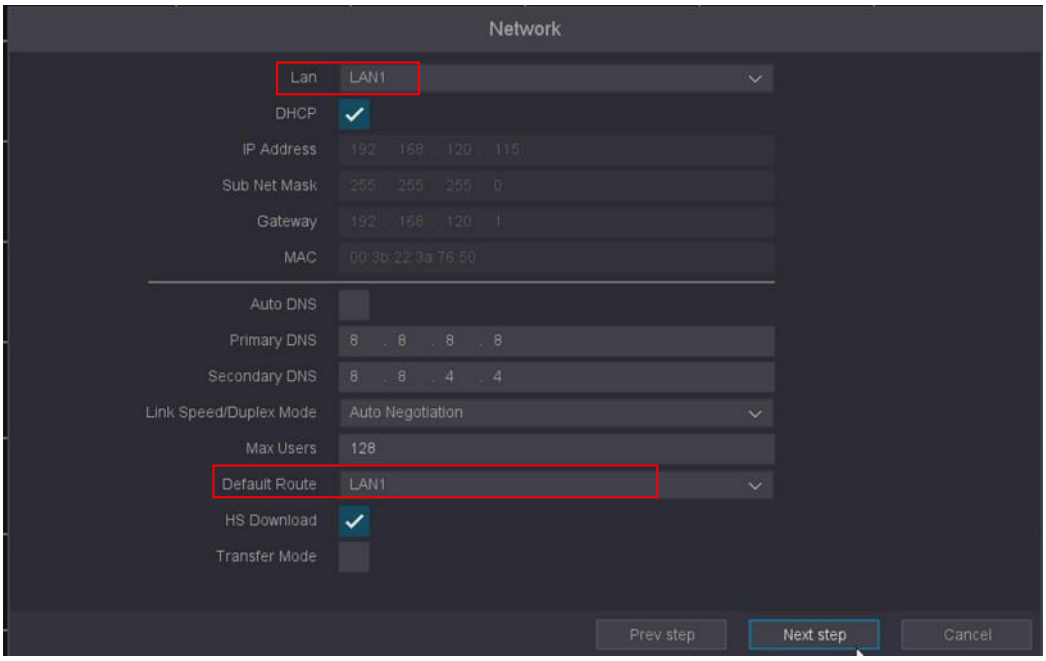


Figure 2-14 Dual Ethernet Port NVR

7. Click **Next Step** button after you configured the network parameters, you enter the cloud service Setup Wizard window, as shown bellow.

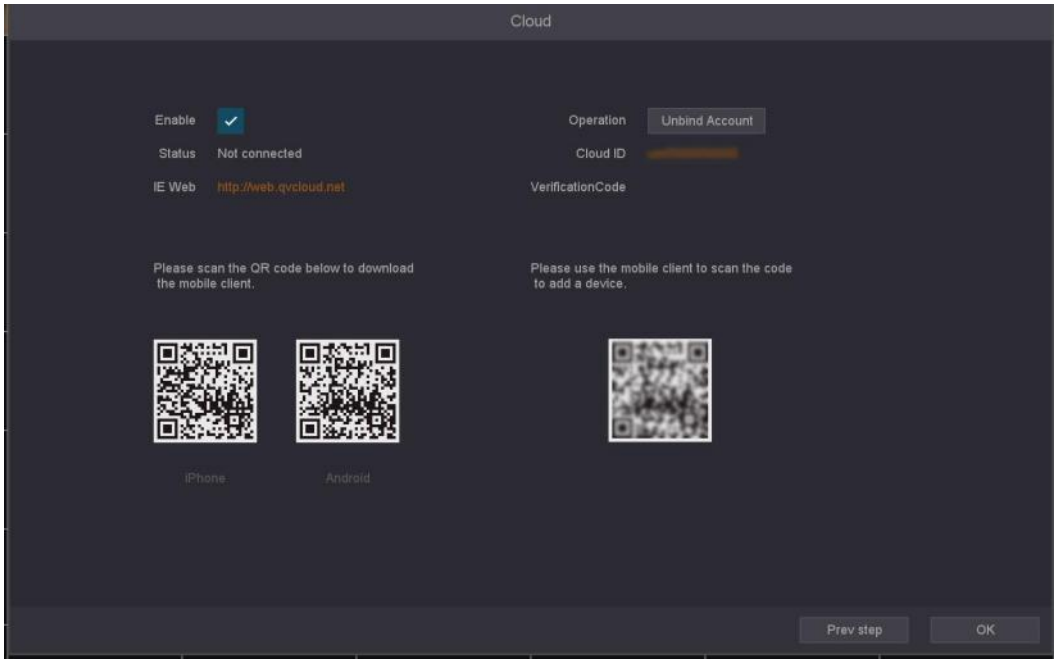


Figure 2-15 Cloud

8. Click finished button to complete the startup Setup Wizard.

2.4 Login and Logout

2.4.1 Log in via Pattern

If you set a pattern password, you can use it to log in when you enter any menu operation (it will also be used in the first step when you use the boot wizard after reboot).

Steps:

1. Click the menu you want.
2. Draw the pre-defined pattern to unlock to enter the menu operation.

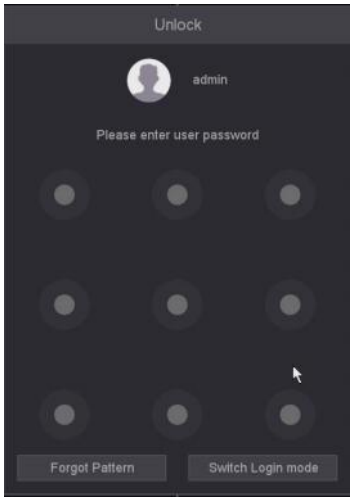


Figure 2-16 Cloud

Note

- If you have forgotten the pattern, you can click Forgot Pattern or Switch Login mode to log in via password.
- If you have drawn the wrong pattern more than 5 times, the system will lock your account for 30 minutes.

2.4.2 Log in via Password

If your video recorder has logged out, you must login before operating the menu and other functions.

Steps:

1. Select **User Name**.

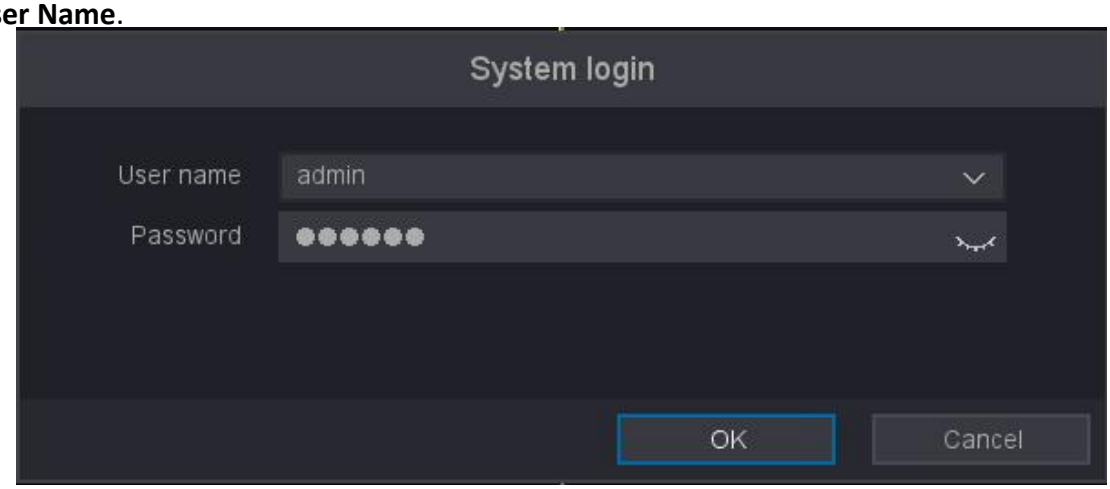


Figure 2-17 Login Interface

2. Input password.
3. Click **OK**.

Note

- When you forget the password of the admin, you can click **Forgot Password** to reset the password.
- If you enter the wrong password 6 times, the current user account will be locked for 15 min.

2.4.3 User Logout

After logging out, the monitor turns to the live view mode and if you want to do some operation, you need to enter user name and password tog in again.

Steps:

1. Right-click the preview screen interface **Shutdown** menu, or enter the 'shutdown' menu button in the upper right corner of the settings interface.
2. Select Logout in the drop-down box.
3. Click **OK**.

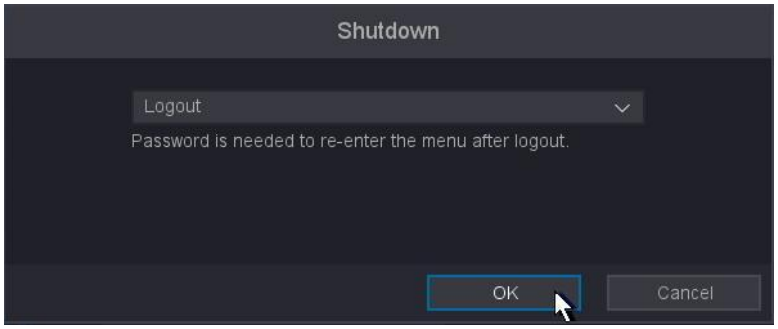


Figure 2-18 Logout

Note

- After you have logged out the system, menu operation on the screen is invalid. It is required to input a user name and password to unlock the system.

2.5 Adding the Online IP Cameras

The main function of the NVR is to connect the network cameras and record the video got from it. So before you can get a live view or record of the video, you should add the network cameras to the connection list of the device.

Before you start:

Ensure the network connection is valid and correct. For detailed checking and configuring of the network, please see Chapter Checking Network Traffic and Chapter Configuring Network Detection.

Adding the IP Cameras

OPTION 1: Auto Connect cameras

Note

- Unactivated camera: it will be activated with the protocol password and the IP address is automatically set to the same network segment as the NVR.
- Activated Camera: The activation password is automatically added if it is the same as the protocol password.
- Third-party cameras: must be on the same network segment as the NVR, added as Onvif protocol, with the same password as the protocol password.
- DHCP for automatically added private cameras will be turned off.

Steps:

1. NVR automatically search to add network cameras that have not already been add.

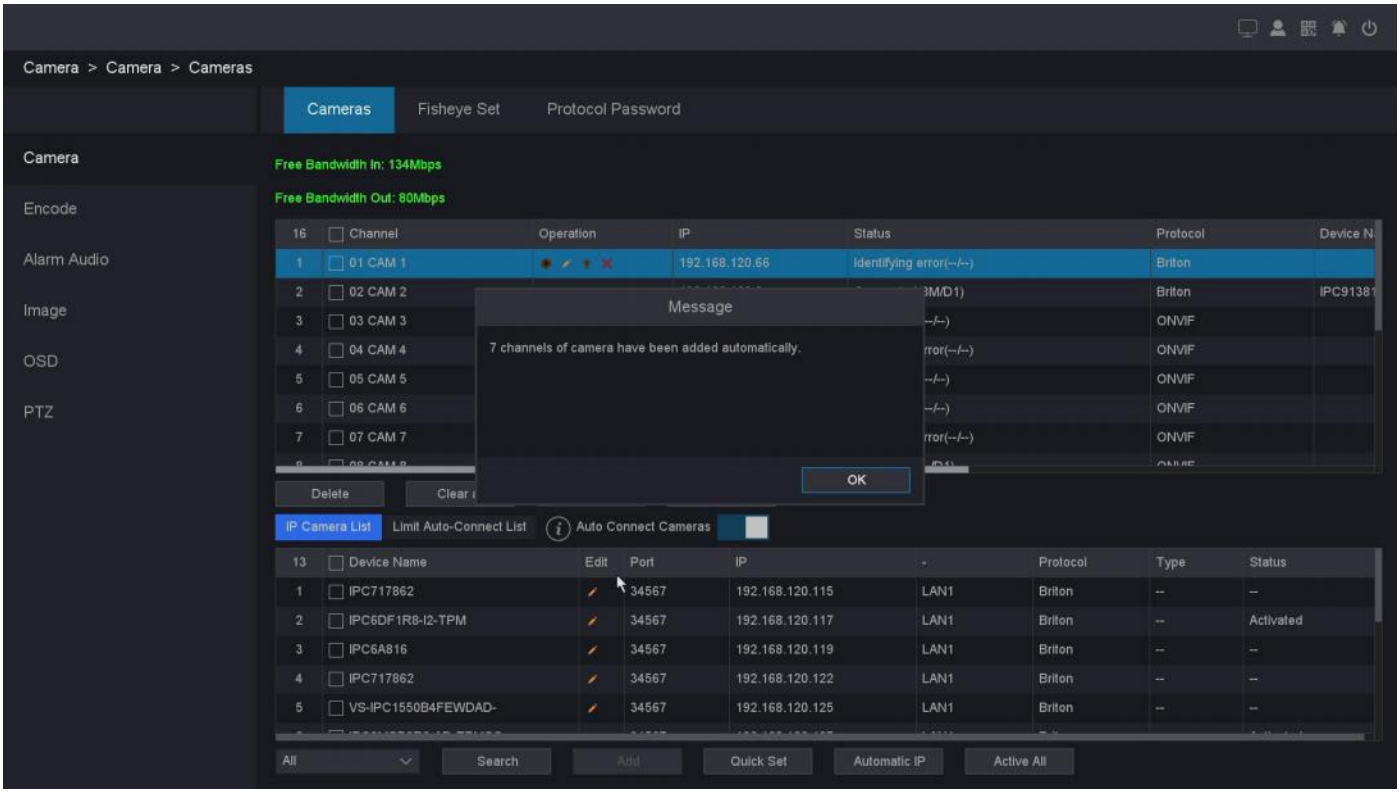


Figure 2-19 Auto Connect cameras

2. The automatically added IPC is classified into the Limit auto-connect list. You can remove the devices from the list to restore auto connection.

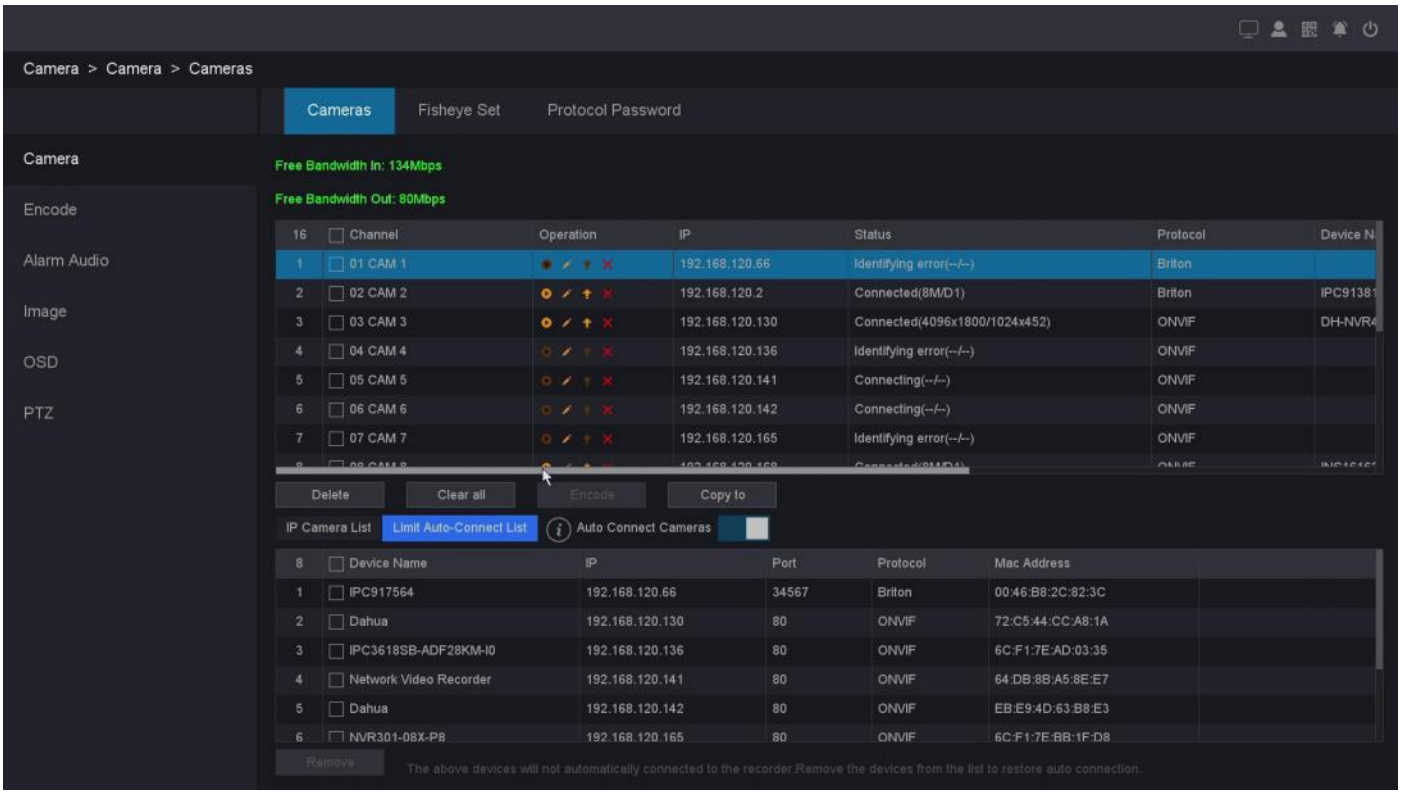


Figure 2-20 Limit Auto-Connect List

OPTION 2:

Steps:

1. Select the ‘IP Channel’ option from the right-click menu or click the '+' sign in live view mode to enter the IP camera management interface.
2. Click the '**Search**' button below, the online cameras with same network segment will be detected and displayed in the camera list.

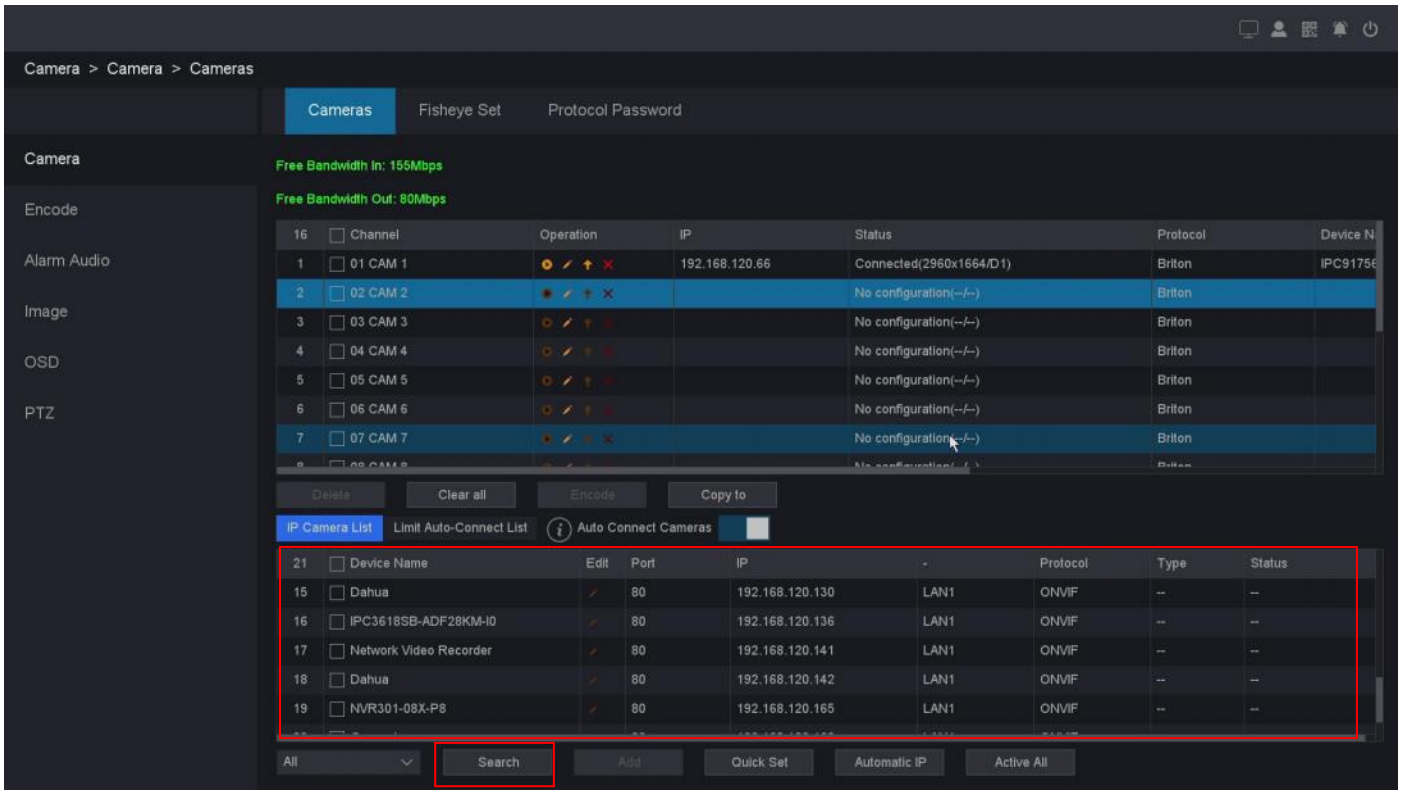


Figure 2-21 IP Camera Management

3. Select the IP camera from the list and click the ‘**Add**’ button to add the camera.

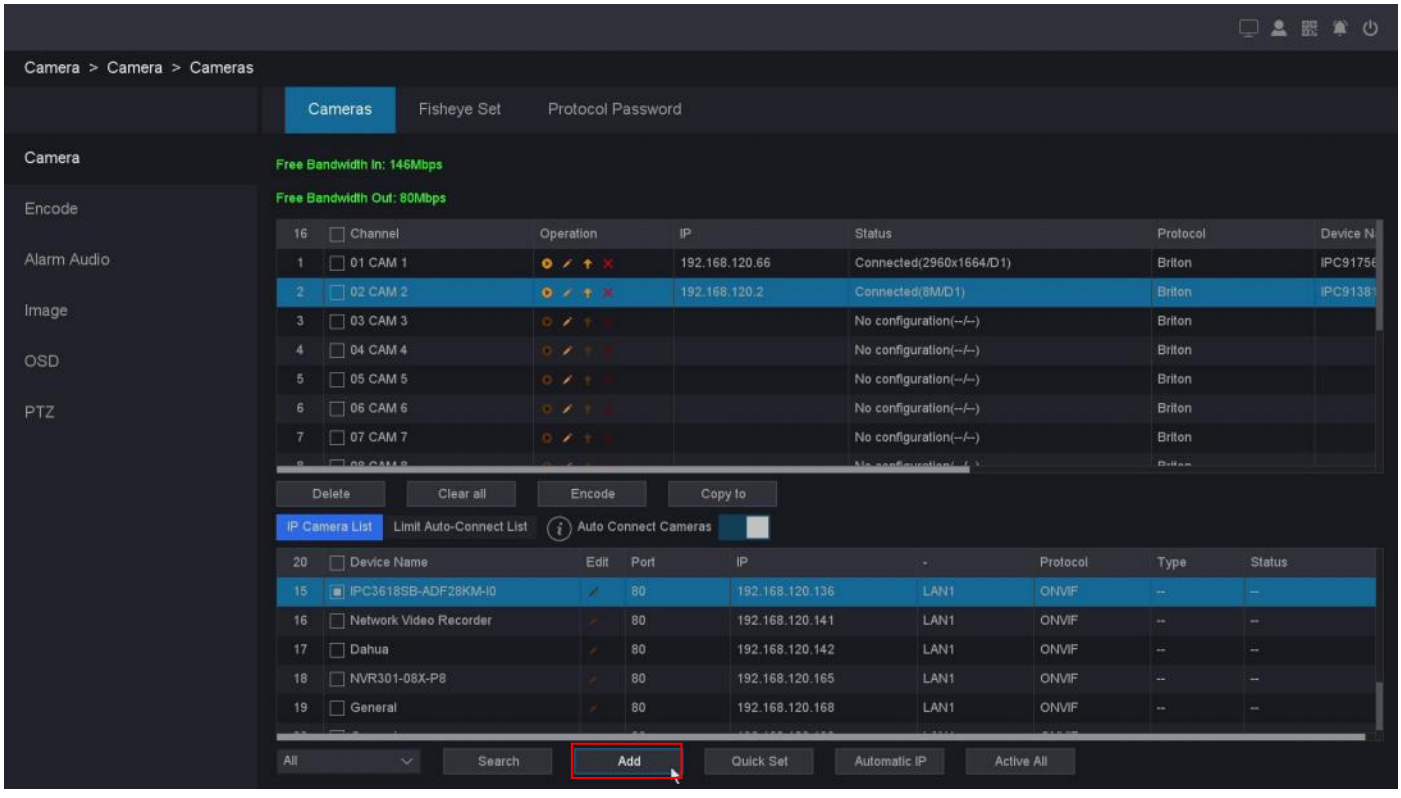


Figure 2-22 Add Camera

4. Check the status of the camera, 'Connected' means connected, 'Connecting' means connecting, 'identifying error' means the password is incorrect, except 'Connected', all others need to check the connection information to ensure that the camera can be connected normally.

Note

●If the camera does not load in the selected position after double-clicking, try deleting the information of the connection by clicking the red 'X' and then double click the IP address to add here.

Explanation of the icons:

Get the live view of the camera	Edit basic parameters of the camera	Upgrade the camera	Delete the IP camera

OPTION 3:

Steps:

1. On the IP Camera Management interface, you can also click the pencil icon ' ' to pop up the Edit IP Camera (Custom) interface.
2. If the prompt password is wrong, please modify the correct user name and password; if it has been in the "connecting" state, please modify the port or protocol.

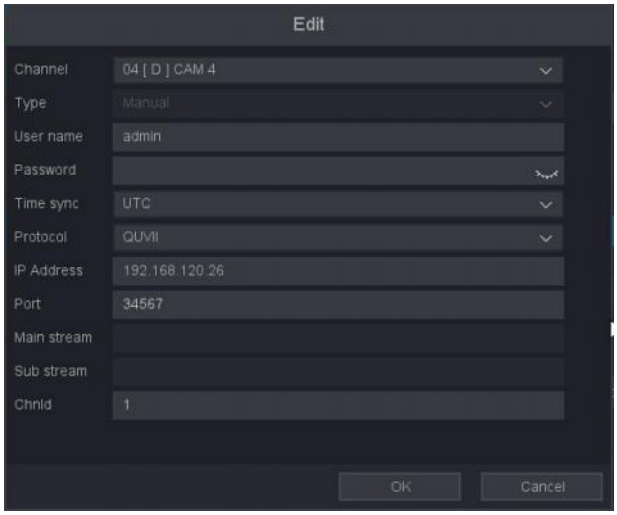


Figure 2-23 Edit

2.6 Editing the connected IP cameras and Configuring

Customized Protocols

After the adding of the IP cameras, the basic information of the camera lists in the page, you can configure the basic setting of the IP cameras.

Steps:

1. Click the icon to edit the parameters; you can edit the IP address, User name, Password, Port and other parameters.

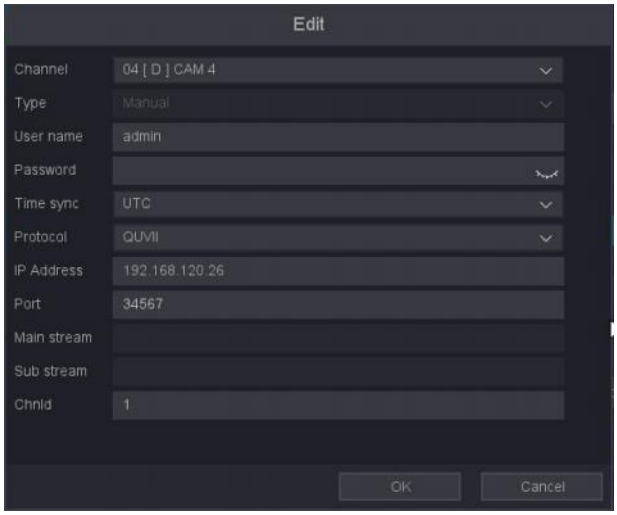


Figure 2-24Edit

2. Click the drop down box of Protocol, You can choose three protocols: QUVII, Onvif, RTSP; QUVII is a private protocol, Onvif and RTSP protocols are mainly connected to third-party cameras.
3. Click 'OK' to save and exit the editing interface.

2.7 Editing IP Cameras Connected to the PoE Interfaces

The PoE interfaces enables the NVR system to pass electrical power safely, along with data, on Ethernet cabling to the connected network cameras. Up to 8 network cameras can be connected to /8P models, and 16 network cameras to /16P models. If you disable the PoE interface, you can also connect to the online network cameras. And the PoE interface supports the Plug-and-Play function.

To add Cameras for NVR supporting PoE function:

Before you start: Connect network cable from the IP camera to the POE port of the NVR.

Steps:

1. Go to **Setting Menu → Camera → IP camera → Camera Setting**.

Note

Also select the 'IP Channel' option from the right-click menu or click the '+' sign in live view mode to enter the IP camera management interface.

2. Click the icon ' ' for the channel you selected.

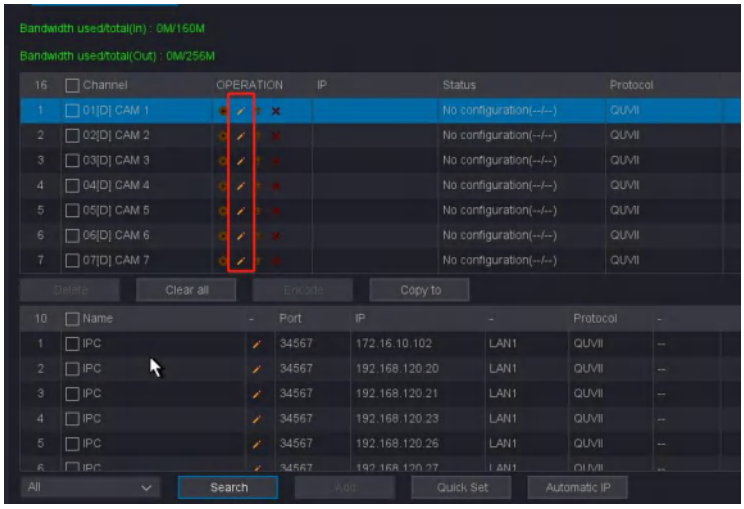


Figure 2-25 Edit

3. Change the connection type buy click the drop-down box of Type and change it to UPNP and click OK.

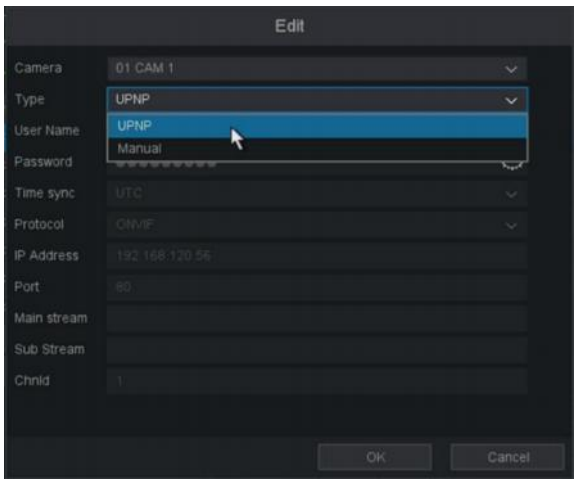


Figure 2-26Upnp

Note

- The factory default is Type is UPNP, if not, please refer to the above method to modify, if you want to quickly modify each channel, please use the Copy to function.
- Manual: You can disable the PoE interface by selecting the manual while the current channel can be used as a normal channel and the parameters can also be edited. Input the IP address, the user name and password of administrator manually, and click OK to add the IP camera. Please refer to ***2.5 Adding the IP Cameras OPTION2***.

4. Check the status of the camera, 'Connected' means the camera is connected.
5. By click the **POE Power** tab, you can see the connection status of the POE port.

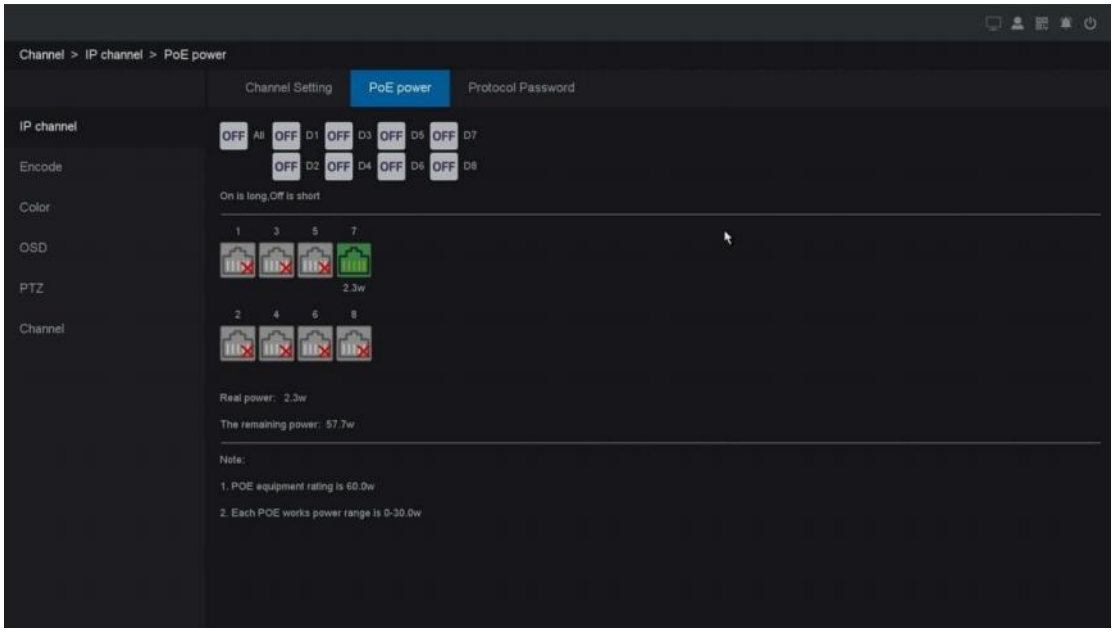


Figure 2-27 Edit the Parameters

Note

- This page you can check all PoE channels power and connection status.
- EPoE (Extended Power Over Ethernet) extends the usual PoE distance limit of 100M to an improved 250M. Turning EPoE on allows even greater capacity for installations on larger sites without expensive additional power infrastructure.
- It is recommended EPoE is only enabled on cameras that are using over 100M of cable as it can introduce a small video delay introduced for the processing of camera data at higher distances.
- Select between PoE and EPoE by pressing the ON/OFF button beneath the individual channels or select beneath 'All'.

3. Live View

3.1 Introduction of Live View

Live view shows you the video image getting from each camera in real time. The NVR automatically enters Live View mode when powered on. It is also at the very top of the menu hierarchy, thus pressing the right click many times (depending on which menu you're on) brings you to the Live View mode, as shown bellow.

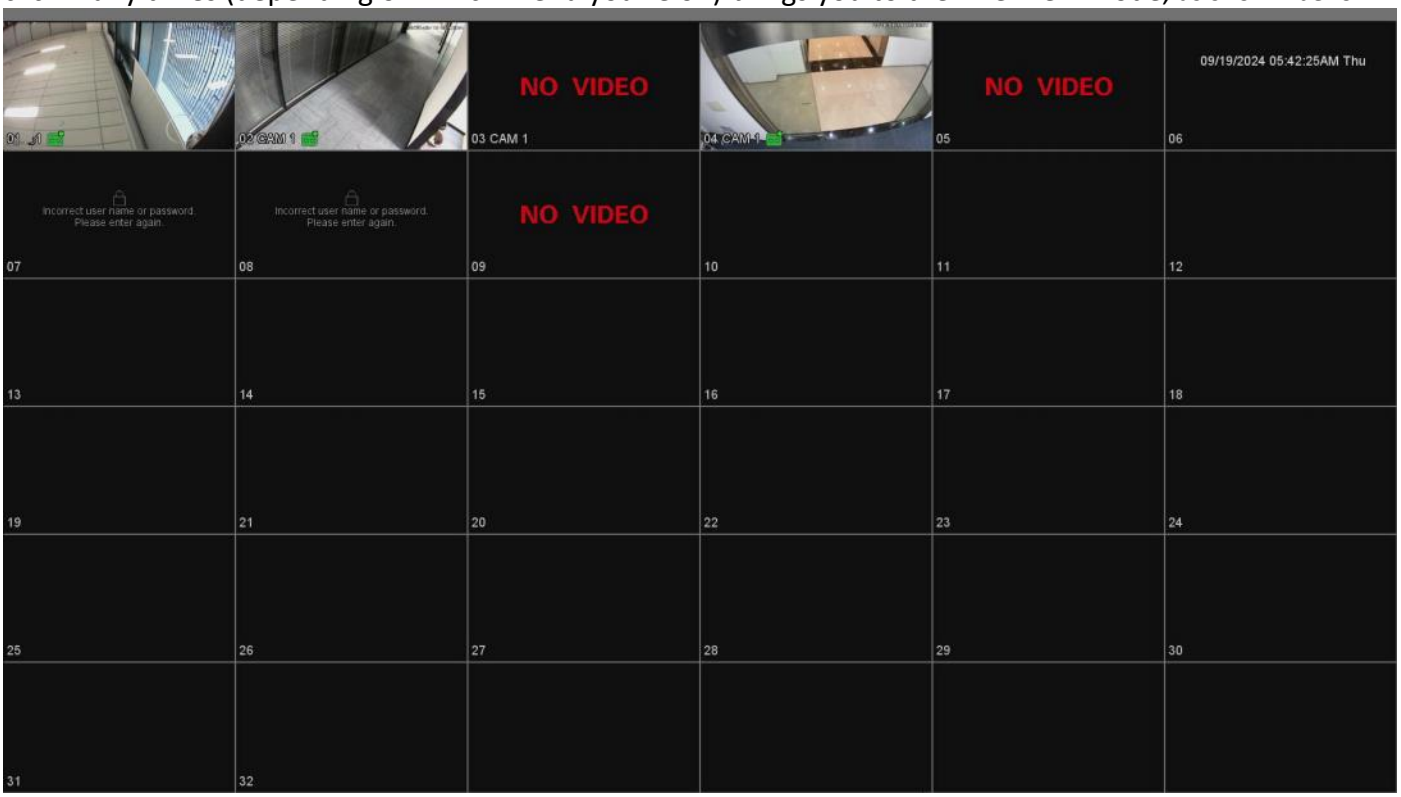


Figure 3-1 Live View

In the live view mode, there are icons at the upper-right of the screen for each channel, showing the status of the record and alarm in the channel, so that you can know whether the channel is recorded, or whether there are alarms occur as soon as possible.

Icon	Items	Description
	Recording state	Shown on channel preview when recording.
	Alarm detect	Shown on channel preview when alarm triggered.
	Video lost	Shown on channel preview when video lost.
	Camera lock	No preview authority.

Table 3-1 Live view Icons

Note

- On live view screen, click on the channel " + "Button to enter the channel management interface NVR Automatically search for network segment IPC, and then select the IPC Click Add to. You can refer to ***2.5 Adding***

the Online IP Cameras.

● The number for IP cameras channels may differ by its type 'All'.

3.2 Operations in Live View Mode

In live view mode, there are many functions provided. The functions are listed below.

- Single Screen: showing only one screen on the monitor.
- Multi-screen: showing multiple screens on the monitor simultaneously.
- Tour: the screen is auto switched to the next one. And you must set the dwell time for each screen on the configuration menu before enabling the tour.
- Start Recording: continuous record and motion detection record are supported.
- Add IP Camera: the shortcut to the IP camera management interface.
- Playback: playback the recorded videos for current day.

3.3 Quick Setting Toolbar in Live View Mod

On the screen of each channel, there is a quick setting toolbar which shows when you move the arrow of mouse to the top of image.

Figure 3-2 Quick Setting Toolbar in channel image

Icon	Items	Description
	Alarm Out	Manually switch on or off the alarm output of the channel. Note: Only camera with alarm out interface support this function.
	Instant Replay	In the preview channel window interface within ten minutes of video for playback.
	Zoom	Displays the selected channel in full screen, Scroll the mouse wheel to zoom in on the area where the mouse is clicked.
	Manual Record	Quick switch video mode for this channel (only in manual and stop mode switching).
	Manual Snap	This channel the display resolution of the images that are captured in real time.
	Audio Preview	To listen Open channel monitor.
	Voice Intercom	Open-channel intercom functions, support and IPC, web and mobile client to talk.
	Channel Set	Quickly enter and locate a channel is channel management interface.
	Switch stream	Switch to main/sub stream.
	Red and Blue Lights	Click to open camera's blue and red light. **Note**: only active deterrence camera support this function.
	PTZ	Quickly enter PTZ control interface.
	Image Stitching	Manually drag the scrollbar to control dual-Lens camera's stitching length. Note: Only dual-Lens camera support this function.

Table 3-2 Quick Setting Toolbar

In preview mode you can right click mouse to access the desktop shortcut menu, as shown bellow.

Icon	Menu name	Function description
	Setting Menu	The Setting Menu includes playback, setting, maintain, backup and shutdown.
	Startup wizard	Please refer to the chapter ***2.3 Using the Startup Wizard*** for more information.
	Auto channel config	When you right click mouse and choose Auto Channel Config, it means that NVR will auto add the IP cameras which in the same LAN.
	IP channel	it is a shortcut access to IP channel interface.
	Channel status	it is a shortcut access to IP channel status interface.
	Playback	it is a shortcut access to playback interface.
	Quick Record	You can check current channel status: "o" means it is not selected, "●"means it is selected.
	PTZ control	The functions include: PTZ direction control, speed, zoom, focus, iris, setup operation, patrol between spots, pattern, border, tour.
	Image setting	It is a shortcut to Setting menu -> Camera -> Image -> Image window.
	Output adjust	it is a shortcut access to System-Display settings-Display interfaces.
	Mute	The speaker mute switch, Icon means speaker turns on, icon means speaker turns off.
	Intelligent mode	After clicking this mode, NVR can show the captured face picture on the bottom of preview interface,(it needs to enable IP camera's face detection function firstly).
	Shutdown	Shutdown, restart system, logout menu user and switch user.
	View 1	Single screen preview.
	Multiple Views	Preview in four screens/six screens/eight screens /nine screens/sixteen screens according to your choice.
	Corridor Mode	Preview in three screens/four screens/five screens /seven screens /nine screens/ten screens/twelve screens/sixteen screens according to your choice.

Table 3-3 Desktop Shortcut Menu

3.4 Desktop Shortcut Menu

Note

- The right-click menu varies according to different models, please refer to the actual GUI menu of the device.

Supplementary function description

- Quick Record: You can check current channel status: "o" means it is not selected, "●"means it is selected.

Items	Description
Schedule	Record according to the configuration.

Figure 3-3 Record Control

Manual	Click the button and the according channel will record immediately regardless of the current state.
Stop	Click the stop button and the according channel will stop recording regardless of the current state.

Table 3-4 Record

- PTZ control: Operation interface is as shown in picture below. The functions include: PTZ direction control, speed, zoom, focus, iris, setup operation, patrol between spots, pattern, border, tour.

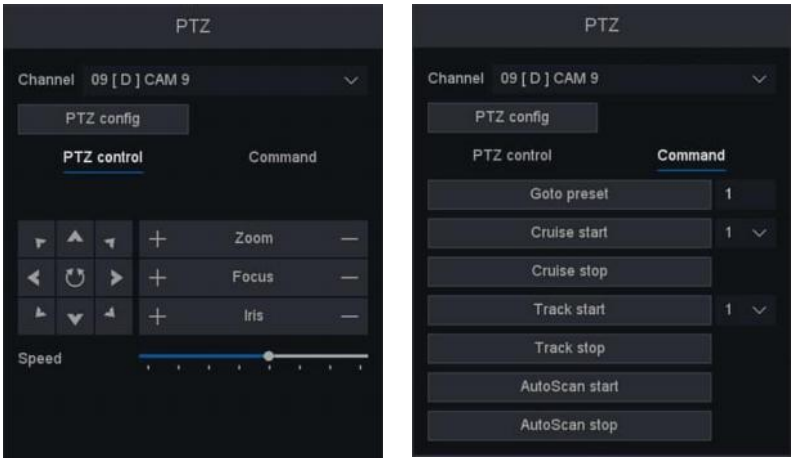


Figure 3-4 PTZ

- Intelligent mode: After clicking this mode, NVR can show the captured face picture on the bottom of preview interface, it's like picture below (it needs to enable IP camera's face detection function firstly).

Figure 3-5 Intelligent

4. Playback

4.1 GUI Introduction

Go to Playback.

- Right click and select the "**Record Playback**" to enter the playback interface and you can also click on the playback button in the Setting Menu to enter the playback interface, as shown in the figure bellow.

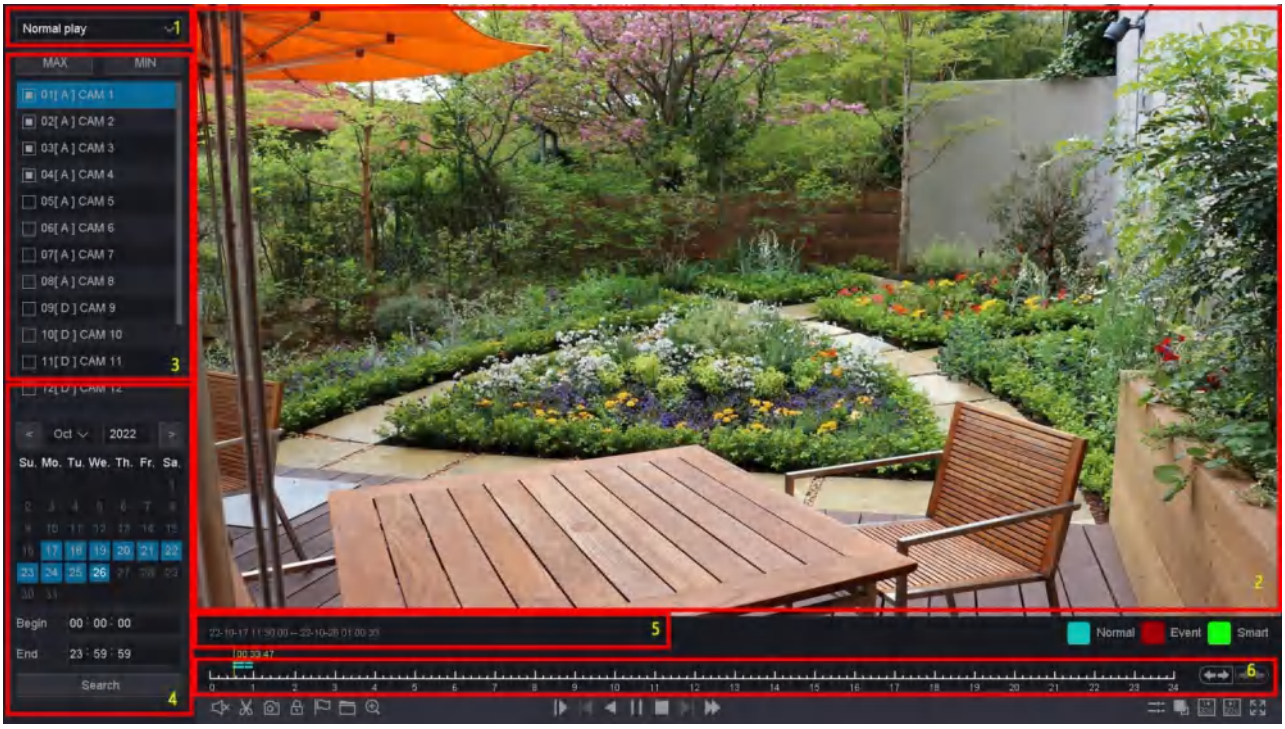


Figure 4-1 Playback

- The functions of each block in the above figure are described as follows.

No.	Items	Function
1	Playback Type	NVR support four types playback mode "Normal Play", "Event Play", "Label Play", "Smart Play"," Time Division Play", "Normal Play (Picture)".
2	Display	The windows display videos.
3	camera list	You can select the channels for playback in this area.
4	Date	Shows the date that have video files and marked blue.
5	Time of File	Shows the start time and the end time of files in HDD.
6	Time Line	Shows files playing course in this area.

Table 4-1 Area Functions Introduce of Playback

- The video playback timeline as the figure bellow.

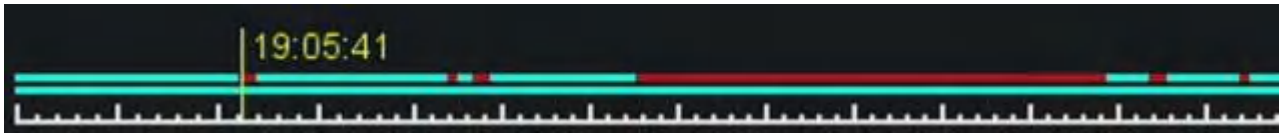


Figure 4-2 Timeline

1. Position the cursor on the timeline, drag the timeline to position to a certain time.

2. Period marked with blue bar contains video. Red bar indicates the video in the period is event video. Scroll the mouse wheel up/down to fast forward and rewind.

3. Click the buttons and buttons at the bottom right of the timeline to zoom in/out of the timeline.

Note

- The second line shows all the files of the channels you selected. And the first line shows the files of the channel you chose by mouse on the display area. And event files marked red, normal files marked blue.

No.	Key title	Key function
1		Switch of playback channel audio
2		Cut the interest video of playing channel
3		Snap a picture of playing channel
4		Lock the file in case over written in HDD
5		Default label, Label the file
6		File manager, Mange the cut file/locked file/labeled file
7		Zoom, Zoom the playing channel

Table 4-2 Tool menu Description

4.2 Normal Playback

Play back normal videos.

Steps:

1. Go to **Playback**.
2. Select a camera from the camera list.
3. Select a date on the calendar.

Note

The blue square at the calendar date indicates there are available videos. For example, 9 means video is available. 10 means no video.

4. Click the timeline for Playback.

Figure 4-3 Timeline

5. Video playback is controlled by the following buttons. The Description of common buttons for playback video as the table bellow.

Button	Operation	Button	Operation
	30 s reverse.		30 s forward.
	Full screen.		Start playback.
	Speed down.		Speed up.
X1	Speed.		Stop play.
	Upside down.		Synchronous playback or asynchronous playback switching
	Main and sub stream switching		

Table 4-3 Playback Interface Description

6. For a recording of a time period, select the recording start time and recording end time you want under the calendar, as shown below.

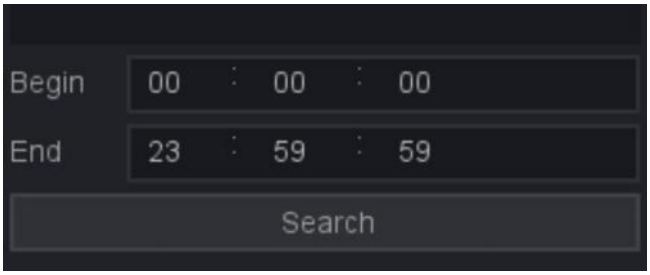


Figure 4-4 Time period

Note

If you want to find a recording of a time period, you can select the recording start time and recording end time you want under the calendar, as shown below

7. The video playback can be controlled by the following buttons.

Button	Description	Button	Description
	Cut the interest video of playing channel		Snap a picture of playing channel
	Lock the file in case over written in HDD		Default label, Label the file
	File manager, Mange the cut file/locked file/labeled file		Zoom, Zoom the playing channel
	Switch of playback channel audio		

Table 4-4 Playback Icon

8. All the operations of these buttons to control the playback, you can refer to the previous table.

- The "**Cut**" button will cut all the files of the channels you're playing, you can check the files you cut in the "File Manage" .

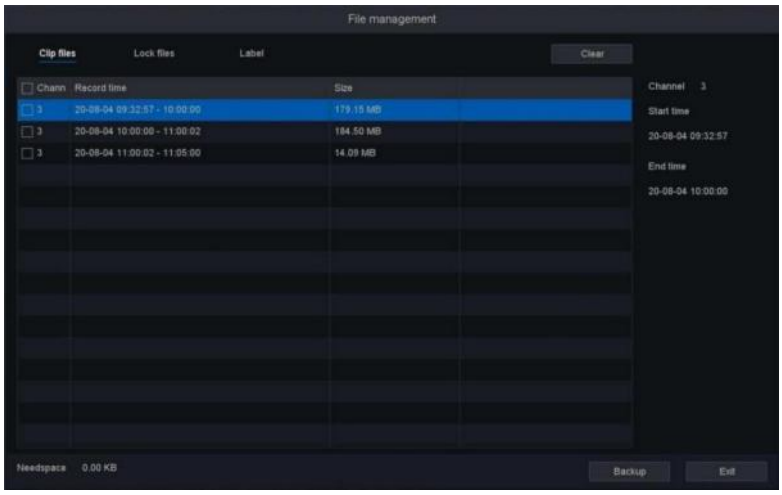


Figure 4-5 File Management

● The "**Lock Record**" button will lock the file in case this file be covered by new file. You can check and backup the locked files in "File Manage". And you can unlock the locked files in this interface.

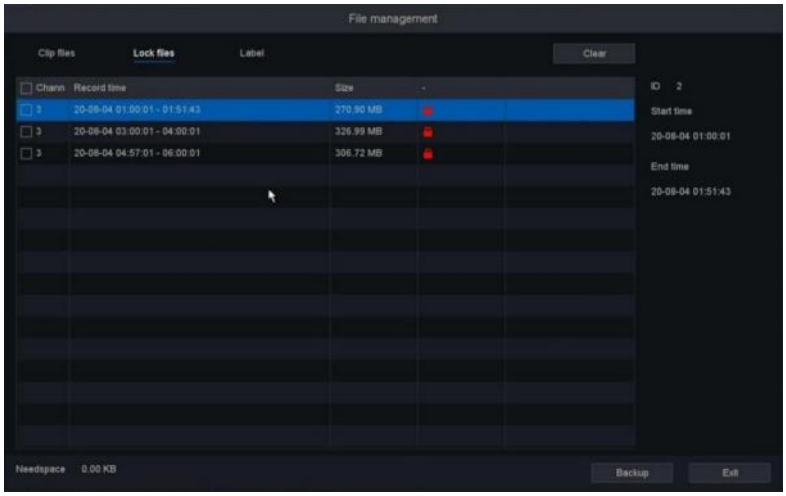


Figure 4-6 Lock File

● Click the "**Default Label**" button will mark the video as a default label, you can edit the label and check in the "File Manage".

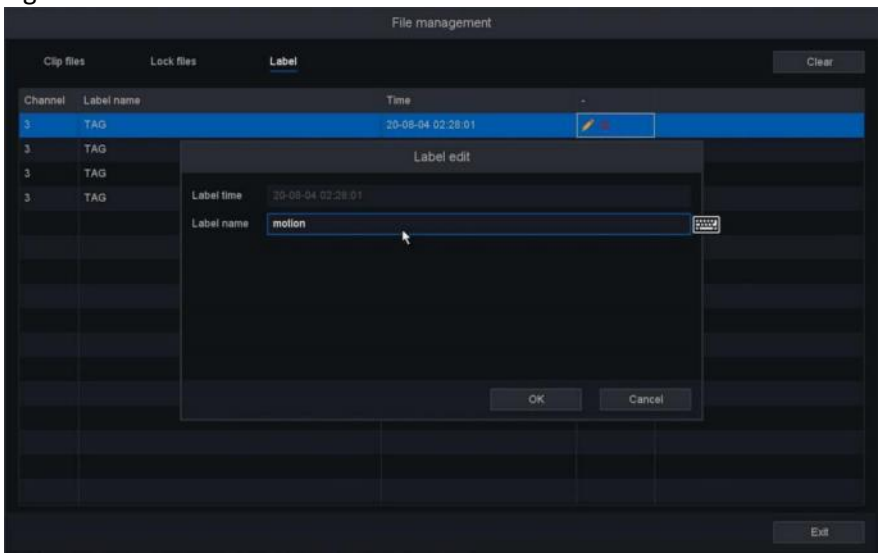


Figure 4-7 File Manage

4.3 Event Playback

When you select the event playback mode, the system will analyze and mark videos that contain the motion detection, line crossing detection, or intrusion detection information.

Before You Start

- Ensure the camera has enabled the Motion detect, the Intelligent Detection, or the Diagnosis. You can enable it via the **Setting Menu → Event → Detect**, Intelligent Detection or other.
- Ensure your video recorder has enabled 'Record channel' in the 'Set' of the 'Trigger process'. You can enable it via **Setting Menu → Event → Detect**, Intelligent Detection or **VQD →Trigger** process.

Steps:

1. Go to **Playback**.
2. Click **Event play**.
3. Select a camera.
4. Set time period,then Click **Search**.

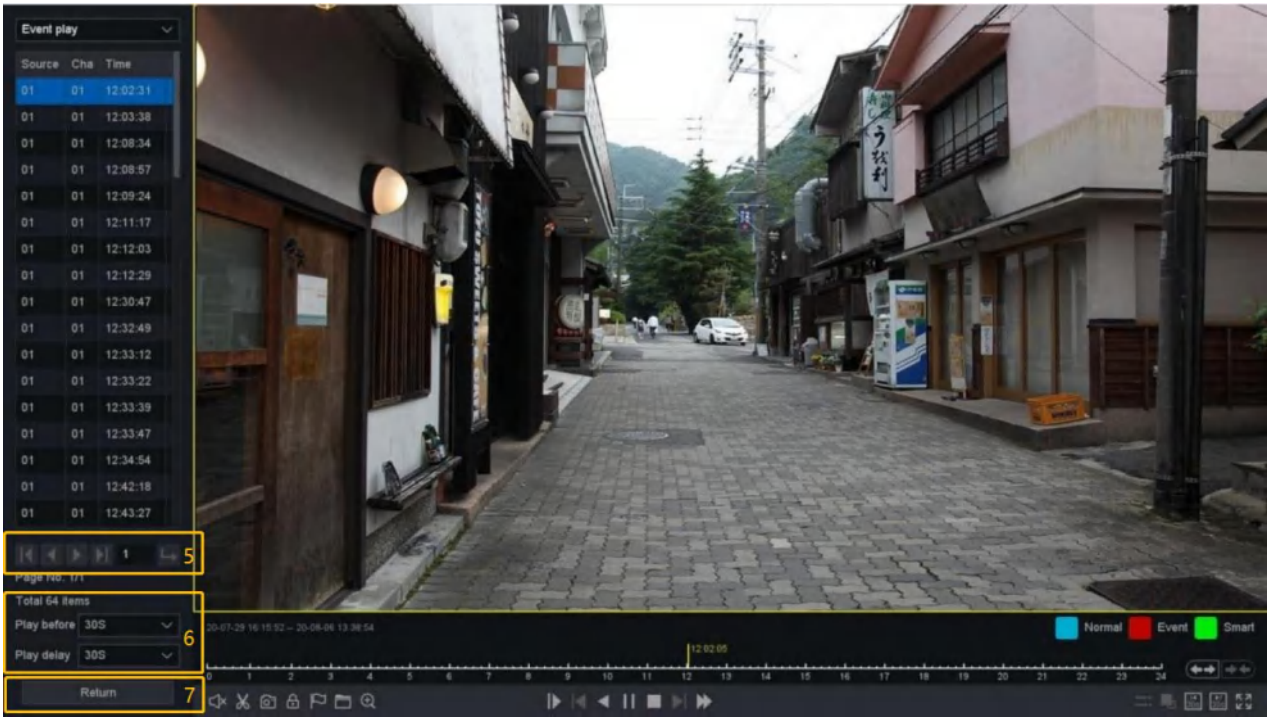


Figure 4-8 Event Playback

5. Search results as shown in the figure, "Source" means alarm channel and "Chan" means record channel of linkage operations, "Time" means when the alarm happened.
6. The next area shows all the alarm items and you can change the page to find the alarm item you want. And then you can set the play period before/after of the alarm time.
7. You can change the alarm types and channels by click the return button back to the last interface. As for the operations of these buttons you can refer to the below table. But you can't use the" Sync/Async ", "Main/Sub stream", "Frame Control" button in event playback mode.

The Buttons of Event Search Results:

Button	Description	Button	Description
	Quickly go to the first page of event search results.		Quickly go to the last page of event search results.

	Go to the previous page of event search results.		Quickly go to the last page of event search results.
	Go to the next page of event search result.		Turn on/off audio.

Table 4-5 Button Description

4.4 Back up Clip

You can clip videos during playback. Video clips can be exported to the backup device (USB flash drive, etc.).

Before You Start:

Connect a backup device to your video recorder.

Steps:

1. Start playback. Refer to ***Chapter 4 Playback*** for details.
2. Click at the start time you want.
3. Click again at the end time you want.
4. You can check the files you cut in the “File Manage”.
5. Select the videos to backup.
6. Click the ‘backup’ into Record backup interface.
7. Select the backup device and folder.
8. Click Start to export the clip to backup device.

Figure 4-9 Record Backup

5. Backup

You can Backup the video recording .It can be exported to the backup device (USB flash drive, etc.).

Before You Start:

Connect a backup device to your video recorder.

Steps:

1. Go to **Setting Menu → Backup → General → Video/Picture/Event**.

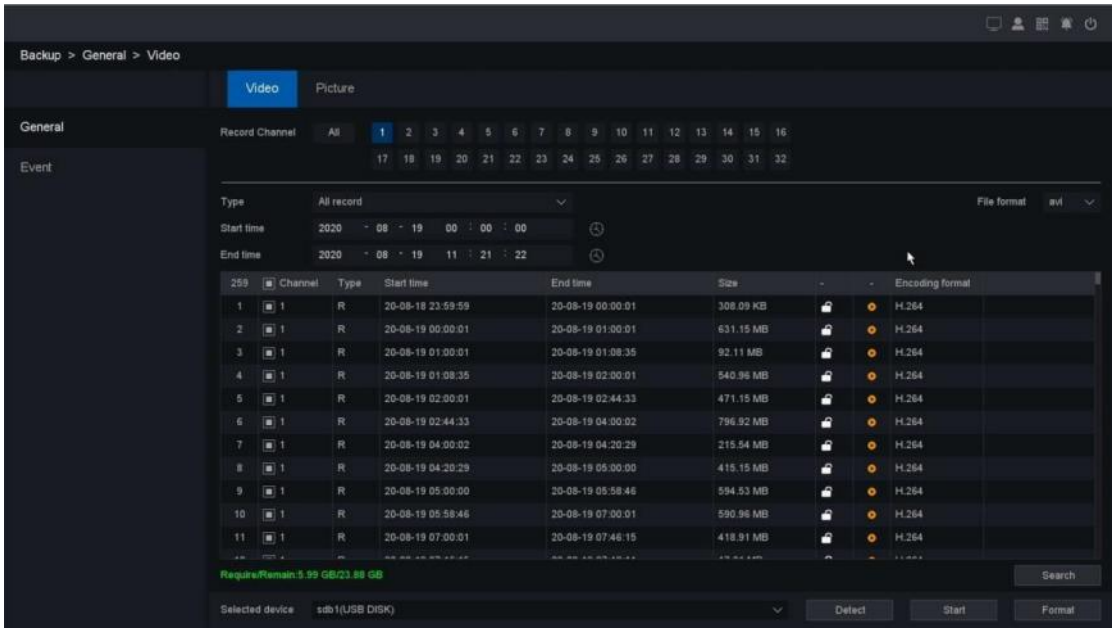


Figure 5-1 Search

2. Select a search type (video or picture).
3. Set search conditions.
4. Click **Search**.
5. Click  to play the video.
6. Click  to lock the file, Locked file will not be overwritten.
7. Select file(s).
8. Select the backup device and folder.
9. And click Start to export file(s) to backup device.

Note

If you can't find the backup device, you can re-plug and unplug it. If the backup fails, you can click the format button to format it first.

6. Configuration (Common Mode)

6.1 System Configuration

6.1.1 System - General

You can configure the language, Time zone, System time, Device No, Host name etc.

Steps:

1. Go to **Setting Menu → System → General**.

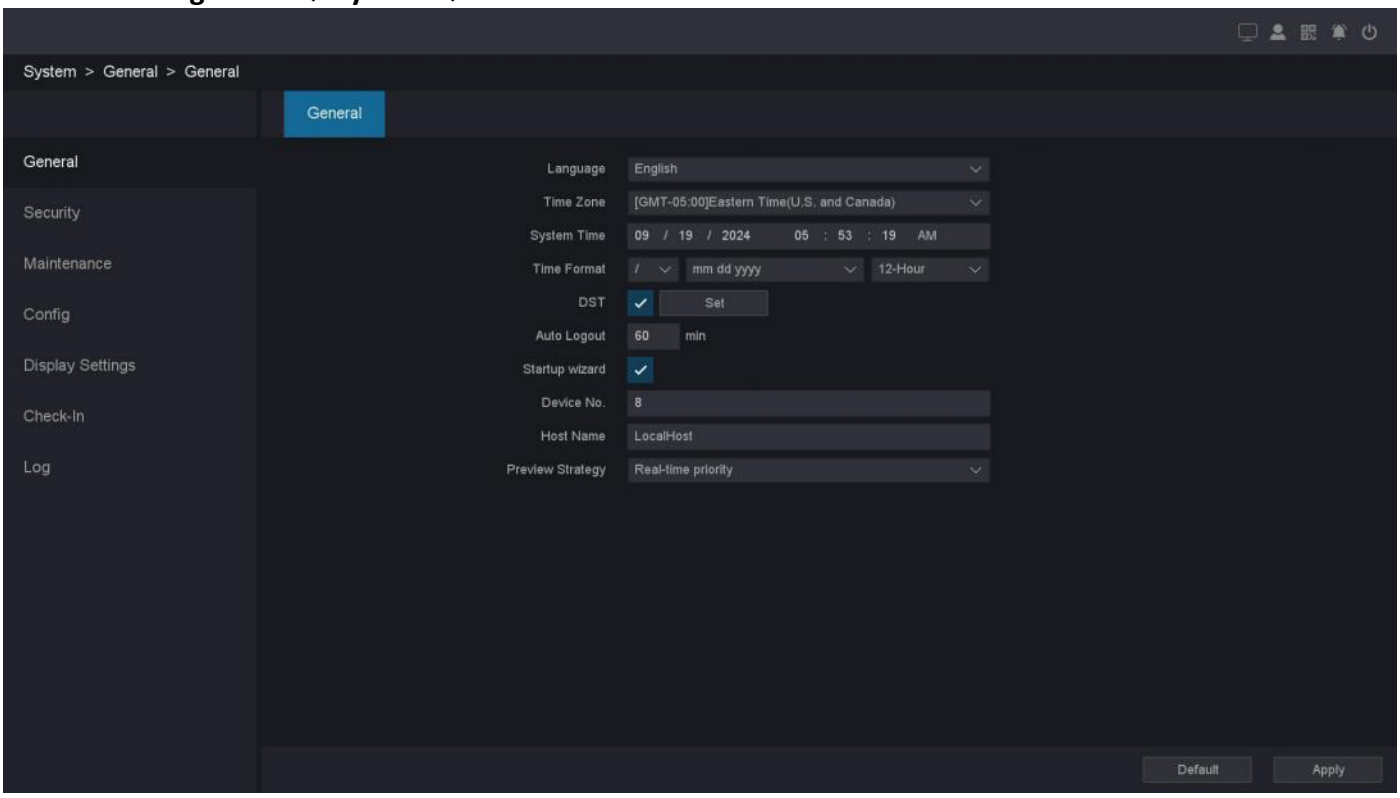


Figure 6-1 General

2. Configure the parameters as your desire.

Time format

The form of time display.

DST

The Summer time.

Auto logout

Auto logout time, the maximum can be set to 60 minutes.

Startup Wizard

The wizard will pop up after the device starts up.

3. Click **Apply**.

6.1.2 User

Add User

There is a default account: Admin. The admin user name is admin. Admin has the permission to add, delete, and edit user. Guest user only has live view, playback, and download.

Steps:

1. Go to **Setting Menu → System → Security → Account**.
2. Click **Add User** and maybe confirm your admin password.

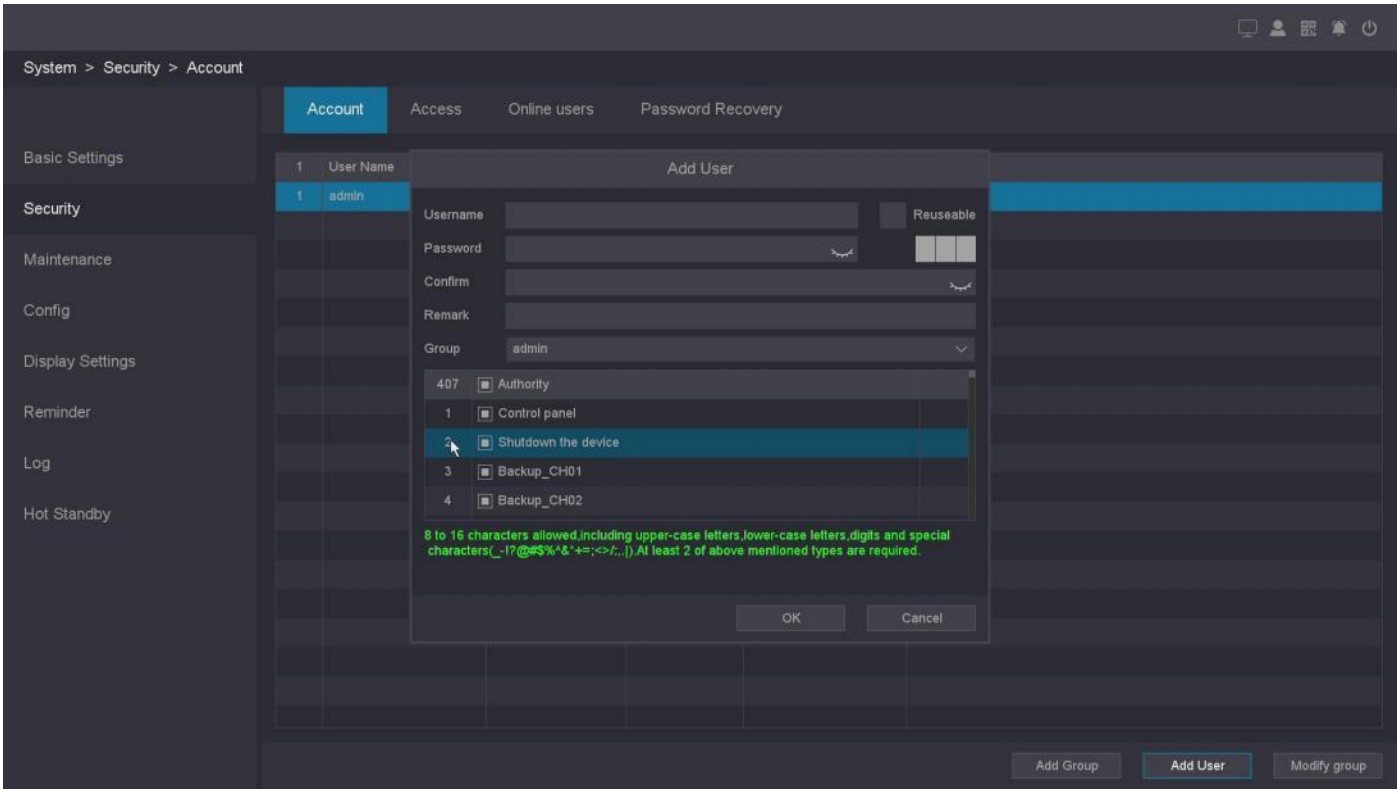


Figure 6-2 Add User

3. Enter user name.
4. Enter the same password in **Password** and **Confirm**.

Warning

Strong Password recommended-We highly recommend you create a strong password of your own choosing (Using a minimum of 8 characters, including at least three of the following categories: upper case letters, lower case letters, numbers, and special characters.) in order to increase the security of your product. And we recommend you reset your password regularly, especially in the high standard security system, resetting the password monthly or weekly can provide better protect to your products.

5. Click **OK**.

– Click / to edit/delete user.

Modify Password

You can modify your password when your password has been compromised.

Steps:

1. Click at the Account interface.

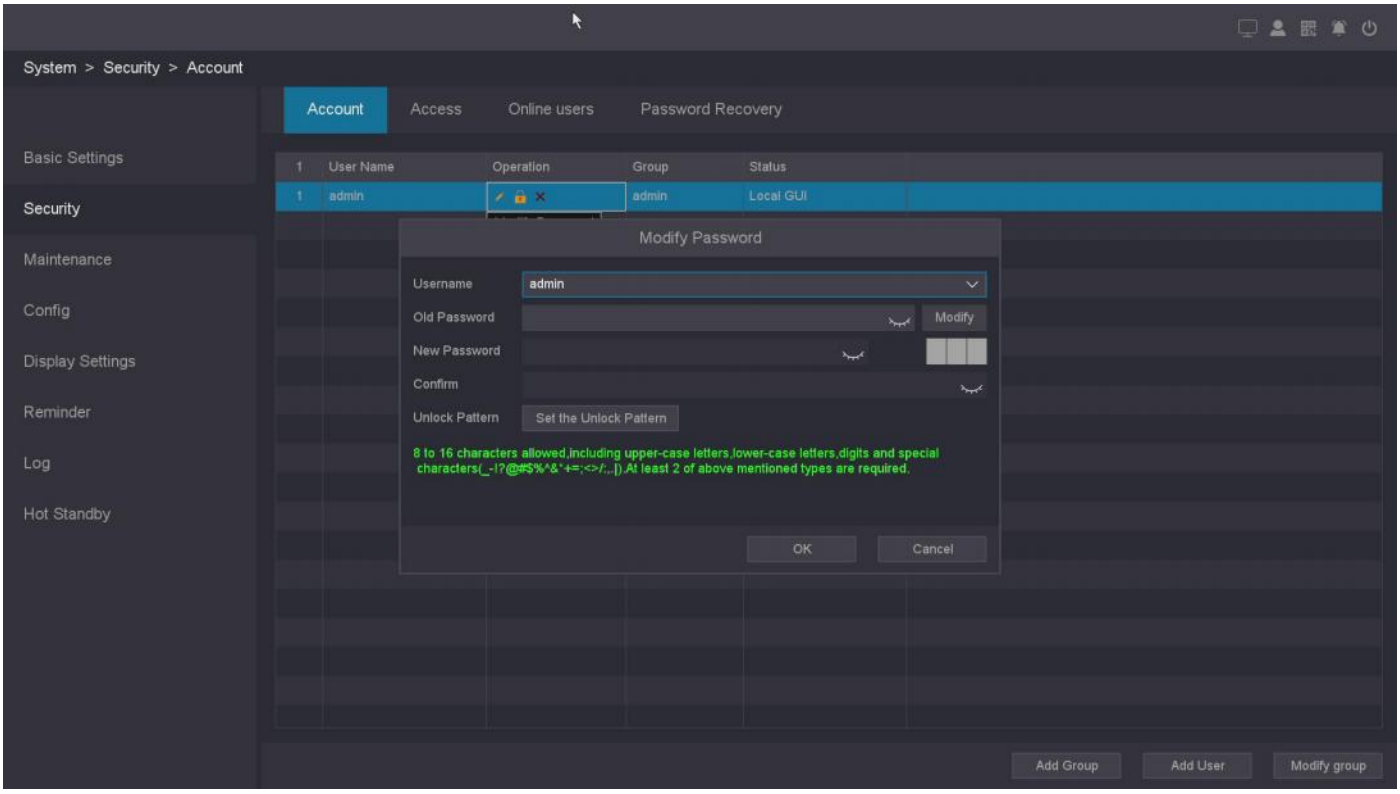


Figure 6-3 Modify Password

2. Enter the **Old Password**.
3. Enter the same new password in **NEW Password** and **Confirm**.
4. Click **OK**.
5. Optional: You can also set the Pattern Lock by click “setting the Pattern Lock”.

6.1.3 Alarm

Local I/O Steps:

1. Go to **Setting Menu → Event → Alarm → Local I/O**.

The upper part is for configuring the alarm input interface, and the lower part of the page is for configuring the alarm output interface.

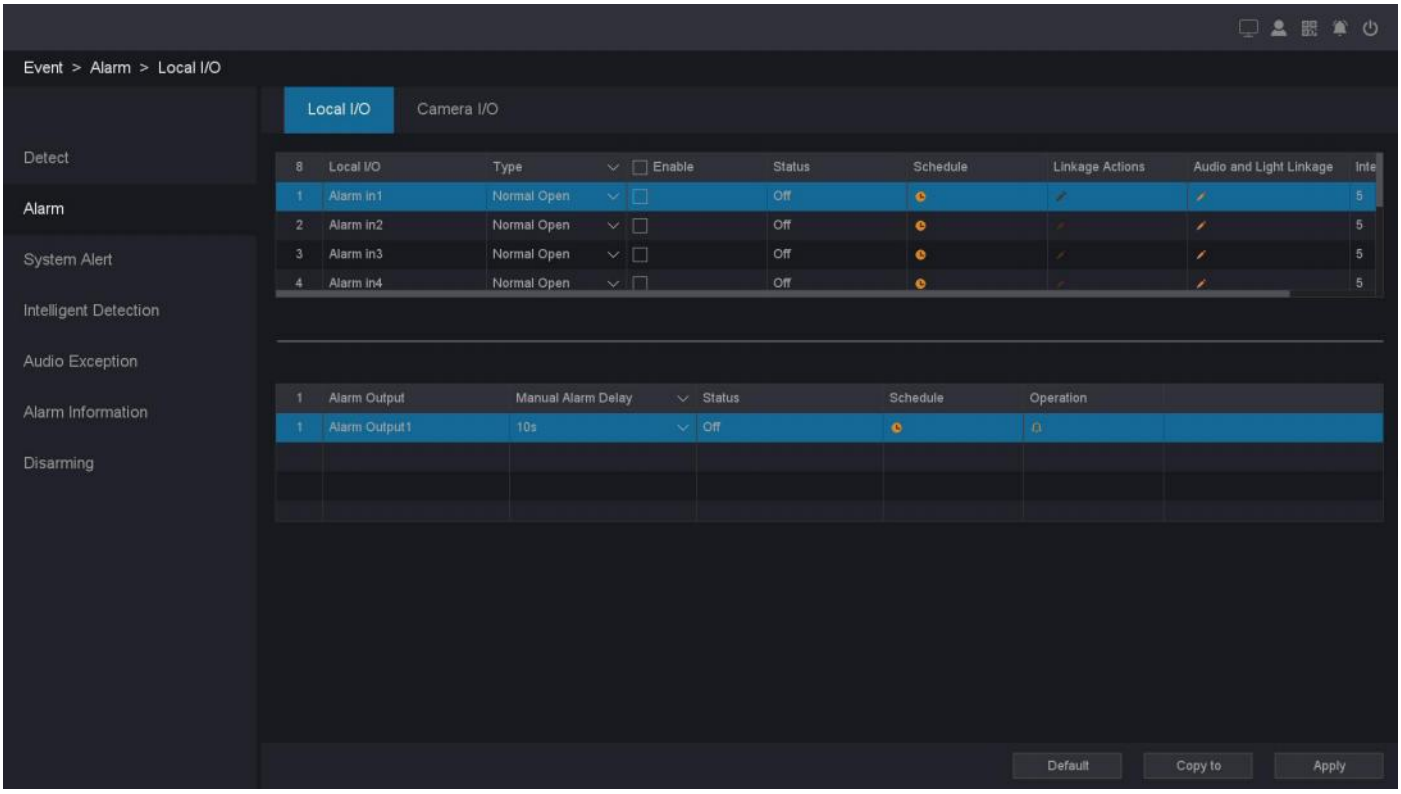


Figure 6-4 Alarm

2. Tick the checkbox of **Enable**.
3. Click to configure alarm schedule.

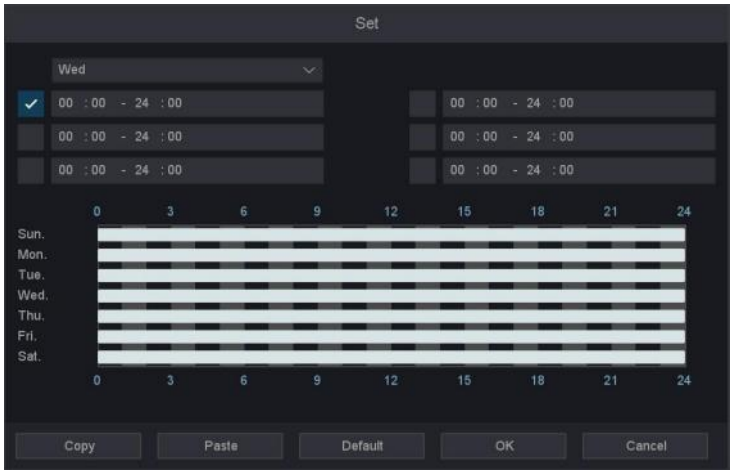


Figure 6-5 Alarm Schedule

4. Click to set linkage actions. Refer to ***6.3.5 Configure Alarm Trigger Process*** below for details.
5. Click to set connected camera's audio and light linkage.

Note

This function is available on some select models cameras.

6. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms.
7. Optional: You can copy the current alarm setting to other local I/O by clicking the button **Copy To.**

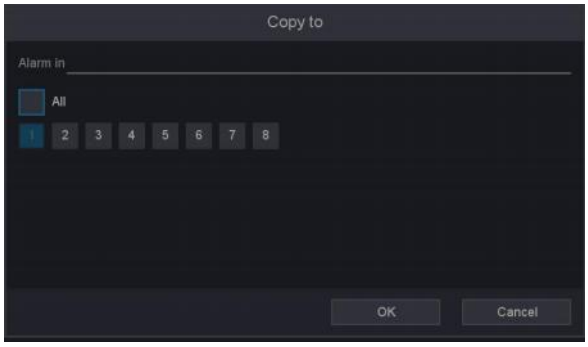


Figure 6-6 Copy to

8. Click **Apply**.

Alarm Output Steps:

1. Go to **Setting Menu → Event → Alarm → Local I/O**.
2. Set **Alarm Out**.
3. Select **Manual Alarm Delay**, default is 10s.
4. Click button to manual alarm, you can click button to cancel alarm.

Camera I/O Steps:

1. Go to **Setting Menu → Event → Camera I/O**.
2. The data is refreshed every time the page is accessed. Real time refresh of status.

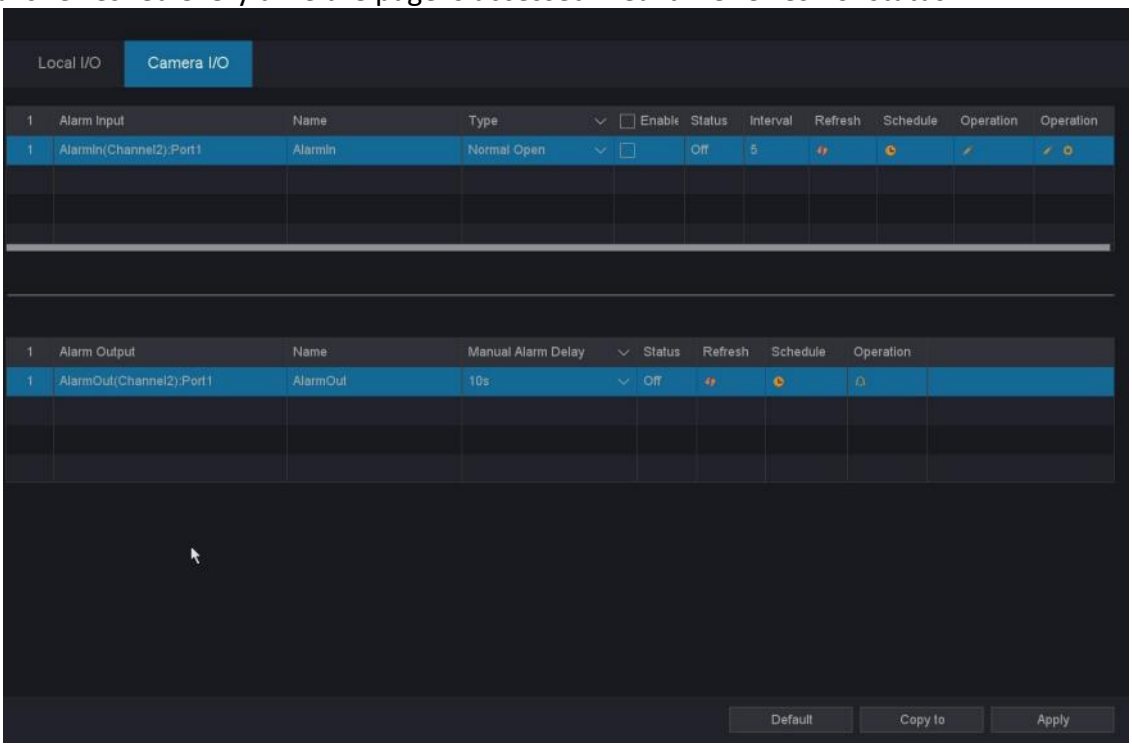


Figure 6-7 Camera I/O

6.2 Network Configuration

6.2.1 General - TCP/IP

You shall properly configure the network settings before operating the device over network.

Steps:

1. Go to **Setting Menu → Network → Base → TCP/IP**.

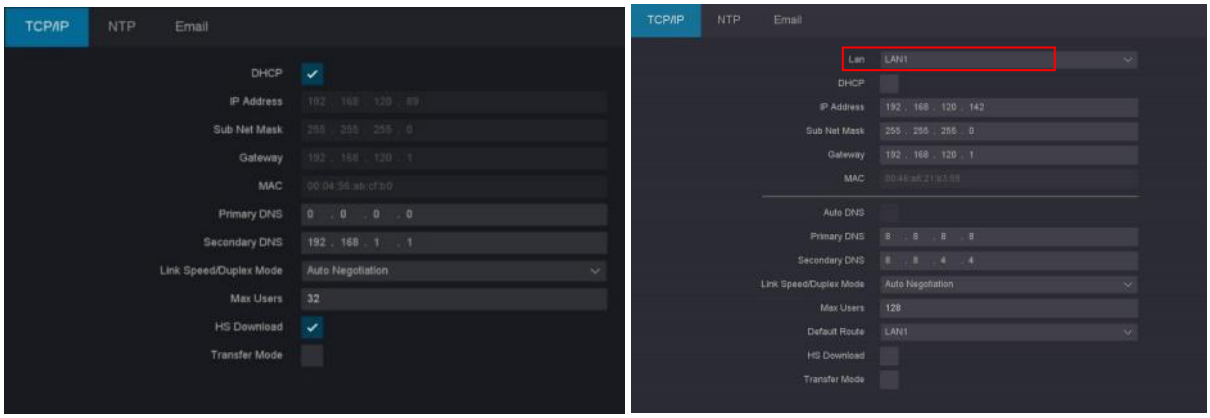


Figure 6-8 Network

Note

Only NVR with dual Ethernet port have **Lan** parameters, please refer to the actual page.

2. Set network parameters.

DHCP

If the DHCP server is available, you can enable DHCP to automatically obtain an IP address and other network settings from that server.

Auto Obtain DNS

If **DHCP** is enabled. You can enable **Auto Obtain DNS** to automatically obtain **Preferred DNS Server** and **Alternate DNS Server**.

Note

Auto obtain DNS function options, there will be differences between different models, subject to the specific model.

Manual

Manually configure your IP address, Such as:

IP Address: 192.168.1.100

Sub Net Mask: 255.255.255.0

Gateway 192.168.1.1

Please make sure that your IP address and the IP address of the camera are in the same LAN.

3. Click **Apply**.

6.2.2 QV-P2P

We provide mobile apps and cloud services to access and manage your connected devices, allowing you to conveniently access your surveillance system remotely.

Steps:

1. Go to **Setting Menu → Network → P2P → P2P**.
2. Turn on Enable, your device will automatically perform P2P cloud registration connection.

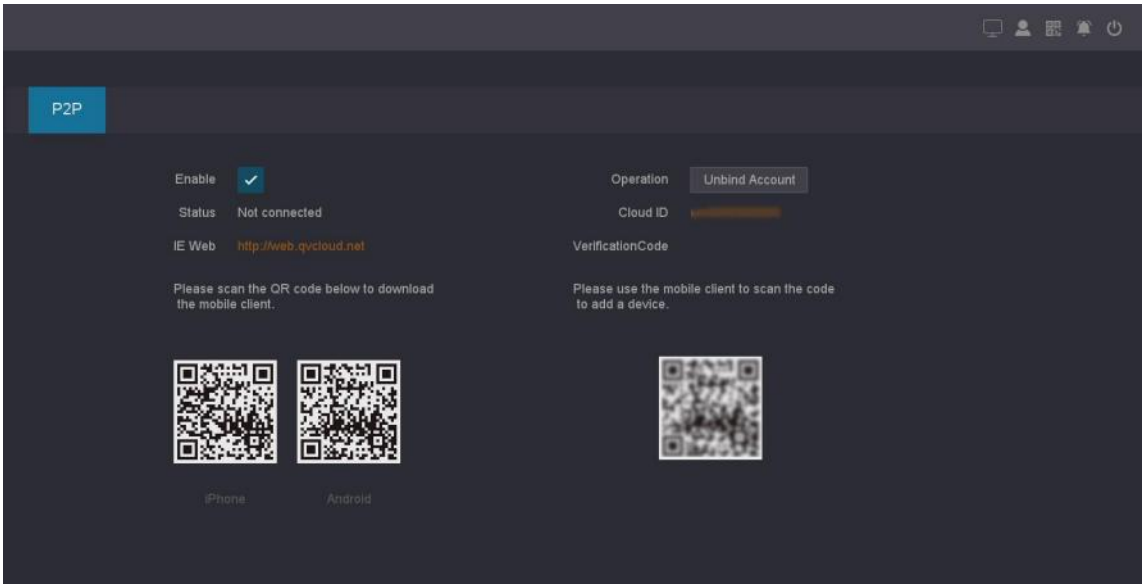


Figure 6-9 P2P

3. Your device will change from connected to connected, which means your device has successfully registered with the P2P cloud.
4. Bind your device to the cloud account.

1) Scan the QR code with your smartphone to download the vEye Pro APP. You can also download from http://www.qualvisiontech.com or the QR code below.

Figure 6-10 QR Code

2) Use vEye Pro APP to scan the device QR, and bind the device.

Steps:

1. Open the vEye Pro application on the smart phone.
2. Tap 'Register' in the lower left corner of the login box, then register your credentials and then Login to the app. Creating an account allows user to connect multiple sites.
3. Open the 'Menu' by tapping the top left option.
4. Tap 'Devices' then the '+' in the top right to add device.
5. Allow the app access to the devices camera, now scan the QR code. From the start up wizard labelled 'Cloud ID'. This will enter the connection information to the device to the app.
6. Set a name for the device so the user can easily identify it from a list; the location of the install is a popular way to name connections.
7. Tap 'Save', then you will be able to 'Start Live View'.
8. Find the device you just added in the devices menu, click the play button in the triangle, and the default is to open the real-time preview of the sub-stream. Choosing sub stream over main will increase video display speeds and reduce mobile data usage.

Note

- You can also direct your phone to the app download store..
- If the device has been bound with an account, you can click "Unbind" to unbind it from the current account.
- If your device does not support manual unbinding, please contact relevant technical personnel.

6.2.3 Email

Set an email account to receive event notification.

Before You Start

- Ensure SMTP service is available for your email.
- Configure your network parameters. Refer to ***6.2.1 General - TCP/IP*** for details.

Steps:

1. Go to **Setting Menu → Network → Basic Settings → Email**.

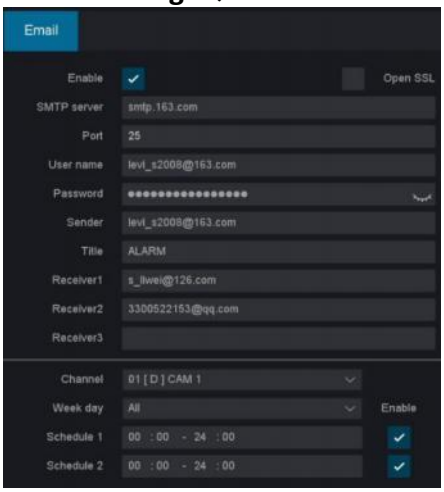


Figure 6-11 Email

2. Set email parameters

Enable

Check it to enable the server authentication feature.

SMTP server

Address of server providing SMTP service: smtp.163.com.

Port

The port used for the SMTP server, which can be obtained from the service provider.

User name

User account of the email sender for SMTP server authentication.

Password

Email sender password for SMTP server authentication.

Sender

The sender name or the sender's email address.

Title

Title of the pushed message.

SSL/TLS

(Optional) Enable SSL/TLS if it is required by the SMTP server.

Receiver1-3

Fill in the receiver’s email address. Up to 3 receivers are available.

Channel

Select the channel that needs to be pushed through the EMAIL alarm.

Week day

Select the date to send the alarm by EMAIL.

Schedule

Select the schedule that needs to be pushed by EMAIL.

3. Click MailTest to send a test email and Get a notification that a message was successfully sent.

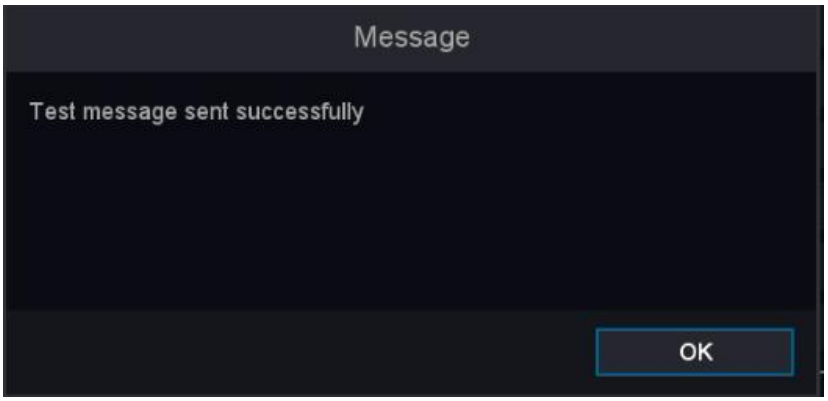


Figure 6-12 Test

Note

- For network cameras, the event images are directly sent as the email attachment. One network camera generally sends 3 pictures. Specific to the actual subject.
- If Email always fails to connect, you can try to check whether the DNS service is configured correctly.

4. Click **Apply**.

6.3 Camera Management

6.3.1 Network Camera

Add Network Camera by Quick Set

Add QV IP camera with default password or the package camera for this device;

Before You Start

- Ensure your network camera is on the same network segment with your video recorder.
- Ensure the network connection is valid and correct. Refer to ***6.2.1 General - TCP/IP*** for details.
- Make sure that the IP camera password has not been manually changed.

Steps:

1. Go to **Setting Menu → Camera**.
2. Click 'Search' button.
3. The online cameras on the same network segment with your video recorder are displayed in Online Device List.
4. Select multiple desired cameras you want to add, or select all cameras.
5. Click the 'Quick Set' button to add the cameras (with the default login password) from the list.

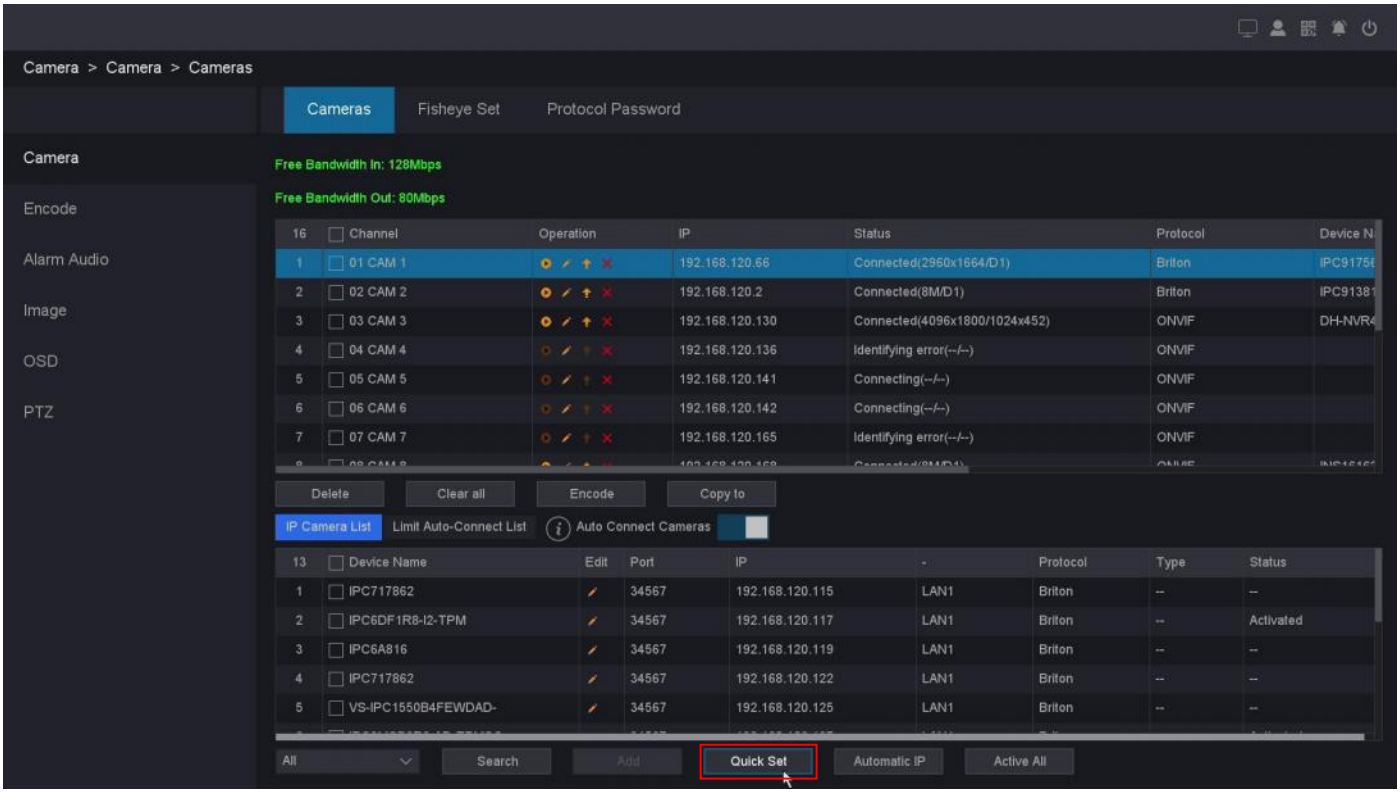


Figure 6-13 IP Camera Management Interface

6. The device you selected will be added quickly.

Note

If the camera is not added successfully, you can manually modify the user name, password, port, protocol or other.

Add Network Camera Manually

Before You Start

- Ensure your network camera is on the same network segment with your video recorder.
- Ensure the network connection is valid and correct.
- Ensure the network camera is activated.

Steps

1. Go to **Setting Menu → Camera**.
2. Select the channel you want to add manually.
3. Click  for that channel.
4. You can edit the IP address, User name, Password, Port and other parameters.

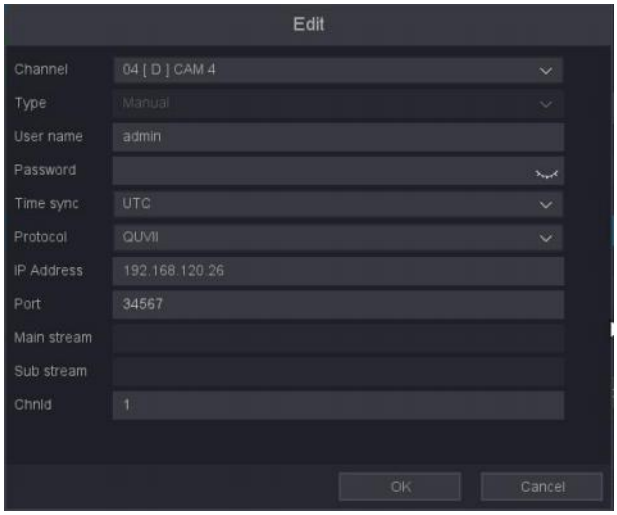


Figure 6-14 Edit the Parameters

5. Click the drop down box of Protocol, You can choose three protocols: QUVII, onvif, RTSP; QUVII is a private protocol, onvif and RTSP protocols are mainly connected to third-party cameras.

6. Edit the ChnId, Default is 1.

7. Click 'OK' to save and exit the editing interface.

8. Optional: Click **Add More** to add another network camera.

Time sync

Time synchronization, the default is UTC synchronization, you can also choose to disable.

Port

Device connection port, QUII is 34567, onvif is 80, RTSP is 554, and other ports are provided by the equipment manufacturer.

ChnId

Device channel number, if the device you connect has multiple channels, please fill in the channel number you want to connect.

Previewing Video

The camera can be previewed directly through the preview button.

Before You Start

- Ensure your network camera is on the same network segment with your video recorder.
- Ensure the network connection is valid and correct.
- Ensure the camera's status is 'conneted' and like this ' (1080P/720P) ' In brackets not (--/--).

Steps:

1. Go to **Setting Menu → Camera**.
2. Click .
3. The preview window is shown in the figure below.

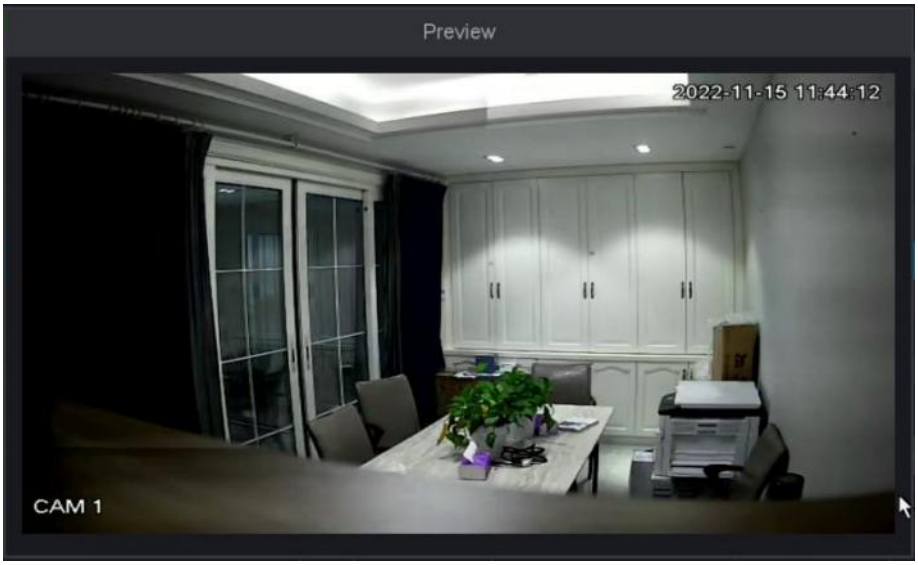


Figure 6-15 Preview

Upgrade Network Camera

The Network camera can be remotely upgraded through the device.

Before You Start

- Ensure you have inserted the USB flash drive to the device, and it contains the network camera upgrade firmware.
- Ensure your network camera is on the same network segment with your video recorder.
- Ensure the network connection is valid and correct.

Steps:

1. Go to **Setting Menu → Camera**.
2. Select the camera to be upgraded.
3. Click  .
4. Select your USB flash drive from the drop down box.
5. Select upgrade file and Click **Upgrade.**
6. Click **ok** to start upgrading. The camera will restarted automatically after upgrade completed.

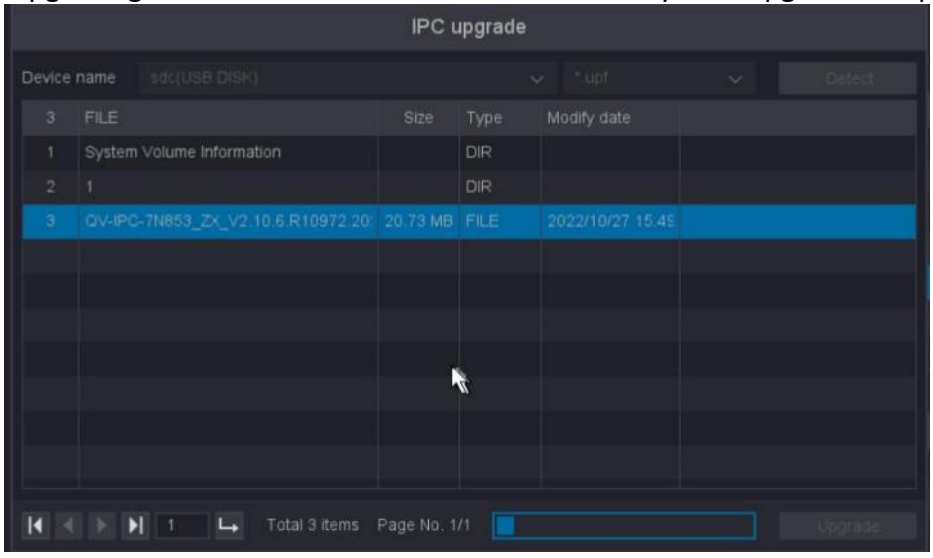


Figure 6-16 IPC Upgrade

Delete Camera

The camera can be deleted through the delete button.

Before You Start

Ensure your network camera is needs to be deleted.

Steps:

1. Go to **Setting Menu → Channel → IP Channel → Channel Setting**.
2. Click or Select the camera and click the Delete button.
3. Optional1: Check the device to be deleted and click the ‘Delete’ button.
4. Optional2: Click 'Clear all', you can delete all the channels you want to delete.
5. As shown in the figure bellow, click **OK**.

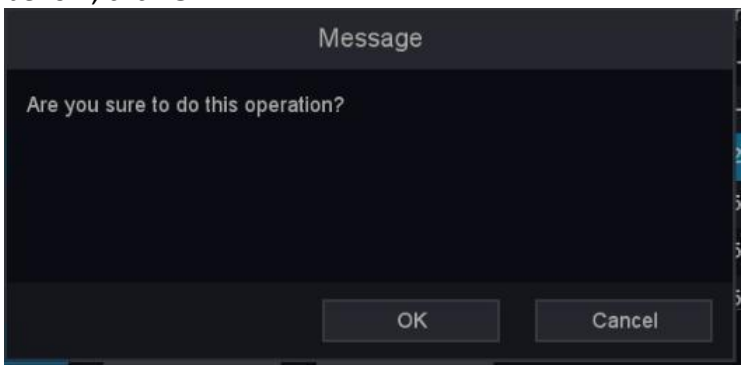


Figure 6-17 Delete

6.3.2 OSD Settings

Configure OSD (On-Screen Display) settings for the camera, including date format, camera name, etc.

Steps:

1. Go to **Setting Menu → Camera → OSD**.
2. Select a camera.

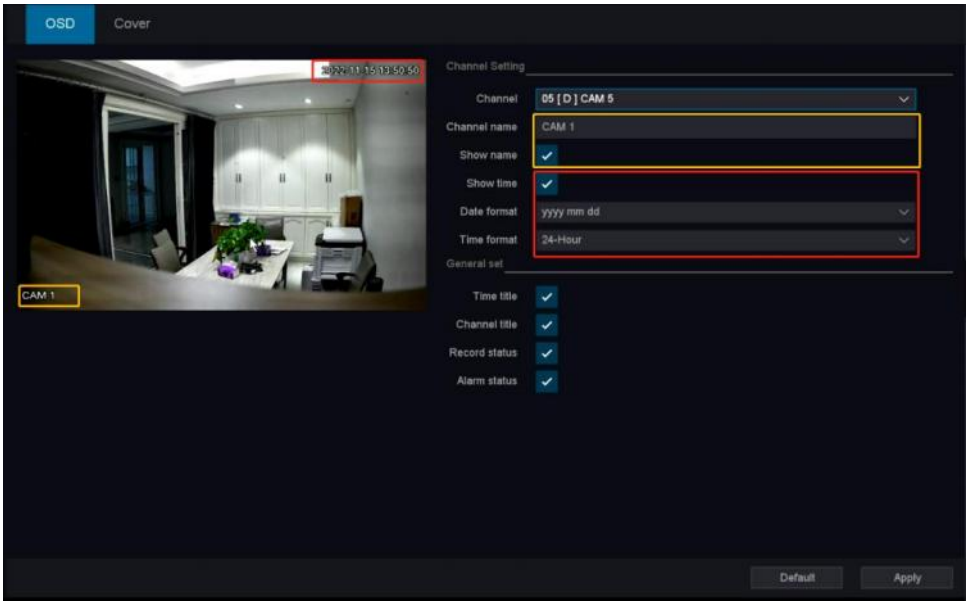


Figure 6-18 OSD

3. Set parameters as your desire.
4. The name and time can be chose to display or not, and can also be customized.
5. Click **Apply**.

6.3.3 Event

Motion Detection

Motion detection enables the video recorder to detect the moving objects in the monitored area and trigger alarms.

Steps:

1. Go to **Setting Menu → Event → Detect**.

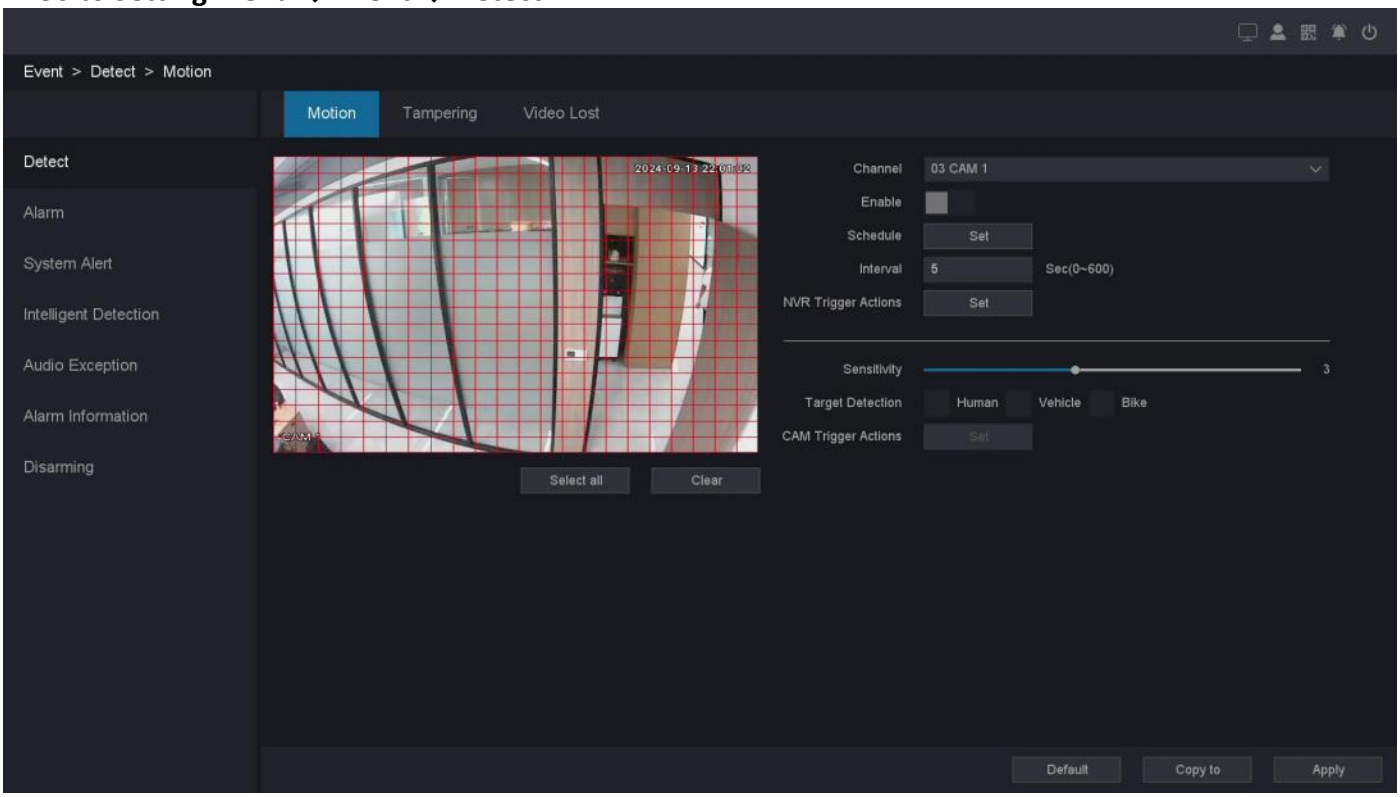


Figure 6-19 Motion Detection

2. Select a camera.
3. Turn on **Enable**.
4. Set the motion detection area.

Click **Clear** or **Hold down the left mouse button** to clear or draw areas. The first area is set as full screen by default.

Click **Select all** to set the motion detection area as full screen. You can drag on the preview window to draw motion detection areas.

5. Set the arming Schedule. Refer to ***6.3.4 Configure Arming Schedule*** below for details.
6. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms. Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.
7. Set the **NVR Trigger Actions**. Refer to ***6.3.5 Configure Alarm Trigger Process*** below for details.
8. Set **Sensitivity**, 1-100 is optional, sensitivity value represent percentage of targets entering the alarm area. A sensitivity value of 0 indicates the alarm will be triggered only if the target enters the area completely. A sensitivity value of 100 indicates the alarm will be triggered the target has just enter the area.
9. Set the **CAM Trigger Actions**. Refer to ***6.3.6 Configure CAM Trigger Actions*** for details.
10. Optional: Click **Copy to**, you can quickly apply the same configuration to other connected channels.

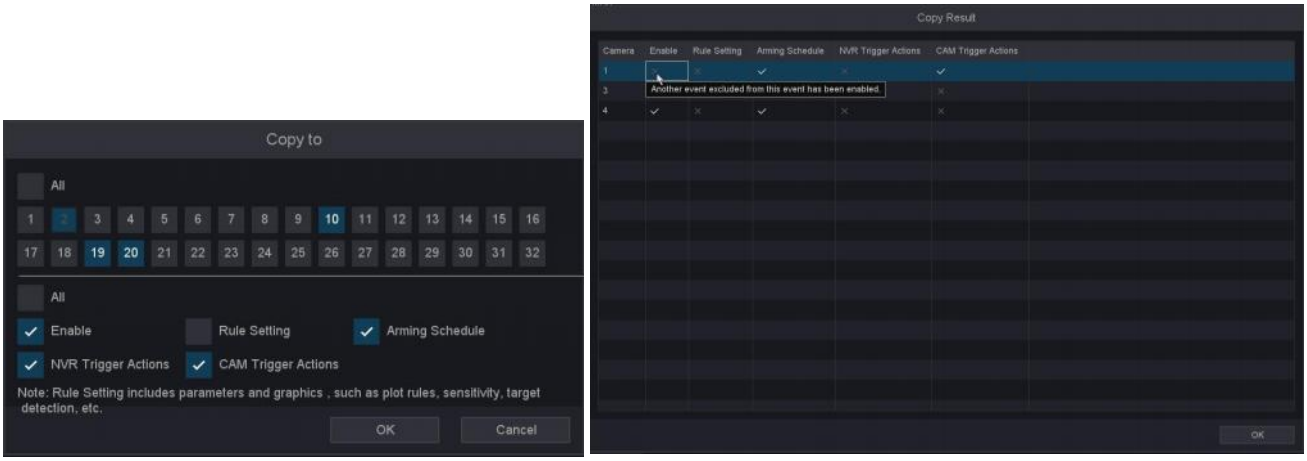


Figure 6-20 Copy to & Copy Result

Note

In the "Copy Result"popup window, hover the mouse over button to view tips.

11. Click **Apply**.

Line Crossing

Line Crossing can be understood as a warning line, which is drawn in the real-time monitoring screen area of the camera . When a target crosses the warning line in the set direction, the system generates an alarm and performs alarm linkage actions .

Steps:

1. Go to **Setting Menu → Event → Intelligent detection → Perimeter Protection → Line Crossing**.
2. Tick the checkbox of **Line Crossing**.
3. Click to enter the popup window.

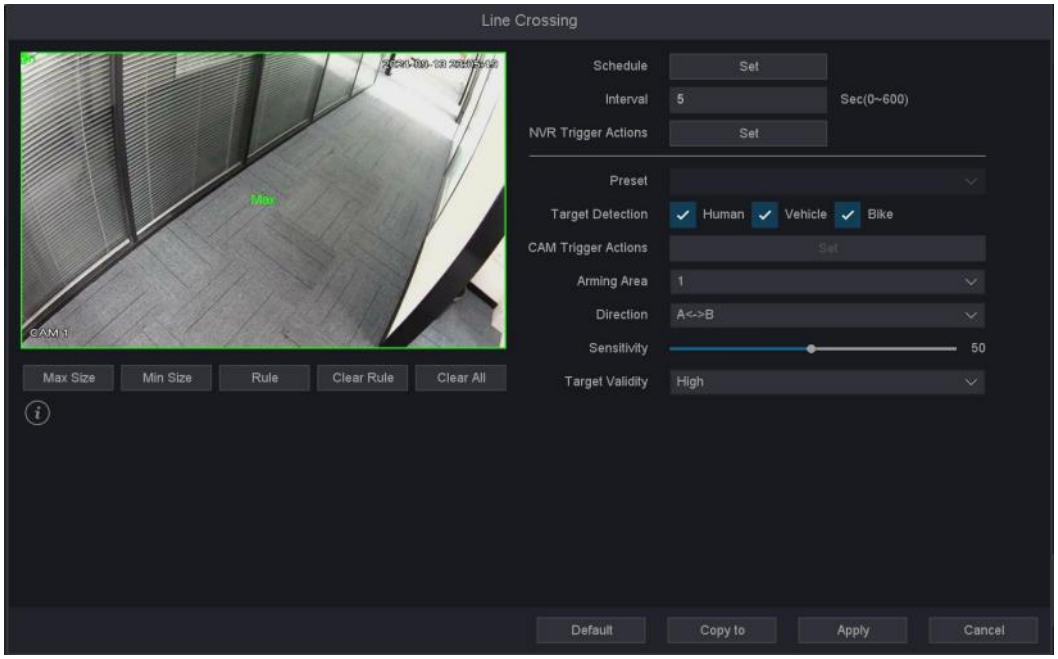


Figure 6-21 Line Crossing

4. Set line crossing detection rules and detection line. You can adjust the Line Crossing warning line by dragging the anchor points at both ends of the default tripwire with the cursor on the screen.

Max Size： When the size of objects in the scene is larger than the drawing max size, the alarm will not be triggered.

Min Size: When the size of objects in the scene is smaller than the drawing Min Size, the alarm will not be triggered.

Clear Rule: Removes area on the current alert area.

Clear All: Removes all areas on all alert areas.

5. Set the arming Schedule. Refer to ***6.3.4 Configure Arming Schedule*** for details.

6. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms. Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.

7. Set the **NVR Trigger Actions**. Refer to **6.3.5 Configure Alarm Trigger Process** for details.

8. You can enable the **Human/Vehicle/Bike** filters. After enabling the filter(s), event will be triggered only by specified targets.

9. Set the **CAM Trigger Actions**. Refer to ***6.3.6 Configure CAM Trigger Actions*** for details.

10. Select the **Arming Area**, Up to 4 arming lines can be set.

11. Select **Direction** as **A<->B**, **A->B**, or **B->A**.

A<->B

The arrow on the A and B side shows. An object crossing a configured line in both directions can be detected and trigger alarms.

A->B

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

B->A

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

12. Set **Sensitivity**, 1-100 is optional, sensitivity value represent percentage of targets cross the line. A sensitivity value of 0 indicates the alarm will be triggered only if the target cross the line completely. A sensitivity value of 100 indicates the alarm will be triggered the target has just cross the line.

13. Select a **Target Validity** for the event among the options, the default is Higher. The higher the level, the more resemble human/vehicle target will be detected.

14. Click **Apply**.

Area Intrusion

Area Intrusion is to draw one or more detection areas in the monitoring area,when an object enters the detection area and reaches the set proportion and intrusion duration, an alarm will be triggered and the set alarm action will be linked.

Steps:

1. Go to **Setting Menu → Event → Intelligent detection → Perimeter Protection → Area Intrusion.**

2. Tick the checkbox of **Area Intrusion**.

3. Click  to enter the popup window.

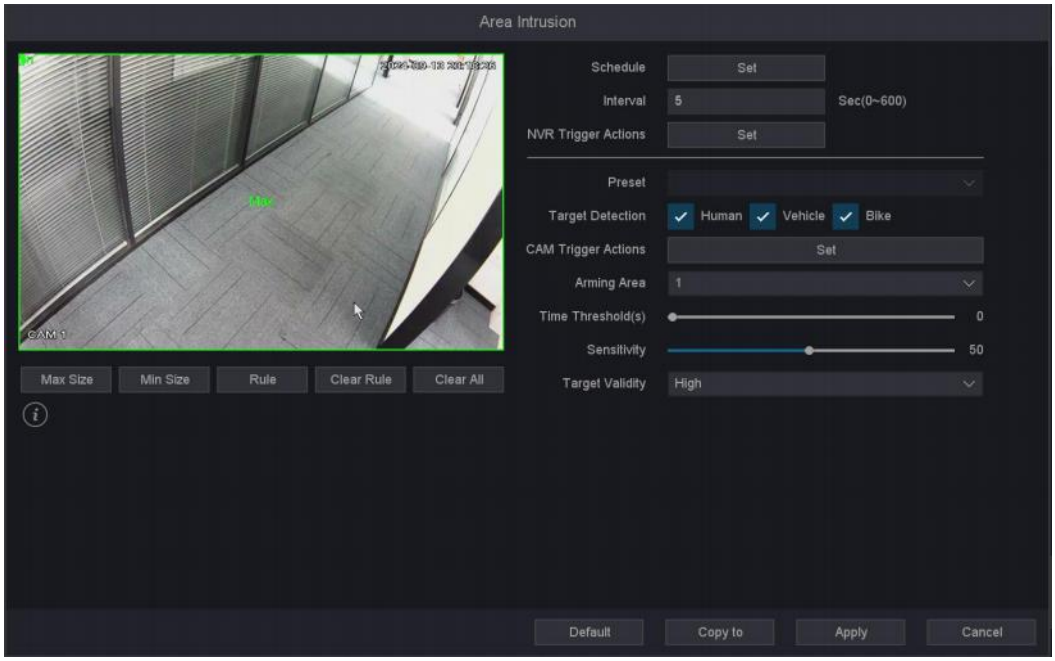


Figure 6-22 Intrusion Detection

3. Click **Rule**, click 4 points by using the left mouse button to draw area directly in the video window.

Max Size: When the size of objects in the scene is larger than the drawing max size, the alarm will not be triggered.

Min Size: When the size of objects in the scene is smaller than the drawing Min Size, the alarm will not be triggered.

Clear Rule: Removes area on the current alert area.

Clear All: Removes all areas on all alert areas.

4. Set the arming **Schedule**. Refer to **6.3.3 Configure Arming Schedule** for details.
5. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms. Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.
6. Set the **NVR Trigger Actions**. Refer to **6.3.4 Configure Alarm Trigger Process** for details.
7. You can enable the **Human/Vehicle/Bike** filters. After enabling the filter(s), event will be triggered only by specified targets.
8. Set the **CAM Trigger Actions**. Refer to ***6.3.6 Configure CAM Trigger Actions*** for details.
9. Select the **Arming Area**, Up to 4 areas can be set.
10. Set **Time Threshold**: Alarm occurs if target enter arming areas and stay longer than the time threshold you set, 0-10s settable.
11. **Sensitivity** value represent percentage of targets intrusion the area. A sensitivity value of 0 indicates the alarm will be triggered only if the target intrusion the area completely. A sensitivity value of 100 indicates the alarm will be triggered the target has just intrusion the area.
12. Select a **Target Validity** for the event among the options, the default is Higher. The higher the level, the more resemble human/vehicle target will be detected.
13. lick **Apply**.

Region Entrance

Region Entrance is to draw one or more detection areas in the monitoring area. When an object enters the detection area, an alarm will be triggered and the alarm action will be set in conjunction .

Steps:

1. Go to **Setting Menu → Event → Intelligent detection → Perimeter Protection → Region Entrance.**
2. Tick the checkbox of **Region Entrance**.

3. Click to enter the popup window.

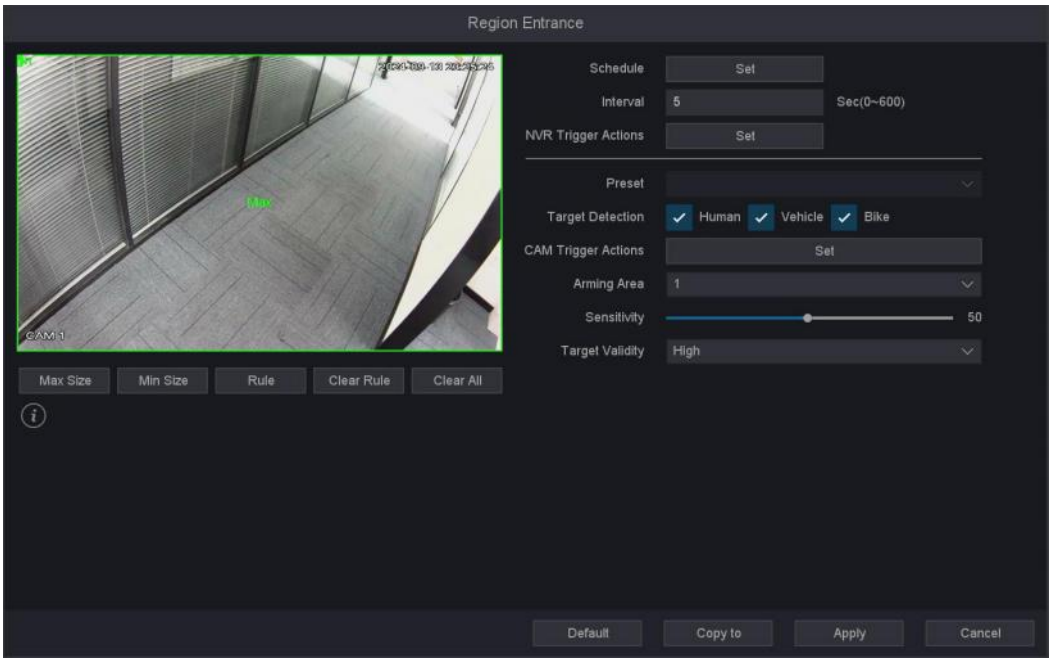


Figure 6-23 Region Entrance Detection

4. Click **Rule**, click 4 points by using the left mouse button to draw area directly in the video window.

Max Size: When the size of objects in the scene is larger than the drawing max size, the alarm will not be triggered.

Min Size: When the size of objects in the scene is smaller than the drawing Min Size, the alarm will not be triggered.

Clear Rule: Removes area on the current alert area.

Clear All: Removes all areas on all alert areas.

5. Set the arming **Schedule**. Refer to **6.3.3 Configure Arming Schedule** for details.
6. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms. Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.
7. Set the **NVR Trigger Actions**. Refer to **6.3.4 Configure Alarm Trigger Process** for details.
8. You can enable the **Human/Vehicle/Bike** filters. After enabling the filter(s), event will be triggered only by specified targets.
9. Set the **Advanced Setting**. Refer to ***6.3.6 Configure CAM Trigger Actions*** for details.
10. Select the **Arming Area**, Up to 4 arming areas can be set.
11. **Sensitivity** value represent percentage of targets enter the area. A sensitivity value of 0 indicates the alarm will be triggered only if the target enter the area completely. A sensitivity value of 100 indicates the alarm will be triggered the target has just enter the area.
12. Select a **Target Validity** for the event among the options, the default is Higher. The higher the level, the more resemble human/vehicle target will be detected.
13. Click **Apply**.

Region Exiting

Region Exiting is used to detect whether the target in a certain area has left the preset monitoring area. When the camera detects the target leaving the specified area,and some certain actions can be taken when

the alarm is triggered.

Steps:

1. Go to Go to **Setting Menu → Event → Intelligent detection → Perimeter Protection → Region Exiting**.
2. Tick the checkbox of **Region Exiting**.
3. Click  to enter the popup window.

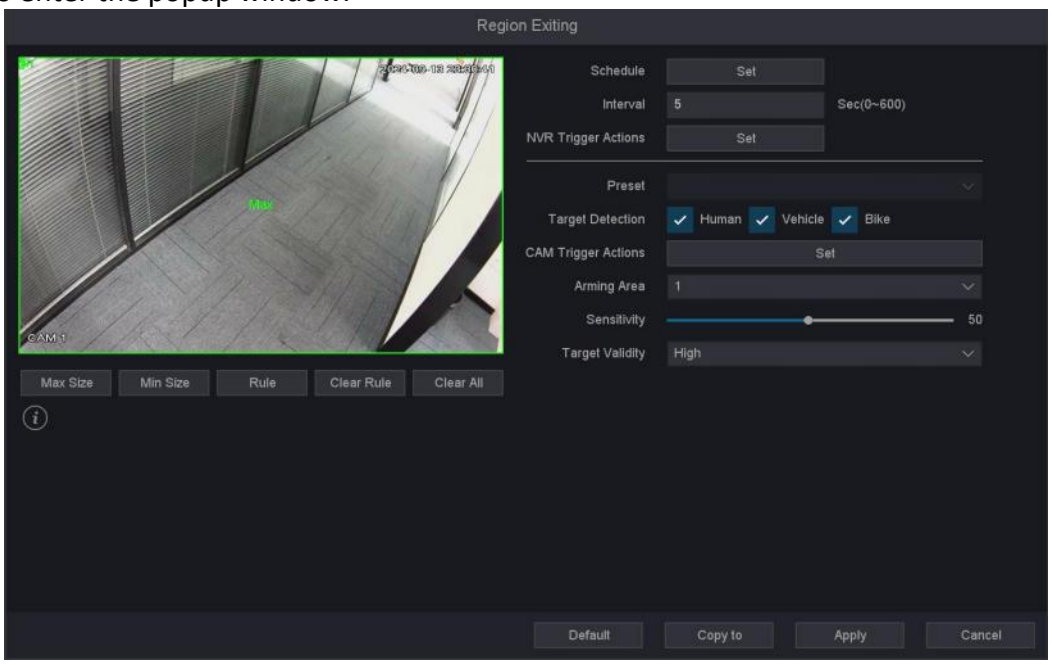


Figure 6-24 Region Exiting Detection

4. Click **Rule**, click 4 points by using the left mouse button to draw area directly in the video window.

Max Size: When the size of objects in the scene is larger than the drawing max size, the alarm will not be triggered.

Min Size: When the size of objects in the scene is smaller than the drawing Min Size, the alarm will not be triggered.

Clear Rule: Removes area on the current alert area.

Clear All: Removes all areas on all alert areas.

5. Set the arming **Schedule**. Refer to **6.3.4 Configure Arming Schedule** for details.
6. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms. Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.
7. Set the **NVR Trigger Actions**. Refer to **6.3.5 Configure Alarm Trigger Process** for details.
8. You can enable the **Human/Vehicle/Bike** filters. After enabling the filter(s), event will be triggered only by specified targets.
9. Set the **Advanced Setting**. Refer to ***6.3.6 Configure CAM Trigger Actions*** below for details.
10. Select the **Arming Area**, Up to 4 arming areas can be set.
11. **Sensitivity** value represent percentage of targets exit the area. A sensitivity value of 0 indicates the alarm will be triggered only if the target exit the area completely. A sensitivity value of 100 indicates the alarm will be triggered the target has just exit the area.
12. Select a **Target Validity** for the event among the options, the default is Higher. The higher the level, the more resemble human/vehicle target will be detected.

13. Click **Apply**.

6.3.4 Configure Arming Schedule

Steps:

1. Click Arming **Schedule**.
2. Choose one day of a week and set the time segment. Up to six time periods can be set within each day.

Note

Time periods shall not be repeated or overlapped

Figure 6-25 Set Arming Schedule

3. Edit the time period 1-6 that you want to trigger the alarm and check it, as shown bellow, edit the three time periods and check it.
4. Click **OK**.

Note

Edit the time period 1-6 that you want to trigger the alarm and check it, as shown in Figure 6-22, edit the three time periods and check it.

6.3.5 Configure Alarm Trigger process

Alarm Trigger process will be activated when an alarm or exception occurs.

Steps:

1. Click **NVR Trigger Actions**.

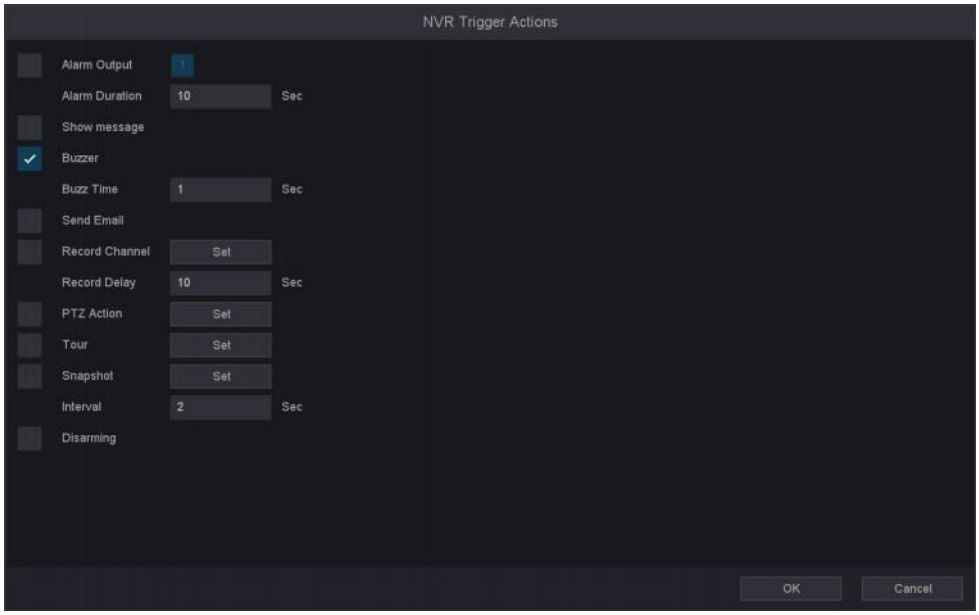


Figure 6-26 Set Trigger Process

2. Set normal Trigger process, alarm output Trigger process, trigger channel, etc.

Alarm Output

The local monitor will pop up the alarming channel image when an alarm is triggered. It requires to select the alarming channel(s) in **Trigger Channel**.

Show Message

The local monitor will pop up the alarming channel image when an alarm is triggered. It requires to select the alarming channel(s) in **Trigger Channel**.

Buzzer & Buzz time

It will trigger a buzzer beep when an alarm is triggered.

Send Email

It will send an email with alarm information when an alarm is triggered.

Record Channel

It triggers the alarm recording for that channel when an alarm is triggered, and associate the recording for viewing.

Record Delay

The alarm is over and the time to continue recording.

Send Email

It will send an email with alarm information when an alarm is triggered.

PTZ Action

It will trigger PTZ actions (e.g., call preset/patrol/pattern) when smart events occur.

Tour

When the alarm is triggered, it will patrol the screen you choose.

Snapshot

It triggers the alarm picture for that channel when an alarm is triggered.

Interval

The interval time of picture capture when the alarm lasts.

Disarming

Check to disarm the alarm.

3. Click **OK**.

Note

- For certain network cameras, you can set the alarm linkage action as audio alarm or light alarm.
- Ensure your camera supports audio and light alarm linkage.
- Ensure the audio output and volume are properly configured.
- If you require to set audio and light parameters, please log into the network camera via web browser to configure them.

6.3.6 Configure CAM Trigger Actions

CAM Trigger Actions will also be activated when an alarm or exception occurs. It includes the red and blue lights, sirens, white lights related to the configuration of parameters.

Red and Blue Lights

You can set the red and blue lights to flash red and blue when the event is triggered.

Schedule

In this screen you can set the lighting time schedule.

Flash Rate

Set the red and blue light alarm frequency.

Stay Time

Set the red and blue light alarm duration.

File

You can set the Siren Sound when the event is triggered.

Play Count

You can set the number of siren alarm.

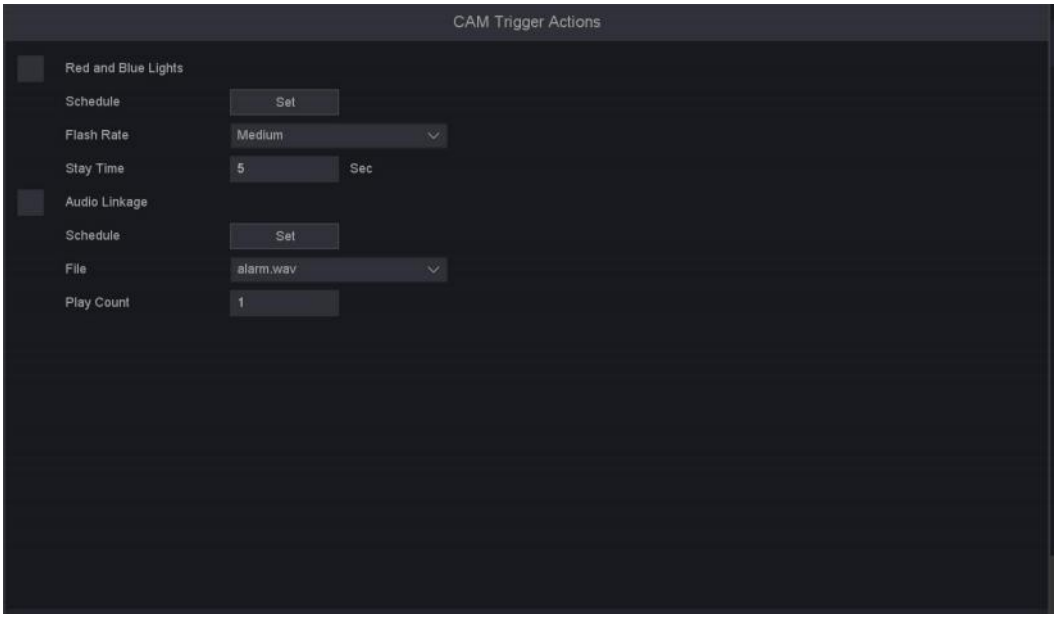


Figure 6-27 CAM Trigger Actions

6.4 Recording Management

6.4.1 Storage

Initialize HDD

A newly installed hard disk drive (HDD) must be initialized before it can be used to save videos and information.

Before You Start

Install at least an HDD to your video recorder. For detailed steps, refer to ***1.4 HDD Installation***.

Steps:

1. Go to **Setting Menu → Storage → Base**.

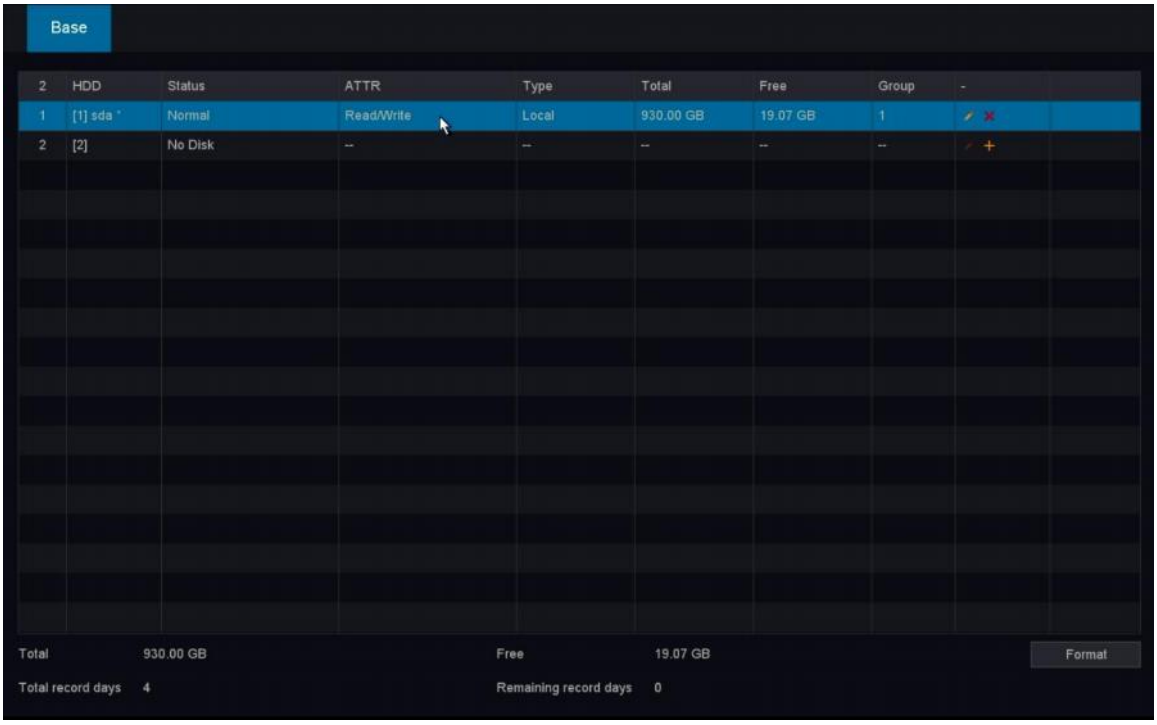


Figure 6-28 Base

2. Select an HDD.
3. Click **Format**.
4. Click **OK** to continue.

Note

Repair an HDD that with error in database. Please operate it with the help of professional technical support.

HDD SETTING

This page displays your device is plugged into the hard disk status, hard drive serial number, name, attributes, the type of hard drive, the total capacity / Remaining capacity, as well as belonging to a group, edit button and uninstall / Loaded button.

HDD

TShows HDD serial number, "[1]sda" or"[2]sdb".

Status

TShows the state of HDD, "Unformatted" or "normal" or "no disk".

ATTR

HDD have three type of ATTR, “Read/Write”, “Read only”, “Redundant”.

- ***Read/Write***, in this mode, hard drive support read and write operations, you can write data storage video and query playback business.
- ***Read only***, in this mode, hard drive support read operation, you can carry out hard drive data query playback but can not write data.

- ***Redundant***, in this mode, the NVR is configured with two hard discs, one of which is a read/write disc and the other is a redundant disc, which writes the video files to the two hard discs at the same time to ensure the security of the data.

Type

Shows HDD connection type.

Total

The size of the HDD total capacity.

Free

Shows HDD remaining capacity size.

Group

Video from specified channels can be recorded onto a particular HDD group through HDD settings, please refer to ***Configure HDD Groups***.

Uninstall

Uninstall HDD.

Add

Add the HDD from uninstall state.

Format

Format the HDD manually.

Total record days

Shows how many days HDD can save the record totally if without overwriting.

Remaining record days

Shows how many days HDD can continue to save the record if without overwriting.

Steps:

1. Click HDD the set button, interface shows as below.
2. Configure the other parameters as your desire.
3. Click **OK**.

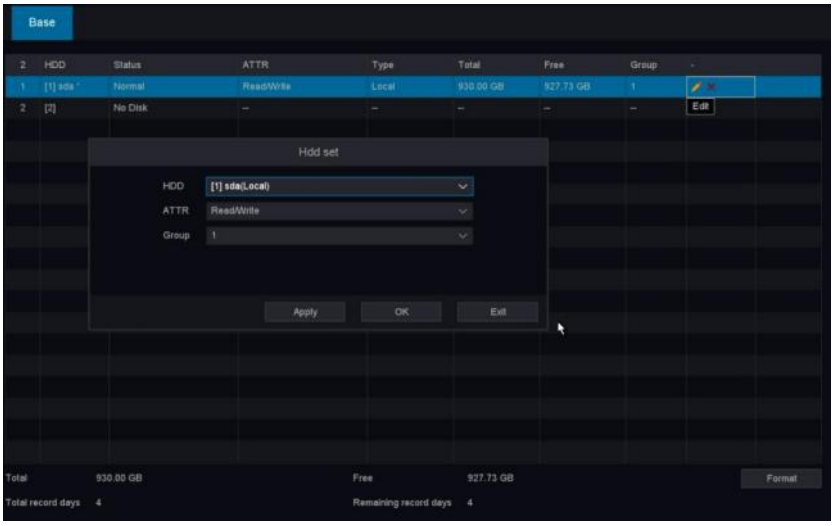


Figure 6-29 Edit

6.4.2 Configure Recording Schedule

Configure the schedule for the record by configuring the related parameters, Video recorder will automatically start/stop recording according to the configured schedule. And before these operations, please make sure that the HDD has already been installed and formatted. If not, please install the HDD and initialize it. For detailed information, please refer to ***6.4.1 Storage/Initialize HDD***.

Configure Recording

Steps:

1. Go to **Setting Menu → Storage → Schedule.**

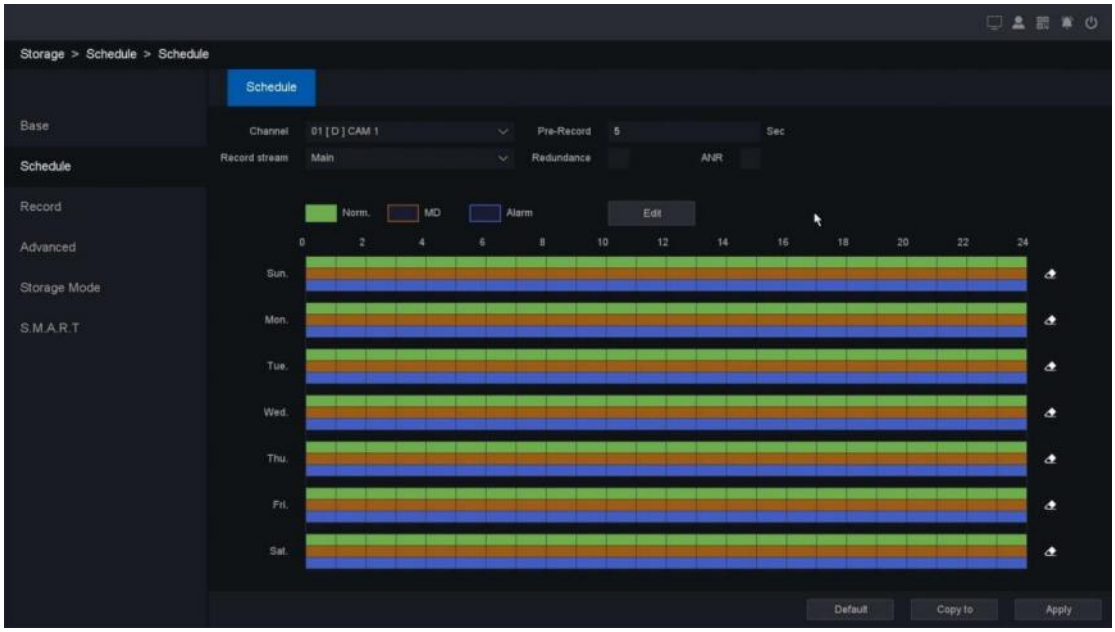


Figure 6-30 Schedule

2. Select the channel.
3. Set the Pre-Record. (The time to be pre-record on the Event video. Range from 0-30 seconds.)
4. Select main stream recording or sub stream recording (some devices with less than 16 channels can support dual stream recording).
5. Set recording schedule. Refer to ***Edit Schedule*** below for details.
6. Click Apply.

Note

- ANR: When IPC disconnected with NVR and IPC has its own record in its TF-card, NVR will supplement the record from IPC's TF card when IPC re-connects with NVR.
- Redundancy: The record will be backed up in redundant HDD, if there is redundant HDD device installed in the system. Please check the chapter 4.4.3 for the details.
- If there are several channels to be set with pre-record function, the pre-record time will be less than 30 seconds (the maximum value), because pre-record function will consume the system resources and it will adjust the time length to support many channels at the same time.

Edit Schedule

OPTION 1:

You can click the button Edit to enter the edit screen and set the schedule of the record.

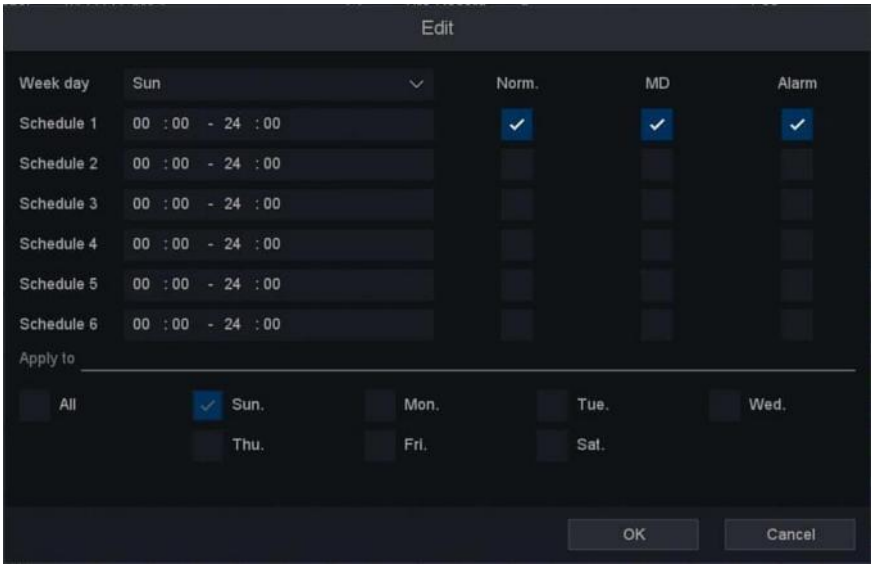


Figure 6-31 Edit

Week Day

The day to set the schedule, from Sunday to Saturday.

Schedule 1-6

The time slot for the record, you can set 6 time slots during one day.

Norm

The type of the record, record as normal video.

MD

The type of the record, record as motion detection video.

Alarm

The type of the record, record as alarm video.

Steps:

1. Click the **Edit** button into the editing interface.
2. Select the Week Day which from Sunday to Saturday.
3. Set the time period you want to record.
4. Check Alarm, MD or Norm for the type of recording you want.
5. Click **OK.**

Note

You can check the All to select all the week day and set the schedule at the same time, or check several of them. If Norm, MD and Alarm are checked at the same time, it will record as a priority like: Alarm > MD > Norm. That means if the three types of detection occurred at the same time, the type of the record will be set as Alarm video

OPTION 2:

You can also edit the schedule on the configuration graph screen, as shown below.

Figure 6-32 Schedule

Steps:

1. Select any one of Norm, MD, and Alarm in the upper left corner
2. Hold down the left mouse button and move on the corresponding bar.
3. If we check the Norm, and Hold down the left mouse button to move on the corresponding bar, we will be able to edit the green part of the bar. The first Holding down is selected, the second Holding down is deleted, and so on.
4. Click the icon eraser  to clear the setting of the bar at once.
5. After all the settings finished, click Apply to activate all the settings.
6. Optional: You can copy the current channel setting to other channels by clicking the button Copy To. As shown below.

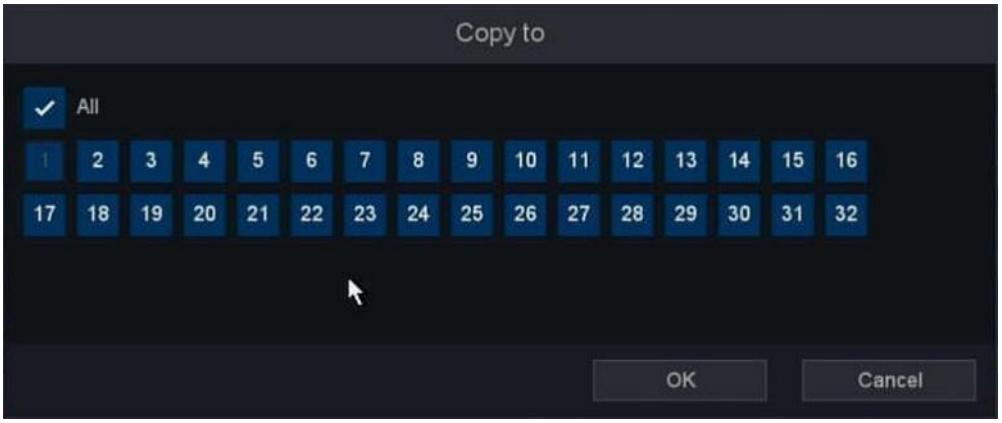


Figure 6-33 Copy to

Note

By clicking the button Default, you can reset all the settings.

Configure MD Recording

You can configure the recording triggered by the motion detection.

Steps:

1. Select any MD in the upper left corner

2. Hold down the left mouse button and move on the yellow corresponding bar, check or clear.

3. Optional: Click the icon eraser  to clear the setting of the bar at once.

4. After all the settings finished, click Apply to activate all the settings.

5. Optional: You can copy the current channel setting to other channels by clicking the button Copy To. As shown below.

Configure Alarm Recording

You can configure the recording triggered by the **Line crossing detection**, **Intrusion detection** and **Region entrance** etc.

Steps:

1. Select any Alarm in the upper left corner.

2. Hold down the left mouse button and move on the blue corresponding bar, check or clear.

3. Optional: Click the icon eraser  to clear the setting of the bar at once.

4. After all the settings finished, click Apply to activate all the settings.

5. Optional: You can copy the current channel setting to other channels by clicking the button Copy To. As shown below.

6.4.3 Configuring video encoding

By configuring the encode parameters you can define the parameters which affect the image quality, such as the Compression type, Resolution, Frame Rate, Bit Rate Type, Quality, etc.

The NVR support Dual Stream Encode, we can set the main stream encode and sub stream encode on this screen.

Steps:

1. Go to **Setting Menu** → **Channel** → **encode**.
2. Configuring video encoding.

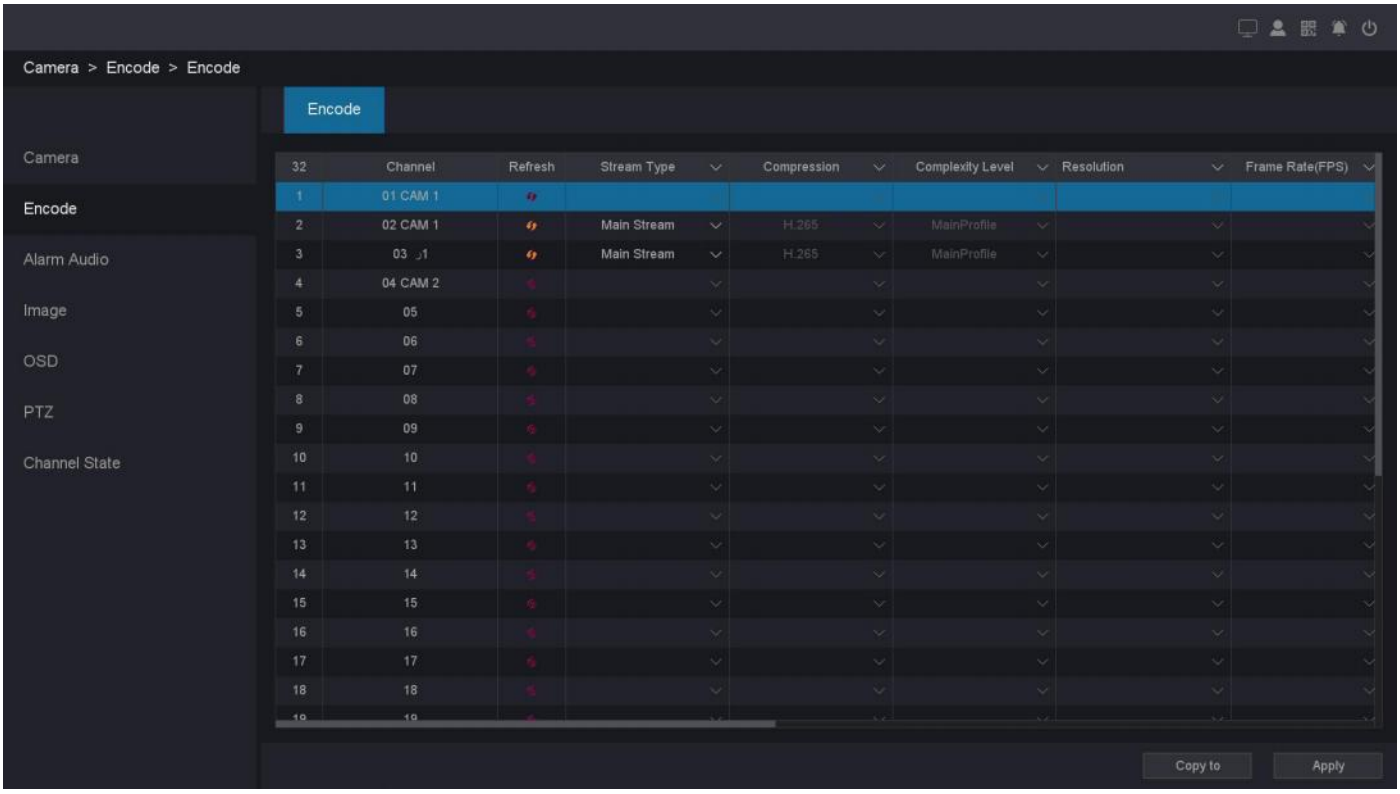


Figure 6-34 Encode

Channel

Select the channel to configure.

Refresh

Click it to refresh IP channel's encode parameters.

Main Stream

Main stream refers to the primary stream that affects data recorded to the hard disk drive and will directly determine your video quality and image size. Comparing with the sub- stream, the main stream provides a higher quality video with higher resolution and frame rate.

Sub Stream

Sub-stream is a second codec that runs alongside the mainstream. It allows you to reduce the outgoing internet bandwidth without sacrificing your direct recording quality. Sub-stream is often exclusively used by smartphone applications to view live video. Users with limited internet speeds may benefit most from this setting.

Compression

H.265, this is the compression protocol for encoding. It also supports H.264 IP cameras.

Resolution

Image resolution is a measure of how much detail a digital image can hold: the greater the resolution, the greater the level of detail. Resolution can be specified as the number of pixel-columns (width) by the number of pixel-rows (height), e.g., 1024×768.

Frame Rate

Frame rate refers to how many frames are captured each second. A higher frame rate is advantageous when there is movement in the video stream, as it maintains image quality throughout.

Bitrate

The bit rate (in Kbit/s or Mbit/s) is often referred to as speed, but actually defines the number of bits/time unit and not distance/time unit.

H.264+/H.265+

Enable smart encode technology, all the record file can reduce the HDD space maximum 80%-90% in static view.

Audio

Set the audio encode for this channel, as shown below.

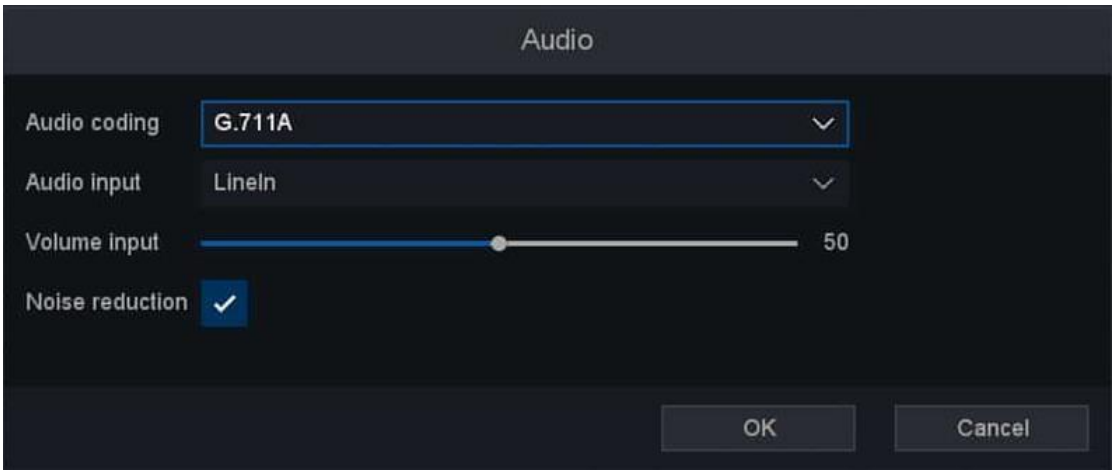


Figure 6-35 Audio

Note

Higher resolution, frame rate, and bitrate provide you better video quality, but it also requires more internet bandwidth and uses more storage space on the hard disk drive.

3. Click **Apply**.

4. Optional: You can copy the configuration of selected channels to the one which you would like to apply the same configuration. By clicking Copy To button, select the channels and save the setting. Please refer to Figure 6-4-3-3 below Copy To.

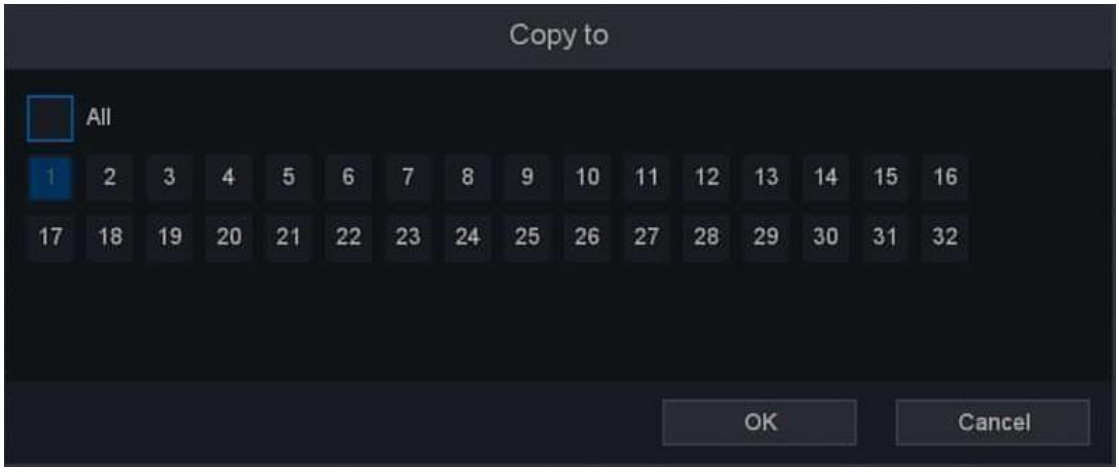


Figure 6-36 Copy

7. Maintenance

7.1 Restore Default

Steps:

1. Go to **Setting Menu → System → Config → Default**.

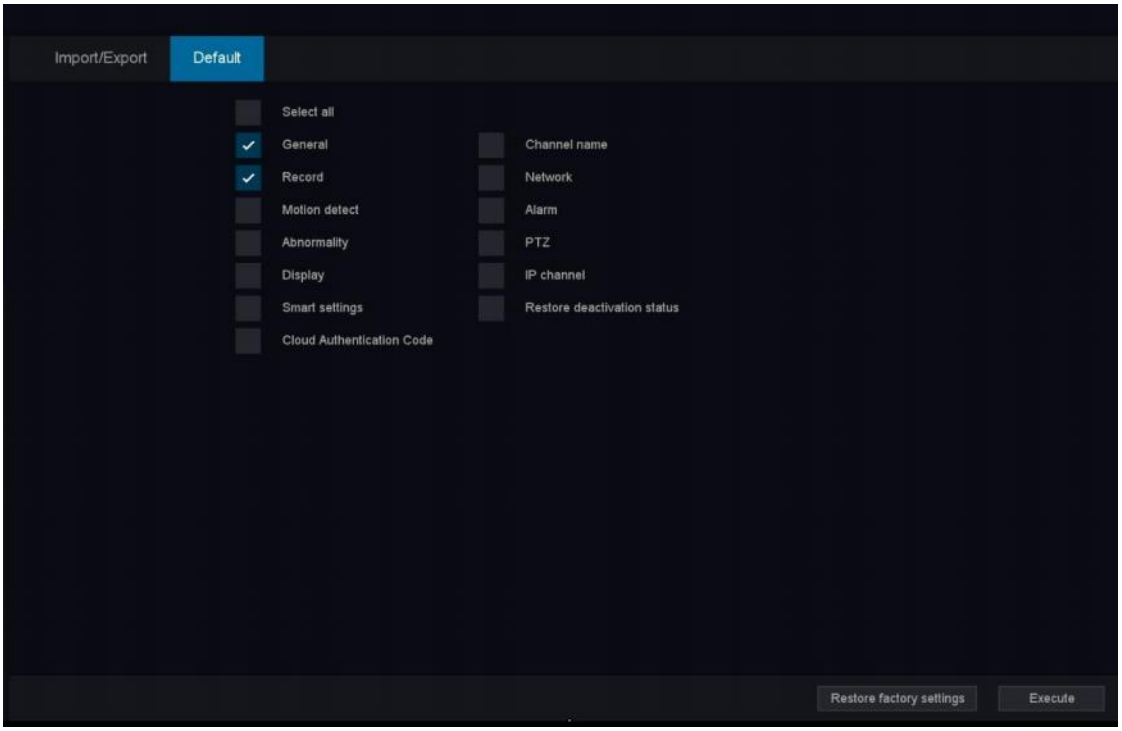


Figure 7-1 Default

2. Select the restoring type.

Simple Restore

● Choose the function item, General/Channel name/Control/Network/Motion Detect/Alarm/Abnormality/PTZ/Display/IP Channel/Smart settings/Cloud Authentication Code.

● Click 'execute' button, the item what you chosen restore defaults.

● Optional: you can also select the "select all" button, all the items restore default.

Factory Defaults

Click the '**Restore factory settings**' button Restore all parameters to the factory default settings.

3. If you did the restore, the device will reboot automatically.

7.2 Search Log

The operation, alarm, exception and information of video recorder can be stored in logs, which can be viewed and exported at any time.

Steps:

1. Go to **Setting Menu → System → Log → Log**.

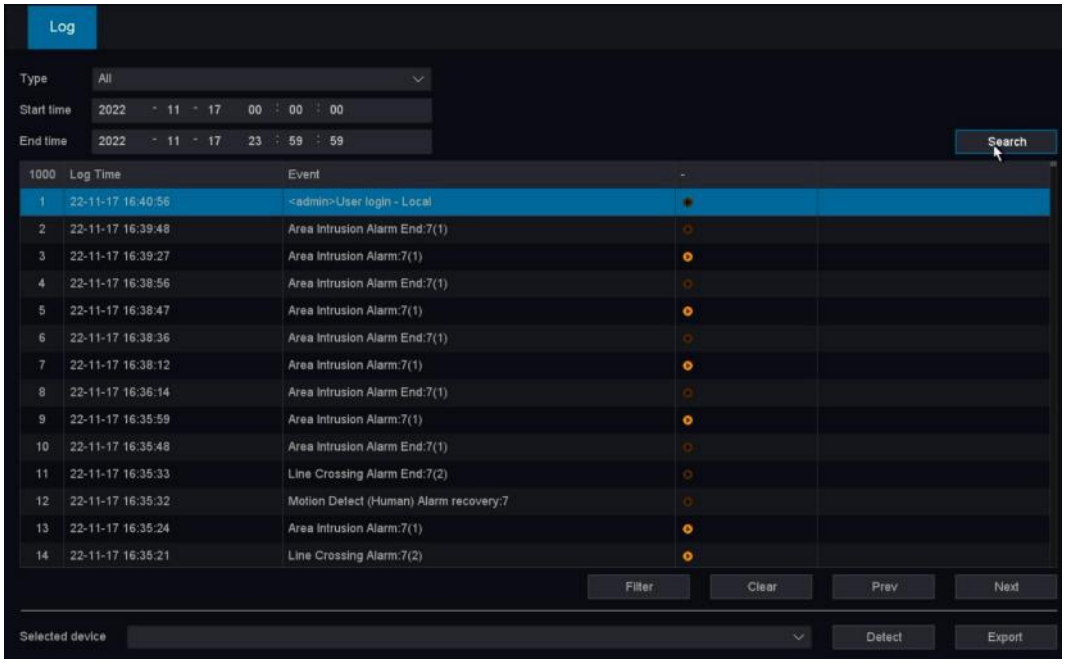


Figure 7-2 Log

2. Select the Type of Log.
3. Select the time period of the log you want.
4. Click **Search**.

Type

Search type include “System”, “Config”, “Storage”, “Alarm”, “Record”, “Account”, “Clear”, “Playback”.

Start time/End time

Set the period you want to search.

Search

After you set the period and search type, click the search button, and device can save 4096 logs tops.

Prev/Next

It can show 1000 logs in one page, and you can check on more by click “Prev/Next” button.

Filter

On this page you can chose whether cover the log after it’s full, and decide which type operation log you want to save.

Detect

Detect the USB device.

Export

Export the operations log into the USB flash disk.

7.3 Upgrade

Warning

Do not shutdown or turn off the power during upgrade.

7.3.1 Local Upgrade

Before You Start

Store the upgrade firmware to a backup device (USB flash drive), and connect it to your device.

Steps:

1. Go to **Setting Menu → System → Maintain - Upgrade**.

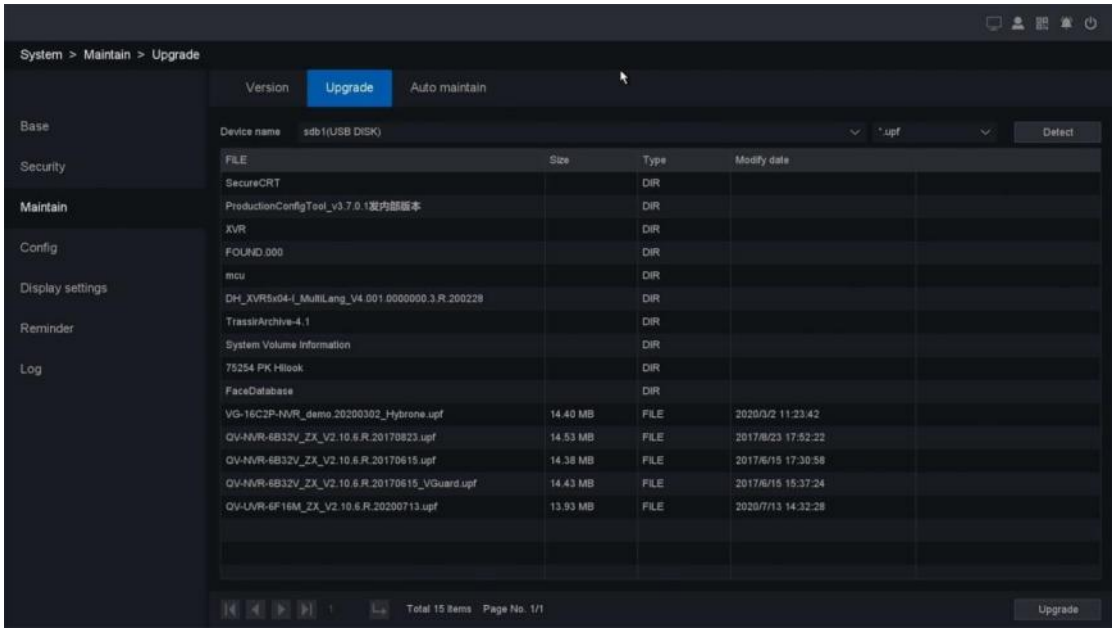


Figure 7-3 Upgrade

2. Select your USB flash drive from the drop down box of Device name.
3. Select the correct upgrade firmware.
4. Click **Upgrade**.
5. Click **OK**, Your device will reboot automatically after the upgrade is complete completed.

7.3.2 Online Upgrade & The Version

Upgrade the device with the latest online firmware.

Before You Start

Ensure P2P is enabled and properly configured. Refer to ***6.2.2 QV-P2P*** for details.

Steps:

1. Go to **Setting Menu → System → Maintain - Version**.

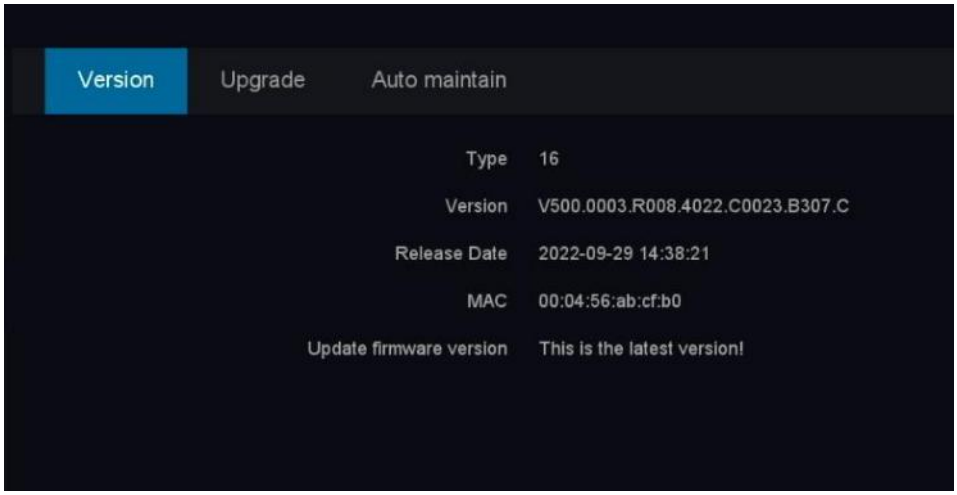


Figure 7-4 Version

2. The system will automatically detect whether there is the latest firmware.

3. If there is a new firmware, Click Upgrade.

4. Click **OK**. Your device will reboot automatically after the upgrade is complete completed.

5. Optional: in this page, you can see the version information of the device.

Type

Number of channels supported by the device.

Version

Version Information.

Release Date

The release date of firmware.

MAC

The MAC address of the device.

Update firmware version

Update firmware version information.

8. Alarm Status & Show Message

When events occur, you can view their details in Alarm Status.

8.1 Alarm Log

Every alarm event occurs, you will see it here.

Steps:

1. Click at the upper-right corner or Go to **Setting Menu → Event → Alarm Information → Alarm Events**.

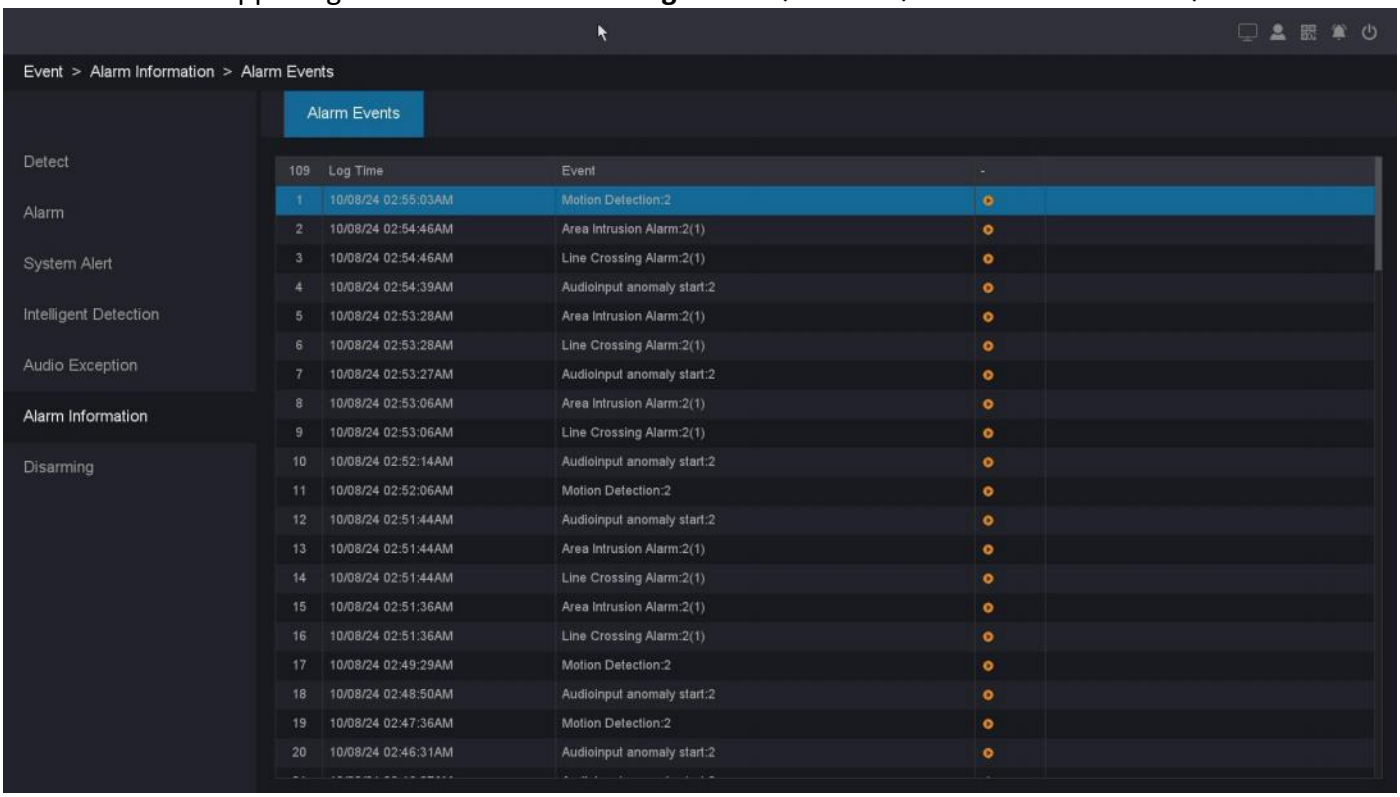


Figure 8-1 Alarm Center

2. You can also click the button to view the video with the alarm events hint.

8.2 View Alarm in Show Message

If The Show message is configured in the Trigger process, please refer to the configuration of ***6.1.3 Alarm events & Trigger process.***

Steps:

1. Go to **Setting Menu → Event → Detect, Intelligent Detection or VQD → Trigger process**.
2. Check the Show Message as shown below.

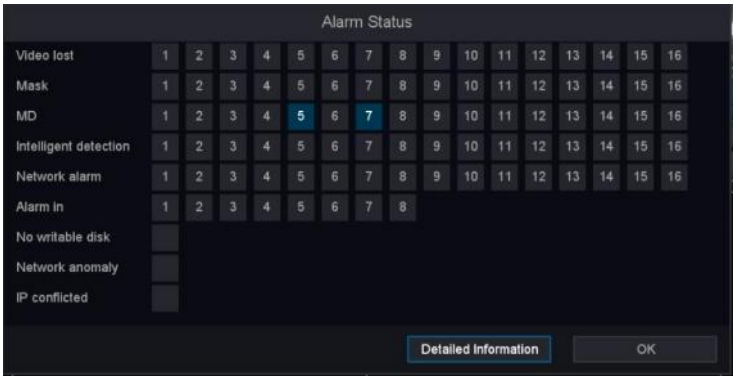


Figure 8-2 Alarm Status

9. Web Operation

9.1 Introduction

You can get access to the video recorder via web browser.

You may use one of the following listed web browsers: Internet Explorer 6.0 to 11.0, Apple Safari, Mozilla Firefox, and Google Chrome. The supported resolutions include 1024×768 and above.

9.2 Login

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

Steps:

1. Open web browser, input the IP address of the video recorder and then press **Enter**.

Note

If you have changed HTTP port, enter **http://IP address:HTTP port** in address bar. E.g., **http: 192.168.1.10:81**.

2. The first time you log in, you will be prompted to install the plugin.
3. Allow the prompt and download the plugin to complete the installation.
4. Close the browser and reopen.
5. Select language in the interface.
6. Enter user name and password in the login interface (The default username is admin and the password is empty).
7. Click **Login**.

Figure 9-1 Login

Note

- If you log in without installing the plugin, you will still be prompted to install the plugin, Please Follow the installation prompts to install the plug-in. Otherwise you will not be able to use it normally.
- You may have to close the web browser to finish the installation of the plug-in.

9.3 Preview

After your login successfully, you will enter the preview interface, as show below.

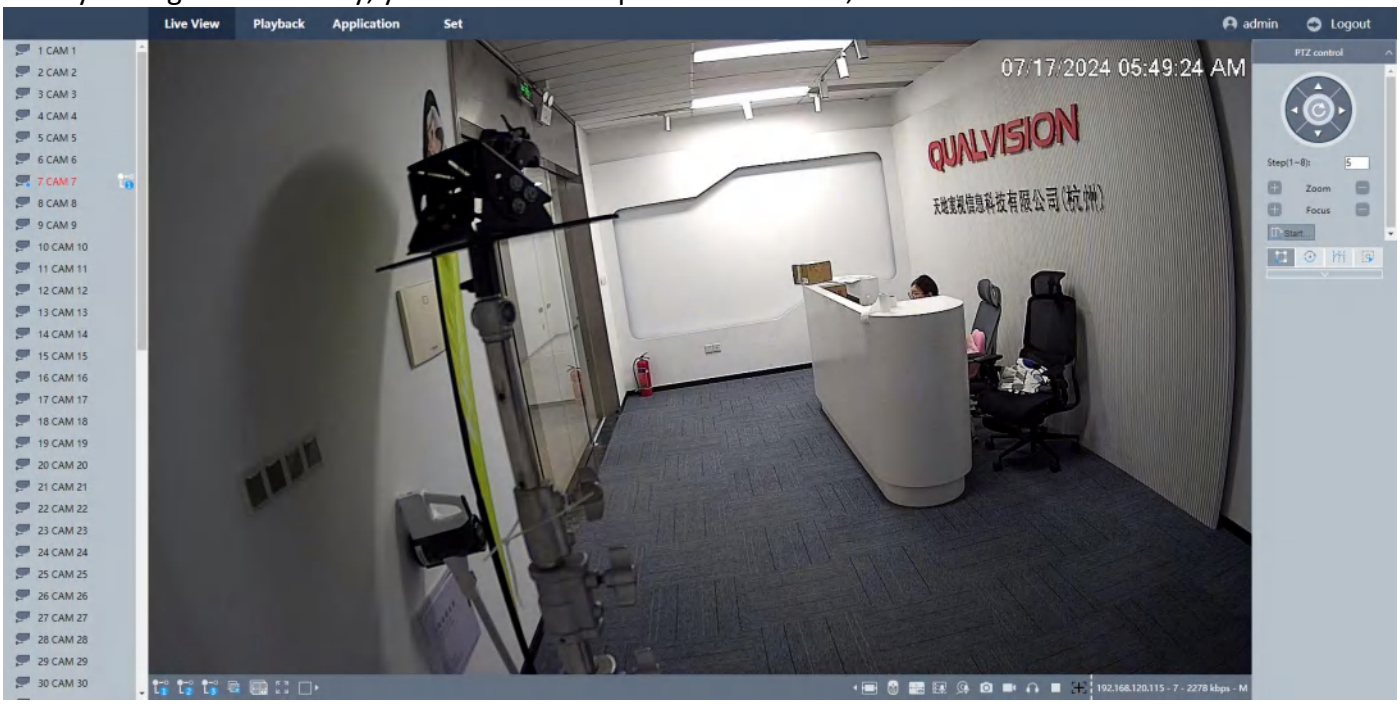


Figure 9-2 Live View

9.4 Playback

Click **Playback** to enter playback interface, as show below.

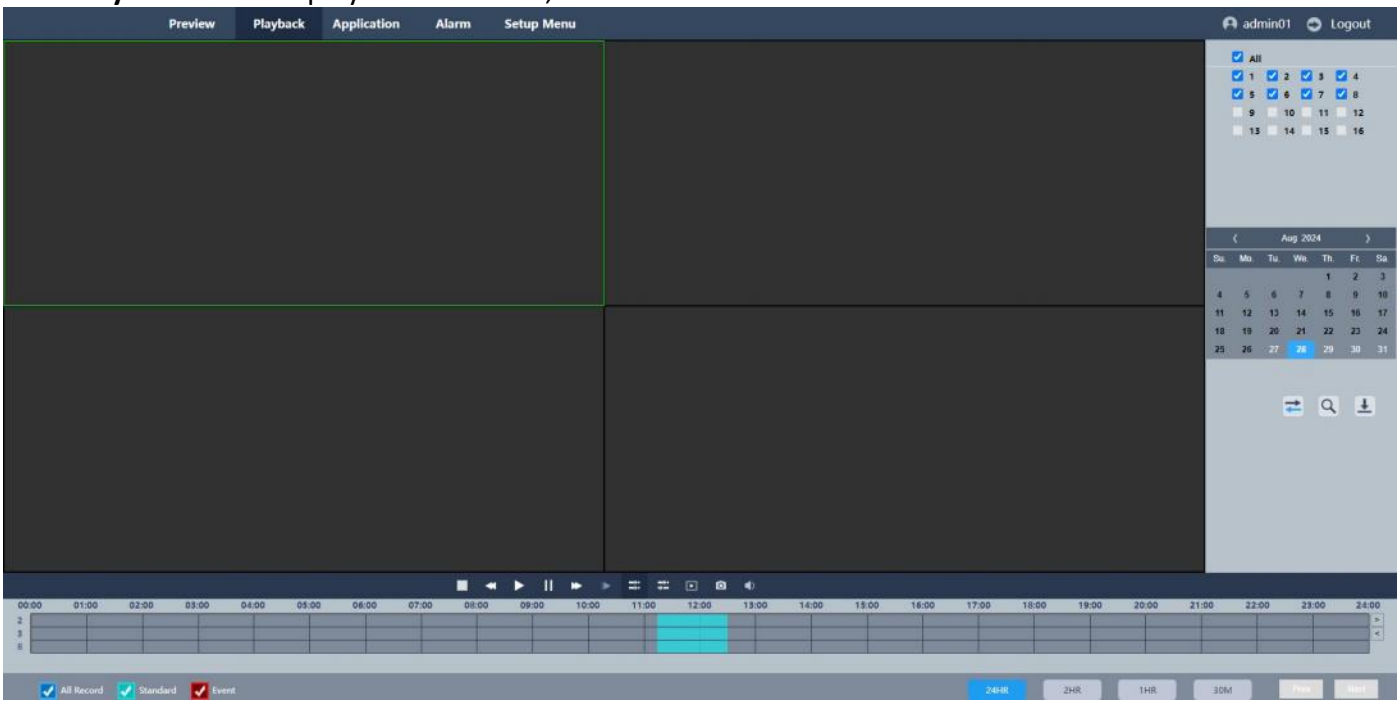


Figure 9-3 Playback

9.5 Set

Click **Set** to enter configuration interface.

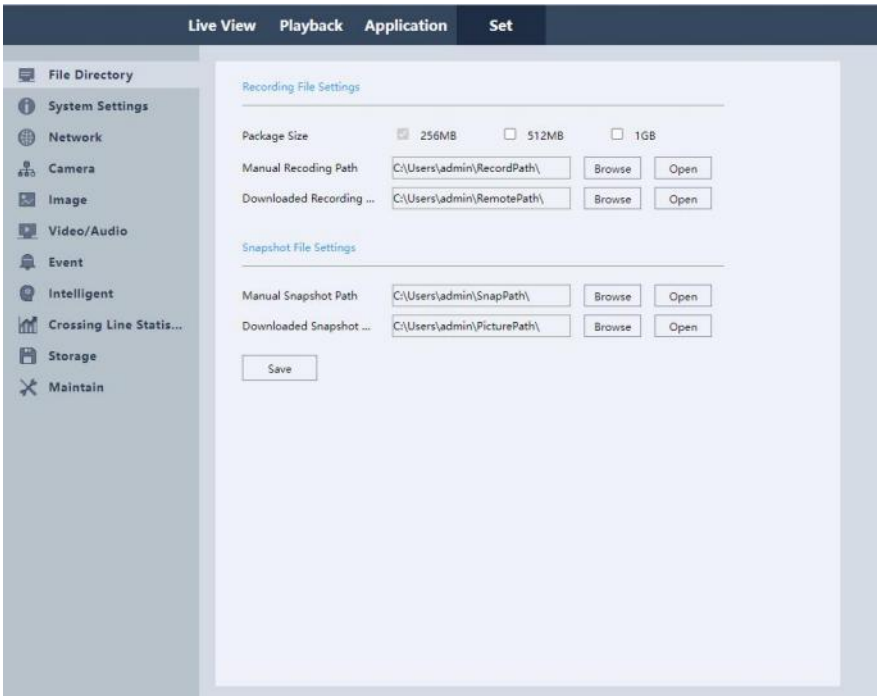


Figure 9-4 Configuration

9.6 Log

Steps:

1. Go to **Set → Maintain → Log**.
2. Set the search conditions.
3. Click **Search**.

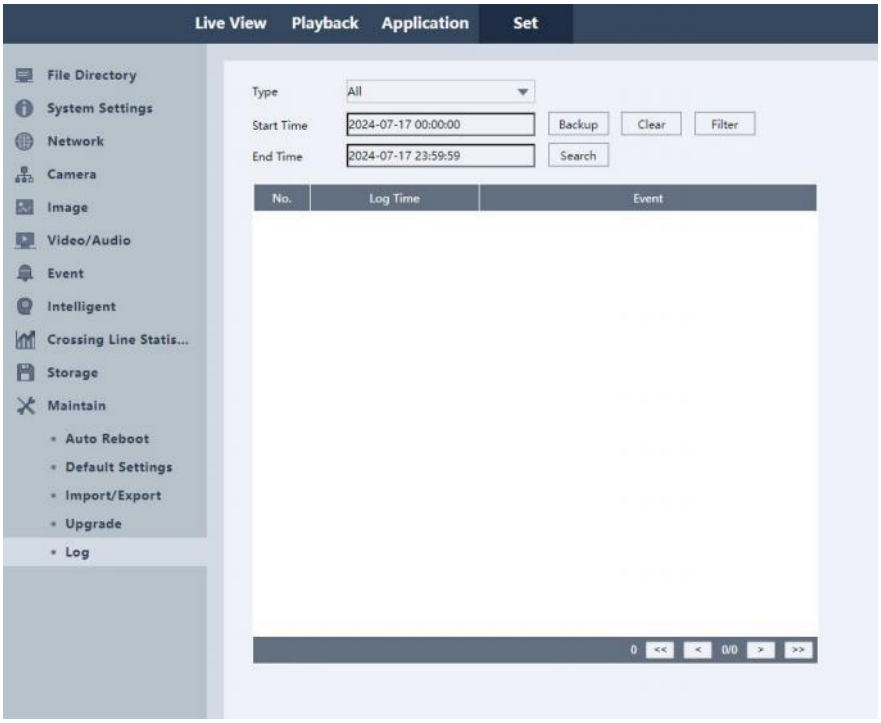


Figure 9-5 Log

10. Configuration (Advanced Mode)

10.1 System Configuration

10.1.1 Basic Settings

Configure Basic Settings

You can configure the Language, Time zone, System time, Time format, DST, Auto logout, Startup Wizard, Smart display, Smart tracking display, Preview strategy.

Steps:

1. Go to **Setting Menu → System → General**.
2. Configure the parameters as your desire.

DST

DST (Daylight Saving Time) refers to the period of the year when clocks are moved one period ahead. In some areas worldwide, this has the effect of creating more sunlit hours in the evening during months when the weather is the warmest.

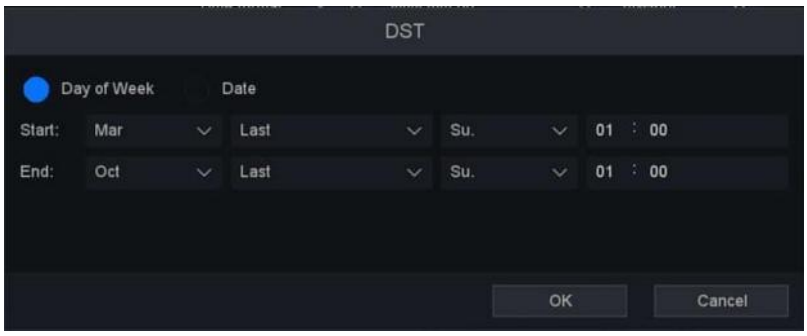


Figure 10-1 DST Settings

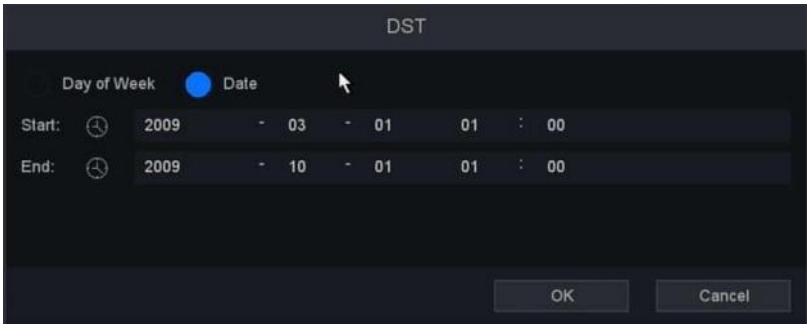


Figure 10-2 DST Settings

Time format

The form of time display.

Device No

When you are using one remote control to control several NVRs, you can give a number to each NVR as address for your management.

Host Name

NVR's name.

Smart display

It will display smart alarm line or area after you enable this function, You can see the blue box in the picture as below.

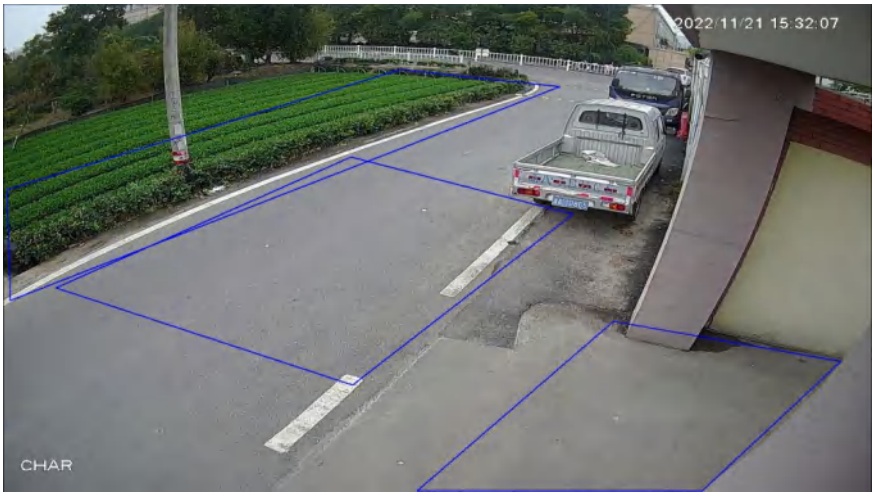


Figure 10-3 Smart Display

Smart tracking display

It will track the moving objects from the specified intelligent alarm type, you can see the blue tracking box in the picture as below.

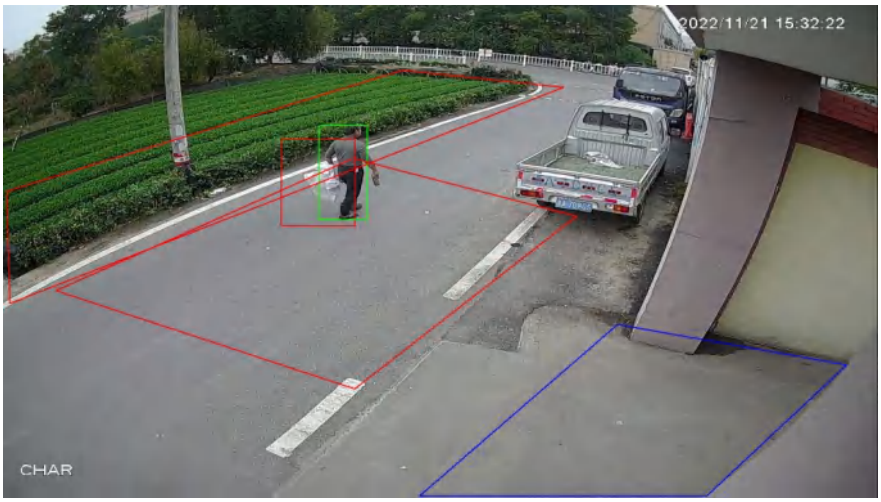


Figure 10-4 Smart Tracking Display

Preview strategy

Real-time priority and fluent priority is available for the preview strategy.

3. Click **Apply**.

10.1.2 Security

Account

There are three default accounts in the NVR: admin/guest/default, their default passwords are empty. The account of admin is an administrator, it has the permission to add and delete any user and configure user parameters. The account of default is used when logout, and this account just has preview permission, so that we can also use this account to decide which channel's preview can be shown when logout.

Steps:

1. Go to **Setting Menu → System → Security → Account**.

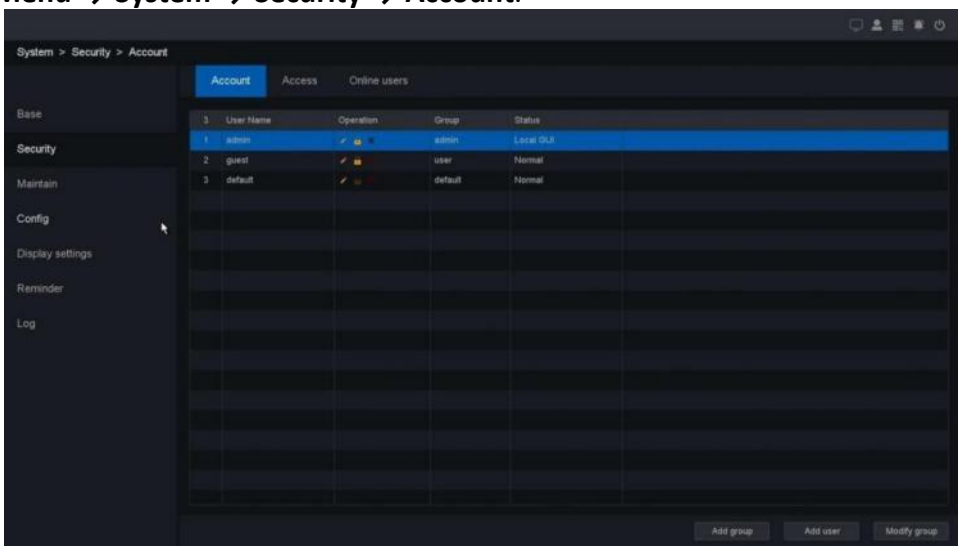


Figure 10-5 Account

Add Group

Add a user group and set the permission. There are many different permissions: control panel, real time surveillance, playback, recording setup, video file backup and so on.

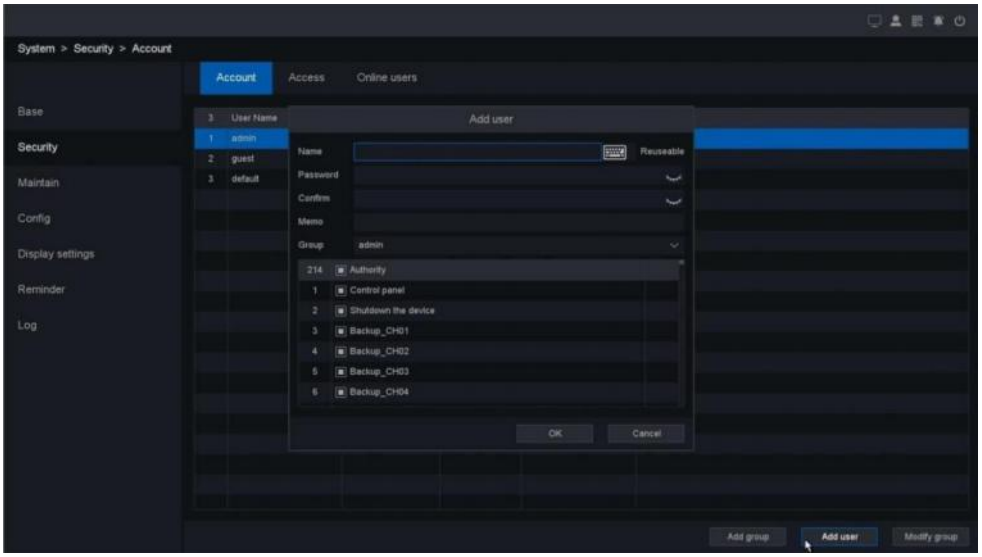


Figure 10-6 Add Group

Modify Group

Modify the existing groups' attribute, configure the parameters as your desire, as shown below.

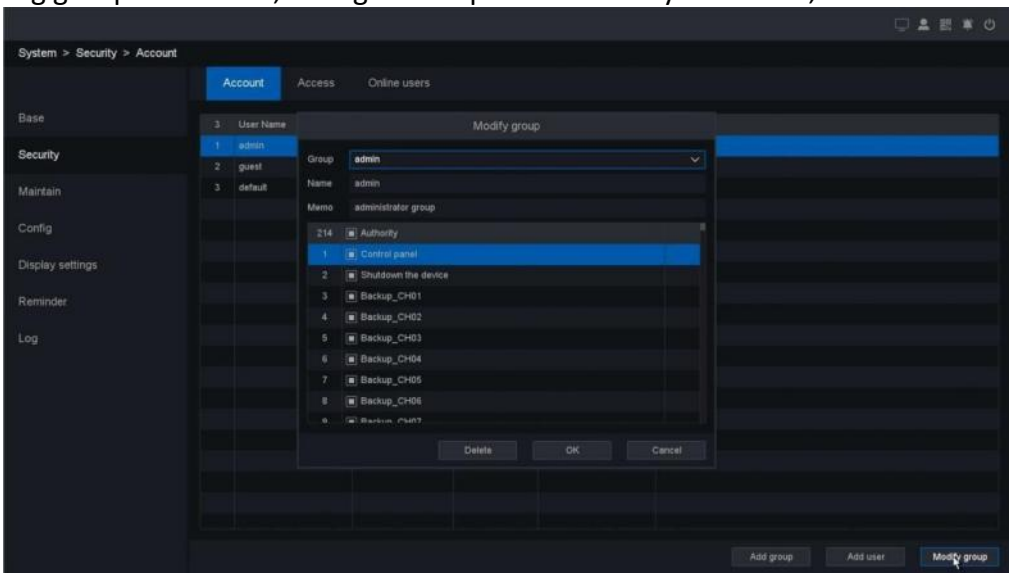


Figure 10-7 Modify Group

Add user & Modify User & Modify password

Please refer to ***6.1.2 User.***

Note

- The character length of name is 64 bytes at most for the users and users' group. Legal characters include: letter and number, other characters are forbidden.
- The user management includes: group/user. One user should belong to one group.

Access

In this chapter by setting the IP address to be blocked and trusted, you can block specific IP address or allow some trusted IP.

Steps:

1. Go to **Setting Menu → System → Security → Access**.

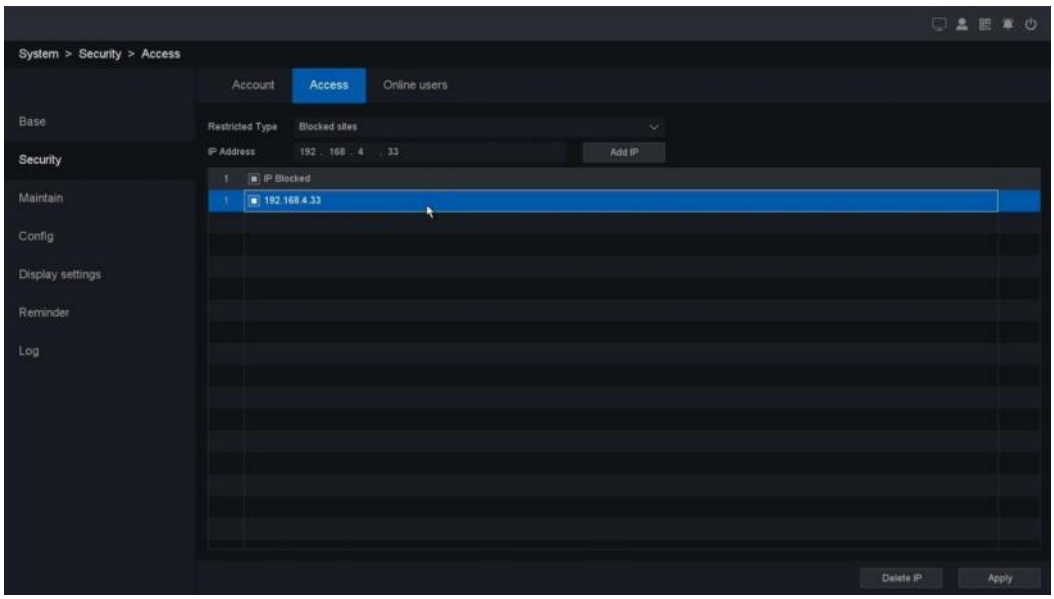


Figure 10-8 Access

Blocked Sites

The IP Addresses which are added to blocked sites are not allowed to login NVR.

Trusted Sites

Only the IP Addresses which are added to trusted sites are allowed to login NVR.

1. Add IP or delete IP by clicking Add IP and Delete IP buttons.
2. Click the Apply button.

Online Users

On the online user interface, you can see online connected users. If there are unknown users, you can disconnect them or Shielding the connected user in a time that you set.

1. Go to **Setting Menu → System → Security → Online Users**.

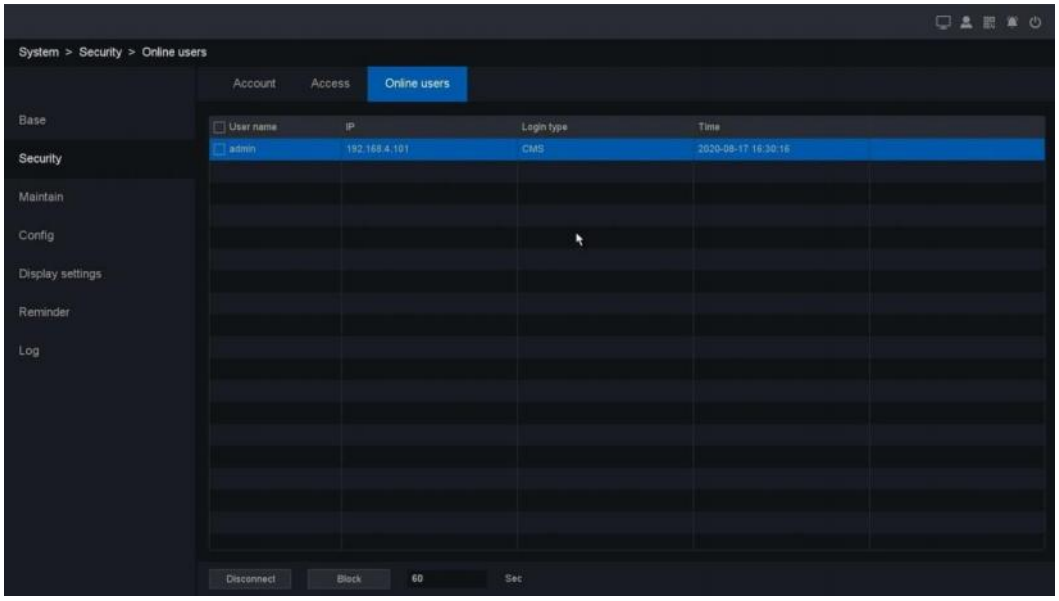


Figure 10-9 Online Users

User Name

Remote device login this NVR device account.

IP

User remote access devices IP Address.

Login Type

Remote connection type.

Disconnect

Disconnect the connected user, and disconnected users will reconnect automatically in a while.

Block

Shielding the connected user in a time that you set, and remote user will reconnect in that time.

10.1.3 Maintenance

The Version & The Upgrade

Please refer to ***7.3.1 Local Upgrade & 7.3.2 Online Upgrade & The Version***.

Auto maintain

In this interface, you can set the automatic maintenance time of the device. Automatic

maintenance on time can clear unnecessary caches and improve device performance.

1. Go to **Setting Menu → System → Maintenance → Auto maintain**.

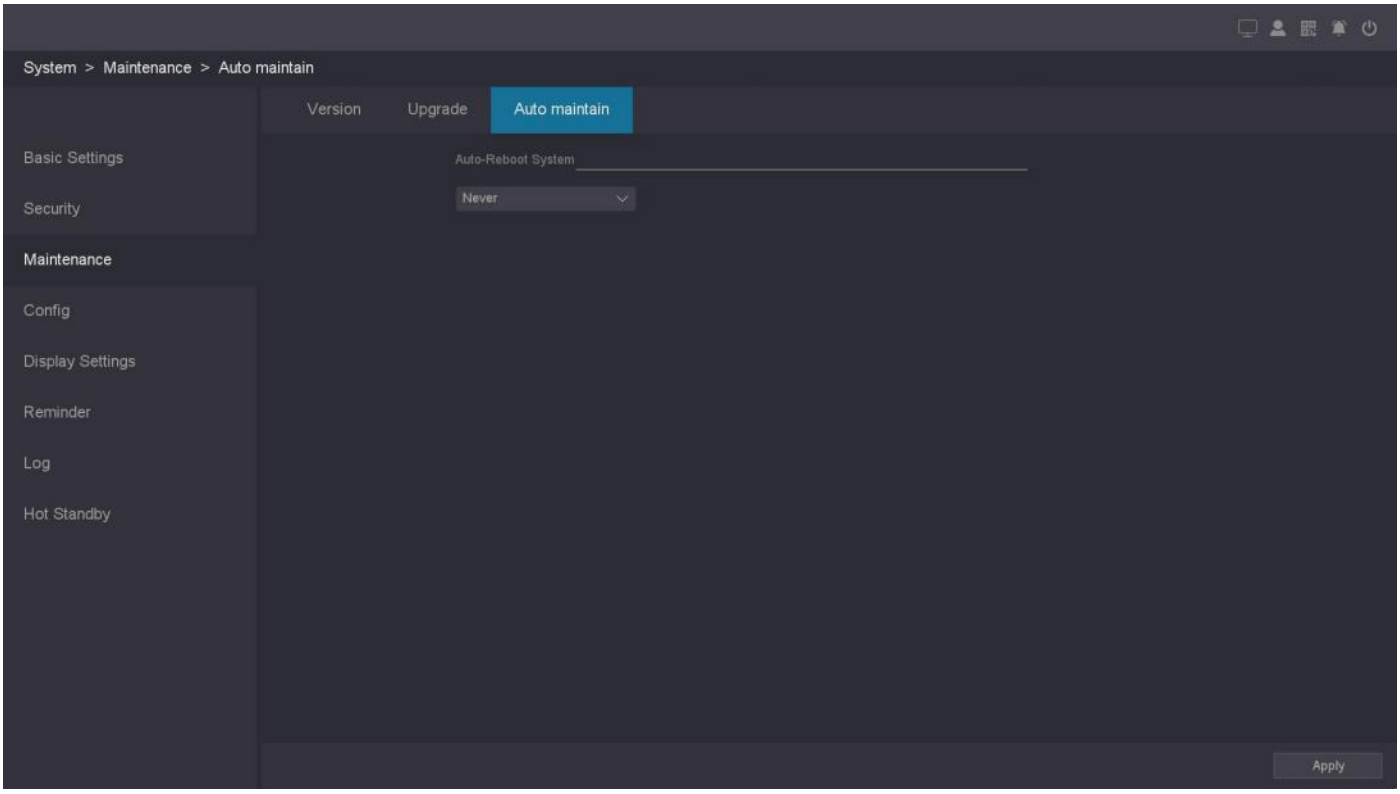


Figure 10-10 Audio Maintain

10.1.4 Display setting

Display

In this pare you can adjust video output parameters.

1. Go to **Setting Menu → System → Display settings → Display**.
2. Click **Apply** after the setting is complete.

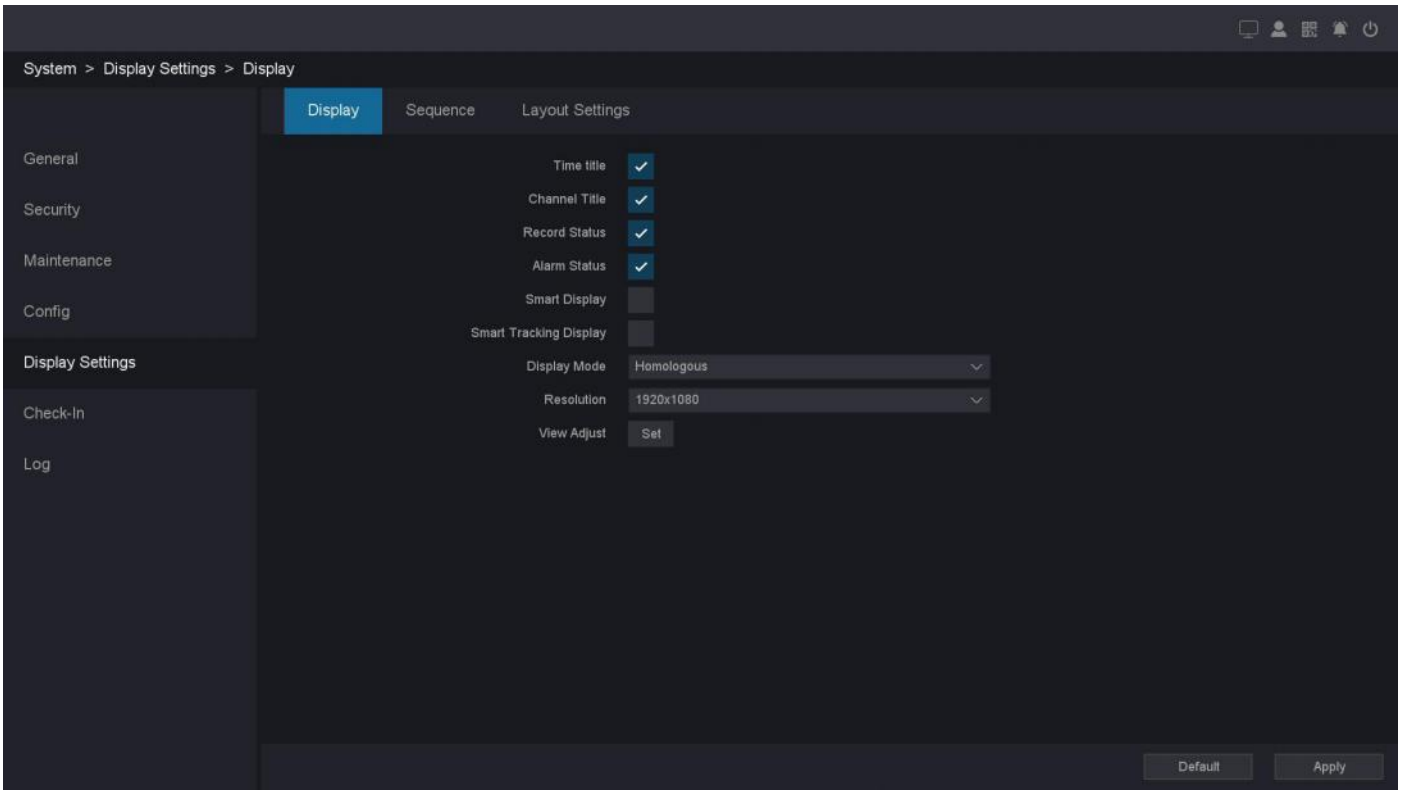


Figure 10-11 Display

Resolution

Select the appropriate resolution of menu output.

Display Mode

Set the connected display mode .

Note

For 6B series NVR, they support show different things on two monitors, and their display mode includes.

- Homologous: All monitors will display the same thing.
- VGA/HDMI1, HDMI2: VGA/HDMI1 port will display the different thing with HDMI2 port.
- HDMI1, VGA/HDMI2: VGA/HDMI2 port will display the different thing with HDMI1 port.

Sequence

In this pare you can set the patrol screen of the monitor.

1. Go to **Setting Menu → System → Display settings → Sequence**.
2. Click **Apply** after the setting is complete.

Layout

The channel quantity and channel group for preview, for example there's a 64ch NVR, and choose View 16 – 1, the preview interface will show channel 1-16; if choose View 16 – 2, the preview interface will show channel 17-32, etc.

Dwell Time

The time in seconds to dwell between switching of channels when enabling auto-switch in Live View.

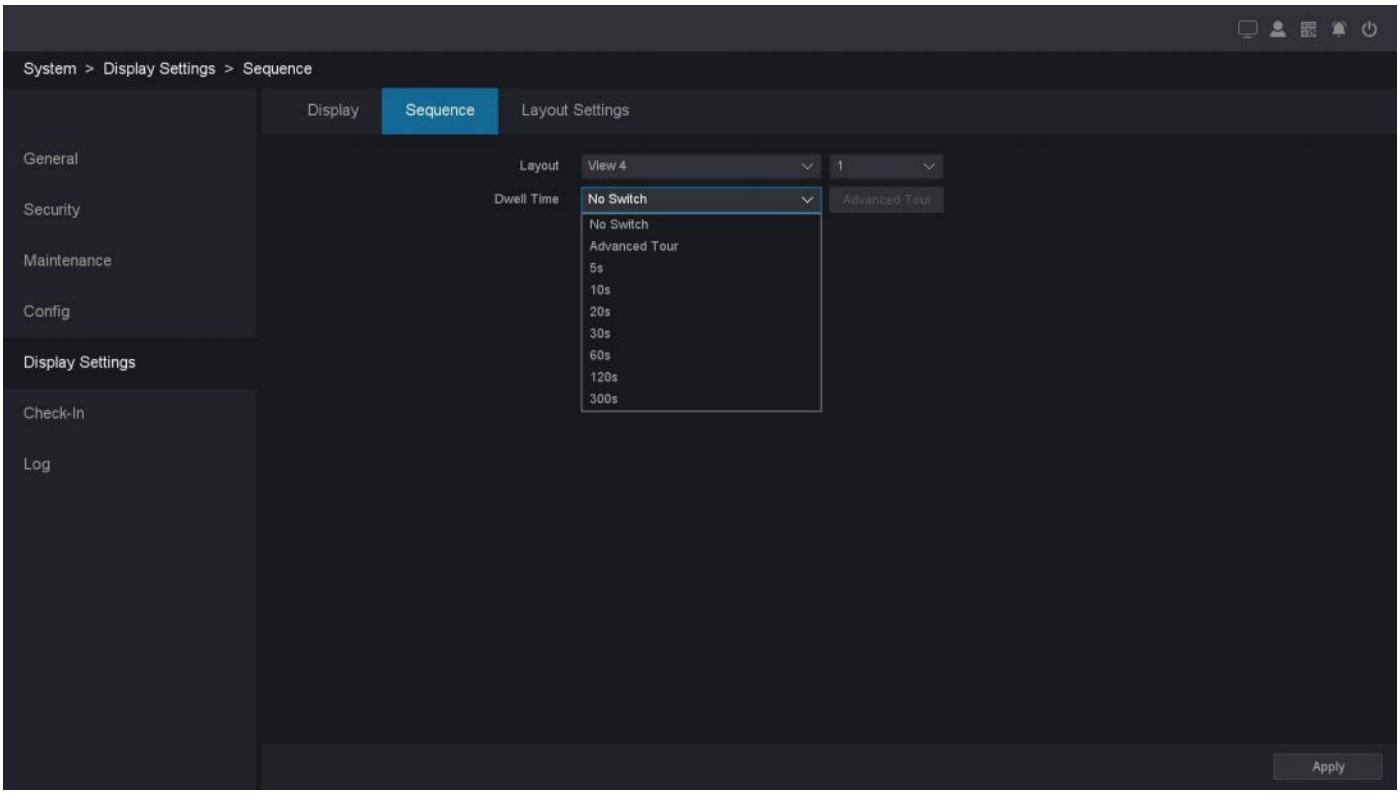


Figure 10-12 Dwell Time

3. And if you choose advanced tour in 'Dwell time', the setting method is shown as following picture:

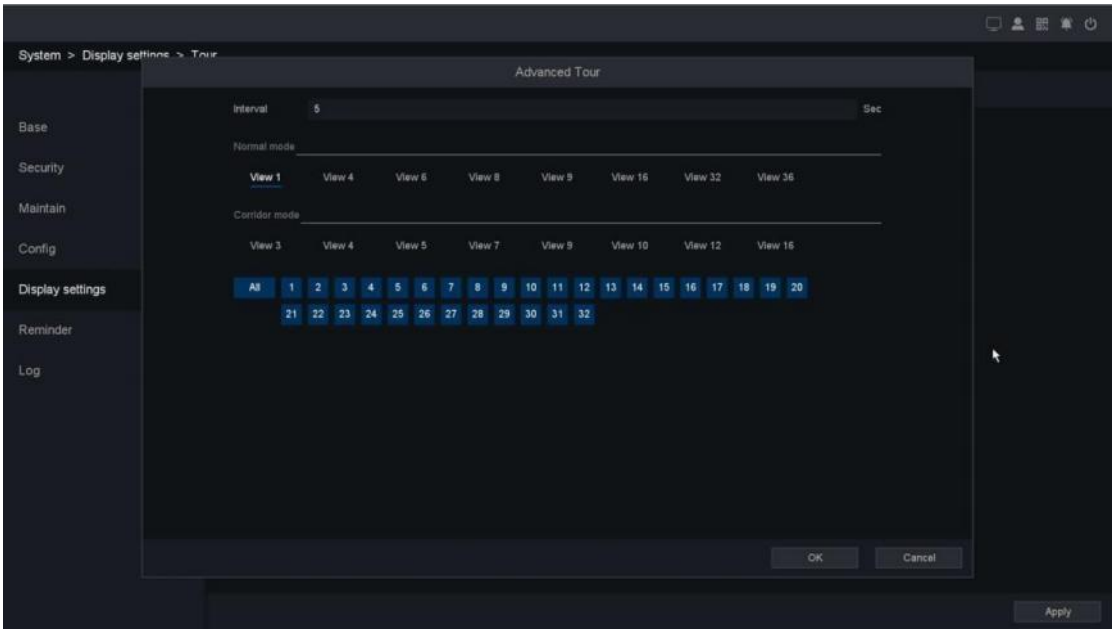


Figure 10-13 Advanced Tour

Interval

Interval time setting, the range of values is from 5s to 300s. It determines the time period switch to the next screen in the tour.

View

View checking about tour.

Layout Settings

In this pare you can set the patrol screen of the monitor.

1. Go to **Setting Menu → System → Display settings → Layout setting**.

2. Select the Channel from the drop-down list.
3. Click a window to select it, and then double-click a camera name in the channel list you would like to display.
4. You can also click to display the configured channels corresponding to each screen and click to cancel the display of configured channels on the screen. Click or to go to the previous or next page.
5. Click **Apply** after the setting is complete.

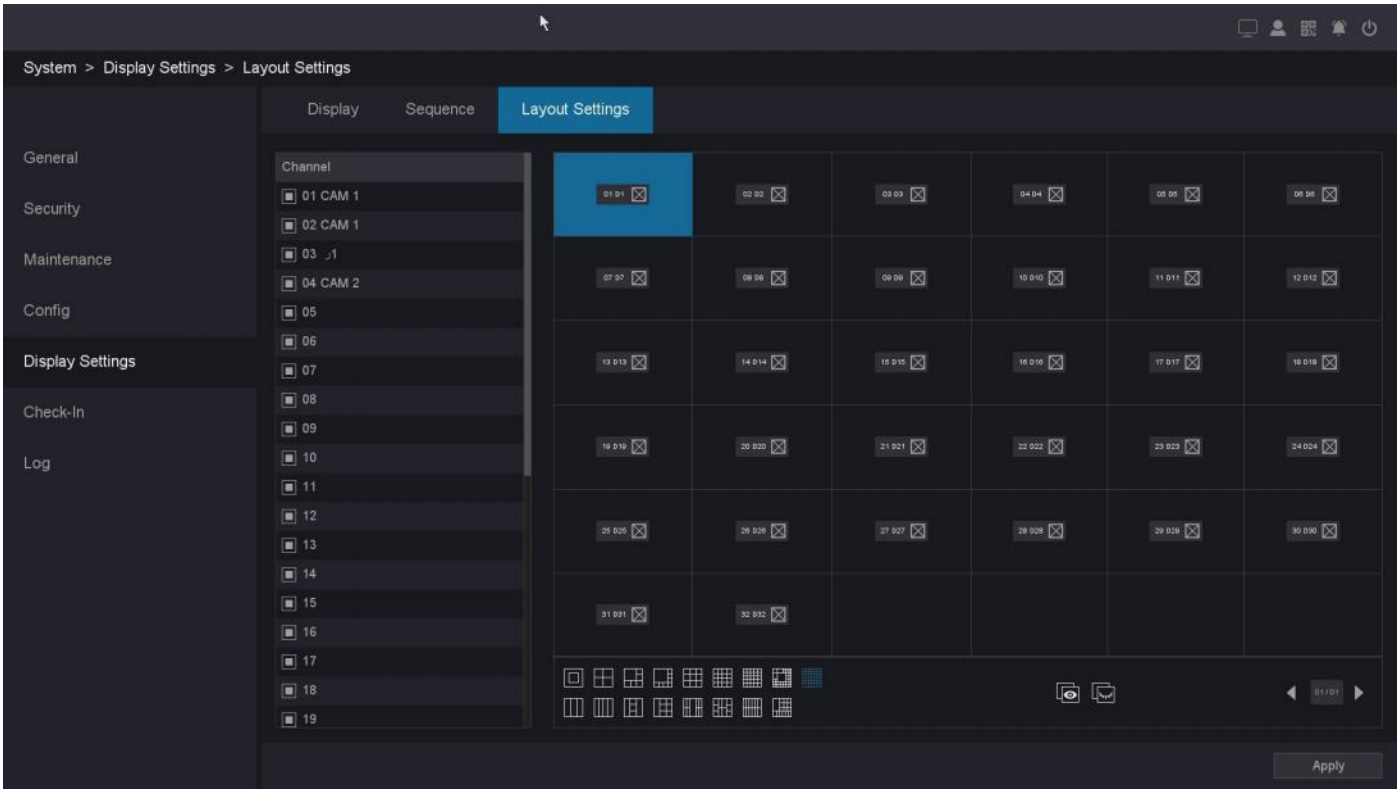


Figure 10-14 View Setting

10.1.5 Reminder

When the function is enabled, the user have to manually confirm the “on-duty” prompt shown on the GUI. The prompt interval can be set to the desire length. Each user confirmation will be stored in the log.

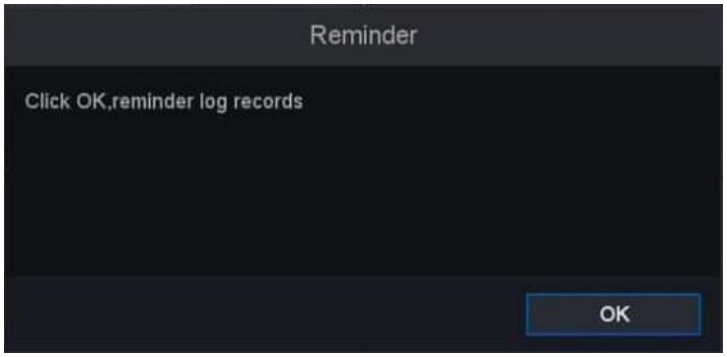


Figure 10-15 System-Reminder

1. Go to **Setting Menu → System → Reminder**.
2. Set the time interval between two patrol checks and the time period for cloth removal.

3. Click **Apply** after the setting is complete.

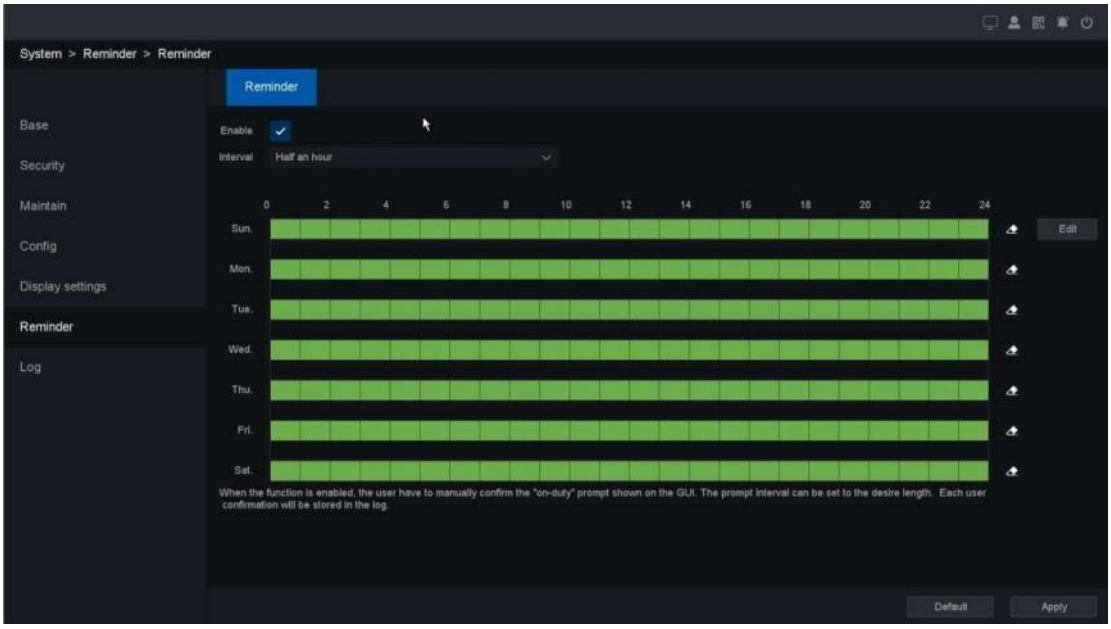


Figure 10-16 Reminder

10.1.6 Config

Import/Export

On this page you can backup device parameters into USB flash disk, Of course, you can also import the device parameters you backed up before.

1. Go to **Setting Menu → System → Config → Import/Export**.
2. Click **Detect**.
3. Click **Import** or **Export**.

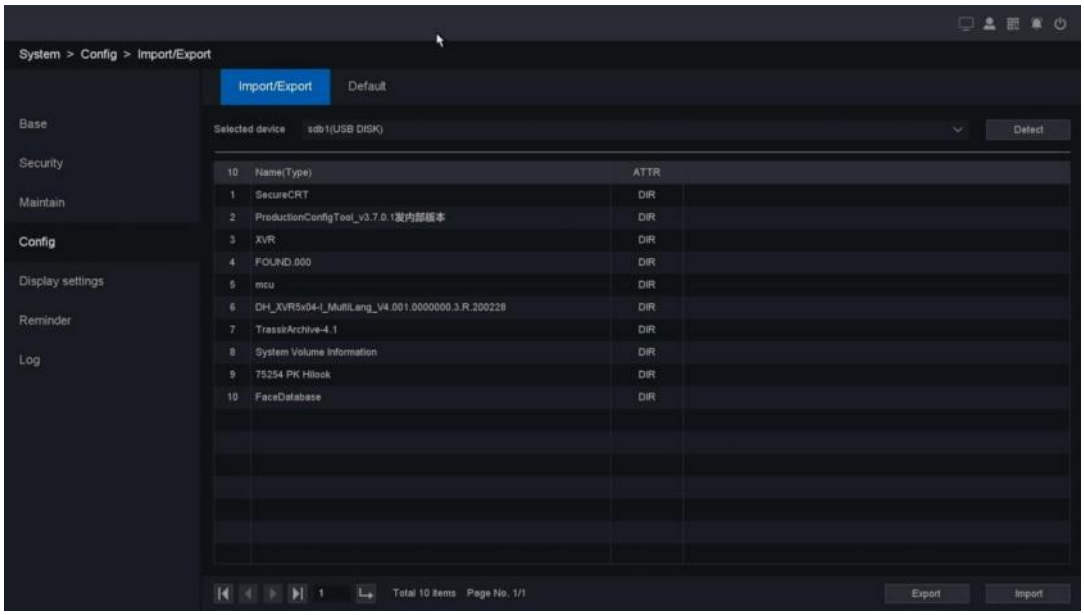


Figure 10-17 Import/Export

Detect

Detect the USB devicer.

Name (type)

File name and file type, and the backup file is ".coi" type.

ATTR

Shows the file type.

Export

Export the parameters backup file into USB disk.

Import

Choose the backup file and click import button, your device parameters will change into the new one.

Default

On this page you can choose the function item, General/Channel name/Control/Network/Motion Detect/Alarm/Abnormality/PTZ/Display/IP Channel/Smart settings/Cloud Authentication Code, and after click **Execute** button, the item what you chosen restore defaults. And you can also select the "select all" button, all the items restore default.

1. Go to **Setting Menu → System → Config → Import/Export**.
2. Select the function item you want to restore the default parameters or Select all.
3. Click **Execute**.

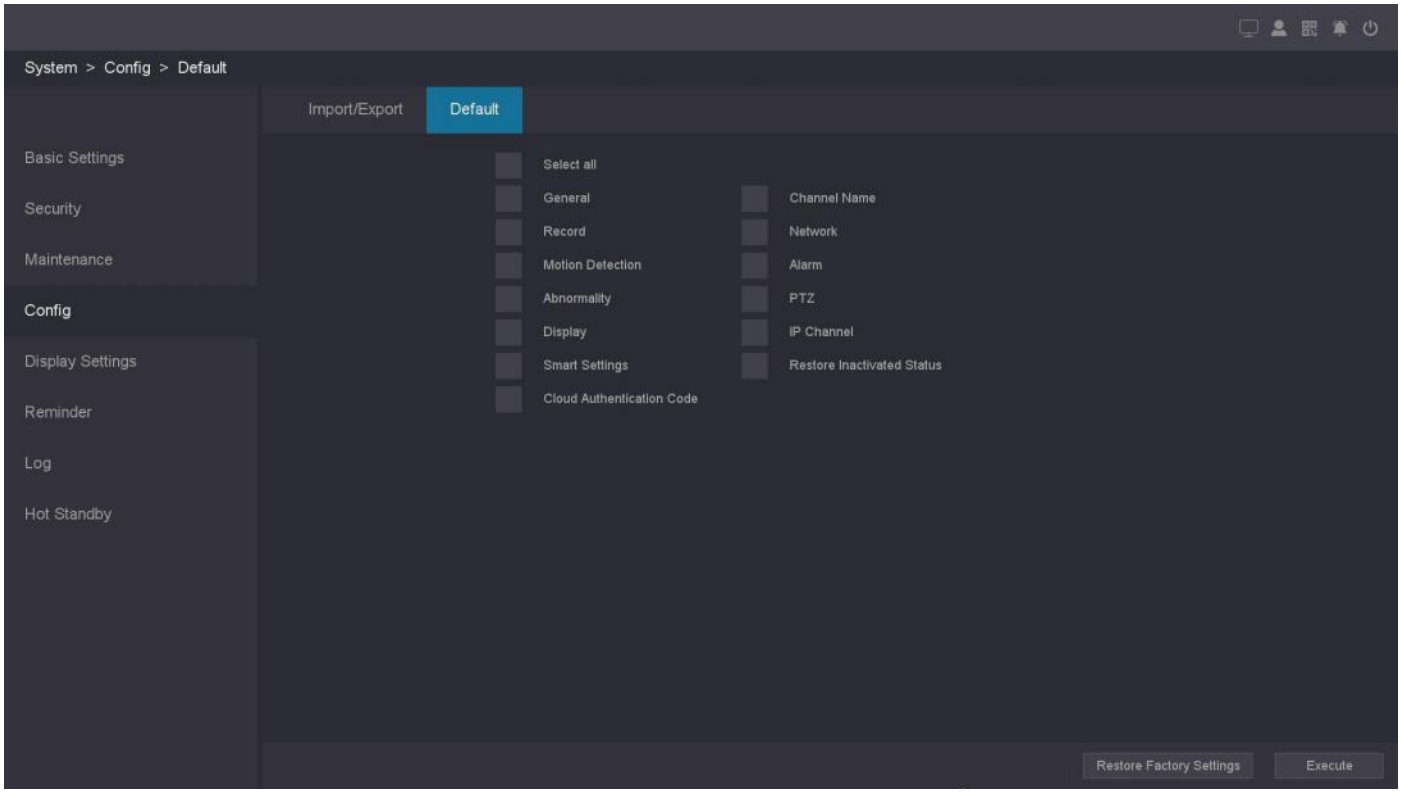


Figure 10-18 Default

Note

You can also click Restore factory settings button to quickly restore factory settings, It is necessary to be cautious when restoring the factory settings, and it is recommended to back up before operation.

10.1.7 Hot Standby

Enable hot standby system, when the working NVR in the system fails, it will automatically switch to the hot standby machine to continue recording, when the working NVR is back to normal, it will automatically cut back to the working NVR, which can reduce video loss and enhance video continuity. When the working machine returns to normal, it will be automatically cut back to the working NVR, which can reduce the loss of video recording and enhance the continuity of video recording.

Note

All working and hot standby machines need to be of the same model.

Config working machine

The working machine is the NVR for daily work, when it break down, it will automatically switch to the hot standby NVR to continue recording. The hot standby function will take effect only after a hot standby has been configured and a working NVR has been added to the hot standby.

Steps:

1. Go to **Setting menu → System → Hot Standby**.

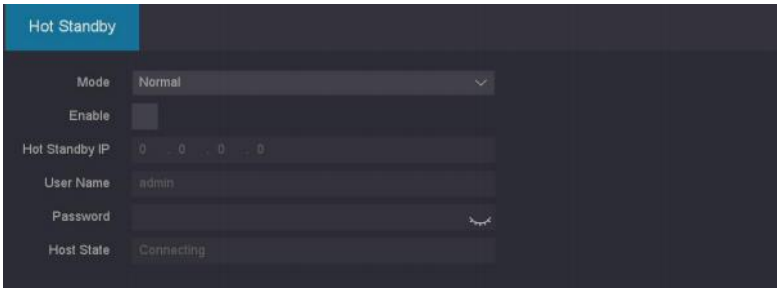


Figure 10-19 Normal Mode

2. **Mode** selects normal, the device is set as a working machine.
3. Turn on **Enable**.
4. Add the IP address of the hot standby.
5. Enter the password of the Hot Standby device.
6. Click **Apply**.

Config hot standby machine

Hot standby NVR does not work everyday, when the corresponding working NVR fails, it can automatically take over the working NVR and continue recording.

Steps:

1. Go to **Main menu → System → Hot Standby.**
2. **Mode** selects standby.
3. Click **Apply**.
4. Click **OK**, wait for the device to reboot successfully.

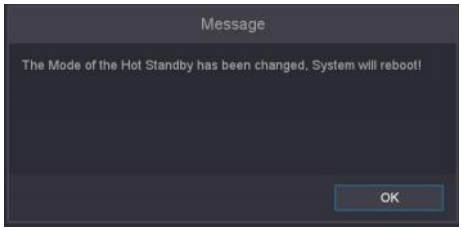


Figure 10-20 Prompt to Reboot

Note

After the hot standby mode takes effect, some of the parameters of the device change, such as: IP

channels are all deleted (preview configuration is cleared at the same time).

5. After restart, go to **Setting menu → Storage → Hot Standby.**

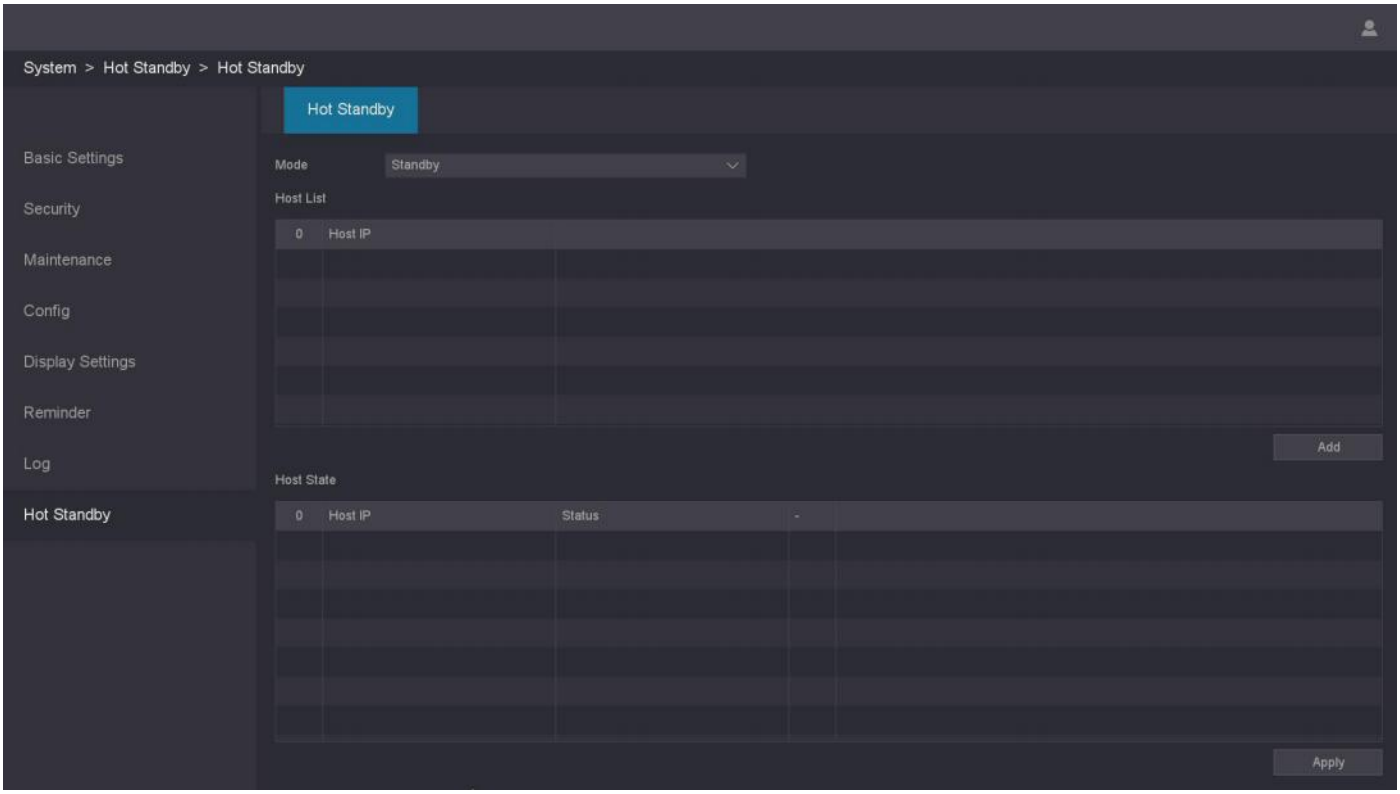


Figure 10-21 Hot Standby Mode

6. Adding Work NVRs.

Note

- If the hot standby does not add a working machine or if the working machine is deleted, video backup or video synchronization is not possible.
- If the hot standby is switched to normal operating mode, it can be switched back to the working machine for use.

10.2 Network Configuration

10.2.1 TCP/IP

TCP/IP must be properly configured before you operate video recorder over network. This page you can set the device IP Address, gateway, DNS as well as view MAC Address. If the NVR has two Ethernet ports, you can connect with two net segments and set one for default Route.

Steps:

1. Go to **Setting Menu → Network → Basic Settings → TCP/IP**.
2. For general settings, please refer to ***6.2.1 General - TCP/IP*** for details.
3. Configure other network parameters as your desire.

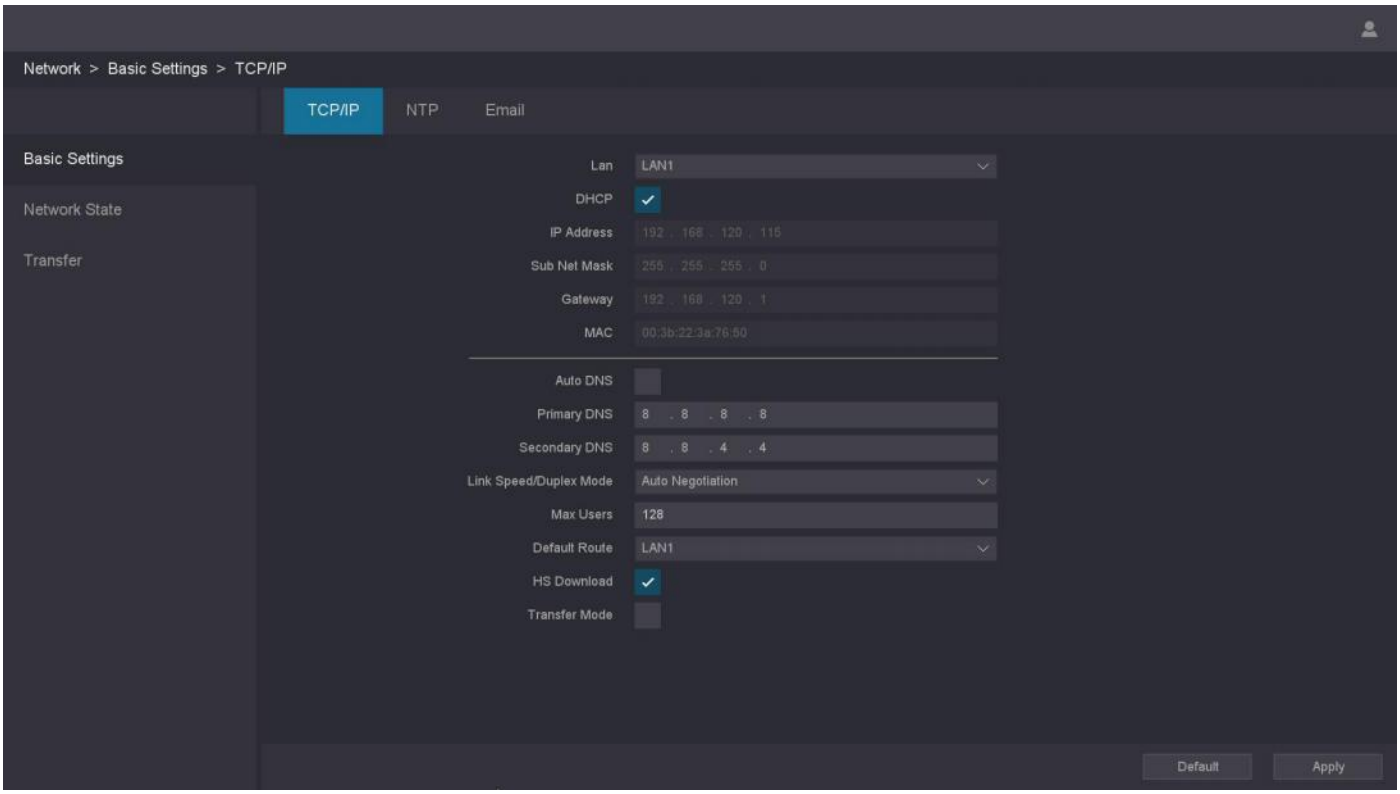


Figure 10-22 TCP/IP

DHCP

If the DHCP server is available, you can check **Enable DHCP** to automatically obtain an IP address and other network settings from that server.

MAC

The physical address of NVR.

DNS setup

Domain Name Server, it translates the domain name into IP address, it contains primary DNS and secondary DNS.

Link Speed/Duplex Mode

Set the operating mode of the network card. Recommend use ***Auto Negotiation.***

Internal IP

Set the beginning of IP addresses of those IP Cameras connected to POE panel. Default is 192.168.3.10. Make sure that this value should not be at the same subnet with the IP address of NVR.

Max Users

The maximum number of users can simultaneously access the NVR, simultaneous login includes APP, Web, VMS and other client software. Default value is 32.

HS Download

Download at a high speed on the network side.

Transfer Mode

There are three modes: quality preferred, fluency preferred and adaptive. The code stream will adjust itself according to the setup, adaptive is the tradeoff between the image quality preferred and fluency preferred, fluency preferred and adaptive are valid only when the sub-stream is turned on, otherwise, quality preferred is valid.X

4. Click Apply.

Note

You can’t set internal IP address if the NVR is not support POE function, Please check if your NVR has

POE function.

10.2.2 NTP

Your device can connect to a network time protocol (NTP) server to ensure that the system time is accurate.

Steps:

1. Go to **Setting Menu → Network → Base → NTP**.
2. Turn on **Enable**.
3. Enter the parameters.

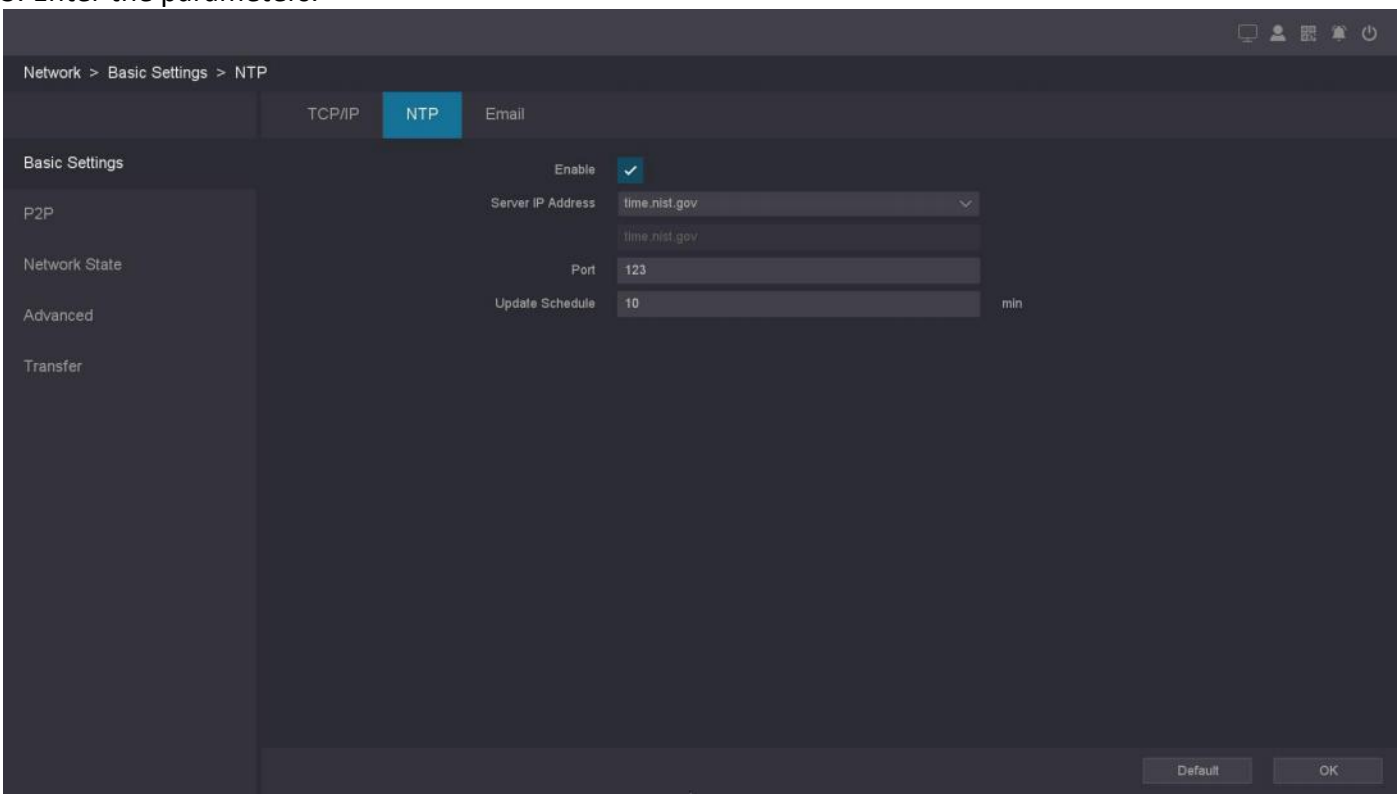


Figure 10-23 NTP

Server IP

The NTP Server IP address or host name. Support two built-in server IPs and custom way.

Port

Port of NTP server.

Update Schedule

Time interval between the two synchronizing actions with NTP server. The unit is minute.

4. Click OK.

Note

The time synchronization interval can be set from 1 to 65535min, and the default value is 10 min. If the NVR is connected to a public network, you should use a NTP server that has a time synchronization function, such as the server at the National Time Center.

10.2.3 Email & P2P

1. Go to **Setting Menu → Network → Basic Settings → Email**. Refer to 6.2.3 Email for details.
2. Go to **Setting Menu → Network → P2P → P2P**. Refer to 6.2.2 QV-P2P for details.

10.2.4 Network State

Base

In this interface, you can see the network parameters and DHCP enable status of the device.

3. Go to Setting Menu → Network → Network State → Base.

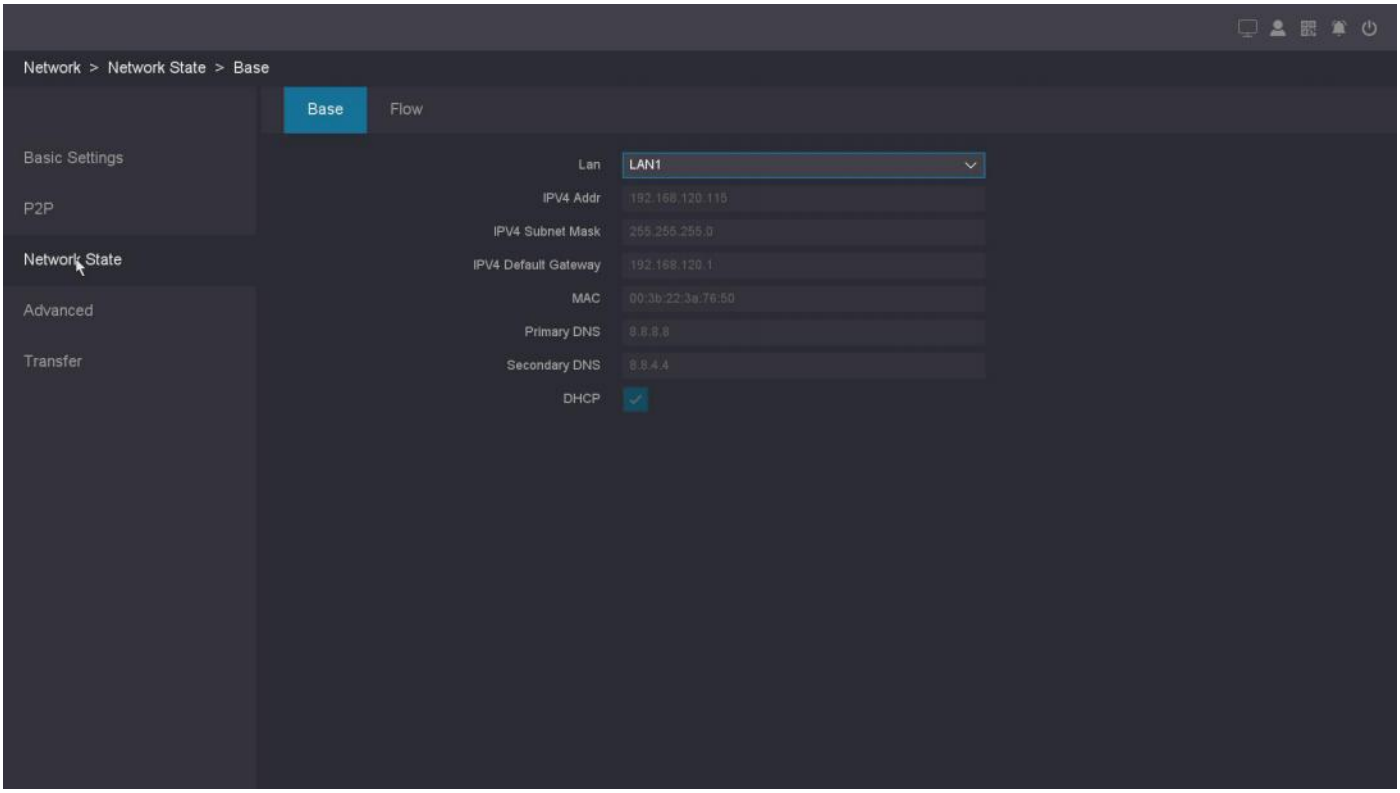


Figure 10-24 Base

Flow

In this interface, you can check transmission and receive status by LAN Port.

1. Go to **Setting Menu → Network → Network State → Flow**.

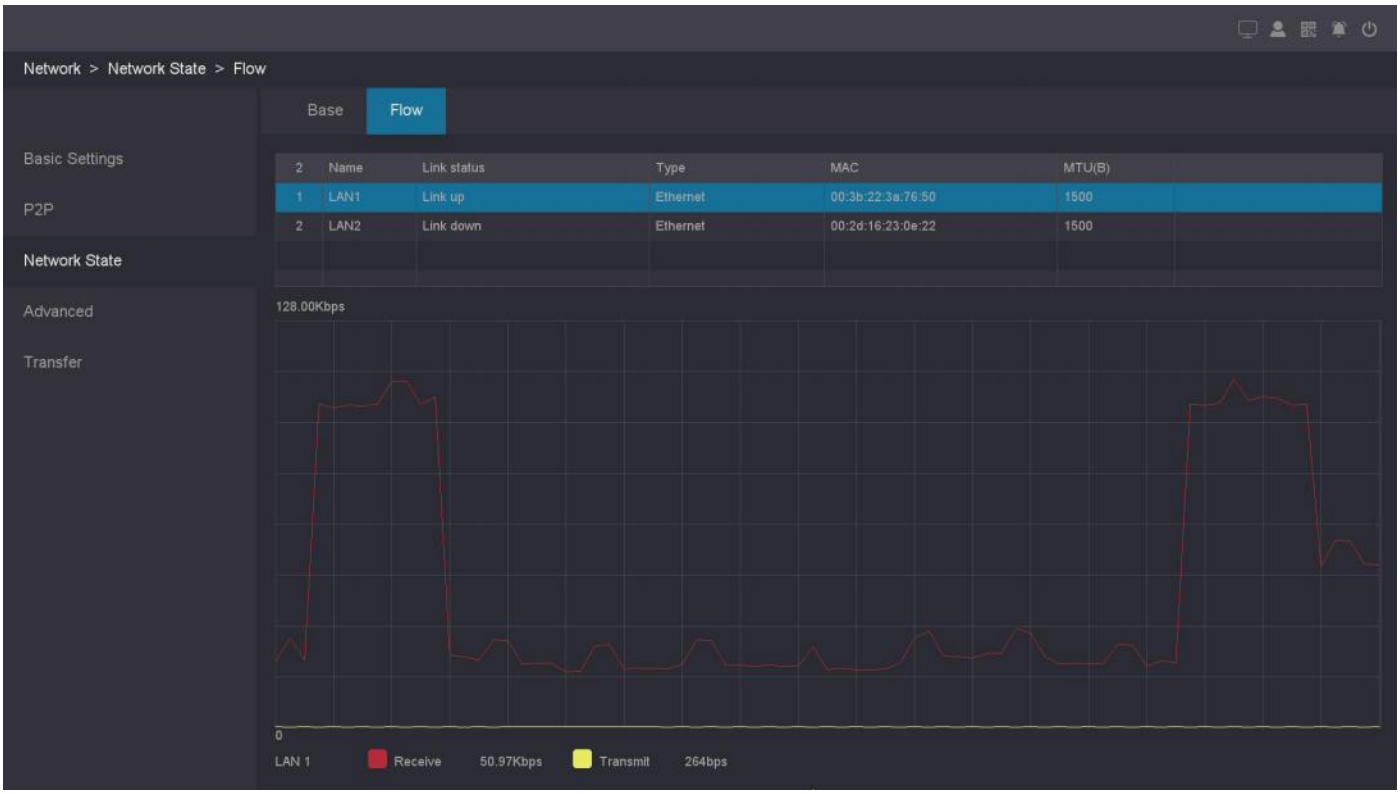


Figure 10-25 Flow

Receive

Shows the byte rate that NVR device received in real-time.

Transmit

Shows the byte rate that NVR device transmit in real-timer.

10.2.5 Advanced

FTP

You can upload the record file onto an FTP server by configuring the FTP settings. It allows you to upload the record file by the record type and record time.

Before You Start

First, you need to confirm that your FTP server is running normally and can upload files.

Steps:

1. Go to **Setting Menu → Network → Advanced → FTP**.
2. Configure each parameter of the FTP service.

FTP setting

Divided into video FTP and pictures FTP, you can set up your server IP, port, user name, password, directory, file length, and there is the Anonymous option, and FTP Setting whether the testing successful.

Channel setting

You can select the channel to transmit, set up on weekday, as well as the time period.

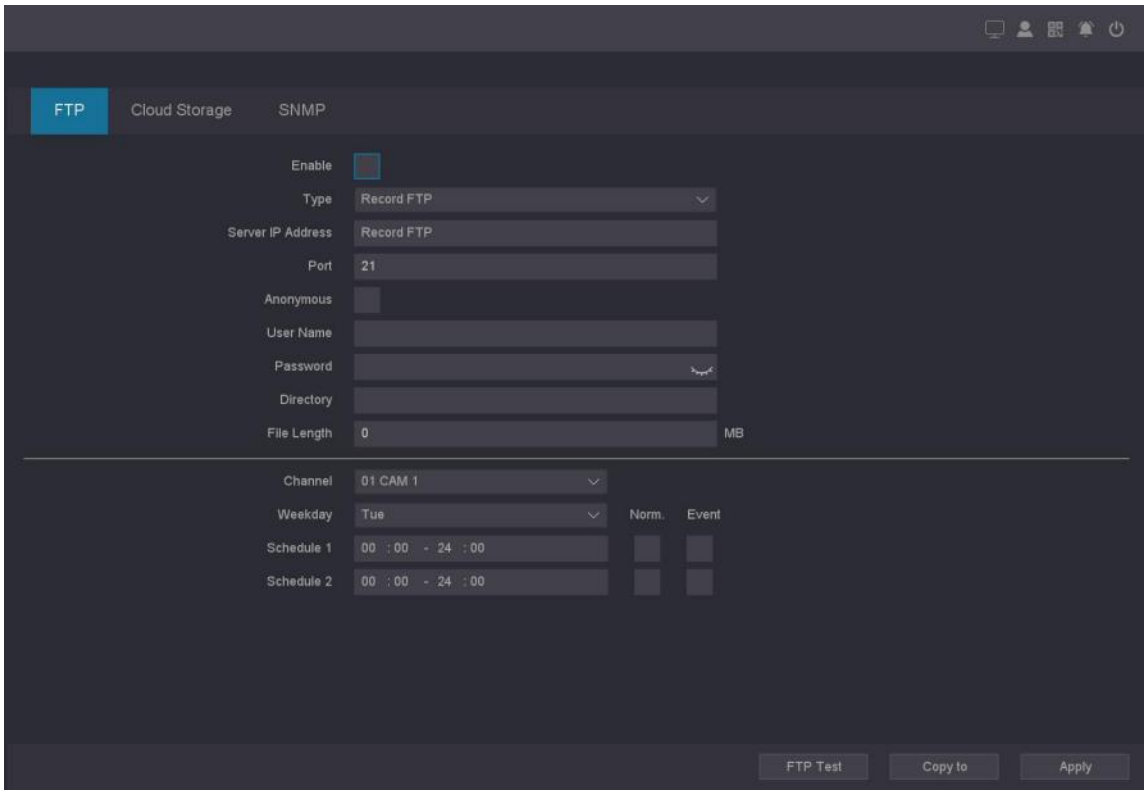


Figure 10-26 FTP

Note

- After finishing the setting, you can click the button FTP Test to try to verify the FTP service is available, and Copy To button is used to copy the configuration of current channel to other channels. Click the button Apply to activate the configuration.
- The password of some mail servers is a special authorization code, which needs to be subject to the mail server provider.

Cloud Storage

As a new feature our device support upload video & picture to the Cloud Storage. The Cloud Storage allows our users to take video stored on their hard drives and upload to either Google Drive or Drop Box. Pricing is all based on the costs on which Google Drive or Drop Box charge when signing up. A hard drive must be installed within the DVR/NVR for Cloud Storage to work, but The Cloud Storage will upload the video and picture to the cloud automatically after you set this function correctly.

Before You Start

Please make sure you have registered for google drive and Drop box accounts.

Steps:

1. Go to **Setting Menu → Network → Advanced → Cloud Storage**.

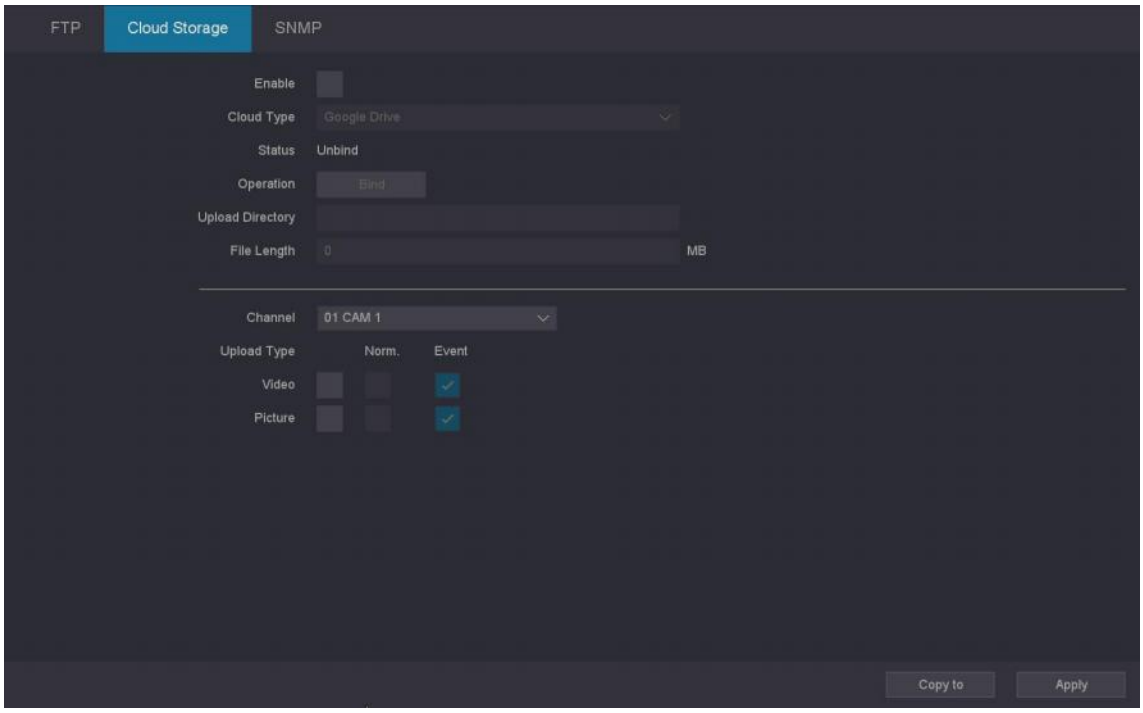


Figure 10-27 Cloud Storage

2. Turn on Enable.
3. Select cloud type.
4. Click the "**BIND**" button.
5. A window will open and load a Verification Code as well as a QR Scan box.

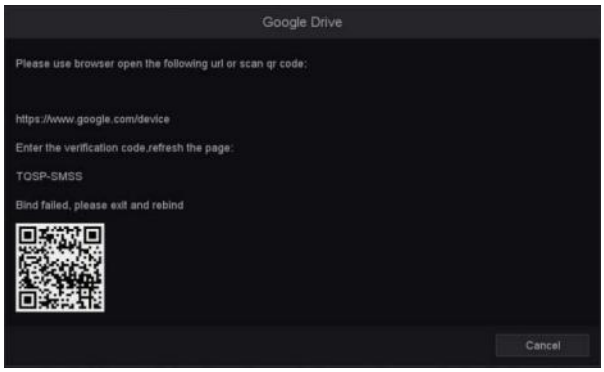


Figure 10-28 Bind

6. Use your mobile phone to scan the QR code, or use your computer to log in to the address in the prompt box.
7. Follow steps of inputting the verification code, signing into your account, and "Allowing."

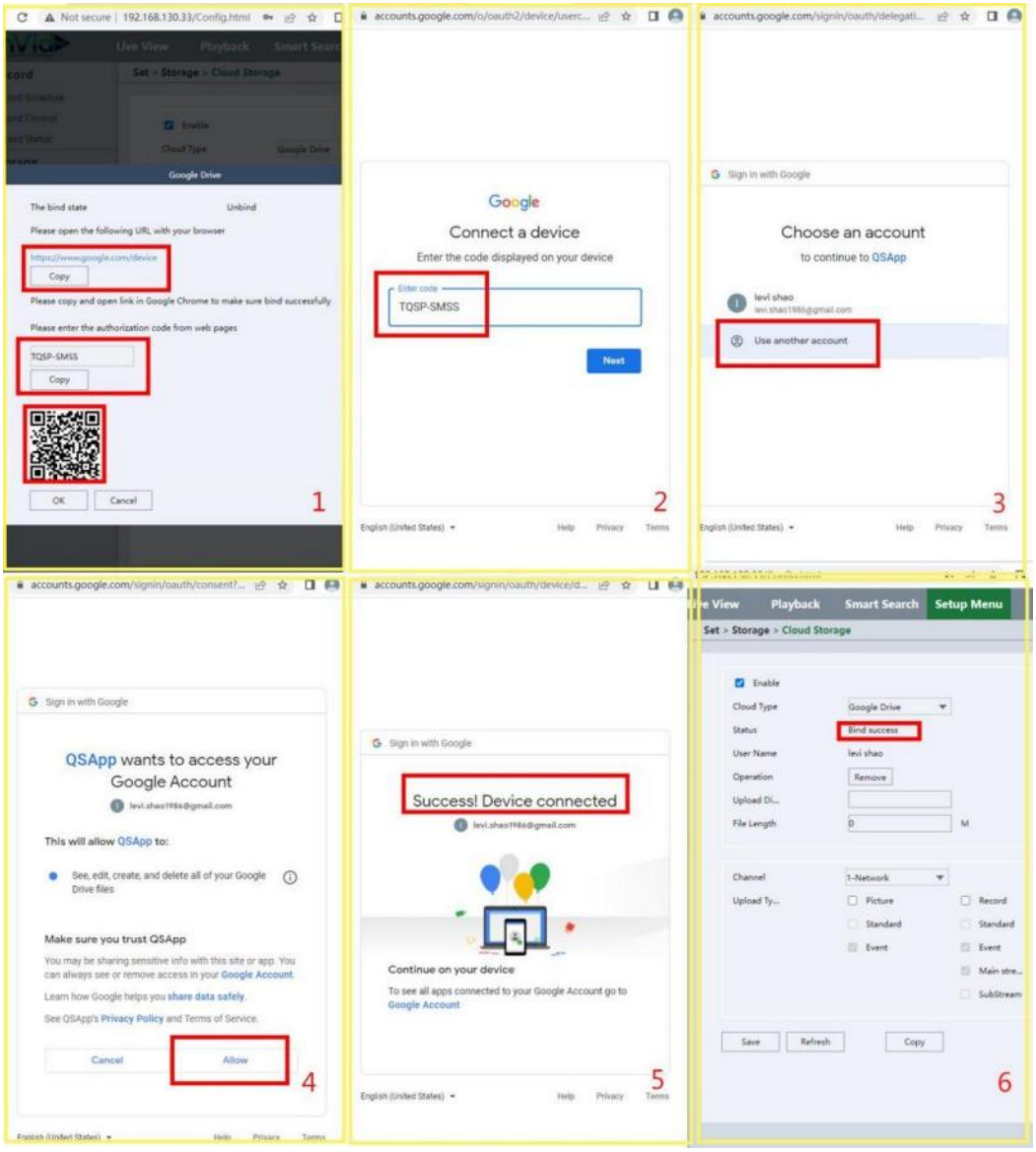


Figure 10-29 Configuration steps

8. Once you fill in/Allow your information to your Google Drive or Drop Box you will see a “Bind Success”, at that point you can hit “Logout” to close window.
9. The Status line will then read “bind Your Login Name.”

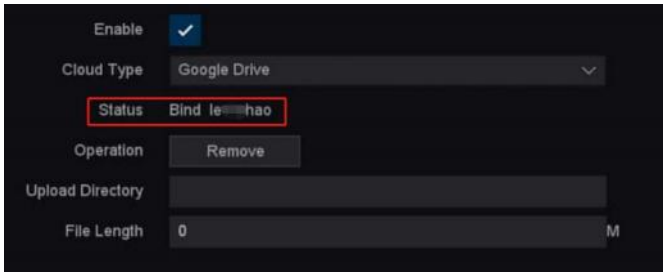


Figure 10-30 Status

10. Under “Upload Directory” you will make a file name of your choice. This file path will automatically appear within the Google Drive or Drop Box directory.
11. Click **Apply** to save.

Cloud Type

Support two kinds of cloud type “Google Drive”& “Dropbox”.

Upload directly

You can set the path of your account folder on your device.

File length

Set the video length that will upload to the cloud.

Other setting items

It’s about how you can enable this cloud storage function. You can set which kind of file you want to upload as you followed by the steps below.

Channel

Choose the channel which you want upload files. Also you can choose different channels to set different upload plant.

Upload type

Including “Norm” “Event” “Main” “Sub stream” four kinds of upload type.

Video

In “Norm” type device will keep upload the video file all the time as long as recording keep going. In “Event” type device will only upload video files as plan that you set in alarm trigger process. “Main” and “Sub stream” means you can choose which the record file type you want to upload.

Picture

Same as the video configuration. It has “Norm” and “Even” type of upload.

SNMP

Simple Network Management Protocol (SNMP) is an Internet-standard protocol for collecting and organizing information about managed devices on IP networks and for modifying that information to change device behavior.

Steps:

1. Go to **Setting Menu → Network → Advanced → SNMP**.
2. There are 3 versions in SNMP. V1/V2 are shown below.

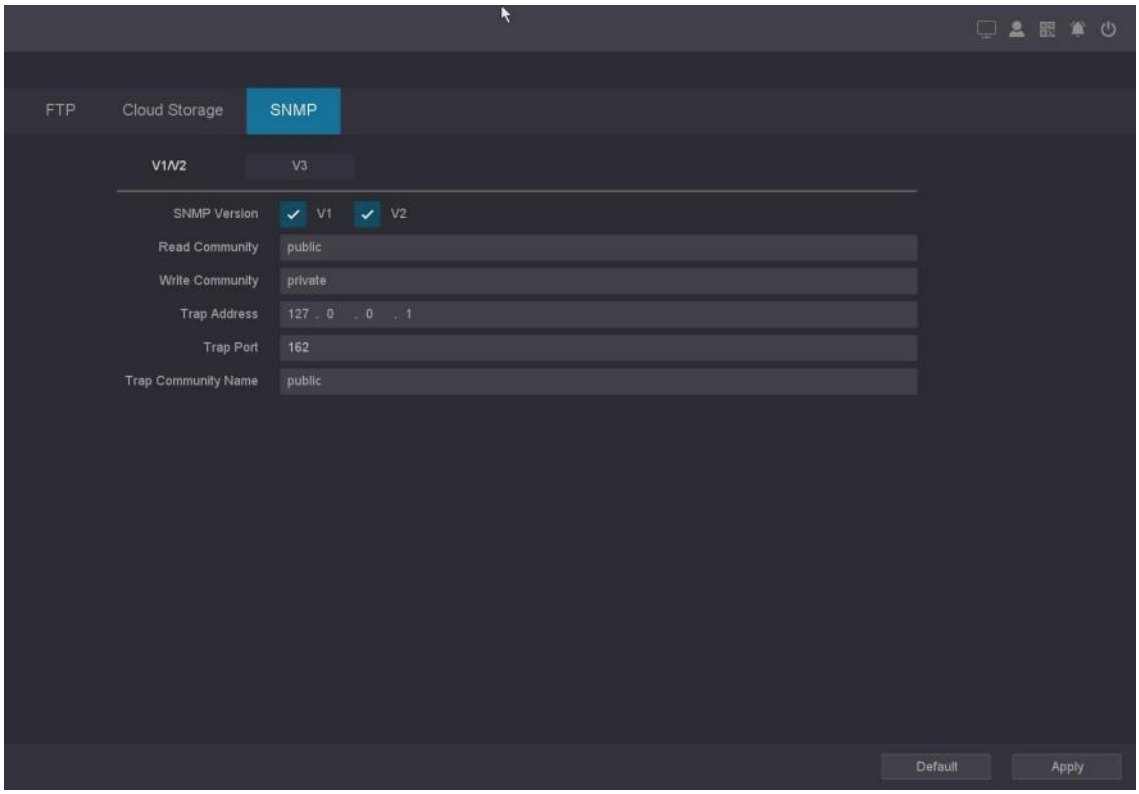


Figure 10-31 V1/V2

3. V3 is shown below.

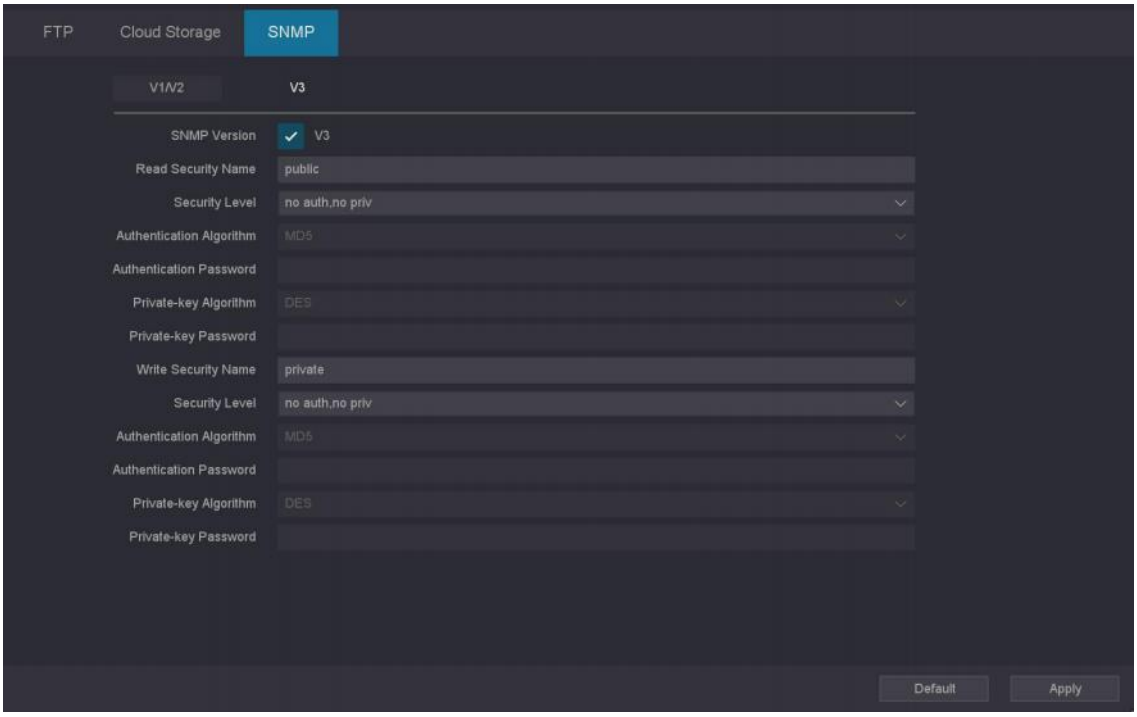


Figure 10-32 V3

4. Tick the protocol as your desire.
5. Click **Apply** to save.

Multicast

Using Multicast via VLC/Web is a source that can send a single copy of data to a single multicast address. Which then is distributed to multiple groups of recipients. This will save on bandwidth.

Before You Start

Please confirm that your device model has multicast capabilities.

Steps:

1. Go to **Setting Menu → Network → Advanced → Multicast**.
2. Set the **Multicast IP** and **Multicast port** within the required range.

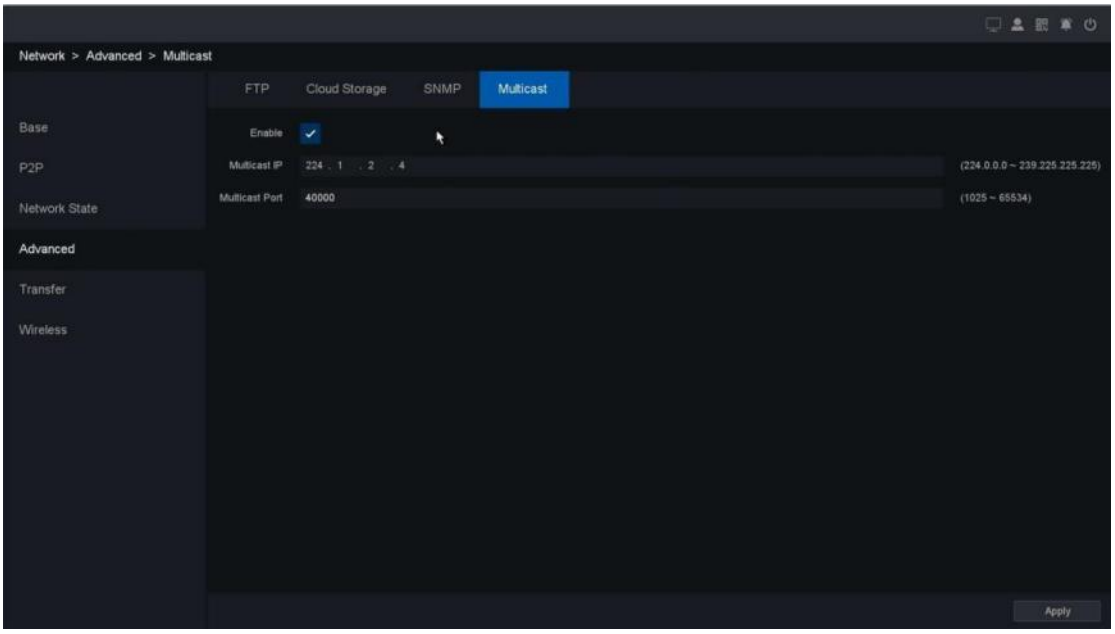


Figure 10-33 Multicast

3. Click **Apply** to save.

Note

If different source devices want to apply the multicast, the multicast IP should be DIFFERENT.

10.2.6 Transfer

UPNP

UPnP is a networking standard that uses protocols on the Internet to allow electronic devices connected to a network to detect and identify each other. Support automatically handles port forwarding.

Before You Start

If you want to use UPNP function, Enable the UPnP™ function of your router, when the device network working mode is multi-address, the default device route should be on the same network segment as the LAN IP address of the router.

Steps:

1. Go to **Setting Menu → Network → Transfer → UPNP**.
2. Turn on **UPNP**.
3. Set up Media Port, HTTP Port, Handset Port, HTTPS and SNMP as your desire.(If you are not sure, do not modify it, it may conflict with other ports of the system).
4. Click **Apply**.

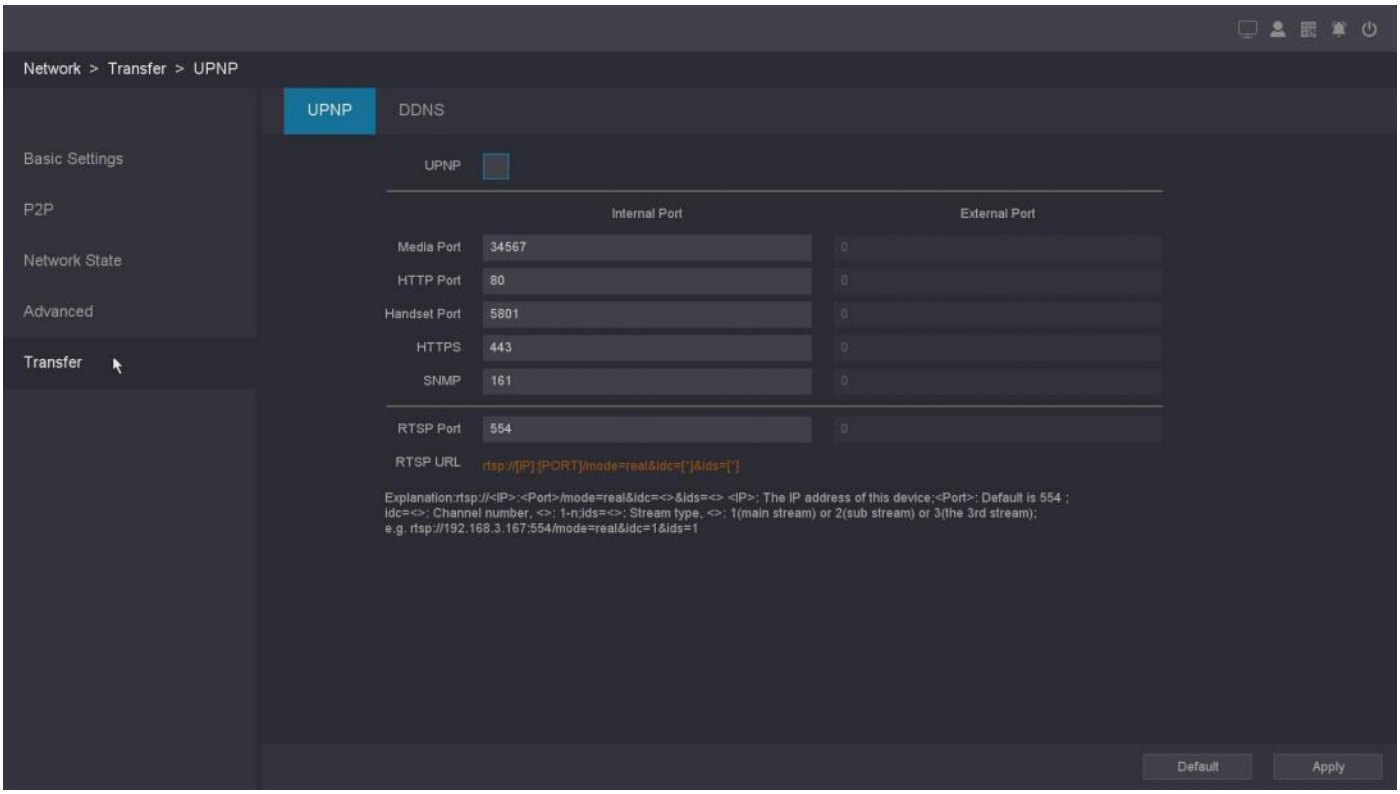


Figure 10-34 UPNP

Note

- RTSP Port: The RTSP (Real Time Streaming Protocol) is a network control protocol designed for use in entertainment and communications systems to control streaming media servers. Enter the RTSP port in the text field of RTSP Port. The default RTSP port is 554, and you can change it according to different requirements.
- The value of the RTSP port No. should be 554 or between 1024 and 65535, while the value of the other ports should be between 1 and 65535 and the value must be different from each other. If multiple devices are configured for the UPnP™ settings under the same router, the value of the port No. for each device should be unique.
- As shown in the figure above, you can use the RTSP address for RTSP streaming.

DDNS

DDNS is a service that can be used to automatically update DNS records if client PCs get their IP settings from a DHCP Server. If DDNS function is enabled on NVR, you can access the NVR by domain name provided by Internet Service Provider (ISP) provider.

Before You Start

Register Oray DDNS, CN99 DDNS, DynDNS and NO-IP services with your ISP.

Steps:

1. Go to **Setting Menu → Network → Transfer → DDNS**.
2. Turn on **Enable**.
3. Select a DDNS type.
4. Enter parameters including domain name, User name and Password etc.
5. Click **Apply**.

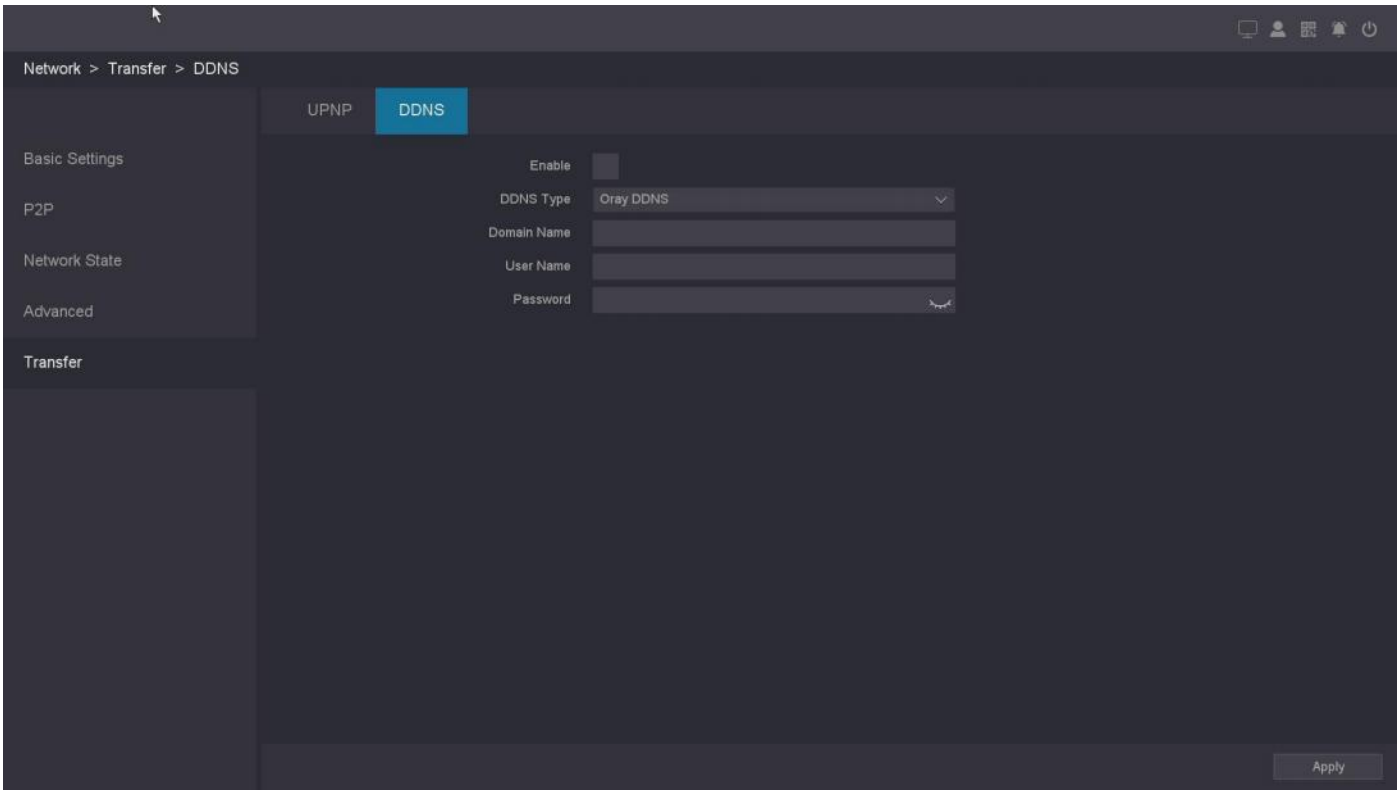


Figure 10-35 DDNS

DDNS Type

ISP of DDNS, including Oray DDNS, CN99 DDNS, DynDNS DDNS, NO-IP DDNS. This option can be customized according to the requirement of users.

Domain name

Fill in the domain name provided by ISP.

User name/Password

Fill in the username and password input correspond to the domain name.

10.2.7 Wireless

Use the **Wireless** that allows your device to connect network wiressly.

3G/4G

Allow your device to connect via 3G/4G wireless mobile network.

Before You Start

Please confirm that your device model has wireless capabilities, and You need to prepare a 3G/4G network Data Card and connect to the USB connector of the NVR. The User name and Password need to be supplied by your ISP.

Steps:

1. Go to **Setting Menu → Network → Wireless → 3G/4G**.
2. Check Status, (if 'Device does not exist', it means it cannot be used).
3. Turn on **Enable**.
4. Set 3G/4G Signal types, Access point, Dial- number, User Name, Password, and 3G/4G IP Addresses.

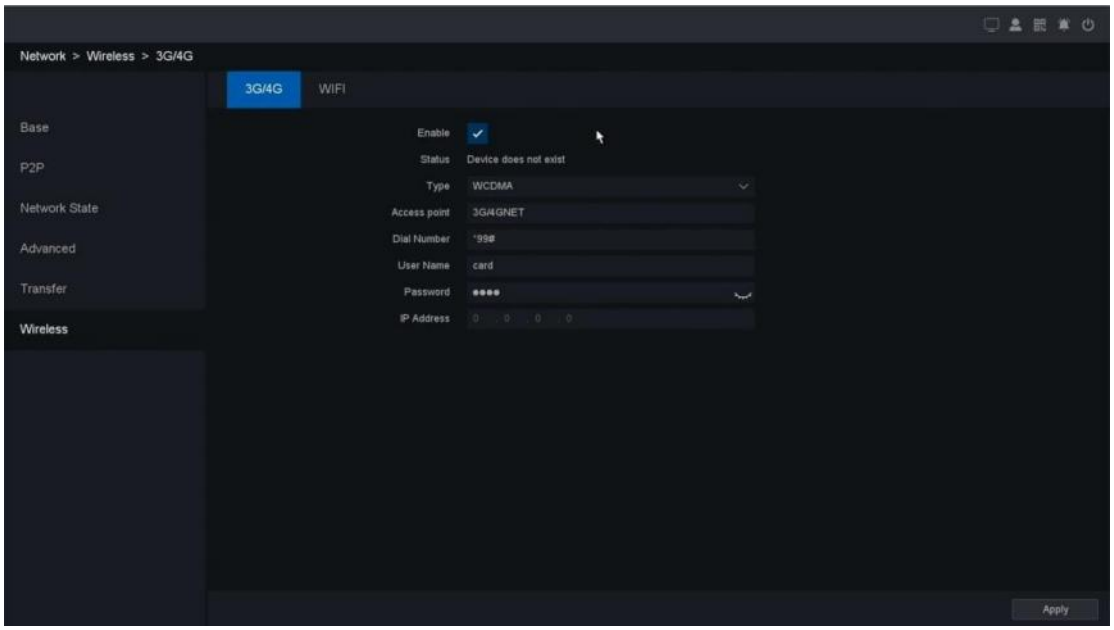


Figure 10-36 3G/4G

5. Click **Apply**.

WIFI

Allow your device to connect via your WIFI network.

Before You Start

Please confirm that your device model has wireless capabilities, and Make sure your Wi-Fi network can access the Internet normally.

Steps:

1. Go to **Setting Menu → Network → Wireless → WIFI**.

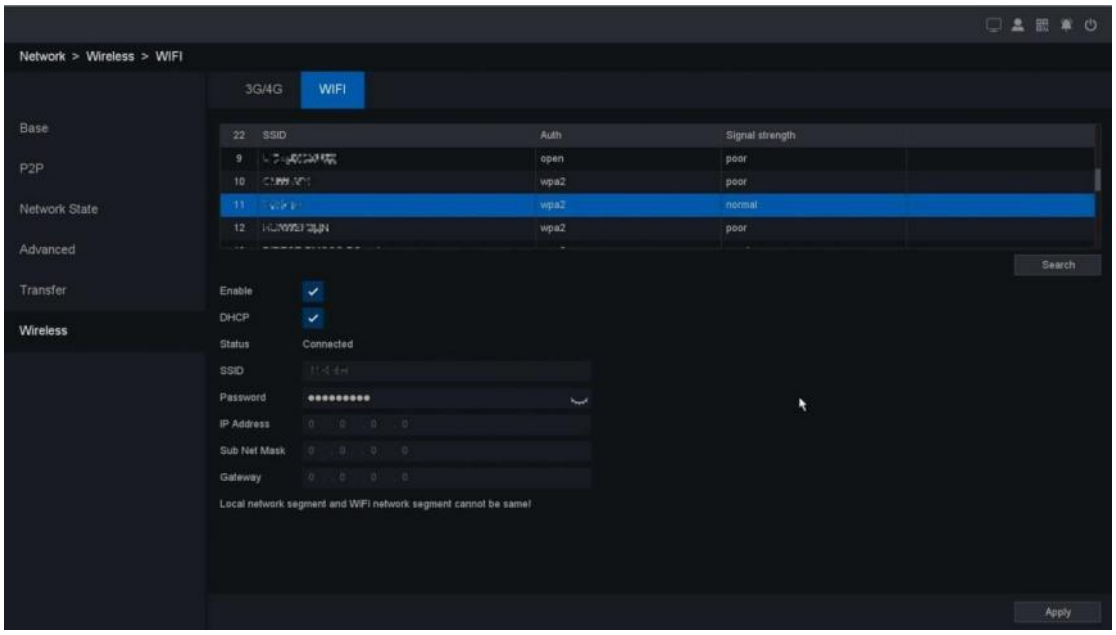


Figure 10-37 WIFI

2. Click Search, find the Wi-Fi network.
3. Select the Wi-Fi network as your desire.
4. Turn on **Enable**.

5. Turn on **DHCP**.
6. Check the Status, if 'Connected' that Wireless WIFI is connected.

10.3 Camera Management

10.3.1 IP channel

Channel Setting

Add Automatically Searched Online Network Camera & Add Network Camera Manually please refer to ***2.5 Adding the Online IP Cameras&2.6 Editing the connected IP cameras and Configuring &2.7 Editing IP Cameras Connected to the PoE Interfaces & 6.3.1Network Camera***.

Fisheye Set

In this interface, it can edit the mount mode and preview mode of our Fisheye cameras.
Before You Start

Please make sure you have a fisheye device in your network cameras.
Steps:

1. Go to **Setting Menu → Camera → Fisheye Set**.

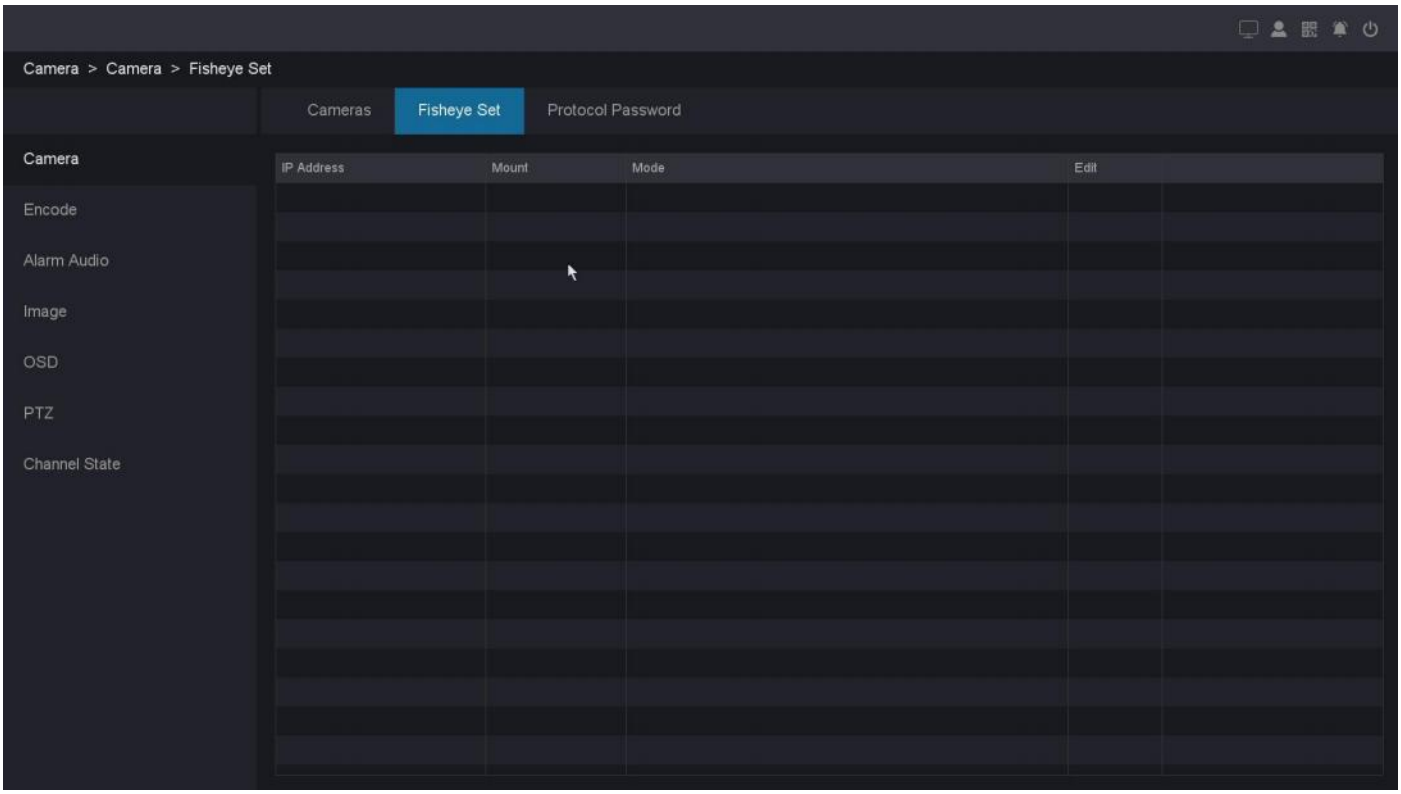


Figure 10-38 Fisheye Set

2. Click **Edit** button.
3. Configure the parameters as your desire.
4. There are three mount mode optional: Desktop, Top, Wall.
5. There are six preview modes optional:
Fisheye

This mode will just show a fisheye picture.
Panoramic

This mode will just show a panoramic picture.
PTZ 1+PTZ 2+PTZ 3+PTZ 4e

This mode will show 4 PTZ pictures at the same time.
Fisheye+ Panoramic+ PTZ 1+ PTZ 2 +PTZ 3e

This mode will show a fisheye picture, a panoramic picture and 3 PTZ pictures at the same time.
Fisheye + PTZ 1+PTZ 2+PTZ 3+PTZ 4e

This mode will show a fisheye picture and 4 PTZ pictures at the same time.
Panoramic + PTZ 1+PTZ 2+PTZ 3+PTZ 4e

This mode will show a panoramic picture and 4 PTZ pictures at the same time.

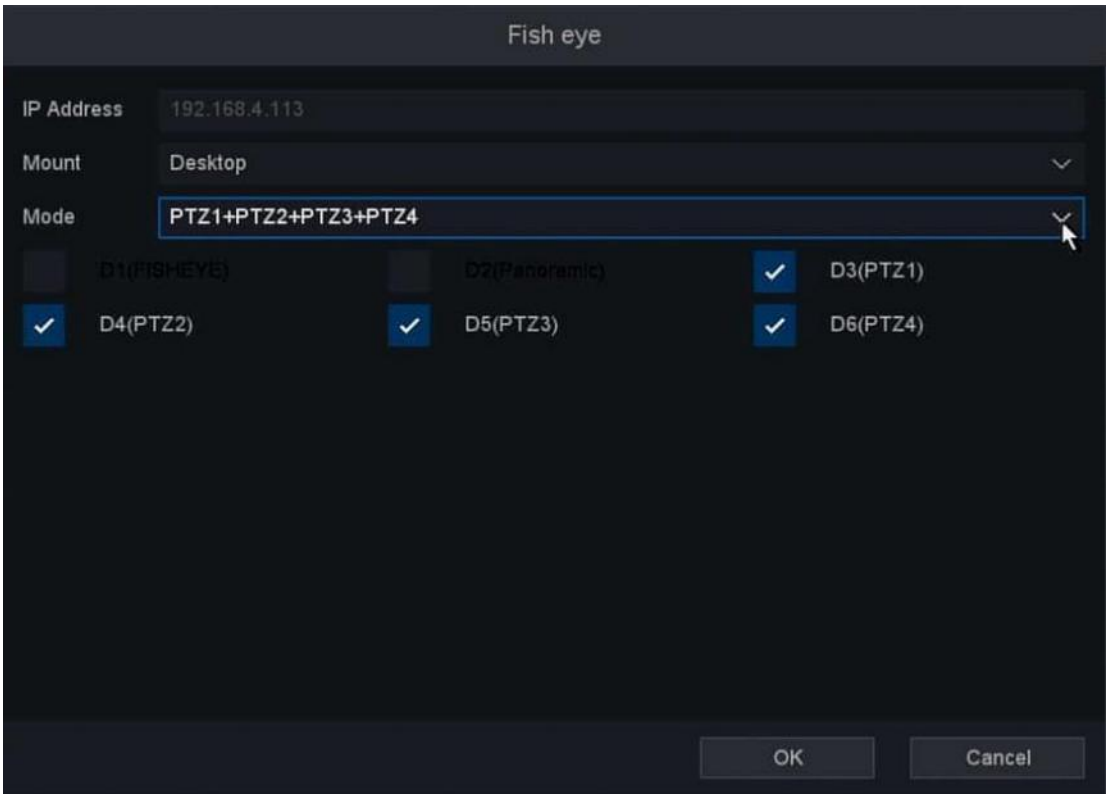


Figure 10-39 Fisheye modes

Note
Each time changing the preview mode, fisheye camera will reboot.

Protocol Password

It will make NVR use specified password firstly when we add the IPCs found by NVR.
Before You Start

You need to know the protocol and protocol password used to connect to the camera.
Steps:
1. Go to **Setting Menu → Camera → Protocol Password**.

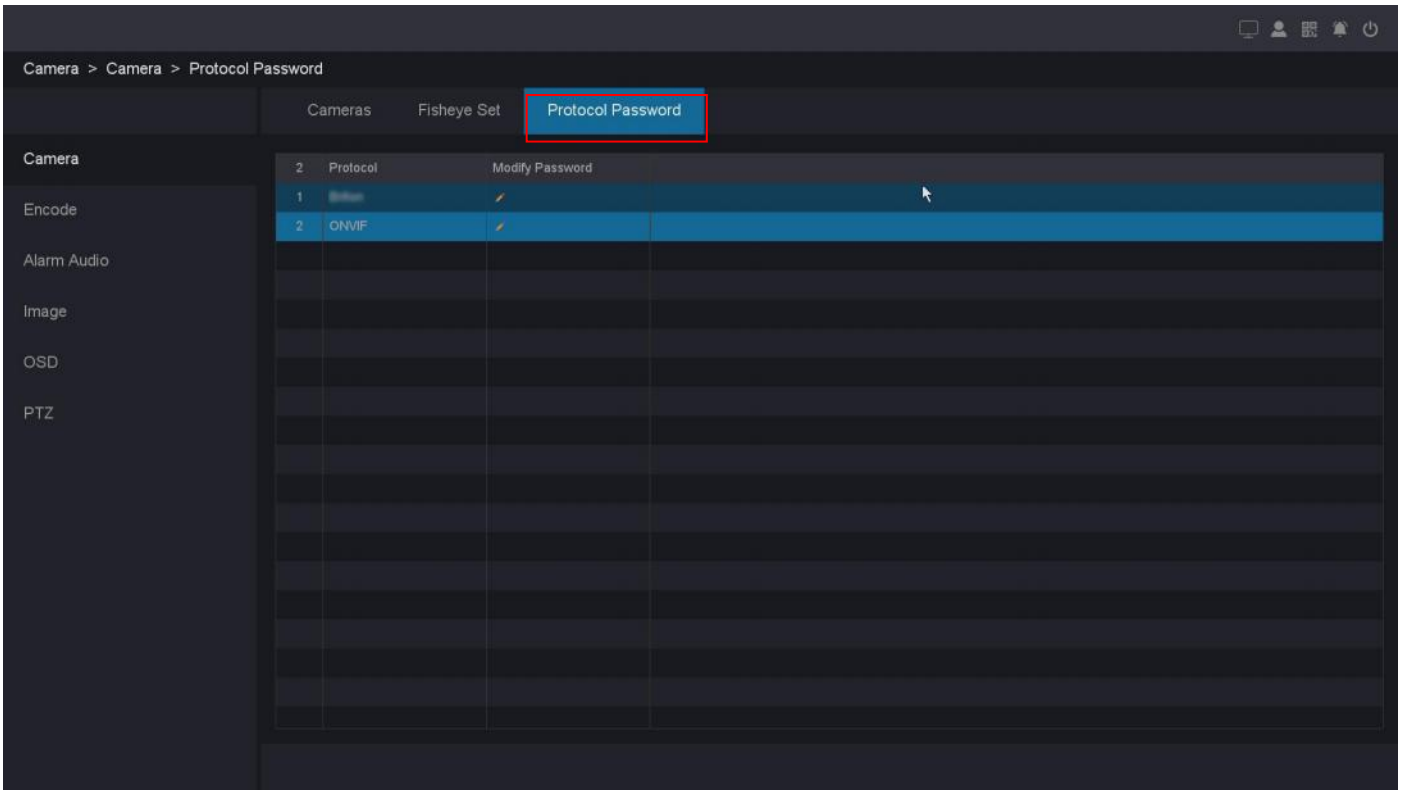


Figure 10-40 Protocol Password

2. Click **Edit** button.

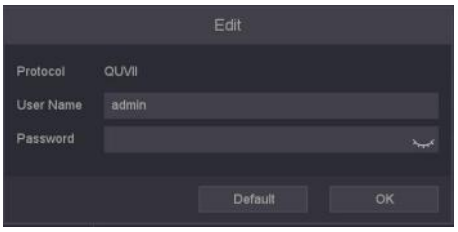


Figure 10-41 Edit Protocol Password

3. Select the **Protocol** you need to modify.
4. Set common password.
5. Click **OK**.
6. Click **Apply**.

Note

If the camera connection status shows identifying error, you need to manually change the password again, please refer to ***2.6 Editing the connected IP cameras and Configuring***.

10.3.2 Encode

By configuring the encode parameters you can define the parameters which affect the image quality, such as the Compression type, Resolution, Frame Rate, Bit Rate Type, Quality, etc.

The NVR support Dual Stream Encode, we can set the main stream encode and sub stream encode on this screen.

Before You Start

Please make sure you already have an IPC whose connection status is Connected.

Steps:

1. Go to **Setting Menu → Camera → Encode**.

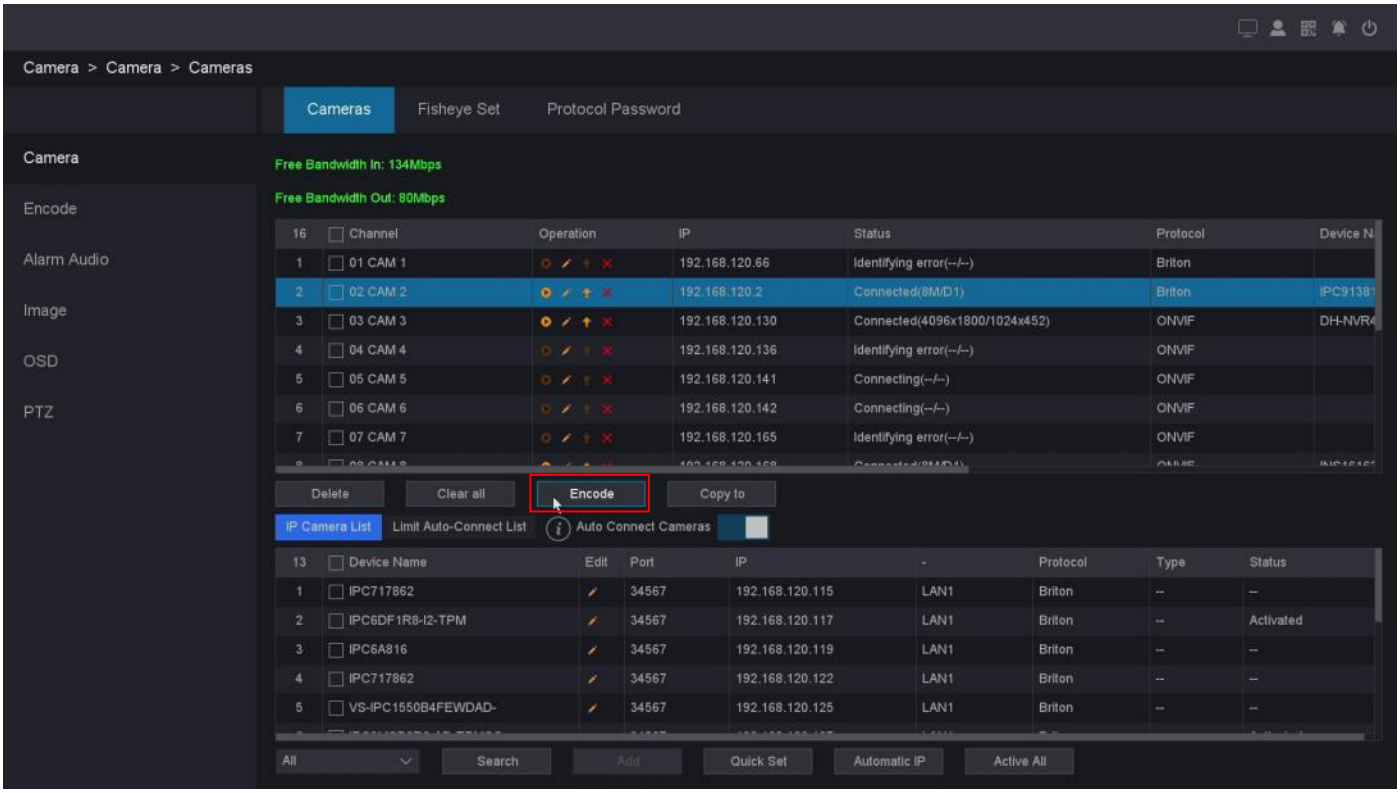


Figure 10-42 Encode

2. You can also go to **Setting Menu → Camera → Encode**.

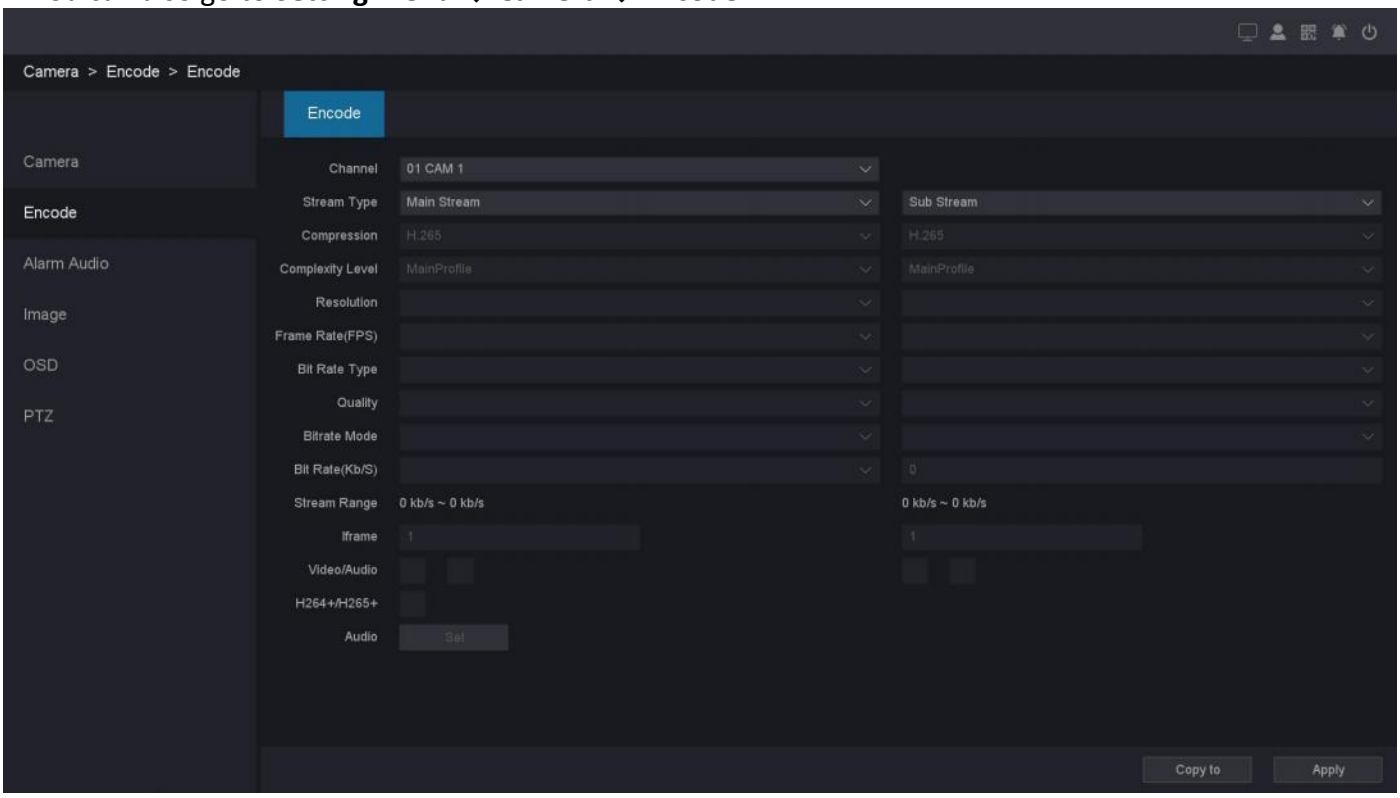


Figure 10-43 Encode Config

3. Configure the parameters as your desire.

Channel

Select the channel to configure.

Refresh

Click it to refresh IP channel's encode parameters.

Stream Type

Main Stream/Sub Stream/Event Stream/Mobile Stream.

Compression

H.265, this is the compression protocol for encoding. It also supports H.264 IP cameras.

Complexity level

Base Profile/Main Profile/High Profile.

Resolution

The resolution of the encoding record.

Frame Rate (FPS)

The number of frames per second in the encoding video.

Bit Rate Type

CBR/VBR.

Image Quality

Lowest/Low/Standard/Good/Better/Best.

Bit Rate Type

General mode/Custom mode.

Bit rate(Kb/s)

Value of the Bandwidth.

Stream range

The bitrate range of this channel.

I-Frame GOP

I-frame setting, range from 10-100.

Video/Audio

To encode the Video and Audio in the record files. The video in mainstream is always enabled.

H.264+/H.265+

Enable smart encode technology, all the record file can reduce the HDD space maximum 80%-90% in static view.

Audio

Set the audio encode for this channel as shown below.

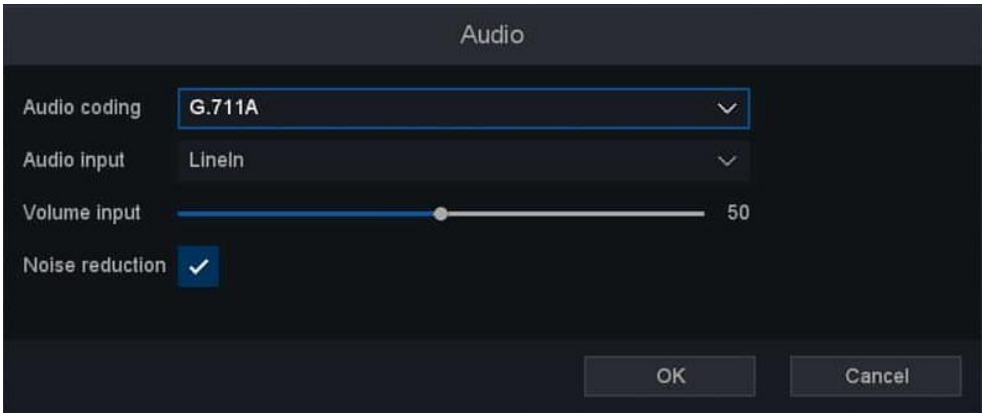


Figure 10-44 Audio

1. Optional: You can also use the function of copy to. The parameters for all channels can be quickly set.
2. Click **OK** and Click Apply.

Note

If you want to use the Copy to function, it is recommended to use it under the same model of cameras.

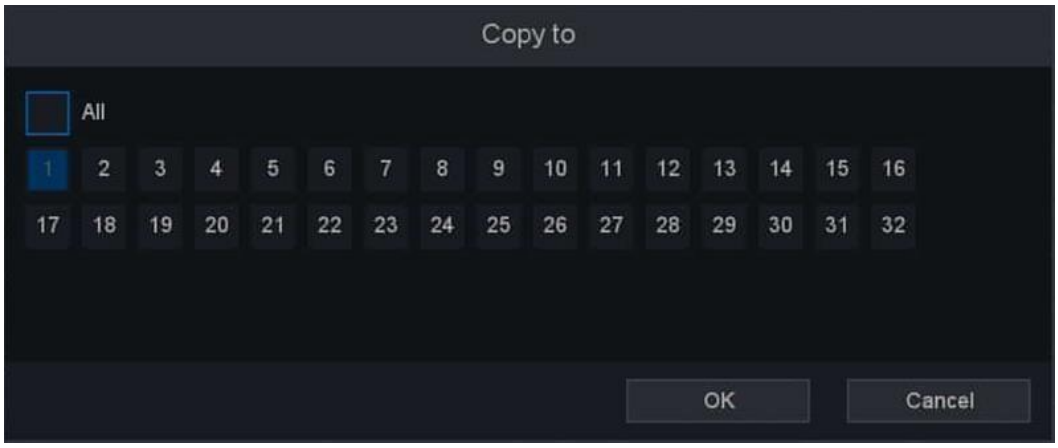


Figure 10-45 Copy to

10.3.3 Color

Our camera has completed the default configuration before leaving the factory, which can meet the needs of ordinary applications, if you have higher requirements. IP Cameras support image adjustment such as Brightness, Contrast, Saturation, Hue and Sharpness. Some high-end IP Cameras support advanced Settings such as Image adjust, Exposure, Backlight, White balance, Day/Night setting, etc. In this chapter you can configure the IP Camera to improve the image and make a better view experience.

Before You Start

Please make sure you already have an IPC whose connection status is connected.

Steps:

1. Go to **Setting Menu → Channel → Color**.
2. Configure the parameters as your desire.

Channel

Select the channel to configure.

Image Mode

The image mode for specific period of the configuration, there are Auto/Manual for options. Auto mode keeps the image settings for 24h, and Manual mode supports 2 period settings (Day period & Night period). You can set independent image settings for different period.

Start-End

Set the image mode as Manual, then enter the starting time and ending time for Day period or Night period.

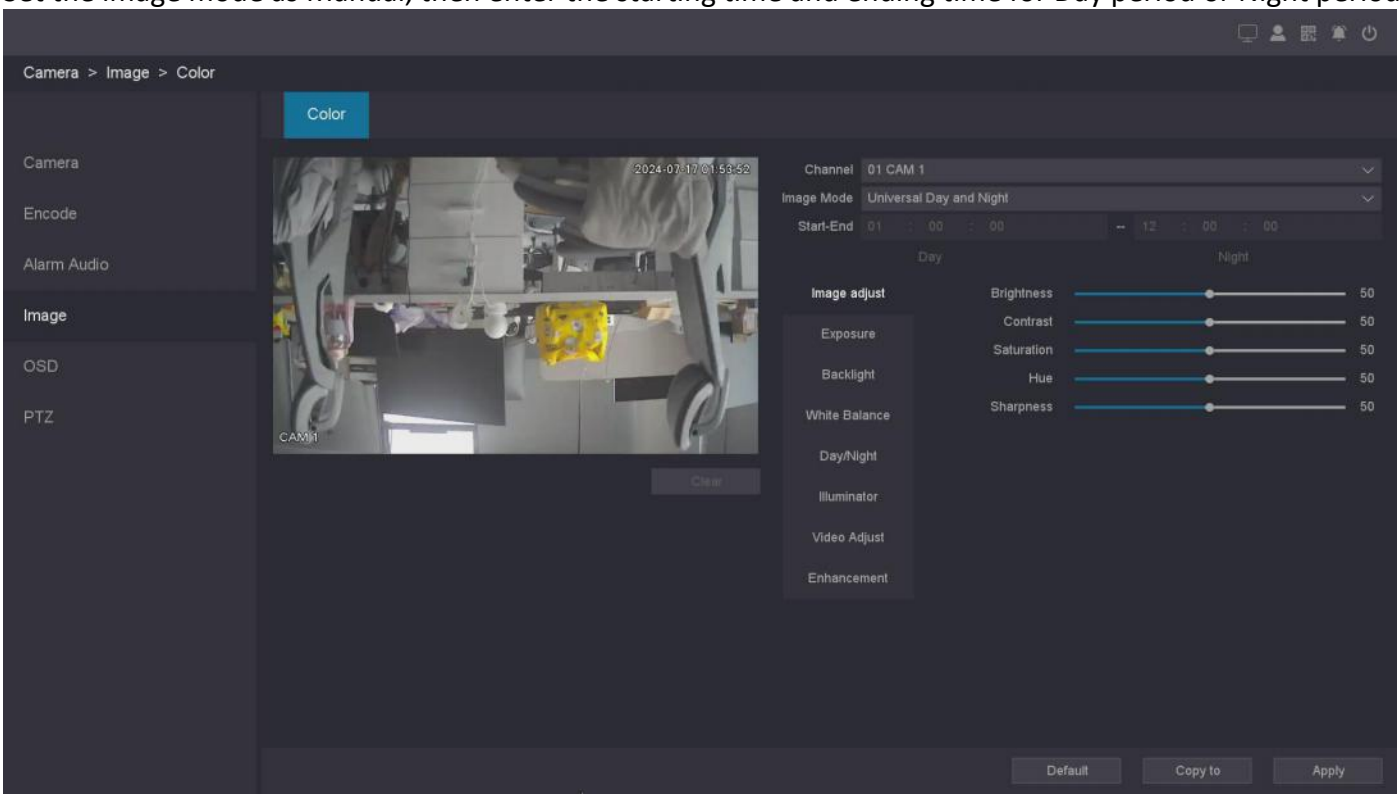


Figure 10-46 Color

3. Set the IP Camera parameters on this screen if the IP Camera compatible with the NVR.

Functions	Description	Functions	Description
Image adjust	Brightness: 0-100 Contrast: 0-100 Saturation: 0-100 Hue: 0-100 Sharpness: 0-100	Video adjust	Image: Close/Updown/Left right/Centre Rotate: Off/90/180/270
Exposure	Auto: Set exposure time automatically Manual: Set exposure time by selecting exact value	Defog	Only certain device models support the function. Close: function disable Auto: defog automatically Manual: adjust the effect manually

Backlight	DWDR:Close, DWDR, WDR(if IPC supports) Limit: Set the degree of DWDR or WDR Back Light Comp: When DWDR is Close, BLC function can be activated as Off,HLC, BLC	Illuminator	Only certain device models support the function. IR Setting: Control the camera's infrared light function. Warm Light Setting: Control the camera's warm light function.
White balance	Auto: Set white balance automatically Manual: Set white balance by selecting exact value of Red Gain and Blue Gain	Enhancement	Only certain models support the function. NR Level: noise reduction level, used to adjust the degree of noise processing, support 0-6 Defog: Close/Auto/Manual Smart light: Close (light always off) –/Manual (light always on)/Auto(light on when alarm triggered)
Day/Night	Day and night mode: ● Auto: Uses D&N Sensitivity setting to change between color mode and infrared ● Daytime: Always represents picture in color ● Night: Always sets picture to black and white Switch Type: IR Synchronous Switch Filter Time: Corresponding to the day-night conversion filter time from 1s to 120s adjustable, when the ambient luminance meets the conversion requirements and maintains the time over the set threshold time before the day-night conversion will be carried out. Fill light:When the device's day/night switching mode supports, click Settings to configure.		

Table 10-1 Function Description

Image adjust

Customize the image parameters including the brightness, contrast, and saturation for the live view and recording effect.

Exposure

Set the camera exposure time (1/10000 to 1 sec). A larger exposure value results in a brighter image.

Backlight

Set the camera's wide dynamic range (0 to 100). When the surrounding illumination and the object have large differences in brightness, you should set the WDR value.

Day/Night

The camera can be set to day, night, or auto switch mode according to the surrounding illumination conditions.

Illuminator

Note

Only certain device models support the function.

- **Fill light**: There are four options: IR Mode, Warm Light Mode, Smart illumination and Schedule.

Schedule and **Setting** buttons are only displayed when Schedule mode is selected, click the Setting button

to pop up the Lighting Plan schedule, as shown in the figure below.
In this screen you can set the lighting plan for different lighting modes. The green one is Smart mode, the orange one is Warm Light mode, the Blue one is Infrared Lamp.

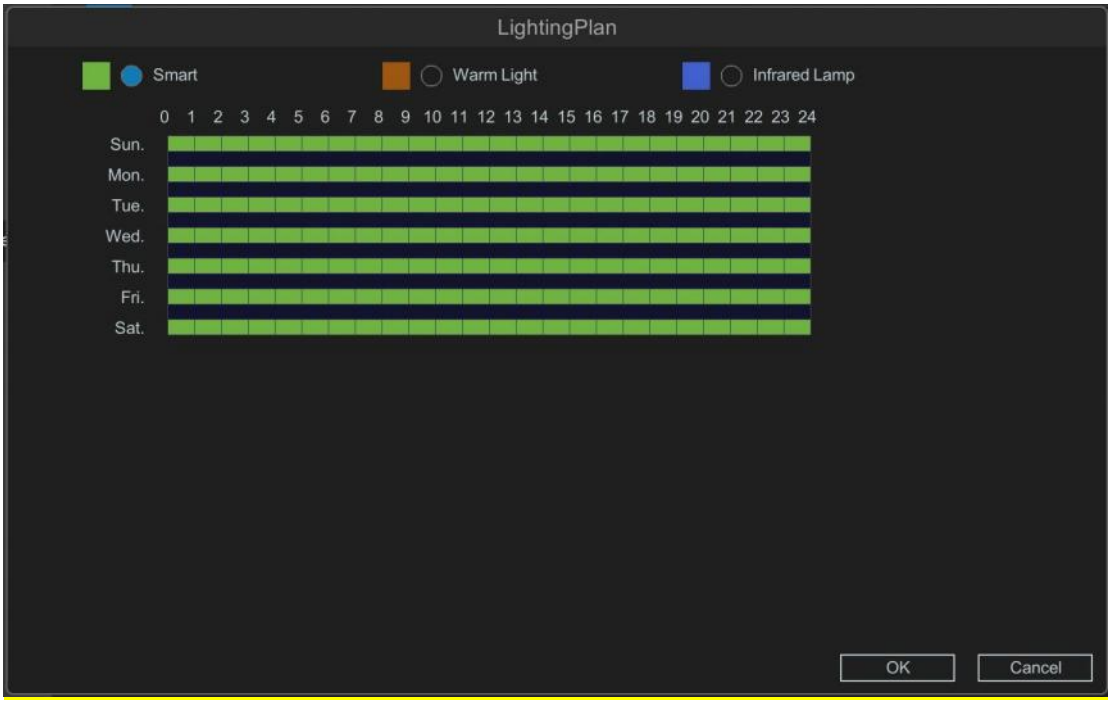


Figure 10-47 Illumination Plan

- **IR Light Setting:**

  Fill Light Mode: It is used to control the camera's infrared lighting physical switch, independent of **Fill Light** selection. There are three options:**Close**, **Manual and Auto**, default is Manual.

  Close: Close the infrared light of the camera;

  Note

  When you need to use the camera's infrared light function, please do not set **Fill Light Mode** to Close.

  Manual: in this mode, the infrared light is at its brightest.

  Auto: adjust the IR brightness automatically. When auto mode is selected, the Smart IR is on. Smart IR can adjust the IR automatically according to the image brightness. When the object is very close to the camera, the IR will be too bright for the object and it will be totally white to see the details. So Smart IR will adjust the output of IR brightness so that the object would not be so white and missing details.

- **Warm Light Setting**:

  Fill Light Mode: It is used to control the camera's warm light physical switch, independent of **Fill Light** selection. There are three options:**Close**, **Manual and Auto**, default is Auto.

  Close: Close the warm light of the camera;

  Note

  When you need to use the camera's warm light function, please do not set **Fill Light Mode** to Close.

  Manual: When switching to manual mode, the Brightness Upper Limit item appears, with an adjustment range of 0-100 and the default of 50;

  Auto: When switching to auto mode, the Brightness Upper Limit item appears, with an adjustment range of 1-100 and the default of 100.

  Illuminator Delay: With an adjustment range of 10 ~ 300, default 30 sec.

Video Adjust

You can rotate the orientation and angle of the image.

Enhancement

For optimized image contrast enhancement.

10.3.4 OSD

OSD

You can configure the OSD (On-screen Display) settings for the camera, including Channel Name, Date/Time format, Record status, Alarm status, etc. You can also refer to ***6.3.2 OSD Settings***.

Before You Start

Please make sure you already have an IPC whose connection status is Connected.

Steps:

1. Go to **Setting Menu → Channel → IP Channel → OSD**.
2. Select a camera.

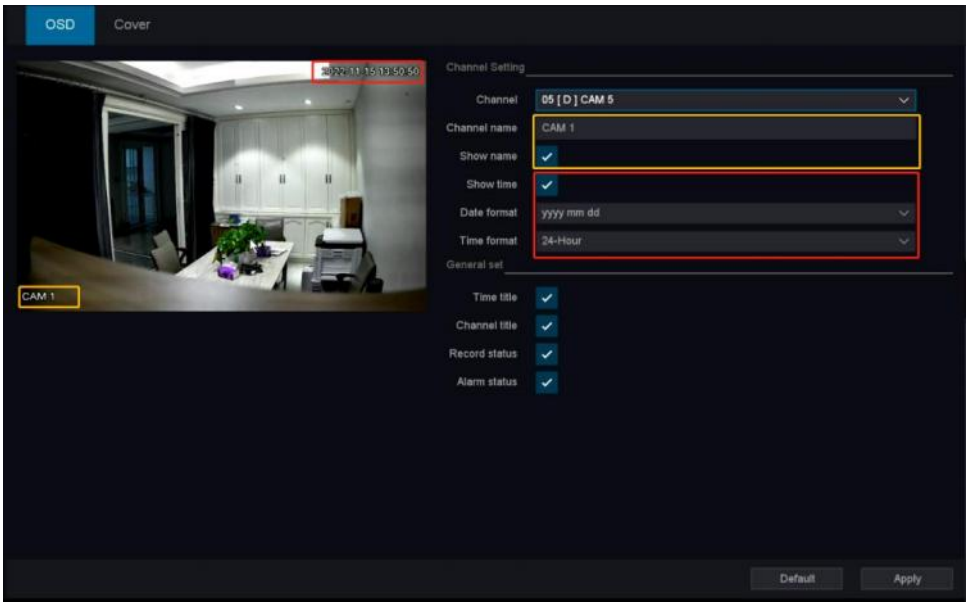


Figure 10-48 OSD

3. Set parameters as your desire.
4. The name and time can be chose to display or not, and can also be customized.
5. Click **Apply**.

The settings are divided into two parts: channel settings and general settings. The channel setting is to configure the IPC, and the general setting is to set the NVR local display.

For the Channel Setting:

Channel

Select the channel to configure.

Channel Name

The name of the channel to be set.

Show Name, Show Time

Enable the information of channel name and time on the screen.

Date Format, Time Format

Set the format of the date and time.

For the general set:

Time Title, Channel Title

Enable/disable the display of the time tile and channel title on the monitor screen.

Record Status, Alarm Status

Enable/disable the display of the record status and alarm status on the screen.

Cover

The Cover function can effectively block the sensitive areas in the monitoring screen, it supports covering 4 areas at the same time.

Before You Start

Please confirm the area you need to cover in advance.

Steps:

1. Go to **Setting Menu → Camera → OSD → Cover**.
2. Select the camera you want to draw the cover area.
3. Set two opposite corners of a square in the preview window to draw a quadrilateral cover region1.
4. The same operation draws region2-4.
5. Turn on **Enable**.
6. Click **Apply**.

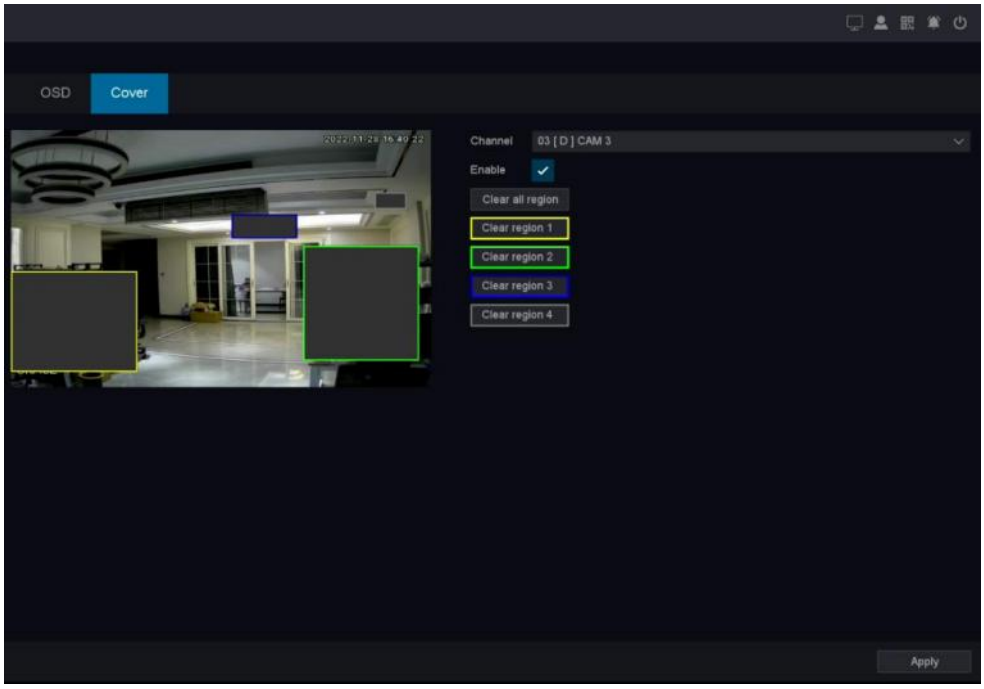


Figure 10-49 Cover

Note

Up to 4 privacy mask areas can be configured. The size of each area can be adjusted.

10.3.5 PTZ

This chapter is to show you how to set the actions which you want the PTZ Camera to respond when corresponding alarm occurred.

Before You Start

Please make sure that the presets, patrols and patterns should be supported by PTZ protocols.

Steps:

1. Go to **Setting Menu → Camera → PTZ**.
2. Select the channel to configure.
3. Configure the parameters as your desire.

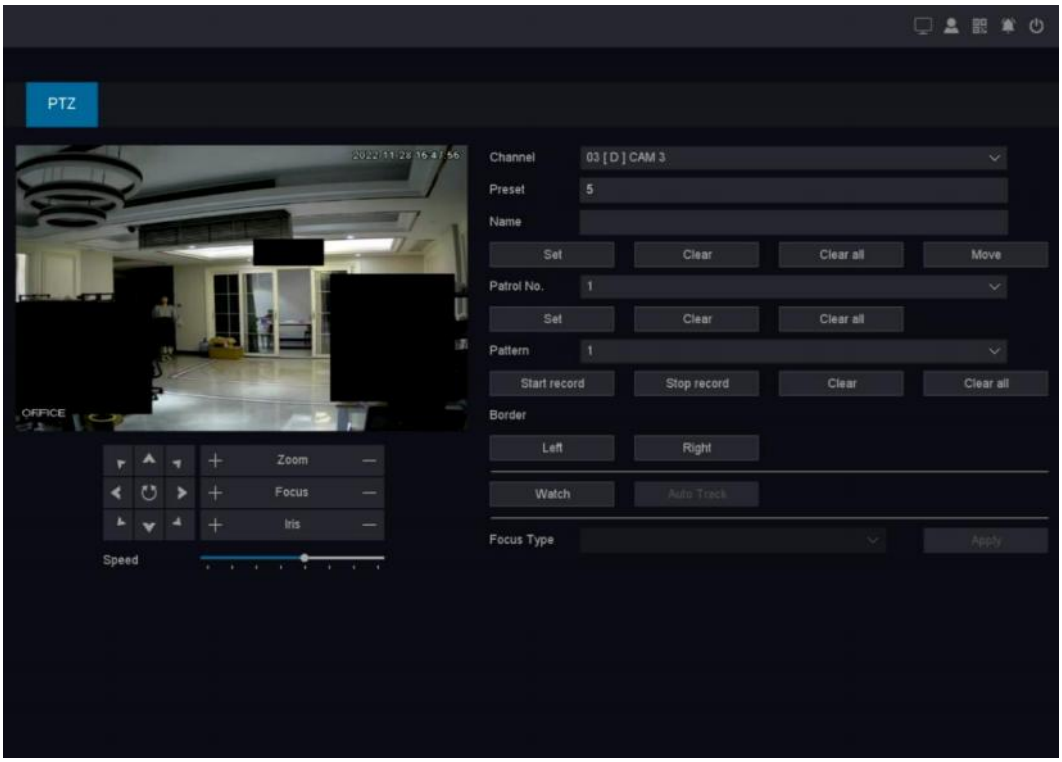


Figure 10-50 PTZ

Preset

This feature enables the camera to point to a specified position such as a window when an event takes place. You can set up to 255 preset points.

Patrol

Patrols can be set to move the PTZ to different key points and have it stay there for a set duration before moving on to the next key point. The key points are corresponding to the presets. You can set up 4 cruise lines, each cruise line includes preset points and the time stayed in the preset point and cruising speed. As shown below.

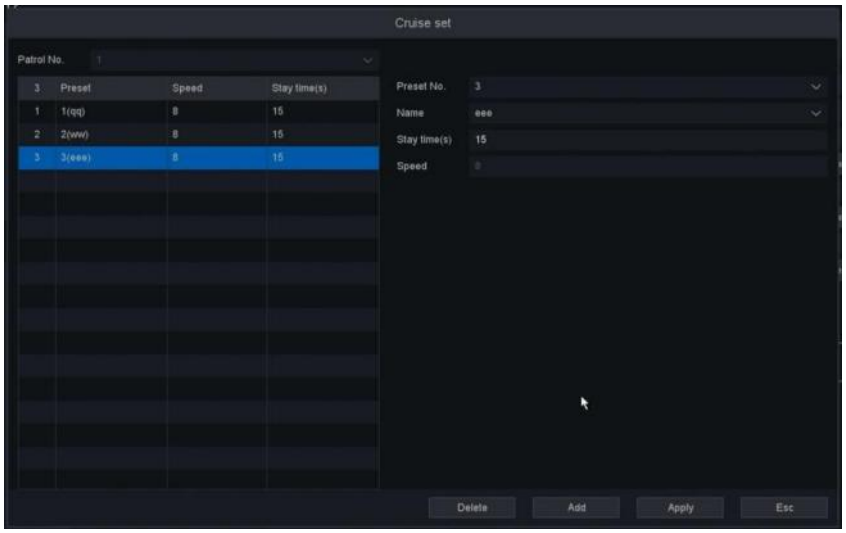


Figure 10-51 Patrol

Pattern

Patterns can be set by recording the movement of the PTZ. You can call the pattern to make the PTZ movement according to the predefined path.

Border

Linear boundaries Including Left and right boundaries.

Speed

Set the speed of the PTZ movement.

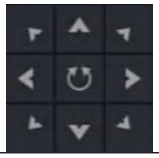
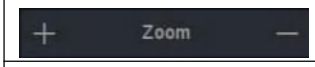
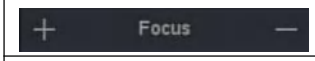
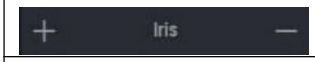
Items	Function Description
	Direction button and the auto-cycle button
	Zoom+, Zoom-
	Focus+, Focus-
	Iris+, Iris-
	The speed of the PTZ movement

Table 10-2 PTZ Function Description

10.4 Event Configuration

10.4.1 Normal Event

Motion Detection

Motion detection enables the video recorder to detect the moving objects in the monitored area and trigger alarms. Please Refer to ***6.3.3 - Motion Detection***.

Tampering

Trigger alarm when the lens is covered and take alarm response actions.

Before You Start

Please make sure whether your IPC supports this function.

Steps:

1. Go to **Setting Menu → Event → Detect → Tampering**.

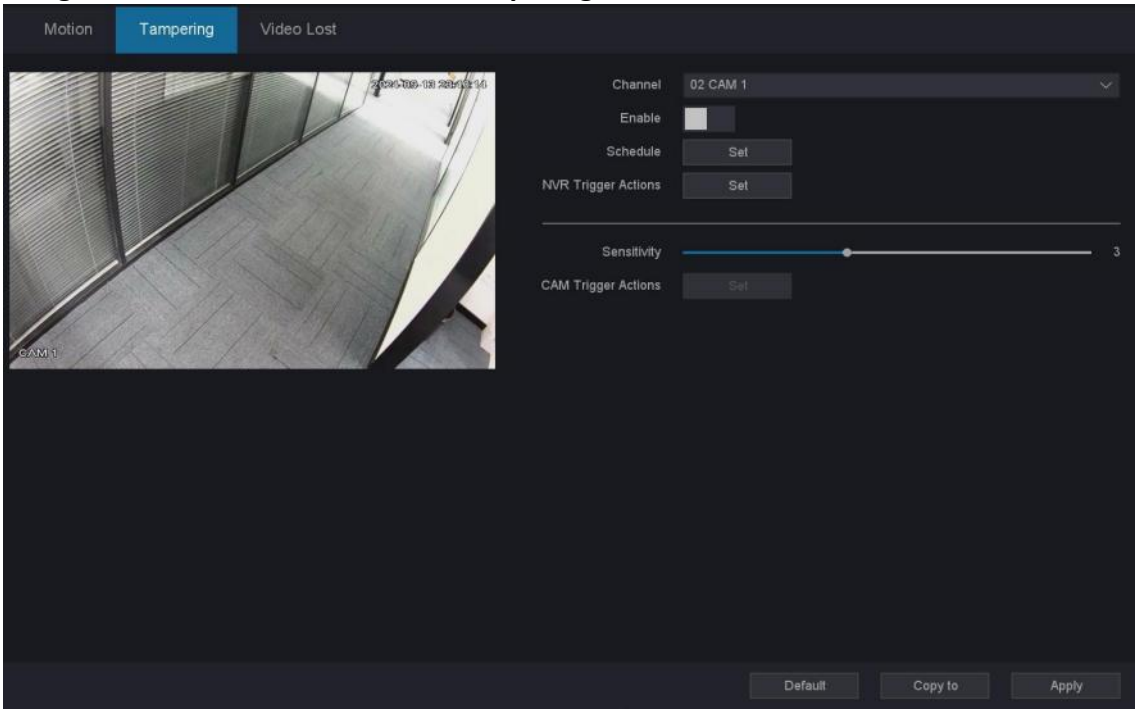


Figure 10-52 Masking

2. Set **Channel**.
3. Turn on **Enable**.
4. Adjust Sensitivity as your desire. The higher the value is, the more easily the video Masking can be triggered.
5. Set the arming Schedule. Refer to for ***6.3.4 Configure Arming Schedule*** for details.
6. Set the Trigger process. Refer to ***6.3.5 Configure Alarm Trigger process*** for details.
7. Click **Apply**.

Video Lost

Detect video loss of a camera and take alarm response actions.

Before You Start

Please make sure whether your IPC supports this function.

Steps:

1. Go to **Setting Menu → Event → Detect → Video Lost**.

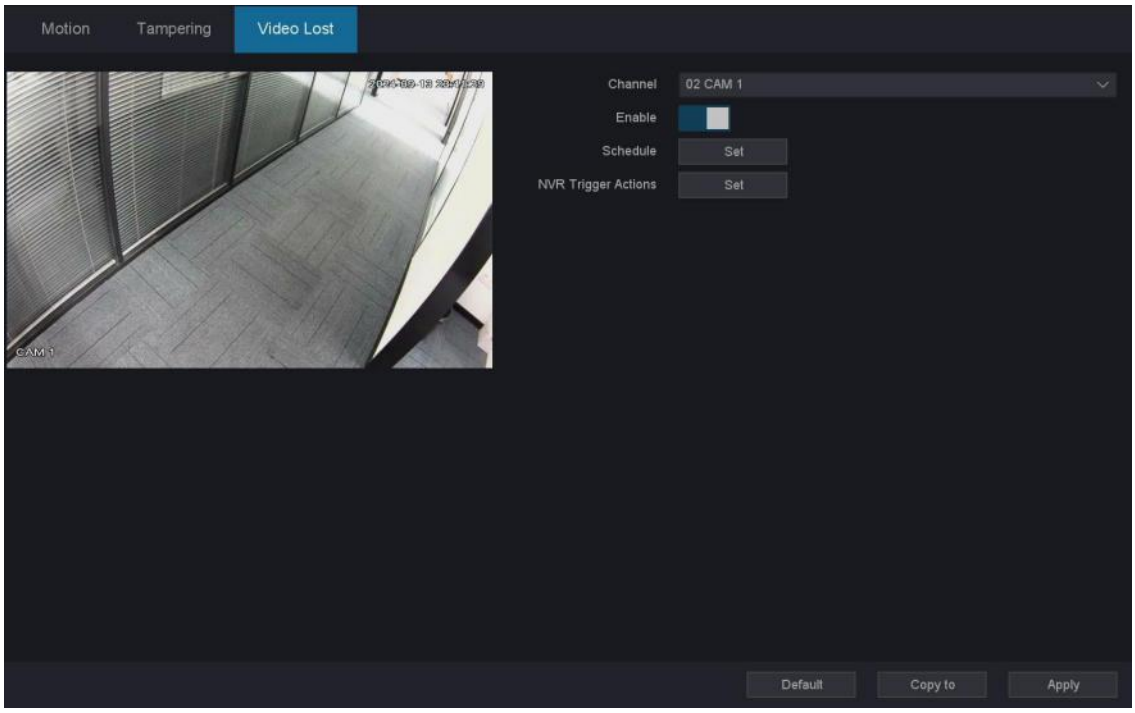


Figure 10-53 Video Lost

2. Set **Channel**.
3. Turn on **Enable**.
4. Set the arming **Schedule**. Refer to ***6.3.4 Configure Arming Schedule*** for details.
5. Set the **Trigger process**. Refer to ***6.3.5 Configure Alarm Trigger*** process for details.
6. Click **Apply**.

10.4.2 Alarm Port

Alarm In

Set linkage actions for an external sensor alarm.

Steps:

1. Go to **Setting Menu → Event → Alarm**.

Figure 10-54 Local I/O

Note

Local alarm input: Local alarm input is triggered by the external device that connected to the video recorder's terminal block.it can detect the surveillance area by some sensors such as infrared sensor or temperature sensor, and when the environment is been changed, the sensor will detect information and alter the status.

2. Click the Alarm input's name to edit the Alarm input's name as your desire.

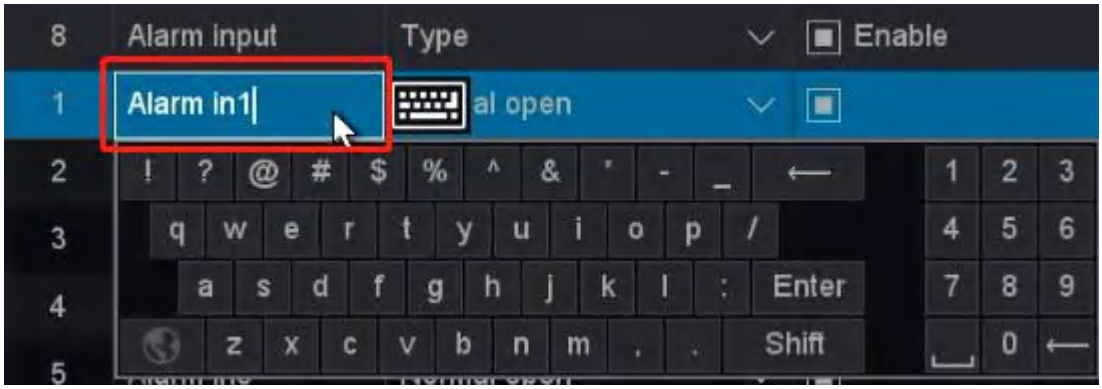


Figure 10-55 Edit Alarm Input

3. Set alarm type as normally open or normally closed.
4. Check the enable box to turn on.
5. Configure the other parameters as your desire.

Note

If you set Settings as Nonuse, the alarm input will be disabled. If you set Settings as One-Key Disarming, the selected linkage method(s) of the alarm input will be disabled.

6. Click to set the arming **Schedule**. Refer to for ***6.3.4 Configure Arming Schedule*** for details.
7. Click to set the **Linkage Actions**. Refer to ***6.3.5 Configure Alarm Trigger process*** for details.
8. Click **Apply**.

Type

Normal Open/Normal Close. It means the system support those external sensor alarms which have two statuses: Open and Close. When the status switches from Open –> Close, or from Close–>Open, alarm will be triggered.

Enable

Alarm in enabled switch.

Status

Show the trigger status of alarm input port.

Interval

Set the time interval of each Alarm in triggered.

Alarm Output

Trigger an alarm output when an alarm is triggered.

Steps:

1. Go to **Setting Menu → Event → Alarm → Local I/O**.

Figure 10-56 Alarm Output

2. Click the Alarm Output's name to edit the Alarm Output's name as your desire.
3. Set alarm type as **Schedule, Manual or Stop**.
4. Configure the other parameters as your desire.
5. Click **Apply**.

Type

Three types: Schedule/Manual/Stop. Schedule means the alarm output device will be activated when the NVR detects the alarm. Manual means the alarm output device will be activated after choosing the Manual and press the button Apply. Stop means the alarm output device is not on-guard.

Status

Show the trigger status of alarm output port.

Network Alarm

This function can get alarm from IPC's alarm input port, and then make actions on NVR.

Before You Start

Please make sure whether your IPC supports this function.

Steps:

1. Go to **Setting Menu → Event → Alarm → Camera I/O**.

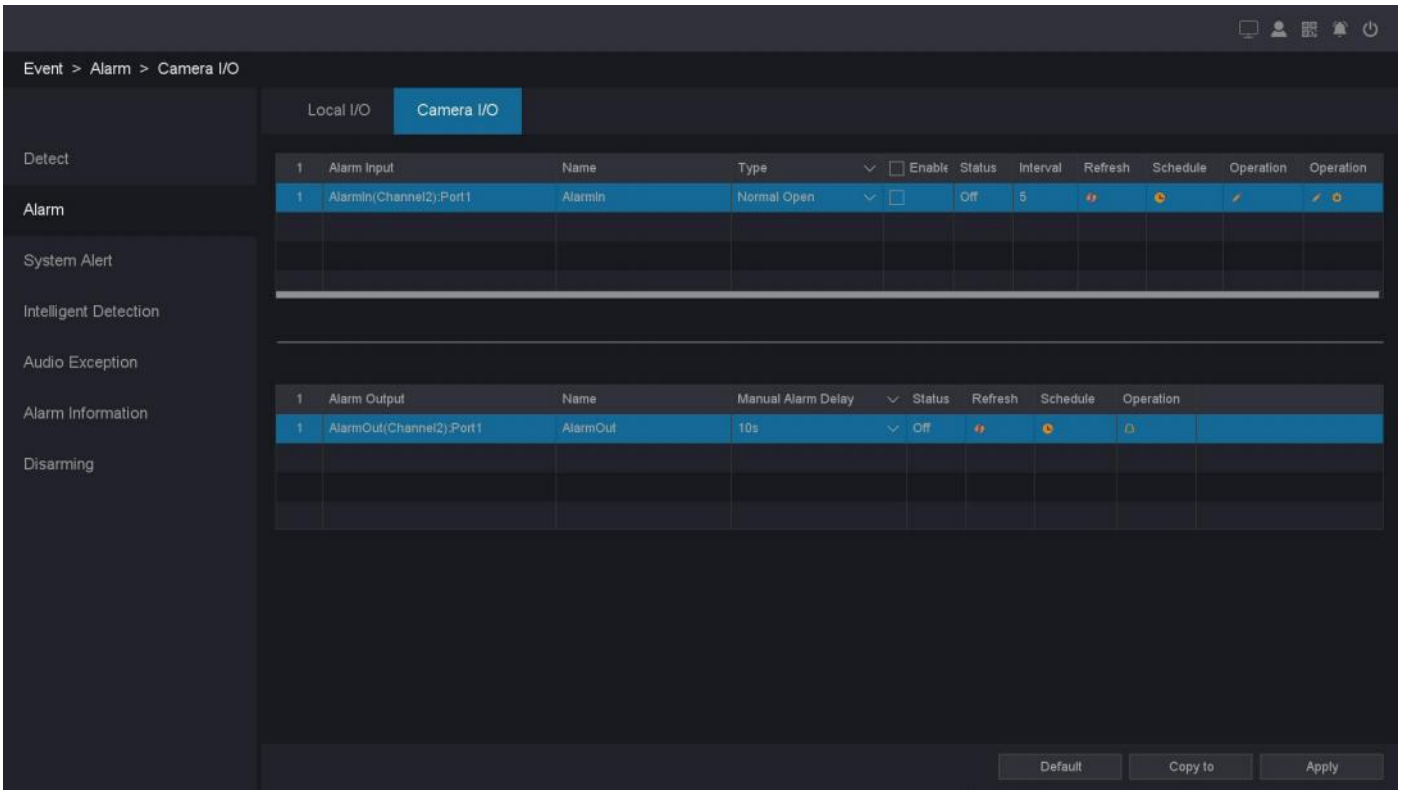


Figure 10-57 Network Alarm

2. Click left to set the name, alarm channel and alarm Port.
3. Click to set the arming Schedule. Refer to ***6.3.4 Configure Arming Schedule*** for details.
4. Click right to set the Trigger process. Refer to ***6.3.5 Configure Alarm Trigger process*** for details.
5. Configure the other parameters as your desire.
6. Check the enable box to turn on.
7. Click **Apply**.

Enable

Alarm in enabled switch of IP channel.

Name

Set the name of the Alarm input device.

Alarm channels

Show which IP channel's alarm input it is.

Port

Show which alarm input port of IP channel it is.

Operations

It includes four kinds of operations: **Edit/Schedule/Trigger process/Delete**.

Type

Normal Open/Normal Close. It means the system support those external sensor alarms which have two statuses: Open and Close. When the status switches from Open –> Close, or from Close–>Open, alarm will be triggered.

Status

Show the trigger status of alarm input port.

Interval

Set the time interval of each Alarm in triggered.

10.4.3 Intelligent detection

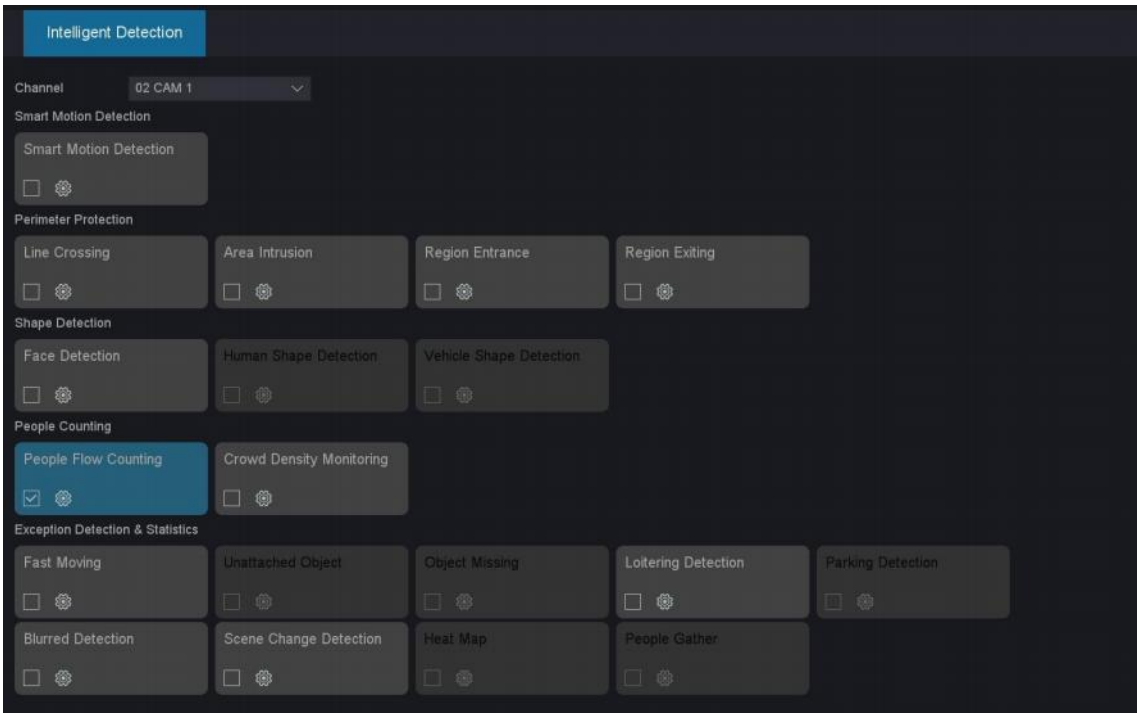


Figure 10-58 Intelligent Detection

Note

The configuration that cannot be checked item means that the channel does not support this function.

Smart Motion Detection

Smart Motion Detection is a motion detection function that supports human and vehicle filter, which can effectively filter alarms triggered by light changes, tree shadows shaking, small animals, etc.

Steps:

1. Go to **Setting Menu → Event → Intelligent detection → Smart Motion Detection**.
2. Tick the checkbox of **Smart Motion Detection**.
3. Click to enter the popup window.

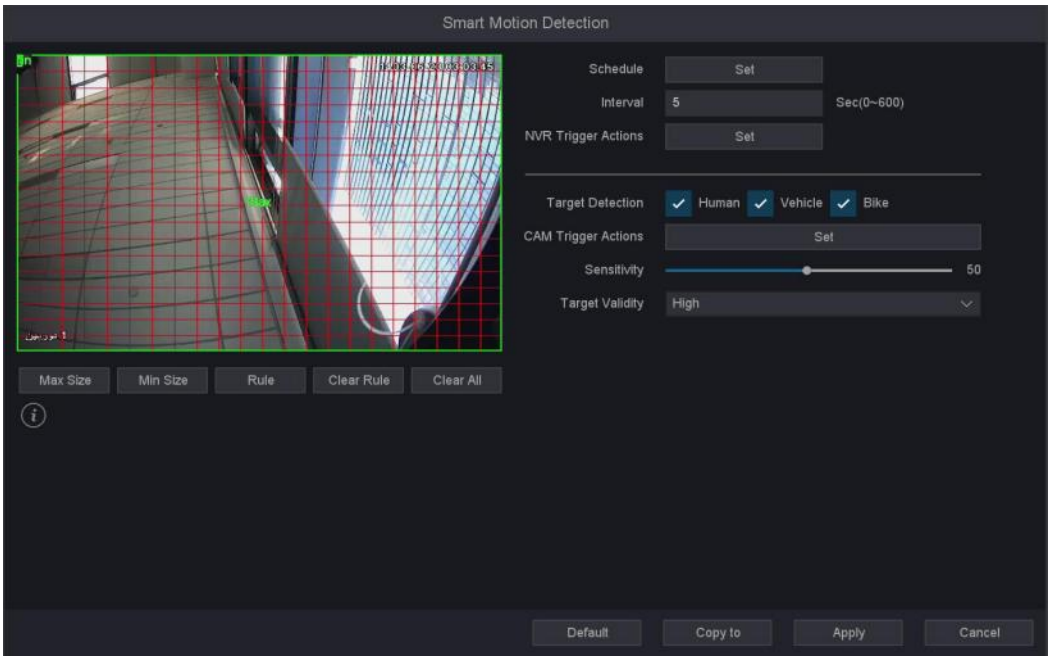


Figure 10-59 Smart Motion Detection

4. Click **Rule**, drag the cursor in the preview area to specify the detection area (Red marked areas are selected).

Max Size： When the size of objects in the scene is larger than the drawing max size， the alarm will not be triggered.

Min Size: When the size of objects in the scene is smaller than the drawing Min Size, the alarm will not be triggered.

Clear Rule: Removes area on the current alert area.

Clear All: Removes all areas on all alert areas.

5. Set the arming **Schedule**. Refer to **6.3.3 Configure Arming Schedule** for details.

6. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms. Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.

7. Set the **NVR Trigger Process**. Refer to **6.3.4 Configure Alarm Trigger Process** for details.

8. You can enable the **Human/Vehicle/Bike** filters. After enabling the filter(s), event will be triggered only by specified targets.

9. Set the **CAM Trigger Actions**. Refer to ***6.3.5 Configure Advanced Setting*** for details.

10. Set **Sensitivity**, 1-100 is optional, sensitivity value represent percentage of targets entering the alarm area. A sensitivity value of 0 indicates the alarm will be triggered only if the target enters the area completely. A sensitivity value of 100 indicates the alarm will be triggered the target has just enter the area.

11. Select a **Target Validity** for the event among the options, the default is Higher. The higher the level, the more resemble human/vehicle target will be detected.

12. Click **Apply**.

Perimeter Protection

Line Crossing & Area Intrusion & Region Entrance & Region Exiting. They are the 4 most commonly used Intelligent detection, if setting Target Detection as Human Shape Filter or Vehicle Shape Filter to discard alarms which are not triggered by human body or vehicle, They are described as Perimeter Protection, referred to as PP. Only certain camera models support these function. Please refer to ***6.3.3 Event.***

Face Detection

Face Detection is an intelligent event detection function of the camera, which uploads an alarm message after detecting a human face.

Steps:

1. Go to **Setting Menu → Event → Intelligent detection → Shape Detection → Face Detection.**
2. Tick the checkbox of **Face Detection**.
3. Click  to enter the popup window.

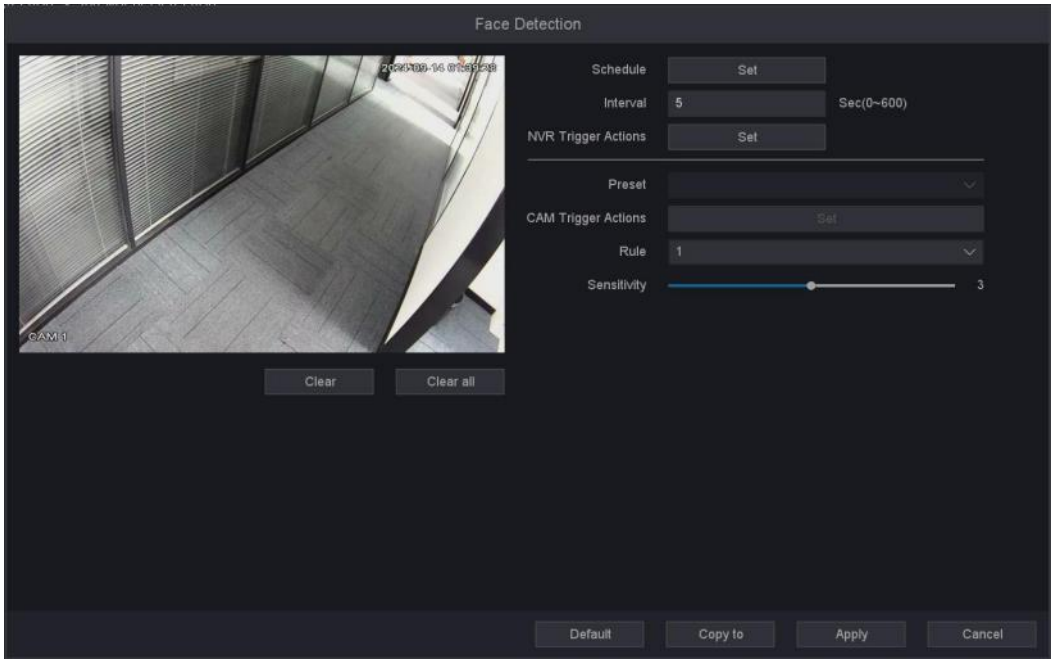


Figure 10-60 Set Disarming Time

4. Click 4 points by using the left mouse button to draw area directly in the video window.

Clear: Removes area on the current alert area.

Clear All: Removes all areas on all alert areas.

5. Set the arming **Schedule**. Refer to ***6.3.4 Configure Arming Schedule*** for details.

6. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms. Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.

7. Set the **NVR Trigger Actions**. Refer to ***6.3.5 Configure Alarm Trigger Process*** for details.

13. Set the **CAM Trigger Actions**. Refer to ***6.3.6 Configure CAM Trigger Actions*** for details.

14. Set **Sensitivity**, 1-5 is optional, sensitivity value represent percentage of targets entering the alarm area. The higher the sensitivity, the higher the face detection rate.

15. Click **Apply**.

People Counting

People counting is a technology that uses deep-learning algorithms to automatically and dynamically measure customer flow through a door or within a certain area.

People Flow Counting

Steps:

1. Go to **Setting Menu → Event → Intelligent detection → People Counting → People Flow Counting**.
2. Tick the checkbox of **People Flow Counting**.

3. Click to enter the popup window.

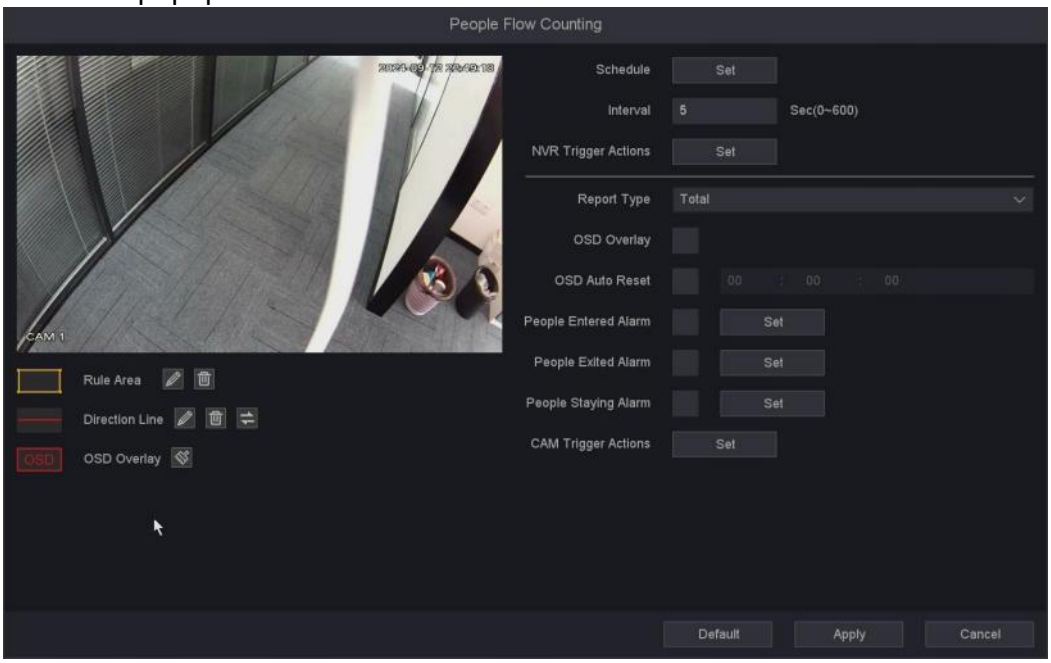


Figure 10-61 Set People Flow Counting

4. Click to draw rule area, click up to 10 points by using the left mouse button to draw area directly in the video window, right click mouse button to finish.

5. Click to draw direction line, you can click to change direction.

Note

Please configure the rule area to ensure that the direction line is within the rule area.

6. Optional: Click to reset OSD data.

7. Set the arming **Schedule**. Refer to **6.3.4 Configure Arming Schedule** for details.

8. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms. Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.

9. Set **NVR Trigger Actions**. Refer to **6.3.5 Configure Alarm Trigger Process** for details.

10. Set **Report Type**, default is “Total”, in this mode, system will upload the entry and exit data to the report. You can switch the mode to “People Entered” or “People Exited”. Go to **Setting Menu → Smart Search → Statistic Analysis → People Flow Counting** to view report.

Note

You can click or to view the report in tables or line graphs.

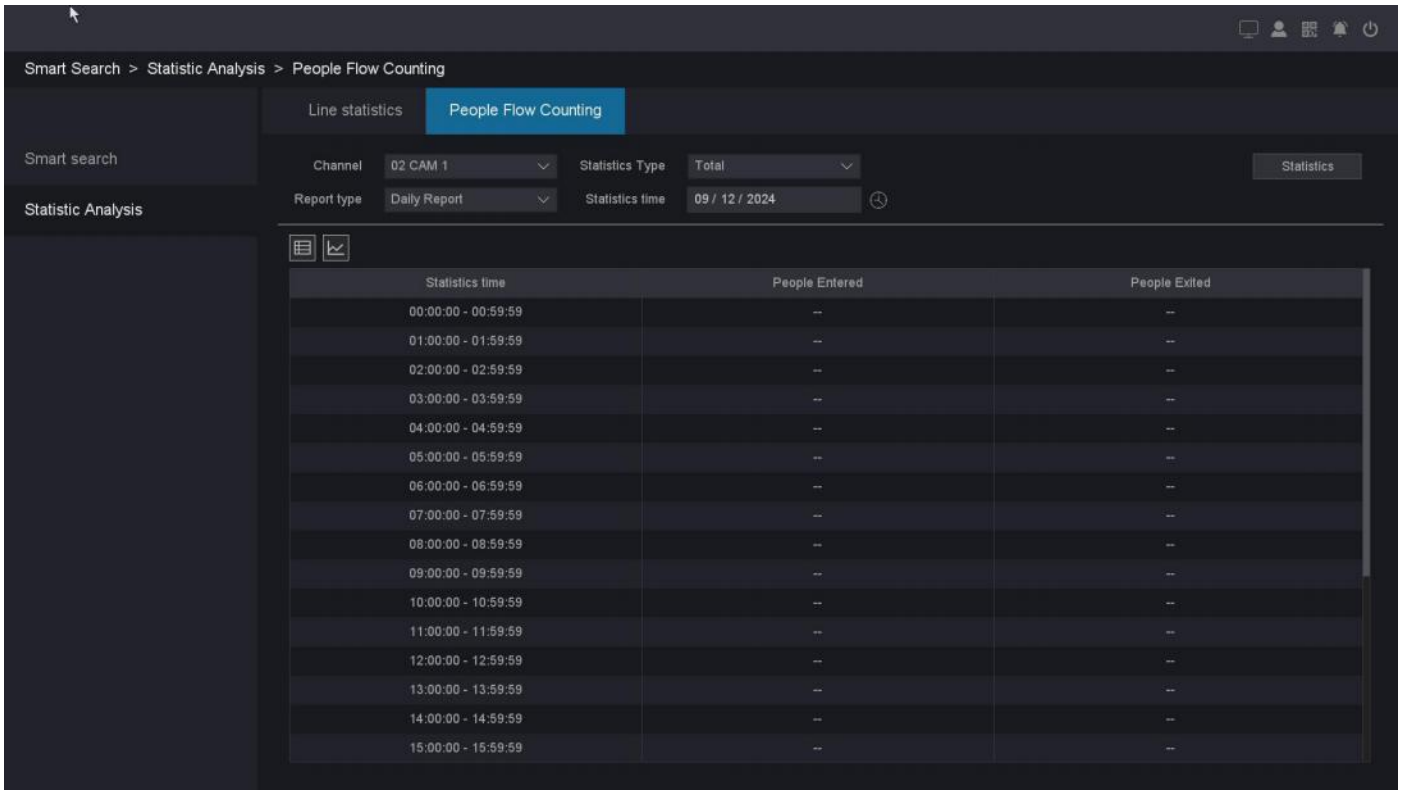


Figure 10-62 People Flow Counting Statistic

11. Check the checkbox of **OSD Auto Reset.**, system will recount at the time you set automatically.

12. Set people entered/exited or staying alarm rule amount. The system will record the alarm information when target trigger the alarm rule, you can go to **Setting Menu → System → Log** to check alarm information.

13. Set **CAM Trigger Actions**. Refer to ***6.3.6 Configure CAM Trigger Actions*** for details.

14. Click **Apply**.

Crowd Density Monitoring

Steps:

1. Go to **Setting Menu → Event → Intelligent detection → People Counting → Crowed Density Monitoring**.

2. Tick the checkbox of **Crowed Density Monitoring**.

3. Click  to enter the popup window.

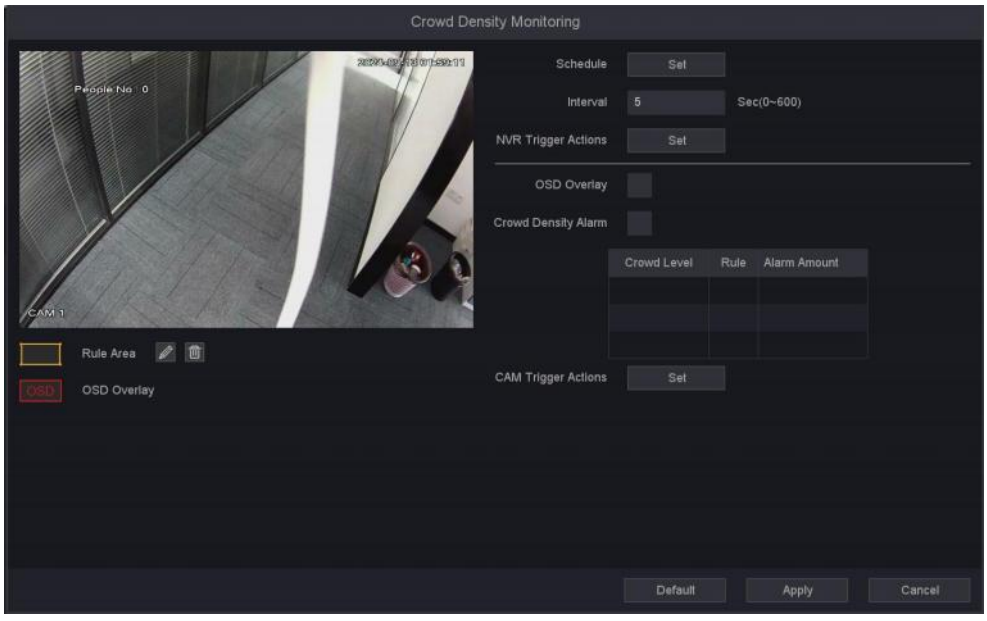


Figure 10-63 Set Crowed Density Monitoring

4. Click  to draw rule area, click up to 10 points by using the left mouse button to draw area directly in the video window, right click mouse button to finish.

5. Set the arming **Schedule**. Refer to **6.3.4 Configure Arming Schedule** for details.

6. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms. Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.

7. Set **NVR Trigger Actions**. Refer to **6.3.5 Configure Alarm Trigger Process** for details.

8. Tick the checkbox of **Crowd Density Alarm**, set alarm amount. System will upload the crowd level to the log, you can go to **Setting Menu → System → Log** to check alarm information.

9. Set **CAM Trigger Actions**. Refer to ***6.3.6 Configure CAM Trigger Actions*** for details.

10. Click **Apply**.

Loitering Detection

Loitering detection can detect the moving human body staying in a predefined place for more than a period of time or abnormal movement trajectory, and some certain actions can be taken when the alarm is triggered.

Before You Start

Please make sure whether your IPC supports this function.

Steps:

1. Go to **Setting Menu → Event → Intelligent detection → Exception Detection → Loitering Detection.**

2. Tick the checkbox of **Loitering Detection**.

3. Click  to enter the popup window.

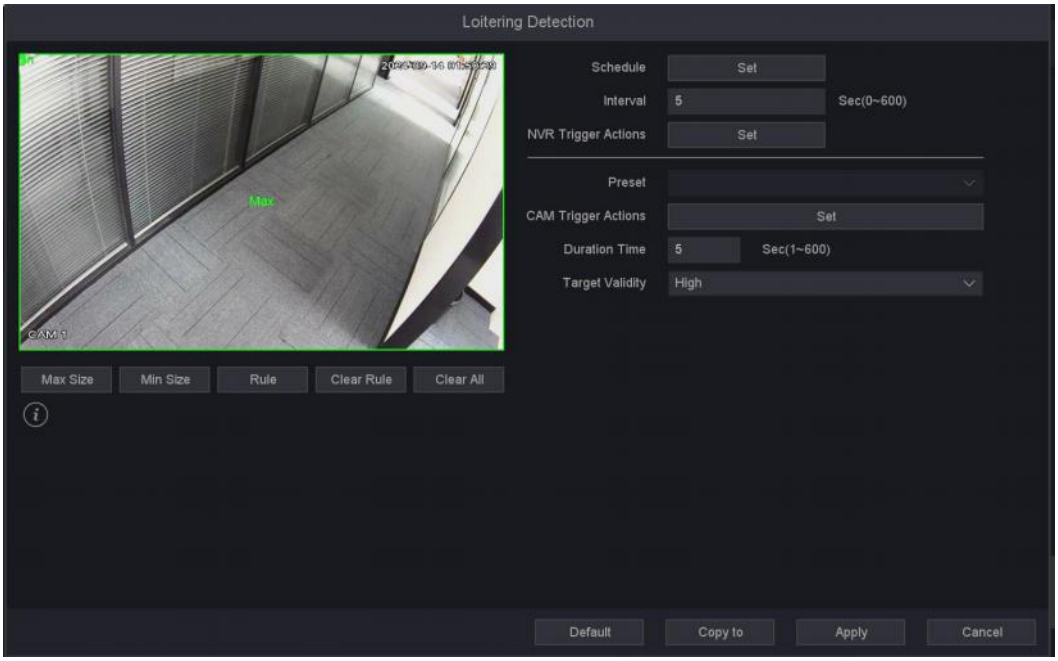


Figure 10-64 Loitering Detection

4. Click **Rule**, click 4 points by using the left mouse button to draw area directly in the video window.

Clear Rule: Removes area on the current alert area.

Clear All: Removes all areas on all alert areas.

Max Size： When the size of objects in the scene is larger than the drawing max size， the alarm will not be triggered.

Min Size: When the size of objects in the scene is smaller than the drawing Min Size, the alarm will not be triggered.

5. Set the arming **Schedule**. Refer to for ***6.3.4 Configure Arming Schedule*** for details.
6. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms. Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.
7. Set the **NVR Trigger Actions**. Refer to ***6.3.5 Configure Alarm Trigger Process*** for details.
8. Set the **CAM Trigger Actions**. Refer to ***6.3.6 Configure CAM Trigger Actions*** for details.
9. **Duration Time**: Loitering Detection alarm occurs if target enter arming areas and stay longer than the duration time you set, 1-600s settable.
10. Select a **Target Validity** for the event amongst the options, the default is Higher. The higher the level, the more resemble human/vehicle target will be detected.
11. Click **Apply**.

Blurred detection

Burred is usually caused by the camera failing to focus accurately, which may result in a blurred or unclear image. Burred detection analyses the characteristics of the image to determine whether the image has been focused correctly and triggers the appropriate alarm linkage response when the image is not clear.

Before You Start

Please make sure whether your IPC supports this function.

Steps:

1. Go to **Setting Menu → Event → Intelligent detection → Exception Detection → Blurred Detection**.
2. Tick the checkbox of Blurred Detection.
3. Click  to enter the popup window.

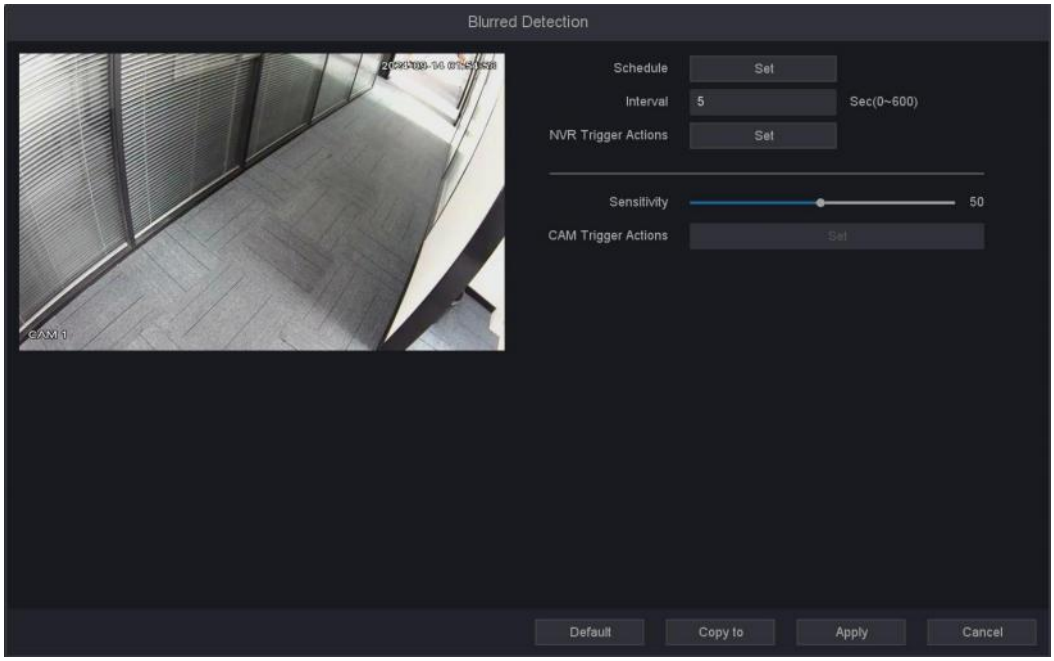


Figure10-65 Blurred Detection

4. Set the arming **Schedule**. Refer to ***6.3.4 Configure Arming Schedule*** for details.
5. Set the **Interval** for the event. It determines the minimal time period between two consecutive alarms.

Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.

6. Set the **NVR Trigger Actions**. Refer to ***6.3.5 Configure Alarm Trigger Process*** for details.

7. The **Sensitivity** controls the degree of blurring of the image alarm. The higher the sensitivity, the more the image will alarm when it is slightly blurred. The lower the sensitivity, the alarm will be raised only when the image is very blurred.

8. Set the **CAM Trigger Actions**. Refer to ***6.3.6 Configure CAM Trigger Actions*** for details.

9. Click **Apply**.

Scene Change Detection

When the scene taken by the camera changed due to human, external environment and other reasons, the camera detects the scene change event and triggers the corresponding alarm linkage reaction.

Steps:

1. Go to **Setting Menu → Event → Intelligent detection → Exception Detection → Scene Change Detection.**

2. Tick the checkbox of Scene Change Detection.

3. Click  to enter the popup window.

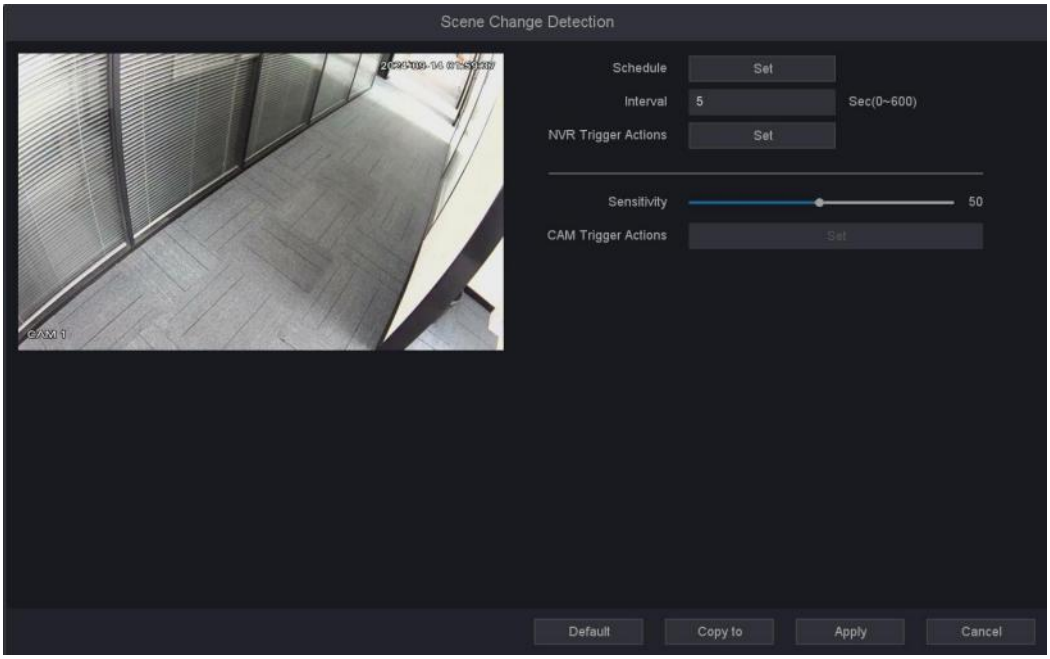


Figure 10-66 Scene Change Detection

4. Set the arming **Schedule**. Refer to ***6.3.4 Configure Arming Schedule*** for details.

5. Set the alarm **Interval** for the event. It determines the minimal time period between two consecutive alarms. Turn it up to filter frequent alarms, and turn it down to prevent missing alarms.

6. Set the **NVR Trigger Actions** . Refer to ***6.3.5 Configure Alarm Trigger Process*** for details.

7. Adjust the **Sensitivity**. 1-100 configurable, the higher the sensitivity, the more the image will alarm with a slight change. The lower the sensitivity, the alarm will be raised only if the image changes a lot.

8. Set the **CAM Trigger Actions**. Refer to ***6.3.6 Configure Advanced Setting*** for details.

9. Click **Apply**.

10.4.4 System Alert

Exception settings refer to the handling action of various exceptions, including No writable disk, Disk error, Disk no space, Network Disconnection, IP Conflicted.

Steps:

1. Go to **Setting Menu → Event → System Alert → System Alert**.

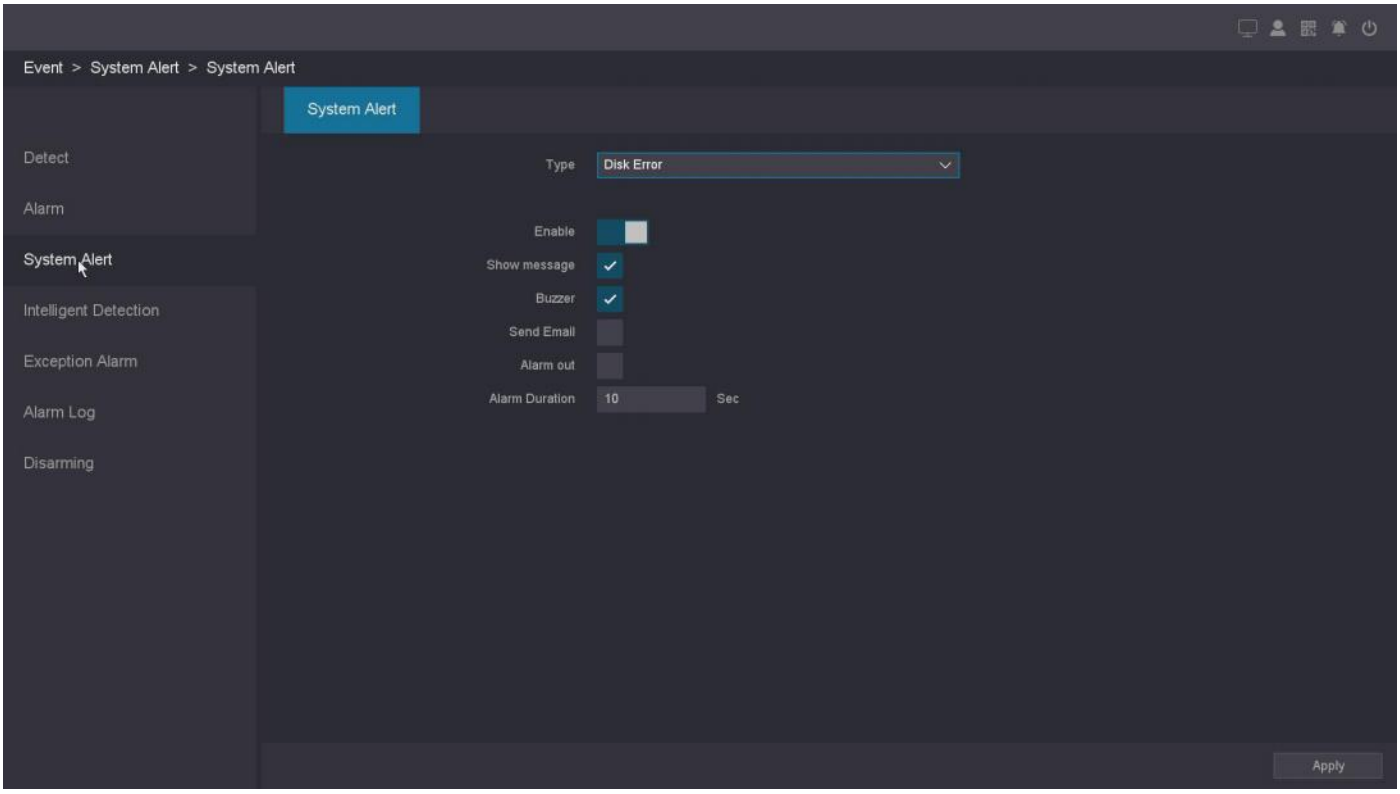


Figure 10-67 System Alert

2. Select Exception Type.
3. Turn on **Enable**.
4. Configure the other parameters as your desire. When the set events occur, you will receive hints in Alarm Status.
5. Click **Apply**.

No writable disk

If all HDD are set to only read, this exception will be triggered. It supports these methods to remind the user about the exception: Show Message, Buzzer, Send Email and Alarm Out.

Disk Error

If writing HDD error or DHH is unformatted, this exception will be triggered. It supports these methods to remind the user about the exception: Show Message and Buzzer.

Disk No Space

You can set minimum percentage of hard disk space. The handling actions of this exception are Show Message, Buzzer, Send Email and Alarm Out.

Network Disconnection

If network is disconnected, this exception will be triggered. It supports these methods to remind the user about the exception: Show Message, Buzzer and Alarm out.

IP Conflicted

Contain If IP conflict with other device at the same network, exception will be triggered. It supports these methods to remind the user about the exception: Show Message, Buzzer and Alarm out.

S.M.A.R.T

This exception is about HDD health detection. It will be triggered when the HDD of device have some problems and not work under good condition. It supports these methods to remind the user about the exception: Show Message and Buzzer. For the configuration detail, please refer to ***S.M.A.R.T.***

10.4.5 Exception Alarm

Audio detection alarm is triggered when audio around camera is abnormal, and some certain actions can be taken when the alarm is triggered.

Before You Start

Please make sure whether your IPC supports this function.

Steps:

1. Go to **Setting Menu → Event → Exception Alarm → Audio detection.**

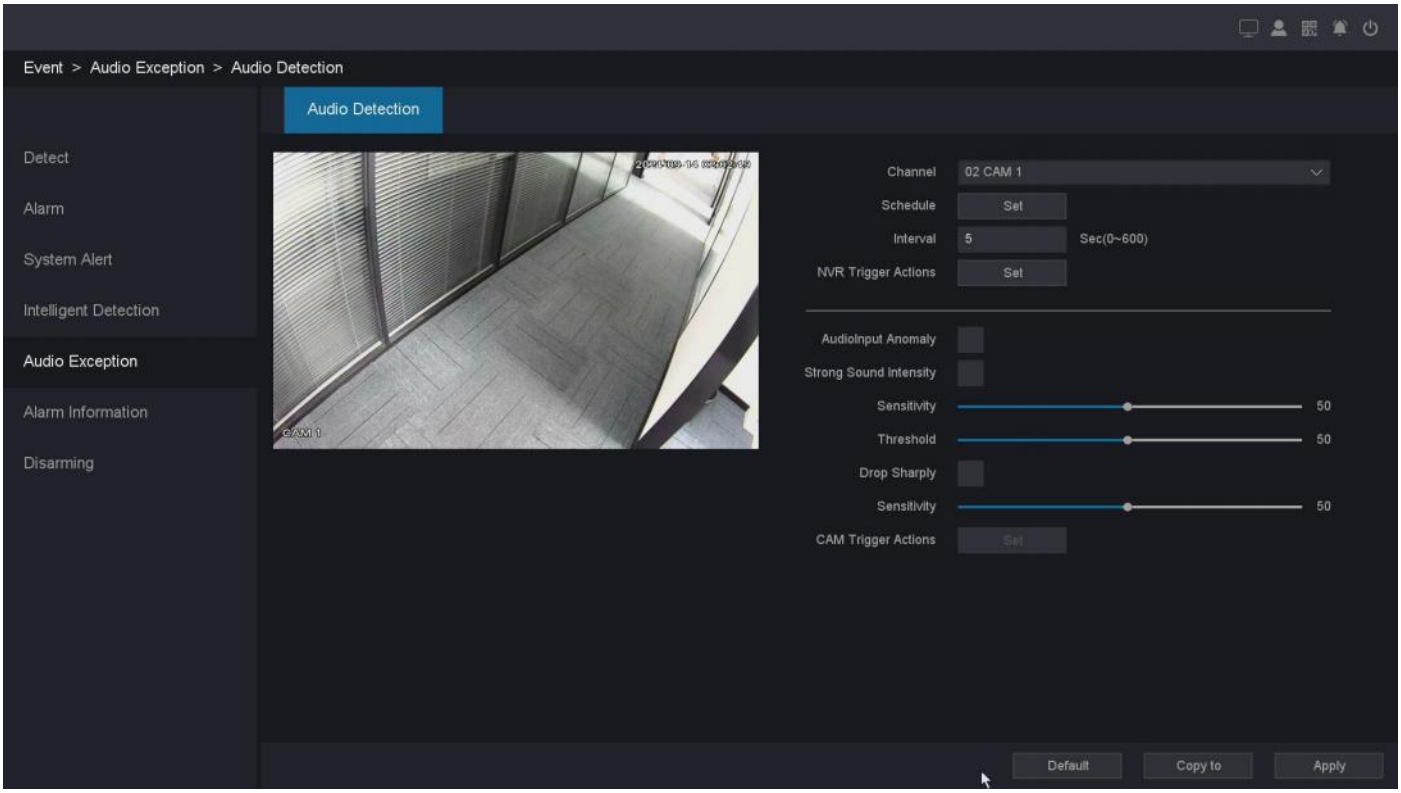


Figure 10-68 Audio Exception Detection

2. Select a camera.
3. Set the arming **Schedule**. Refer to for ***Configure Arming Schedule*** for details.
4. Set the **NVR Trigger Actions** process. Refer to ***Configure Alarm Trigger*** process for details.
5. **Audio input anomaly：**

Audio input exception: After Enable is checked, the current input audio can be detected. If the audio volume value is lower than 20db, the audio input exception alarm will be reported.

6. **Strong sound intensity:**

After you select enable, you can detect whether the current input audio has a sharp rise in sound intensity.

Sensitivity:

Controls the volume value of a steep rise, the higher the sensitivity, the volume value will rise slightly will alarm. The lower the sensitivity, the volume value will rise a lot before the alarm.

Sound Intensity Threshold:
An alarm is generated when the current rised volume is greater than the threshold. The alarm for a sudden rise in sound intensity is a sudden rise in sound intensity alarm.

7. **Drop sharply：**
After you select Enable, you can check whether the current input audio has a steep drop in sound intensity.
Sensitivity:
Controls the volume value of the steep drop, the higher the sensitivity, the volume value slightly decreased will alarm. The lower the sensitivity, the volume value will drop a lot before the alarm. The sound intensity drop alarm reported is the sound intensity drop alarm.

8. Set the alarm interval time and recommend using the default.

9. Click **Apply**.

10.4.6 Alarm Log

Alarm Information

Every alarm event occurs, you will see it here, and in this GUI you can playback the record video of the Alarm.

1. Go to **Setting Menu → Event → Alarm Log → Alarm Information**.

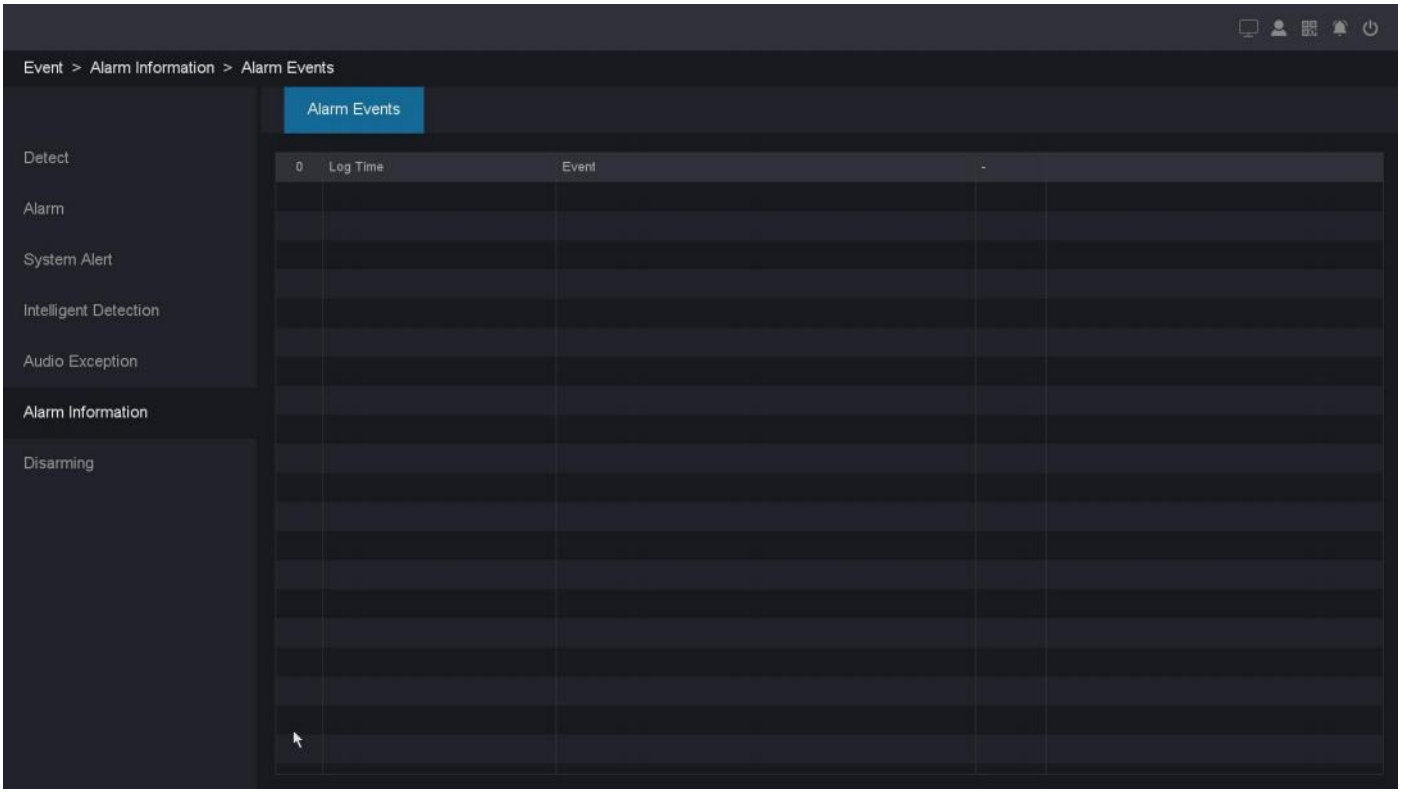


Figure 10-69 Alarm Information

2. You can also click the button to view the video with the alarm events hint.

3. The maximum number of logs supports 1000, there may be differences between different models.

10.5 Storage Management

10.5.1 Base - Storage Device

Initialize HDD

If it is the first time you use your HDD, please initialize it after it is installed. Please refer to ***6.4.1 Storage.***

Add Cloud Storage

You can also add network storage, Please refer to ***10.2.5 Advanced - Cloud Storage***.

10.5.2 Storage Mode

Configure HDD Groups

Multiple HDDs can be managed in groups. Video from specified channels can be recorded onto a particular HDD group through HDD settings. Multiple HDDs can be managed in groups. Video from specified channels can be recorded onto a particular HDD group through HDD settings. You can also switch the hard disk's storage mode, including the "group", "quotas (Capacity)", and “Quota (Time)”.

Before You Start

Install at least an HDD to your video recorder.

Steps:

1. Go to **Setting Menu → Storage → Group Management**.
2. Select **Mode** as Group.
3. Select a group number.
4. Select IP channels to record on the HDD group.

Figure 10-70 Storage Mode

5. Click **Apply**.
6. Restart the video recorder to activate the new storage mode settings.
7. After restart, go to **Setting Menu → Storage → Storage → Base**.
8. Click  of desired HDD to set the group.
9. Select a group number for the current HDD.

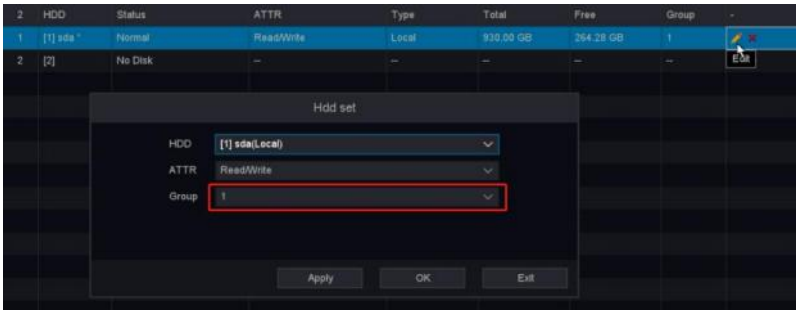


Figure 10-71 Group

10. Click OK.

Note

You can set 16 groups under group mode, and each channel is independent of each group. If the channel does not belong to any group, none video file will be saved, and if the channel belongs to more than one group, the channel will use the space of these group one by one until all the group are full.

Configure HDD Quota (Capacity)

Each camera can be configured with an allocated Quota (Capacity) for storing videos.

Steps:

1. Go to **Setting Menu → Storage → Storage Mode → Storage Mode**.
2. Select Mode as **Quota** (Capacity).
3. Select a camera to set quota in Channel.
4. Enter the Record capacity in Record quota (GB) and Picture quota (GB).

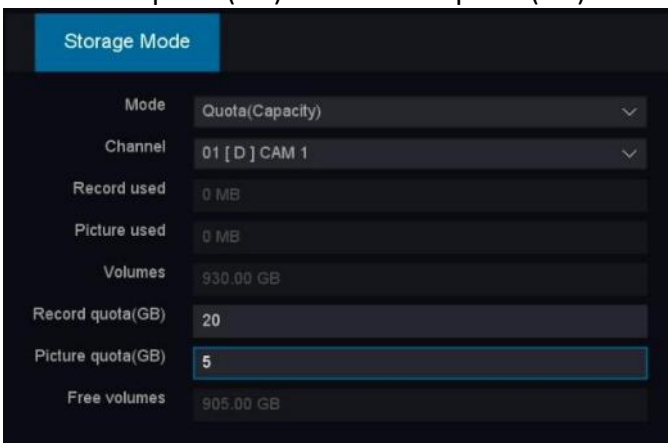


Figure 10-72 Quota

5. Click **Apply**.
6. Click **OK** to the video recorder to activate the new settings.

Note

When the quota capacity is set to 0, all cameras will use the total capacity of HDD for videos and pictures. Every time you change the storage mode, you need to restart the NVR device.

Record used

Shows the video files space that the channel you chose have used in real-time.

Picture used

Shows the pictures space that the channel you chose have used in real-time.

Volumes

Total capacity of all hard drives.

Record Quota

You can manually set the quota size of channel video.

Picture quota

You can manually set the quota size of channel picture.

Free volumes

Shows the free space minus the space you have set on other channels.

Note

About the operation mechanism of capacity quota (It needs to be set to allow overwriting when the hard disk video is full. For the setting, please refer to **10*.5.5 Advanced Settings/HDD Full***).

- The video recording is given priority. If the hard disk capacity is left, the video recording will continue. The highest priority is to ensure that there are as many videos as possible.
- After the recording is full, the BLOCK of the channel with the earliest end time exceeding the quota will be overwritten first.
- Until the capacity quota is allocated, then look for the block with the earliest end time within the quota to be overwritten.

Configure HDD Quota (Time)

Each camera can be configured with an allocated Quota (Time) for storing videos.

Steps:

1. Go to **Setting Menu → Storage → Storage Mode → Storage Mode**.
2. Select **Mode as Quota (Time)**.
3. Select a camera to set quota in **Channel**.
4. Enter the Record Day in Record Quota (Day).

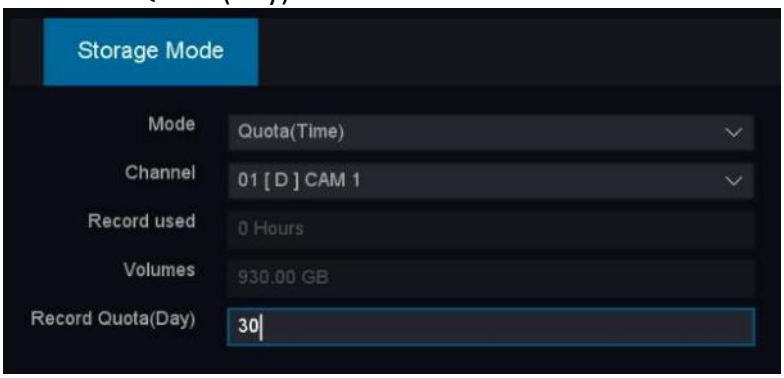


Figure 10-73 Quota

5. Click **Apply**.
6. Click **OK** to the video recorder to activate the new settings.

Note

When the Record Quota (Day) is set to 0, all cameras will use the total capacity of HDD for videos and pictures. Every time you change the storage mode, you need to restart the NVR device.

Record used

Shows the video files space that the channel you chose has used in real-time.

Volumes

Total capacity of all hard drives.

Record Quota (Day)

Set a time for a channel from 0-60 days, and the new video files will not cover the old files in this period.

Note

About the time quota operation mechanism (It needs to be set to allow overwriting when the hard disk video is full. For the setting, please refer to ***10.5.5 Advanced Settings/HDD Full).***

- 1.2.1 The video recording is given priority. If the hard disk capacity is left, the video

recording will continue. The highest priority is to ensure that there are as many videos as possible.

- 1.2.2. After the recording is full, the BLOCK of the channel with the earliest end time exceeding the time quota will be overwritten first.
- 1.2.3. Until the BLOCK of the channel exceeding the time quota is covered by the recordings of the remaining channels within the time quota, the time quota mechanism of the channel will take effect.
- 1.2.4. Because the video stream changes dynamically, under the time quota mechanism, to make the time quota mechanism of this channel take effect, you can set the time quota of another channel as large as possible.

10.5.3 Configure Recording Schedule

Video recorder will automatically start/stop recording according to the configured schedule. Please refer to ***6.4.2Configure Recording Schedule*** .

10.5.4 Record Status

On this page you can check all the channels record status, open or stop; stream type, video or mixture (video and audio); frame/bite rate of channels stream; main/sub resolution of IP channel; and whether open the redundancy function or not.

Before You Start

Please make sure whether you have configured the recording Schedule.

Steps:

1. Go to **Setting Menu → Storage → Record Status→ Record**.

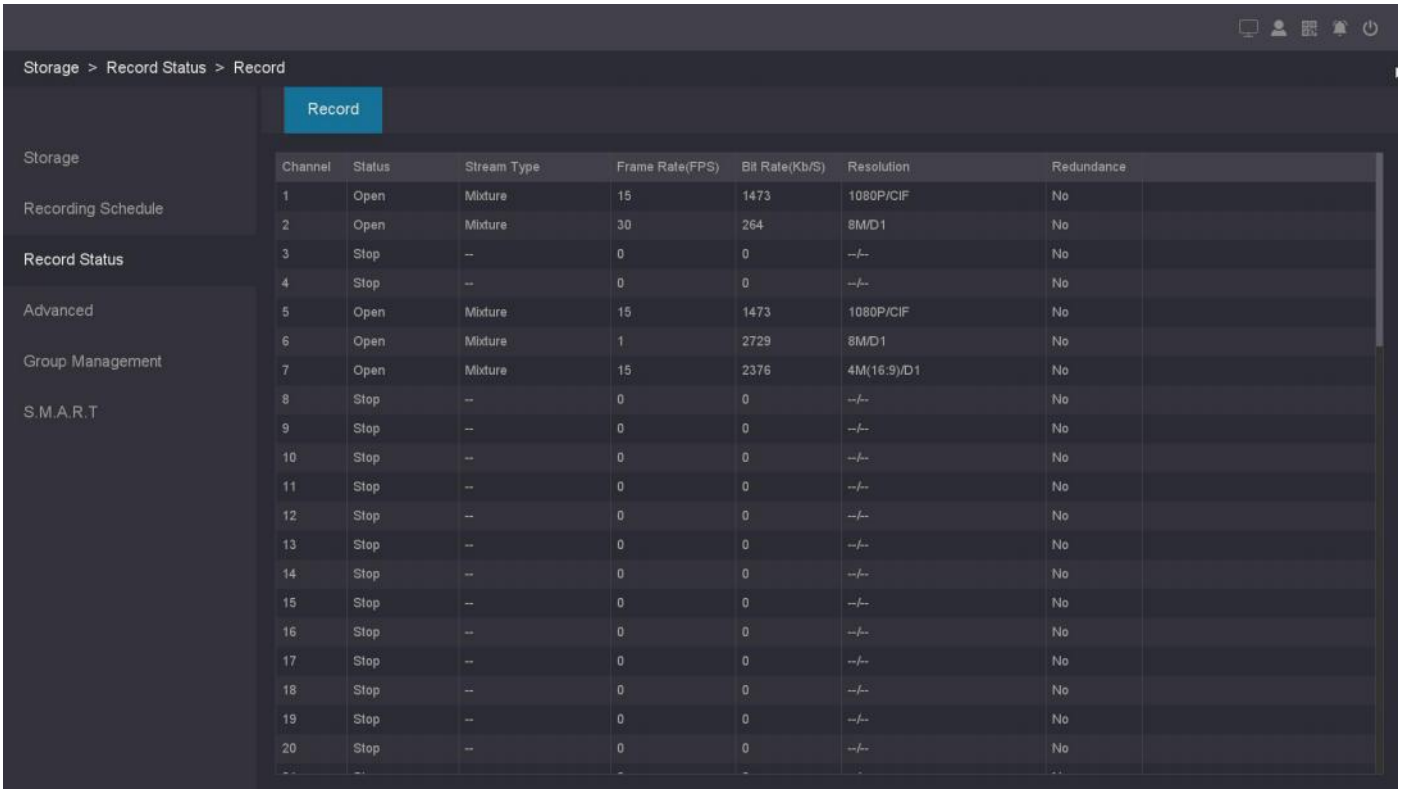


Figure 10-74 Record

10.5.5 Advanced Settings

In this page you can set the full strategy of hard disk, "stop" or "overwrite".

Steps:

1. Go to **Setting Menu → Storage → Advanced → Advanced**.

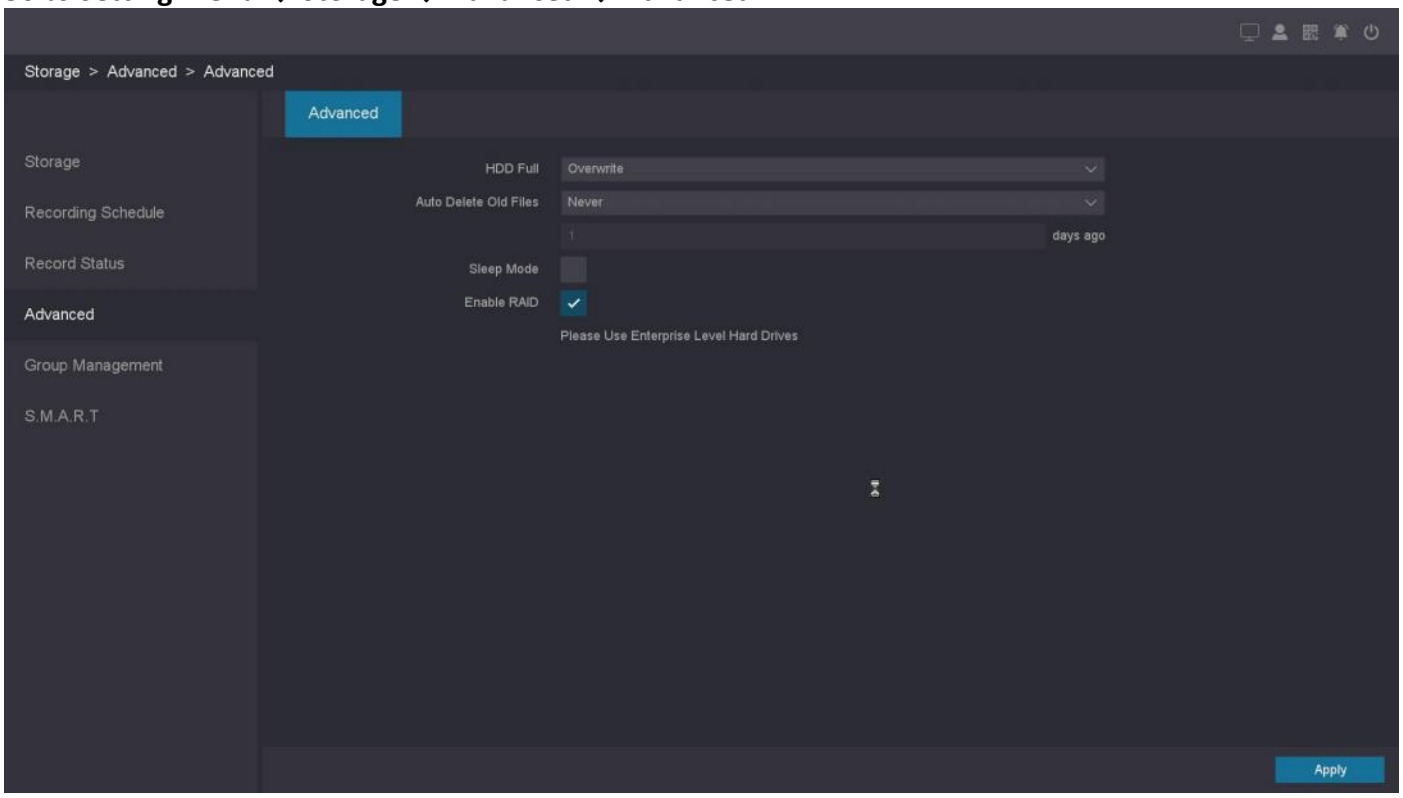


Figure 10-75 Advanced

2. Configure the parameters as your desire.
3. Click **Apply**.

HDD Full

- Stop record: When the HDD is full, video recorder will stop writing.
- Overwrite: When hard drive is full, video record will continue to write new files by deleting the oldest files.

Auto-Delete Old Files

Support two mode of strategy, “never” and “Custom”. In the “Custom” mode you can set auto-delete time from 1-30 days before.

Sleep Mode

HDDs which are free of working for a long time will turn into sleep status.

Enable RAID

When RAID is enabled on the device, a Redundant Array of Independent Disks (RAID) can be implemented. Please refer to *10.5.6 RAID* for detail.

Note

Only some models support this feature, please refer to the actual interface.

10.5.6 RAID

When RAID is enabled on the device, a Redundant Array of Independent Disks (RAID) can be implemented.

Warning

- The array function has high requirements for hard disks. In order to ensure that the disk array works reliably and stably for a long period of time, it is recommended to use enterprise level hard drivers to participate in array creation and other configurations. We are not responsible for any data loss or damage caused by the use of surveillance-grade or desktop-grade hard disks.
- It is recommend to use the same model and capacity HDDs.
- The capacity of a single disk can not less than 4TB.

Enable RAID

NVR need enable RAID to configure array, such as creating array.

Before You Start

The RAID function requires device support.

Steps:

1. Go to **Setting Menu→ Storage → Advanced**.
2. Turn on **Enable RAID**.

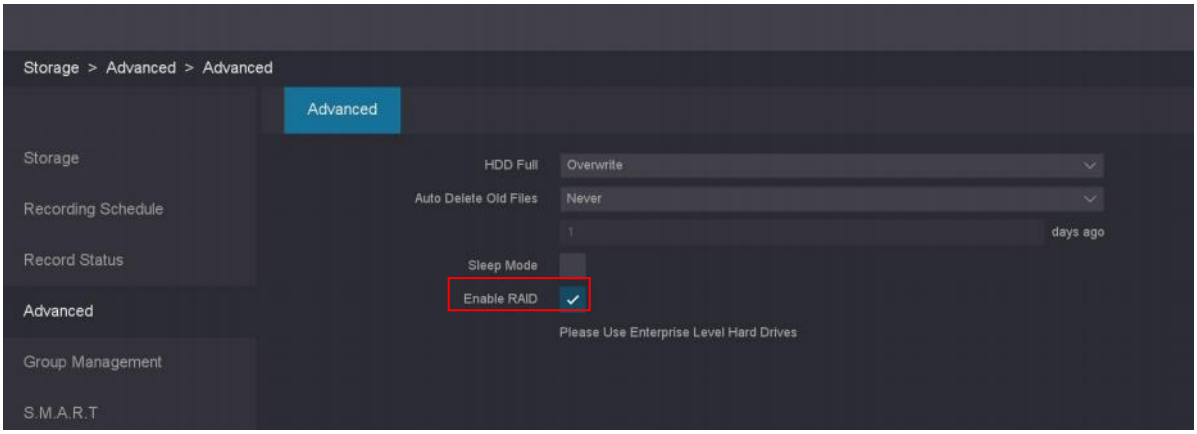


Figure10-76 Advanced Setting

3. Click **OK** and continue.

Figure 10-77 Continue

4. Click **OK** and wait for for restart finish.

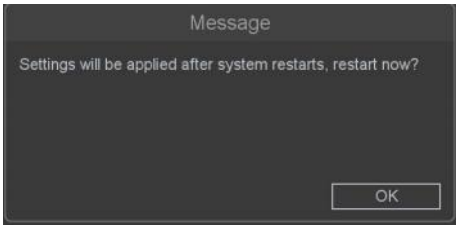


Figure 10-78 Restart

Note

The NVR does not record when RAID is turned on, please refer to ***Create RAID*** to configure to record.

Create RAID

There are two ways to create RAID, **Quick Set** configuration and **Manual Create RAID**. Quick set configuration creates RAID5 by default, manual create RAID support RAID0, RAID1, RAID5 and RAID10.

Type.	Number of Hard Disk
RAID0	≥2
RAID1	2
RAID5	≥3
RAID10	4 or 8

Table 10-3 Description of Number of Hard Disk

Quick Set RAID

With Quick Set, the appliance can quickly perform the creation of disk arrays and virtual disks. The default array type created is RAID5.

Before You Start

NVR has at least 3 physical disks installed.

Steps:

1. Go to **Setting Menu→ Storage → RAID**.
2. Click **Quick Set**.
3. Click **OK**.

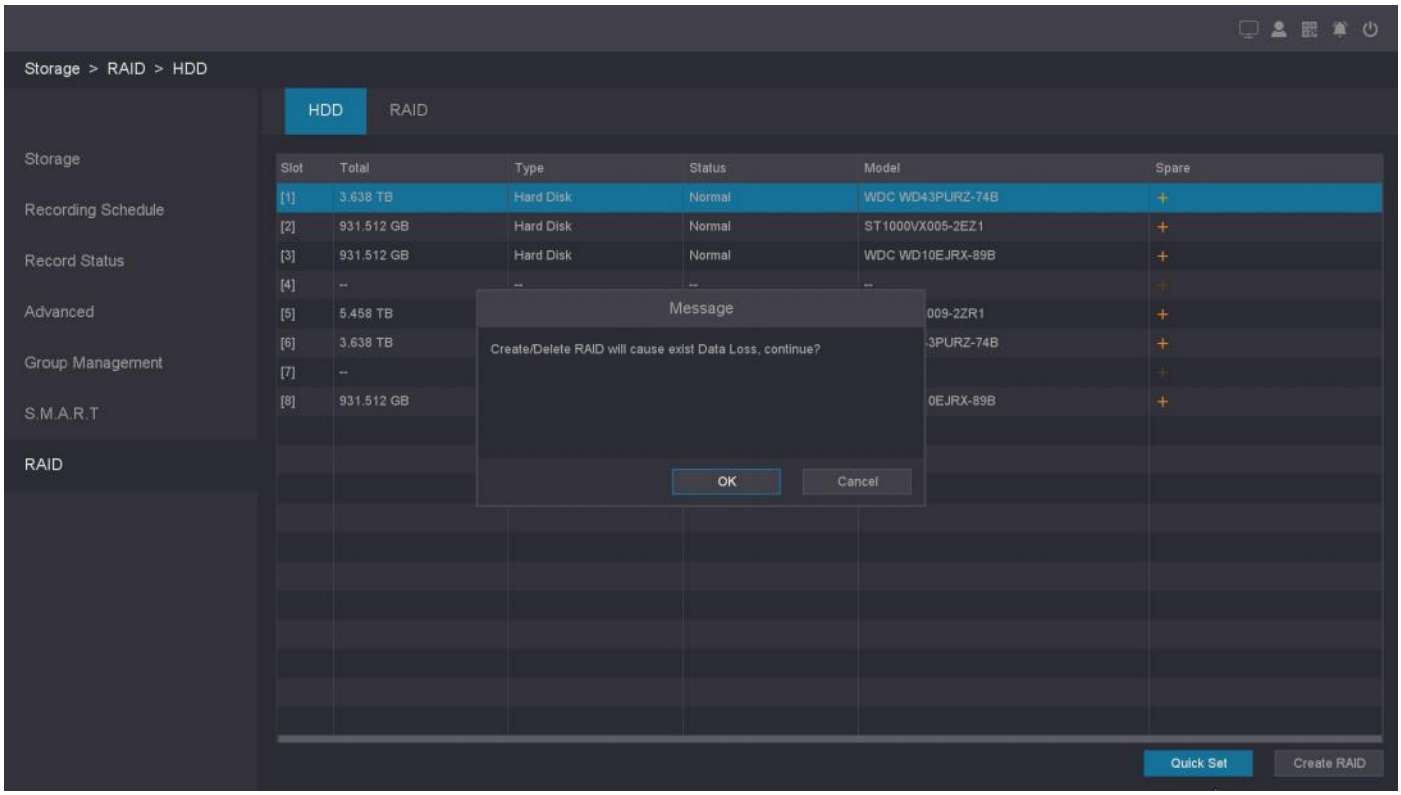


Figure 10-79 Quick Set

4. Go to **Setting Menu→ Storage → RAID → RAID** to check RAID status. When the initialization is complete, the status is displayed as normal and the disk is ready for normal reading and writing.

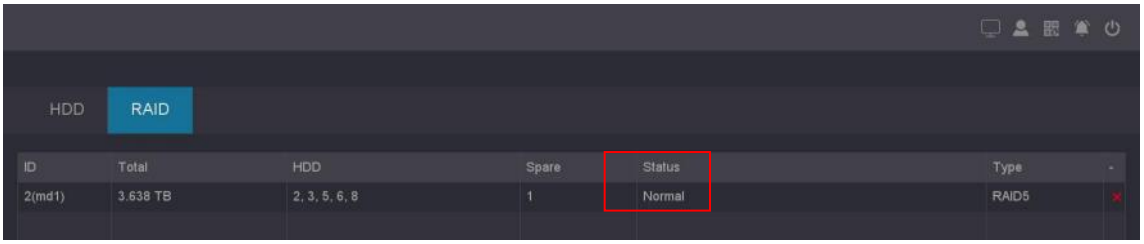


Figure 10-80 Check Status

5. Optional, you can click  to delete or click **Quick Delete** to delete all RAID.

6. Go to **Setting Menu→ Storage → Base** to check array (equivalent to a high-capacity logical disk) recording status information.

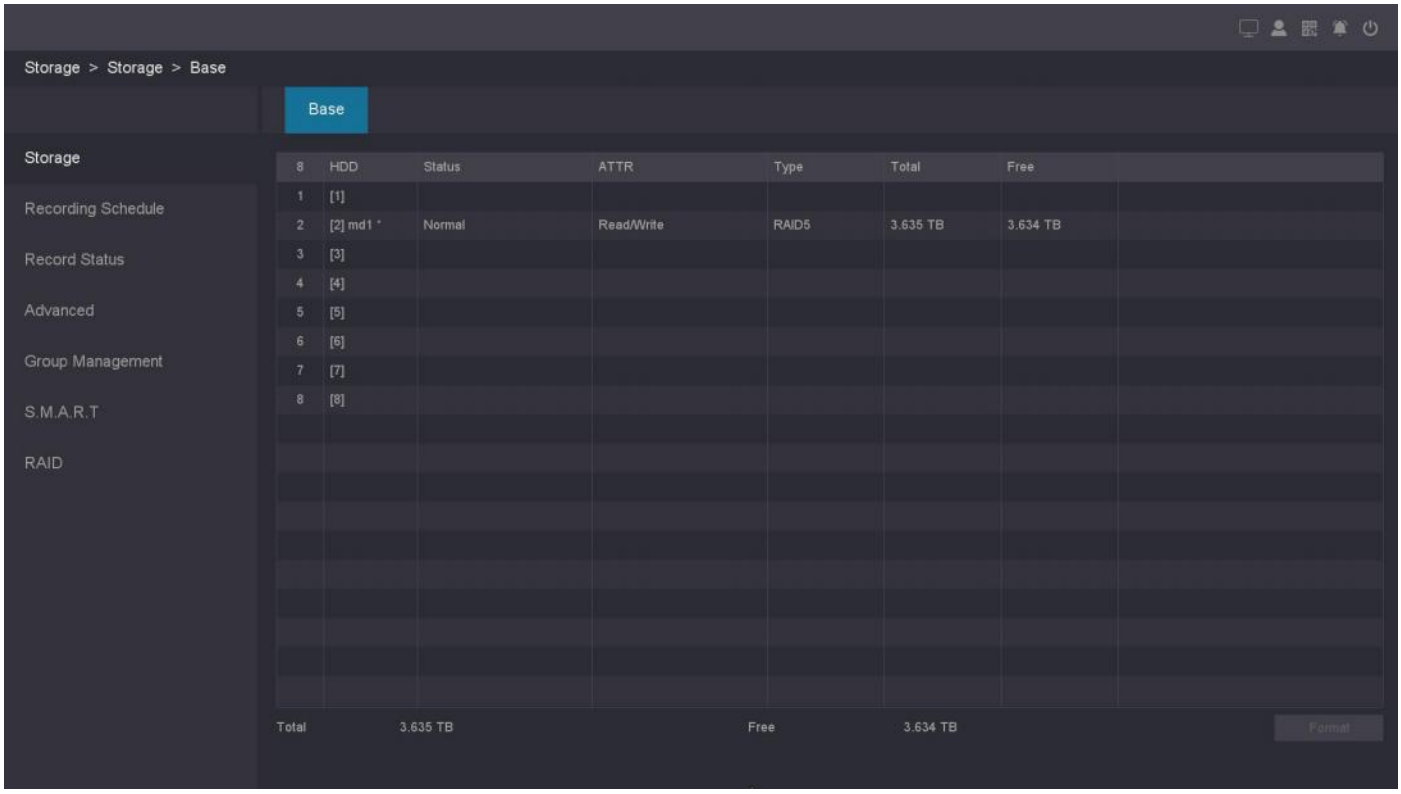


Figure 10-81 Check Recording Status Information

Manual create RAID

With manual creation, users can create different types of arrays depending on the number of hard disks.

Before You Start

NVR has at least 2 physical disks installed.

Steps:

1. Go to **Setting Menu→ Storage → RAID → HDD**.
2. Click **Create RAID**.

Figure 10-82 Manual Create RAID

3. Check the physical disks for which you need to create an array and click OK to continue.

Note

If the array creation requirements are not met, it will popup “Available disk are not enough!”

4. Go to **Setting Menu→ Storage → RAID → RAID** to check RAID status. When the initialization is complete, the status is displayed as normal and the disk is ready for normal reading and writing.

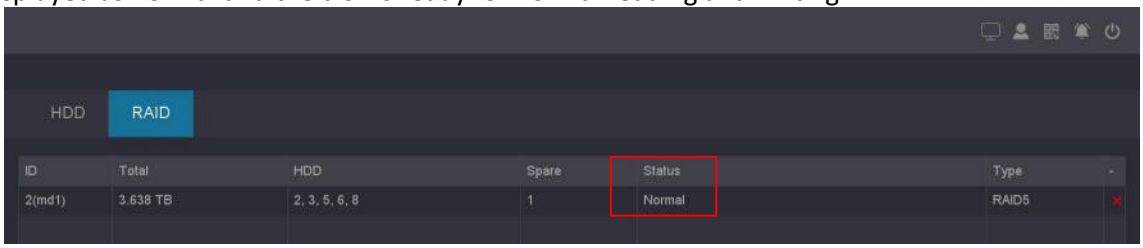


Figure 10-83 Check Status

5. Optional, you can click  to delete or click **Quick Delete** to delete all RAID.

6. Go to **Setting Menu → Storage → Base** to check array (equivalent to a high-capacity logical disk) recording status information.

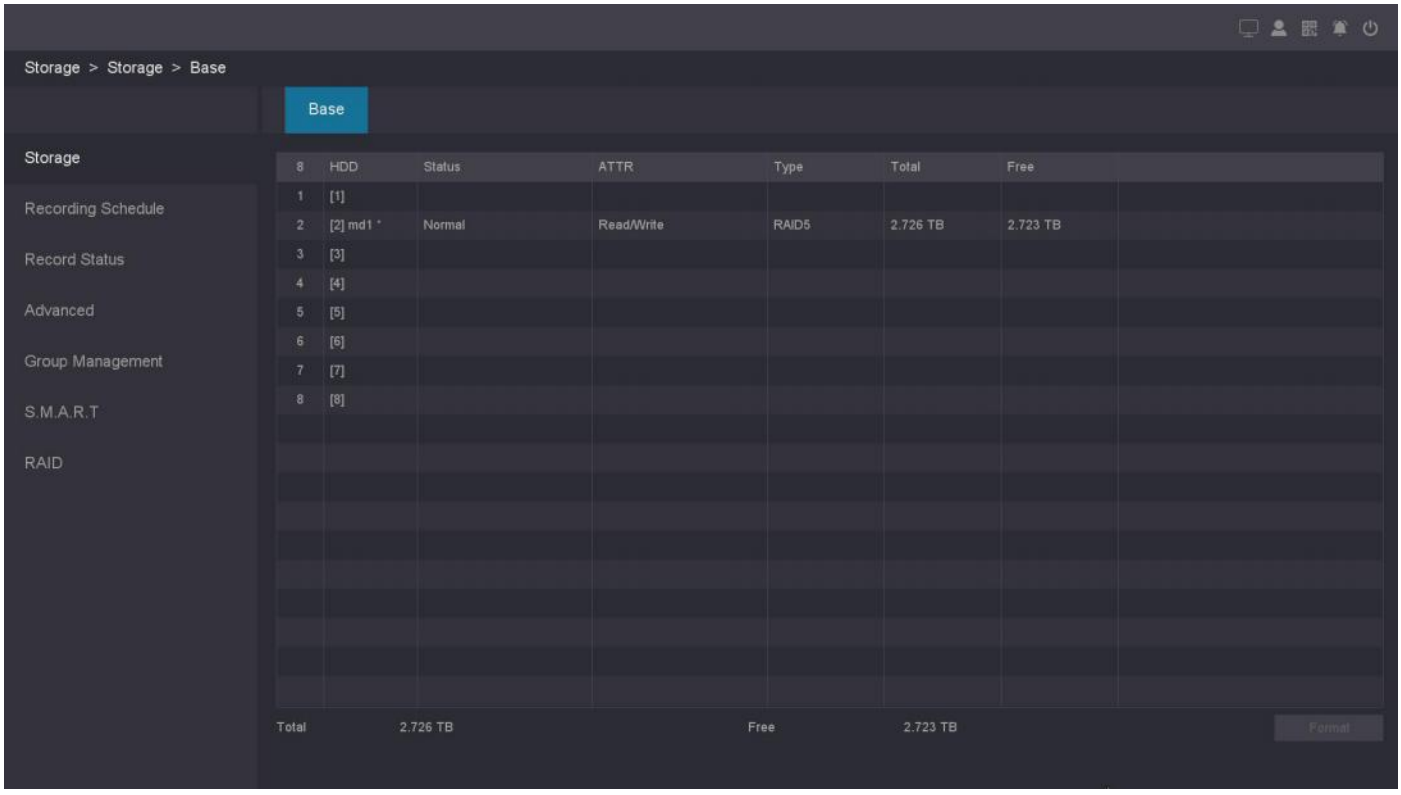


Figure 10-84 HDD Manage

7. Optional, set up a hot spare disk.

(1)Go to **Setting Menu → Storage → RAID → HDD.**

(2)Select a disk which status is Normal, click .

(3)Click **OK**.

(4)The Status will display Spare(Global).

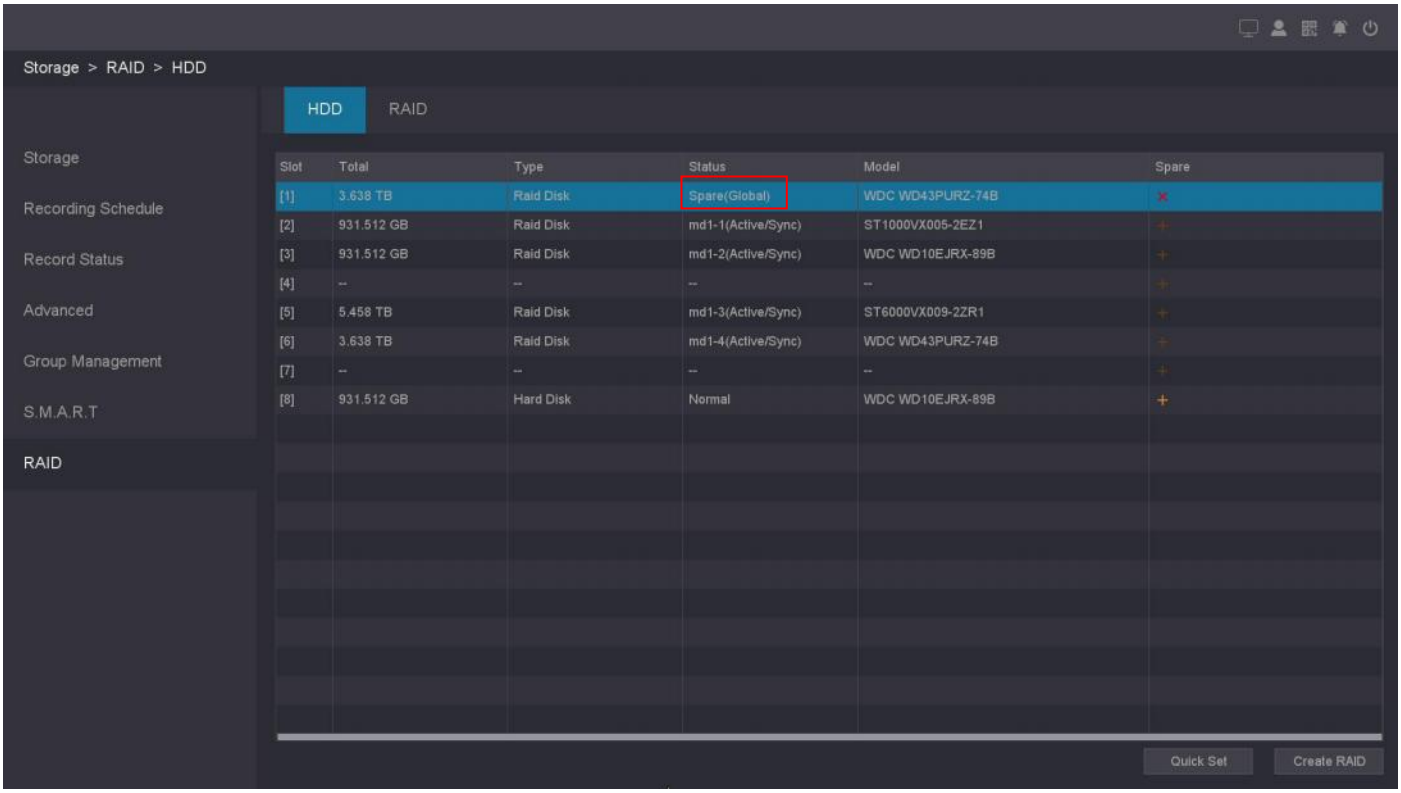


Figure 10-85 Set a Hot Spare Disk

Note

The global hot spare disk can be used by all created RAID.

10.5.7 S.M.A.R.T

The device provides the HDD detection function such as the adopting of the S.M.A.R.T. and the Bad Sector Detection technique. The S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a monitoring system for HDD to detect and report on various indicators of reliability in the hopes of anticipating failures.

Before You Start

Install at least an HDD to your video recorder.

Steps:

1. Go to **Setting Menu → Storage → S.M.A.R.T → S.M.A.R.T**.
2. Select the HDD you want to detect.
3. Select the self-test types as **Short Test** or **Expanded Test**.

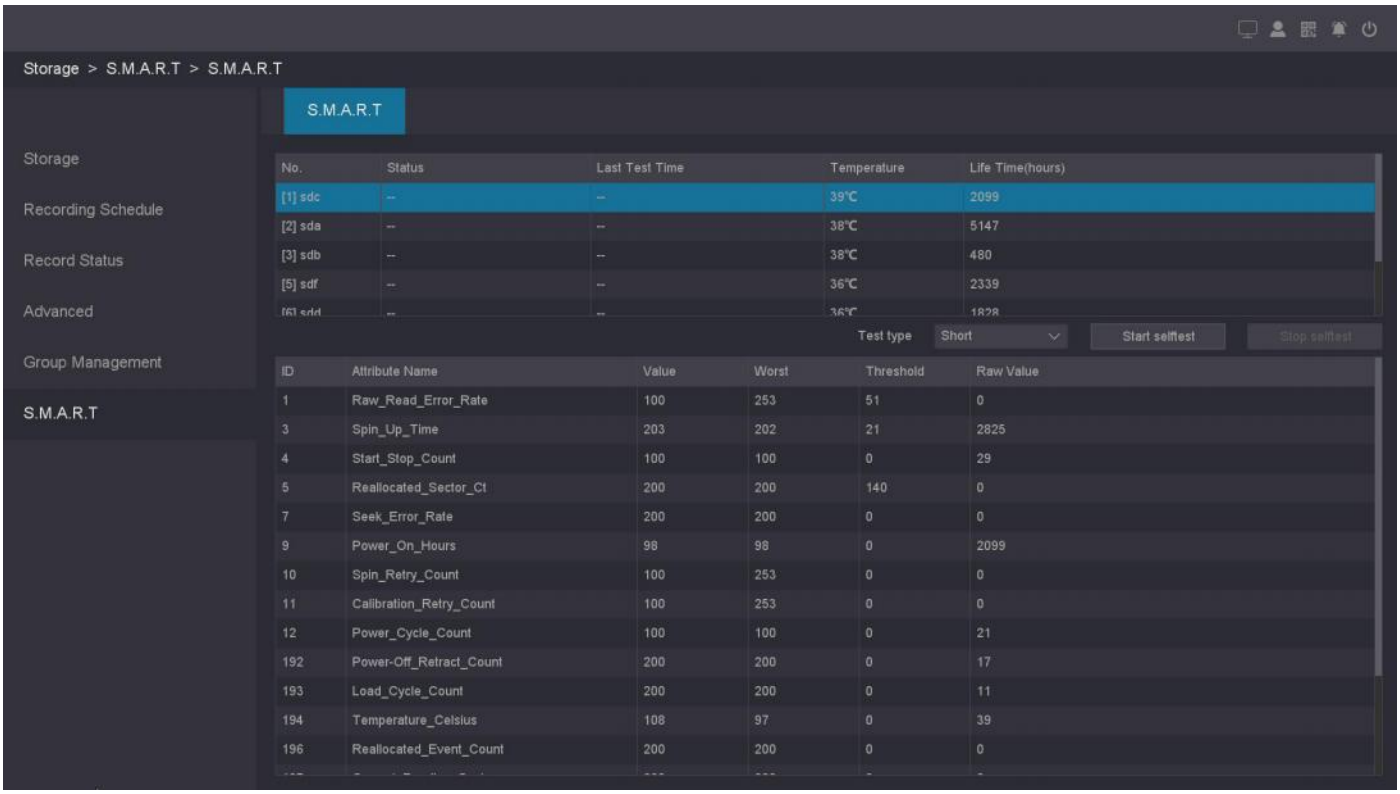


Figure 10-86 S.M.A.R.T

4. Click the Start selftest button to start the S.M.A.R.T. HDD self-evaluation.
5. If the HDD is normal you can see the **Status** is Passed, and you can also pause or cancel the detection.

Figure 10-87 Status

10.6 Smart search

10.6.1 Smart Search

Face detect

This page you can select the record channel which had triggered face detection and has recording files. Then you can set the Start time and End time.

Before You Start

Please make sure you have enabled the **face detection** of the camera through the NVR, and enabled the **Record Channel** and **snapshot** in the Trigger process of the face detection, and also enabled the Snapshot in the camera which you can refer to ***the IPC User Manual***.

Steps:

1. Go to **Setting Menu → Smart Search → Smart Search → Face detect**.
2. Select the **Record Channel** you want to search.
3. Set the **Start** time and **End** time.

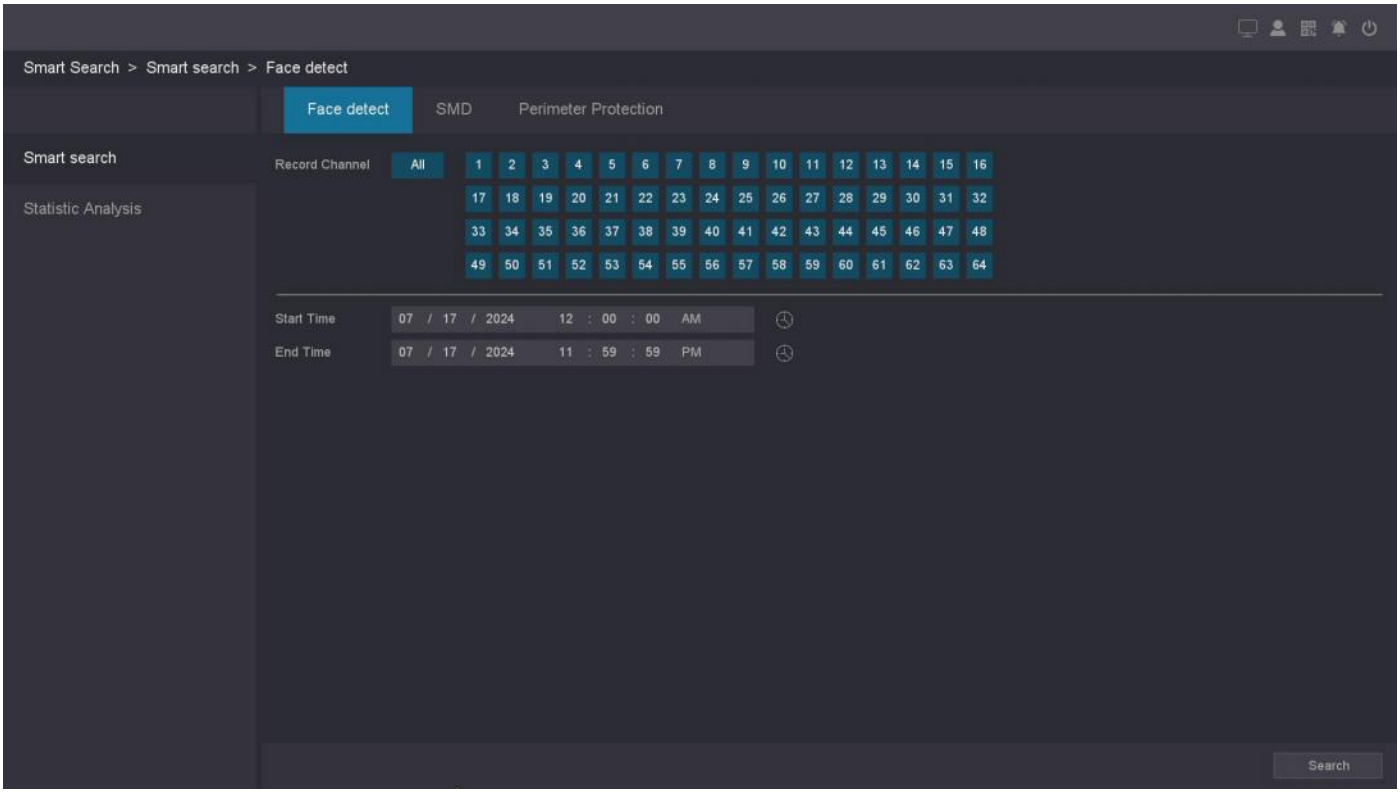


Figure 10-88 Status

4. Click **Search**.
5. You can see the search results as shown below.

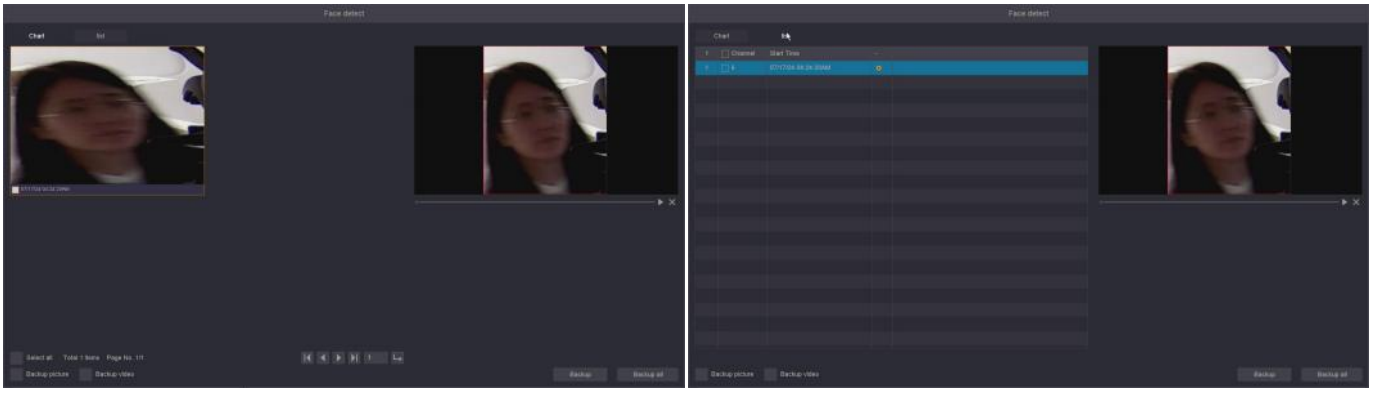


Figure 10-89 Search Result

Note

- In this page, you can select the way of face detection's preview ---chart or list. Then you can choose some recordings and decide whether to back up the pictures or videos.
- If you don't find pictures in the chart, please check whether your camera has turned on Snapshot, about the setting of camera you can refer to ***the IPC User Manual***..

Human/Vehicle Shape Retrieval

This page you can select the record channel which had triggered human shape and vehicle shape files. Then

you can set the Start time and End time.

Steps:

1. Go to **Setting Menu → Smart → Smart search → Human/Vehicle Shape Retrieval**.
2. Select the **Record Channel** you want to search.
3. Set the Start time and End time.
4. Click **Search**.
5. You can see the search results as shown below.

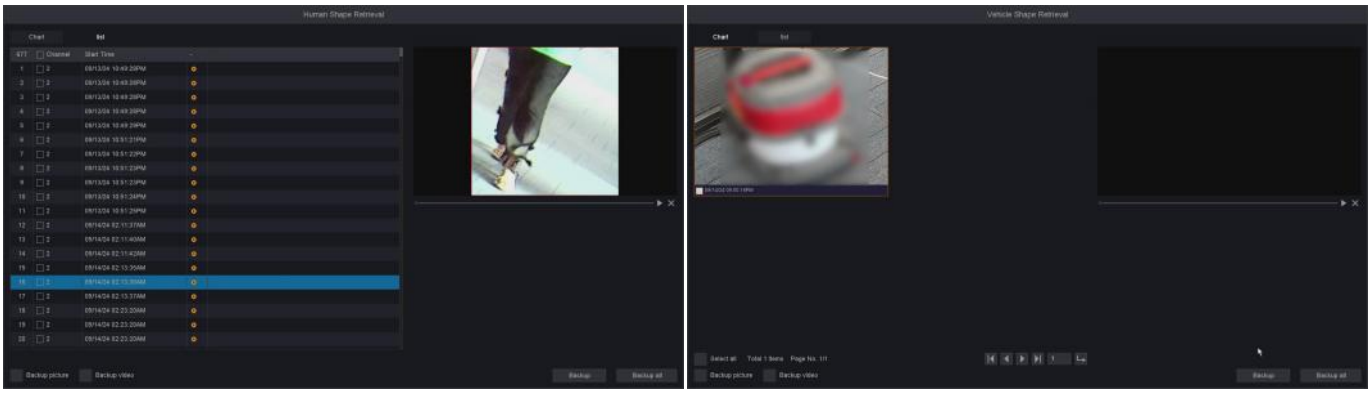


Figure 10-90 Human/Vehicle Shape Retrieval

Smart Motion Detection

This page you can select the record channel which had triggered **Motion Detection** with **Human Shape Filter/Vehicle Shape Filter** and has the alarm videos or alarm pictures. Then you can set the Start time and End time.

Before You Start

Please make sure you have enabled the **Motion Detection with Human Shape Filter/Vehicle Shape Filter** of the camera through the NVR, and enabled the **Record Channel** and **snapshot** in the Trigger process of the Motion Detection, and also enabled the **Snapshot** in the camera which you can refer to ***the IPC User Manual.***

Steps:

1. Go to **Setting Menu → Smart → Smart search → Smart Motion Detection**.
2. Select the Event type as SMD-Human or SMD-Vehicle
3. Select the **Record Channel** you want to search.
4. Set the Start time and End time.

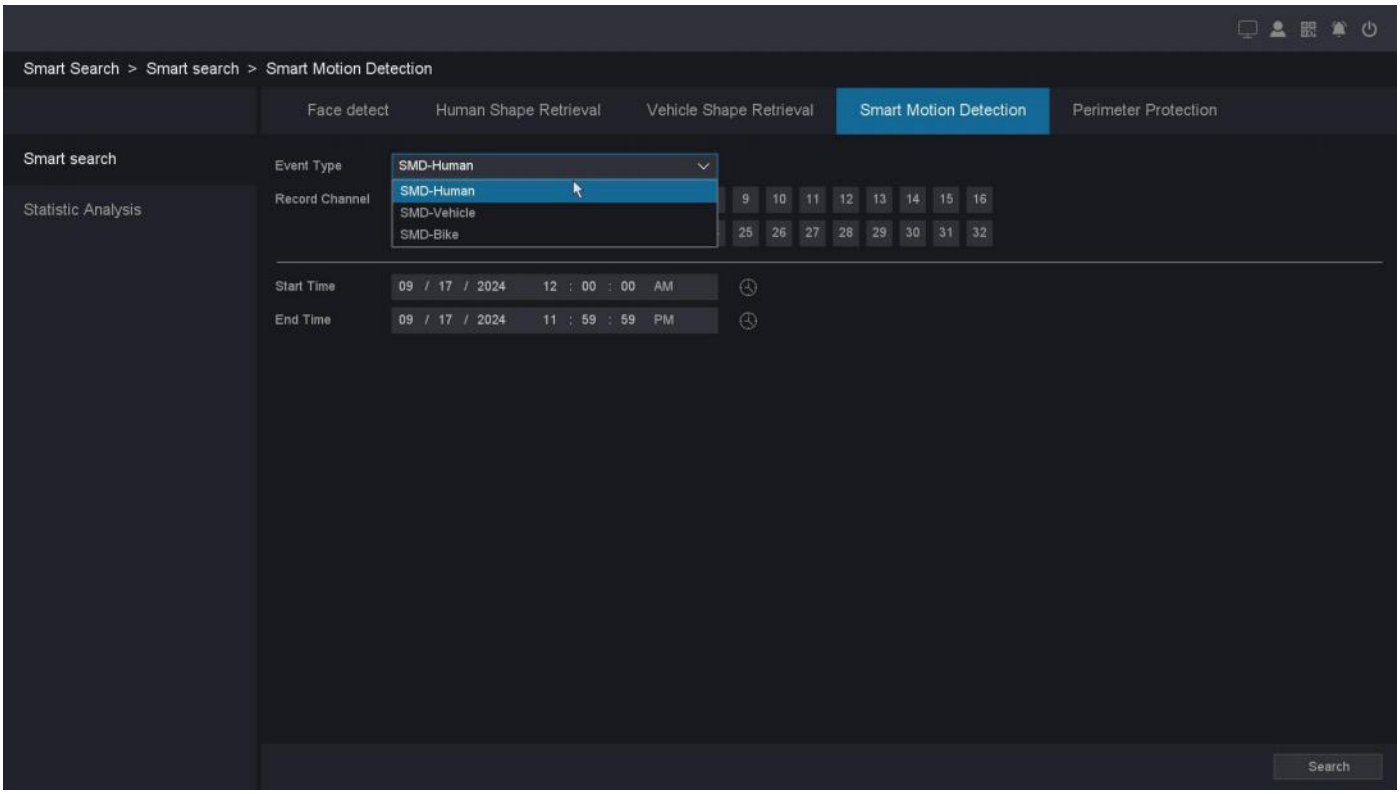


Figure 10-91 Smart Motion Detection

5. Click **Search**.
6. You can see the search results as shown below.

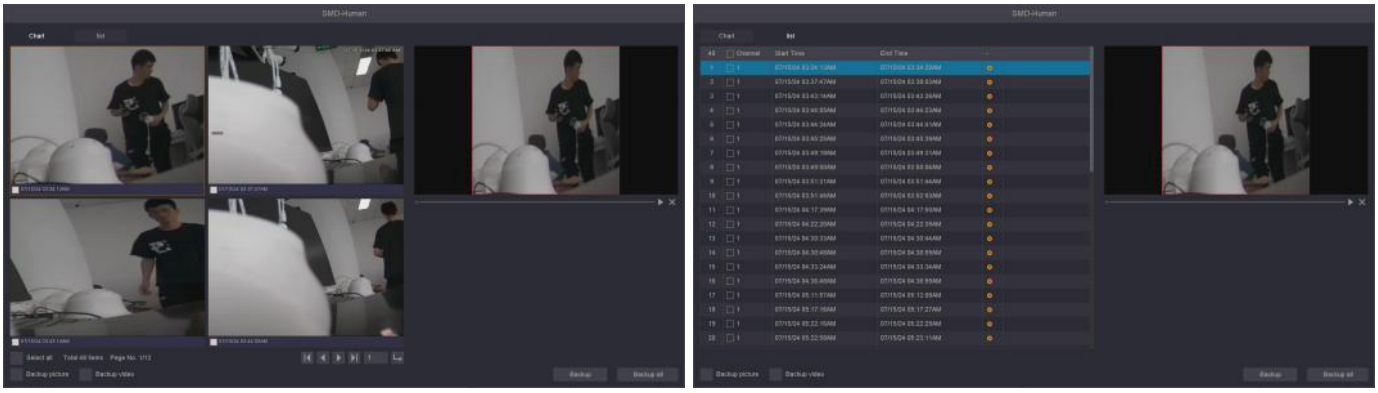


Figure 10-92 Search Result

Note

- In this page, you can select the way of SMD's preview ---chart or list. Then you can choose some recordings and decide whether to back up the pictures or videos.
- If you don't find pictures in the chart, please check whether your camera has turned on Snapshot, about the setting of camera you can refer to the IPC User Manual.

Perimeter Protection

This page you can select the record channel which had triggered **Line Crossing & Area Intrusion & Region Entrance & Region Exiting** with **Human Shape Filter/Vehicle Shape Filter** and has the alarm videos or alarm pictures. Then you can set the Start time and End time.

Before You Start

Please make sure you have enabled the **Line Crossing & Area Intrusion & Region Entrance & Region Exiting** with **Human Shape Filter/Vehicle Shape Filter** of the camera through the NVR, and enabled the **Record Channel** and **snapshot** in the Trigger process of the Motion Detection, and also enabled the **Snapshot** in the camera which you can refer to ***the IPC User Manual***.

Steps:

1. Go to **Setting Menu → Smart → Smart search → PP**.
2. Select the Event type as Line Crossing-Human/Vehicle, Area Intrusion-Human/Vehicle, Region Entrance-Human/Vehicle or Region Exiting-Human/Vehicle.
3. Select the **Record Channel** you want to search.
4. Set the Start time and End time.

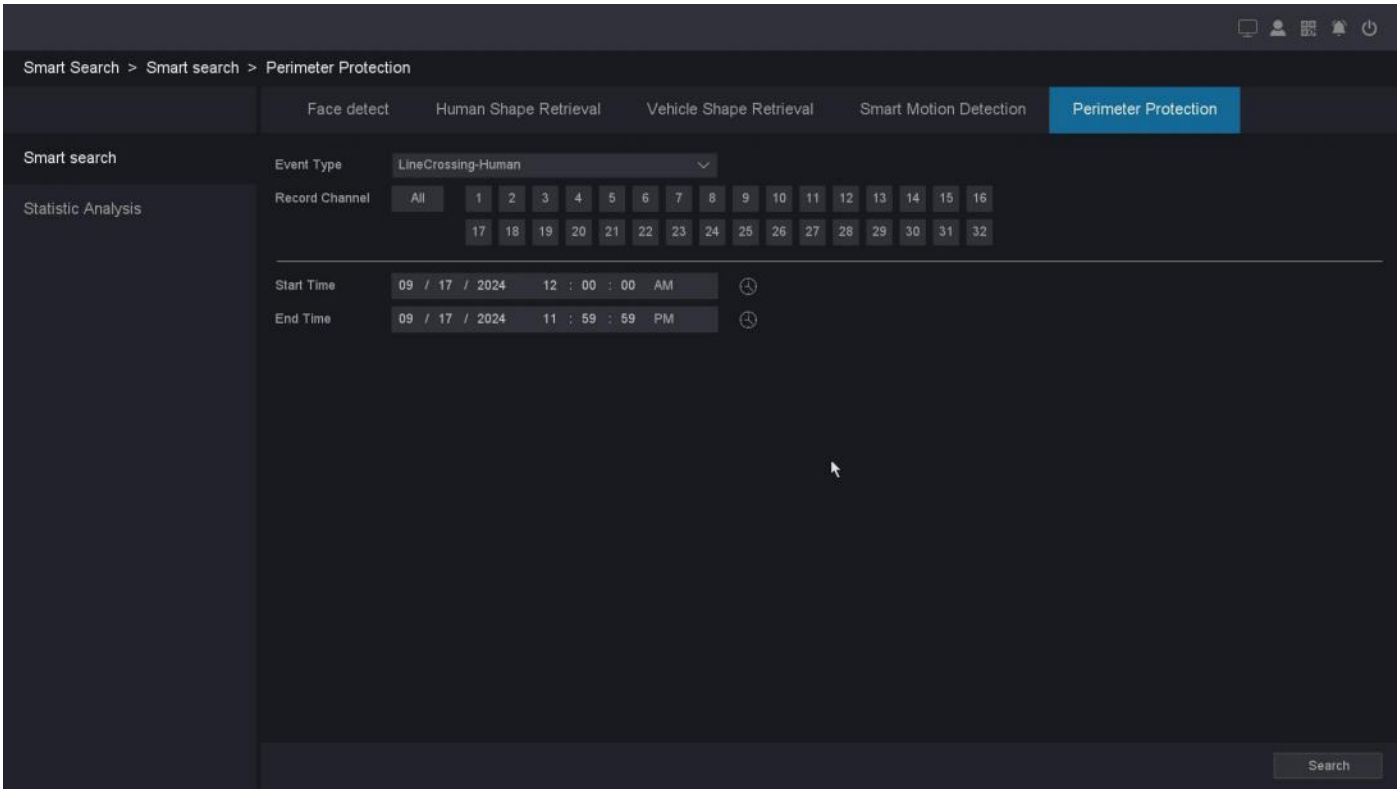


Figure 10-93 PP

5. Click **Search**.
6. You can see the search results as shown below.

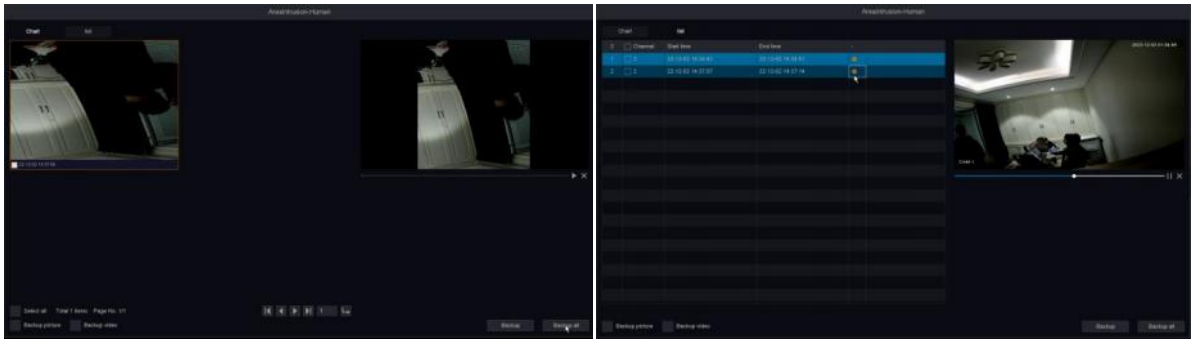


Figure 10-94 Result

Note

- In this page, you can select the way of Line Crossing & Area Intrusion & Region Entrance & Region

Exiting's preview ---chart or list. Then you can choose some recordings and decide whether to back up the pictures or videos.

- If you don't find pictures in the chart, please check whether your camera has turned on Snapshot, about the setting of camera you can refer to the IPC User Manual.

10.7 Playback

10.7.1 Normal Playback & Event Playback

Right click and select the "Playback" to enter the playback interface and you can also click on the playback button in the Setting Menu to enter the playback interface. The Normal Playback & Event Playback please refer to *4.2 Normal Playback* & *4.3 Event Playback.*

10.7.2 Label Play

Select the "Label Play" enters the label playback mode.

Before You Start

Please confirm that you have added the Default label during normal playback and there are already the records of the label you made in File management as shown below. You can also refer to ***4.2 Normal Playback/8***.

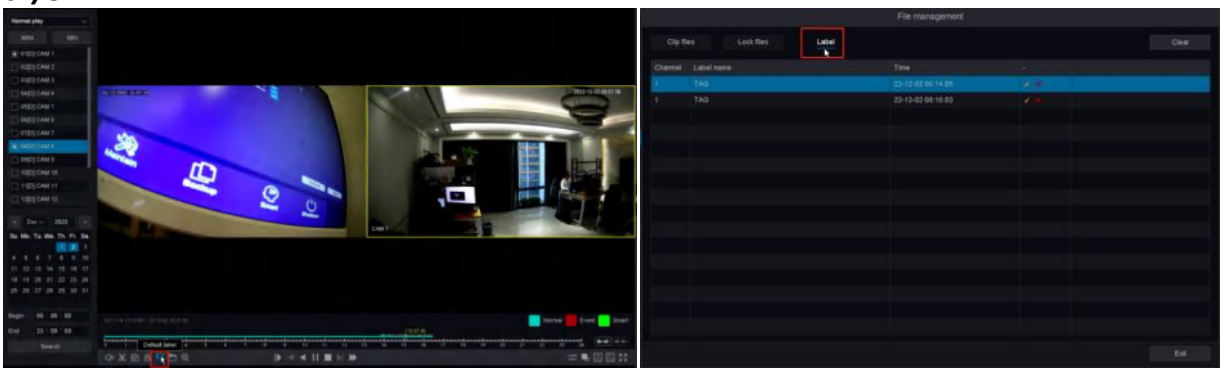


Figure 10-95 Label Play

Steps:

1. Go to **Playback**.
2. Select the **Label play**.
3. Select the channels as your desire.
4. Set time period, then Click **Search**.

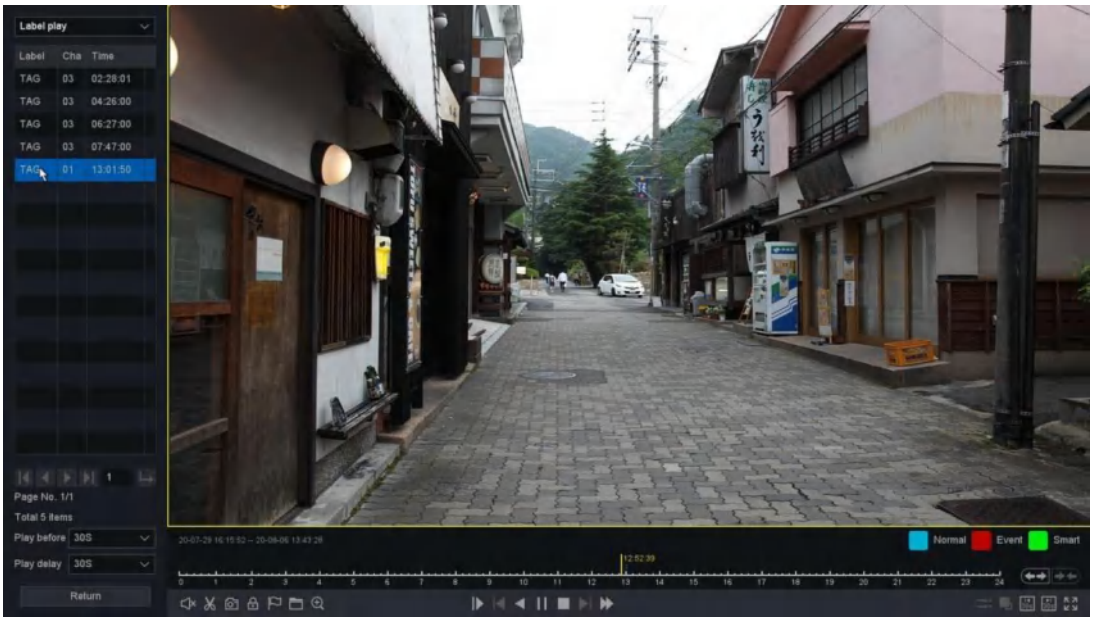


Figure 10-96 Label Play

5. The search results as shown in the figure above.
6. Click a label in the label list for label playback as your desire.
7. Click the return button back to the last interface to change the search channels.

Label

The label's name that you can edit in file manage.

Chan

The channel you tagged.

Time

The time that was playing when you tag.

The left and right arrows

You can change the page to find the label items you want.

Play before and Play delay

You can set the play period before/after of the label time.

Note

As for the operations of these buttons you can refer to ***Table 4-3 Playback Interface Description***. But you can't use the "Sync/Async", "Main/Sub stream", "Frame Control"button in label playback mode.

10.7.3 Smart Play

Select the "Smart Play" enters the Smart playback mode.

Before You Start

Please make sure that your device has enabled intelligent detection such as Motion Detection, Line Crossing, Area Intrusion, Region Entrance, Region Exiting, etc., and the alarm videos has been generated.

Icon	Description	Icon	Description
	Draw Line		Face search
	Draw Quadrilateral		Human Body search

	Motion Draw Rectangle		Vehicle search
	Motion Full Screen		Bike search

Table 10-4 Icon Description

Draw Line

Steps:

1. Go to **Playback**.
2. Select the **Smart Play**.
3. Select the channel and the record time as your desire.
4. Click Play button or Click the blue timeline.
5. Click the icon of "Draw Line" to draw a line on the video interface.
6. Click "Setting" button you can specify some setting for playback like "Skip Non-Focus Video" and specify the playback speed for Non-Concerned Video and Attention-Video, also you can specify the time before and after the events from 0 to 600 seconds, as shown below.

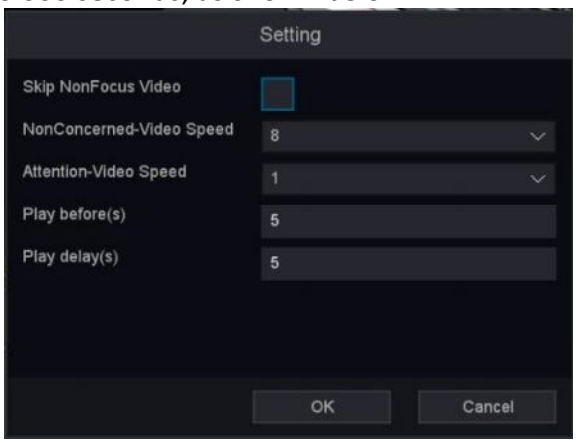


Figure 10-97 Setting

7. Click "Search" button then the result will be shown below, video with line crossing will be marked color "green", and the video will be played by the setting as you made at step 6.

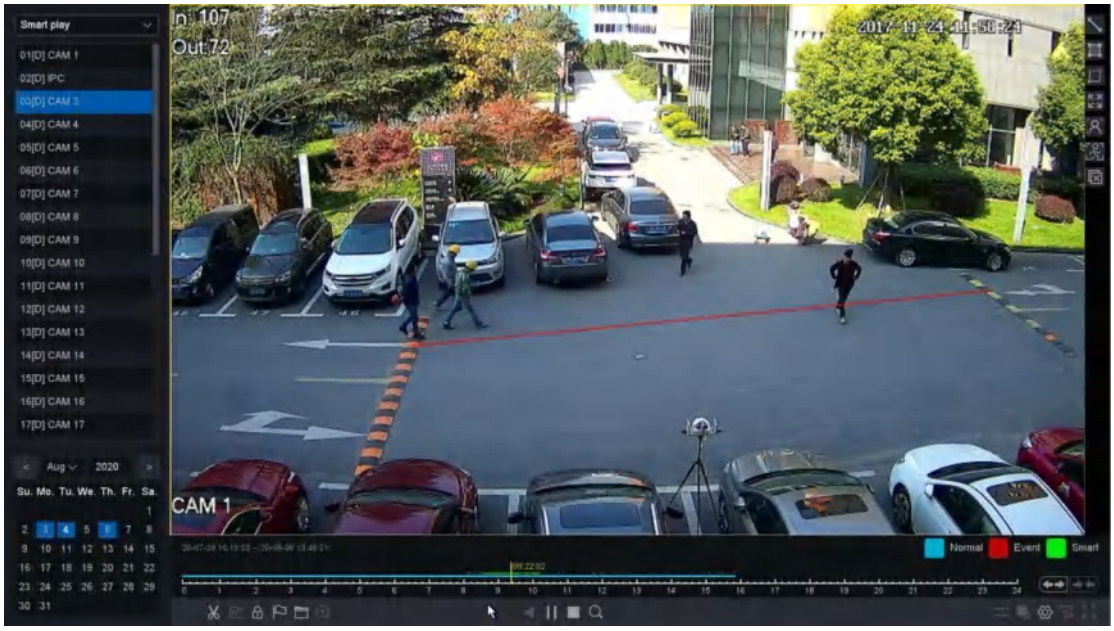


Figure 10-98 Search Result

Draw Quadrilateral

Steps:

1. Go to **Playback**.
2. Select the **Smart Play**.
3. Select the channel and the record time as your desire.
4. Click **Play** button or Click the blue timeline.
5. Click the icon of “Draw Quadrilateral” to draw a quadrilateral on the video interface.
6. Click “Setting” button to Configure the parameters as your desire.
7. Click the ”Search” button then the result will be shown below, video with Area Intrusion will be marked color “green”, and the video will be played by the setting as you made at step 6.

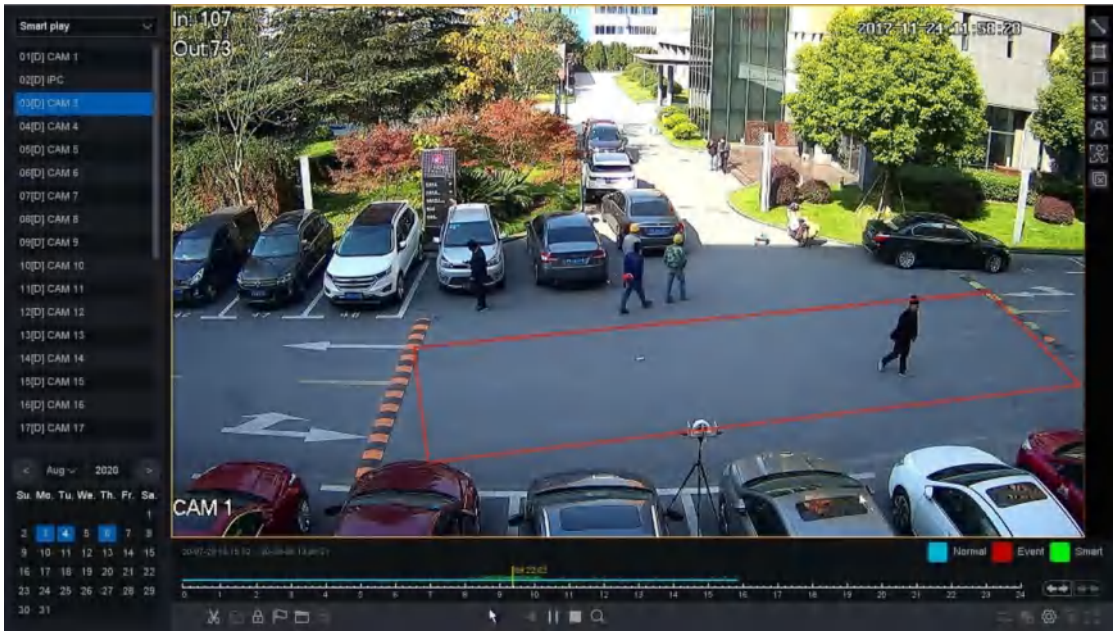


Figure 10-99 Search Result

Motion Draw Rectangle

Steps:

1. Go to **Playback**.
2. Select the **Smart Play**.
3. Select the channel and the record time as your desire.
4. Click Play button or Click the blue timeline.
5. Click the icon of “Motion Draw Rectangle” to draw an area on the video interface.
6. Click ”Setting” button to Configure the parameters as your desire.

7. Click the “Search” button then the result will be shown below, video with Motion will be marked color “green”, and the video will be played by the setting as you made at step 6.

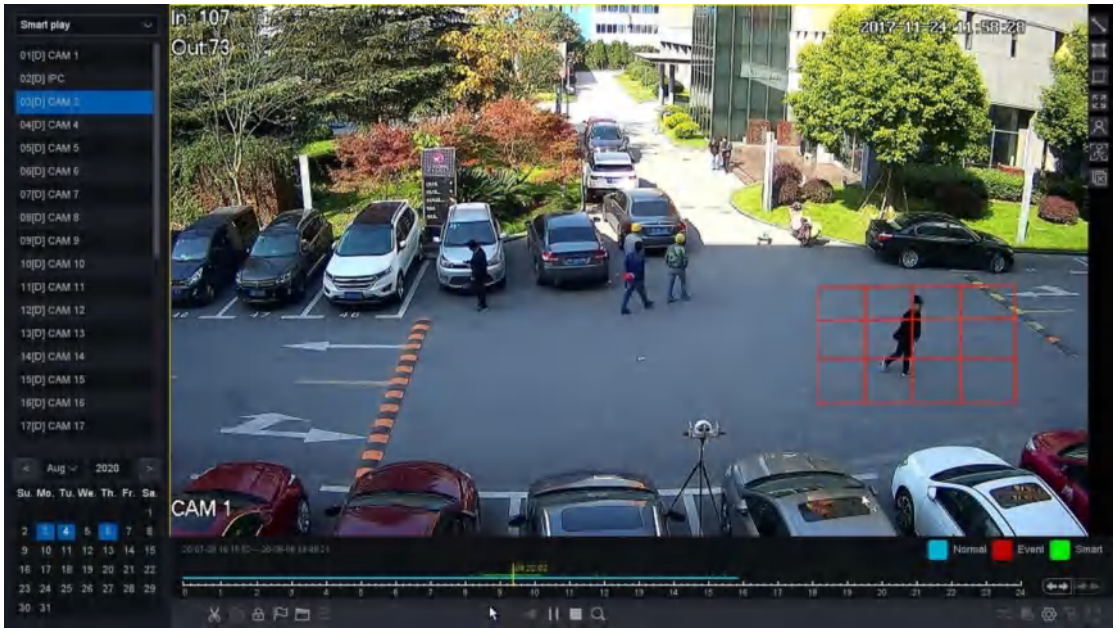


Figure 10-100 Search Result

Motion Full Screen

Steps:

1. Go to **Playback**.
2. Select the **Smart Play**.
3. Select the channel and the record time as your desire.
4. Click Play button or Click the blue timeline.
5. Click the icon  of “Motion Full Screen” to draw an area on the video interface.
6. Click “Setting” button to Configure the parameters as your desire.
7. Click the “Search” button then the result will be shown below, video with Motion will be marked color “green”, and the video will be played by the setting as you made at step 6.

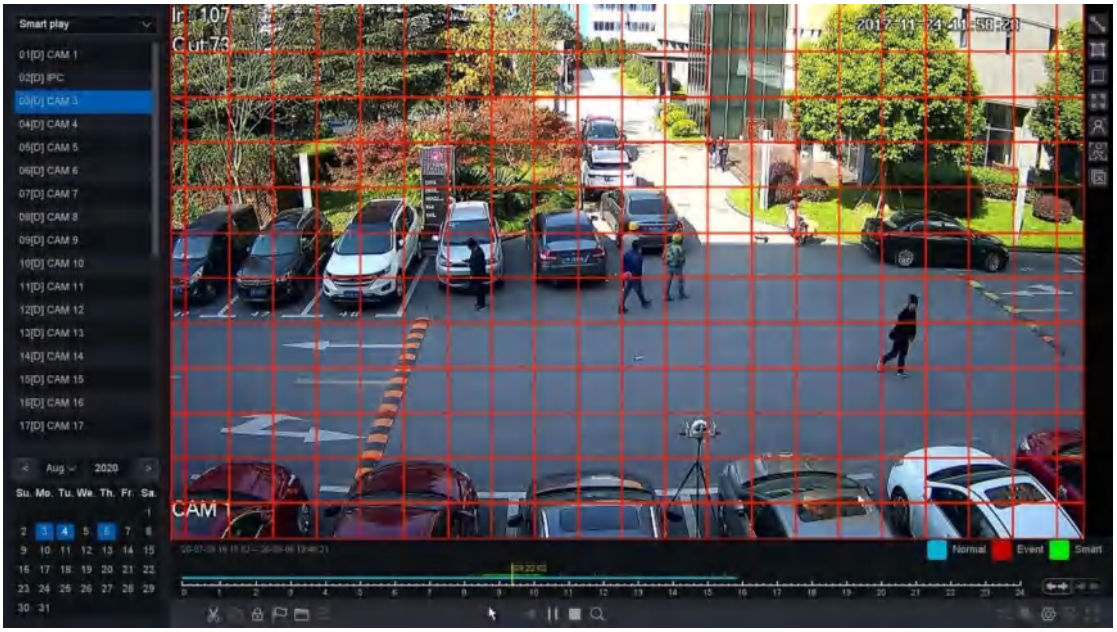


Figure 10-101 Search Result

Face search

Steps:

1. Go to **Playback**.
2. Select the **Smart Play**.
3. Select the channel and the record time as your desire.
4. Click Play button or Click the blue timeline.
5. Click the icon of “Face search”, then the full video interface will be detected by default.
6. Click “Setting” button to Configure the parameters as your desire.
7. Click the “Search” button then the result will be shown below, video with people’s face will be marked color “green”, and the video will be played by the setting as you made at step 6.

Note

Smart Play only work with Qualvision IPCs which support these features.

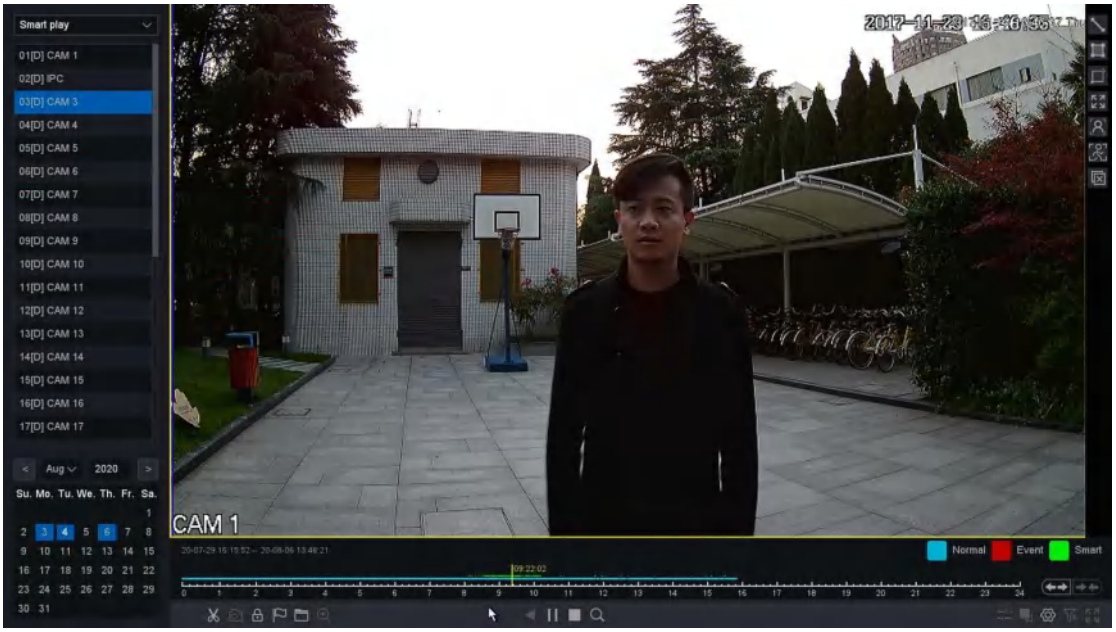


Figure 10-102 Search Result

Human Shape search

Steps:

1. Go to **Playback**.
2. Select the **Smart Play**.
3. Select the channel and the record time as your desire.
4. Click Play button or Click the blue timeline.
5. Click the icon of “Human Body search”, then the full video interface will be detected by default.
6. Click “Setting” button to Configure the parameters as your desire.
7. Click the “Search” button then the result will be shown below, video with Human Shape Motion will be marked color “green”, and the video will be played by the setting as you made at step.

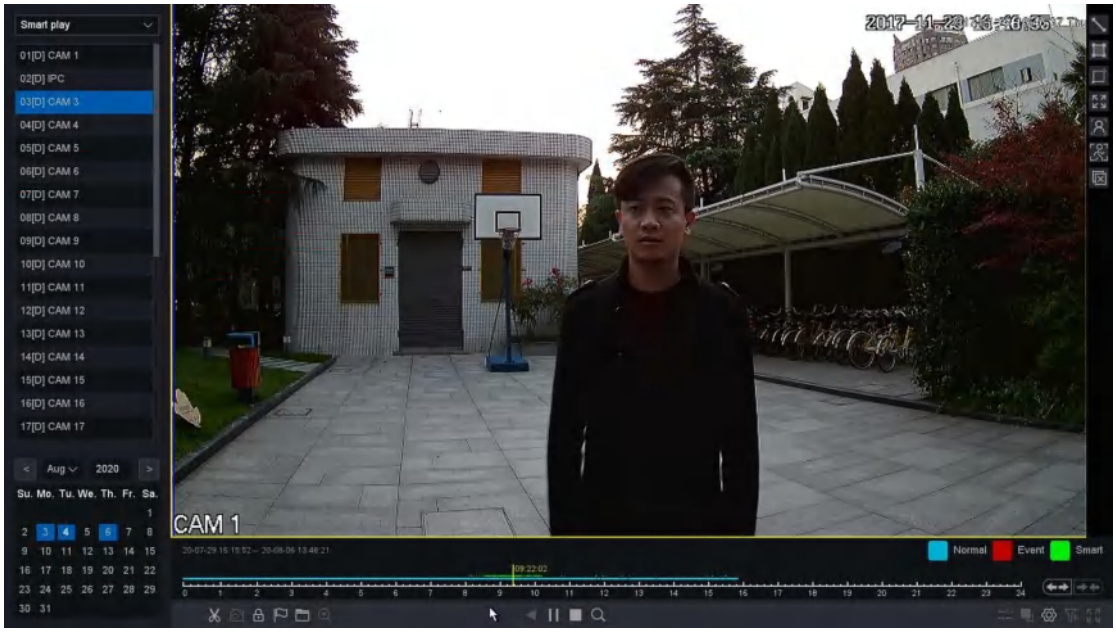


Figure 10-103 Search Result

Vehicle Shape Search

Steps:

1. Go to **Playback**.
2. Select the **Smart Play**.
3. Select the channel and the record time as your desire.
4. Click Play button or Click the blue timeline.
5. Click the icon of “Human Body search”, then the full video interface will be detected by default.
6. Click “Setting” button to Configure the parameters as your desire.
7. Click the “Search” button then the result will be shown below, video with Human Body Motion will be marked color “green”, and the video will be played by the setting as you made at step.

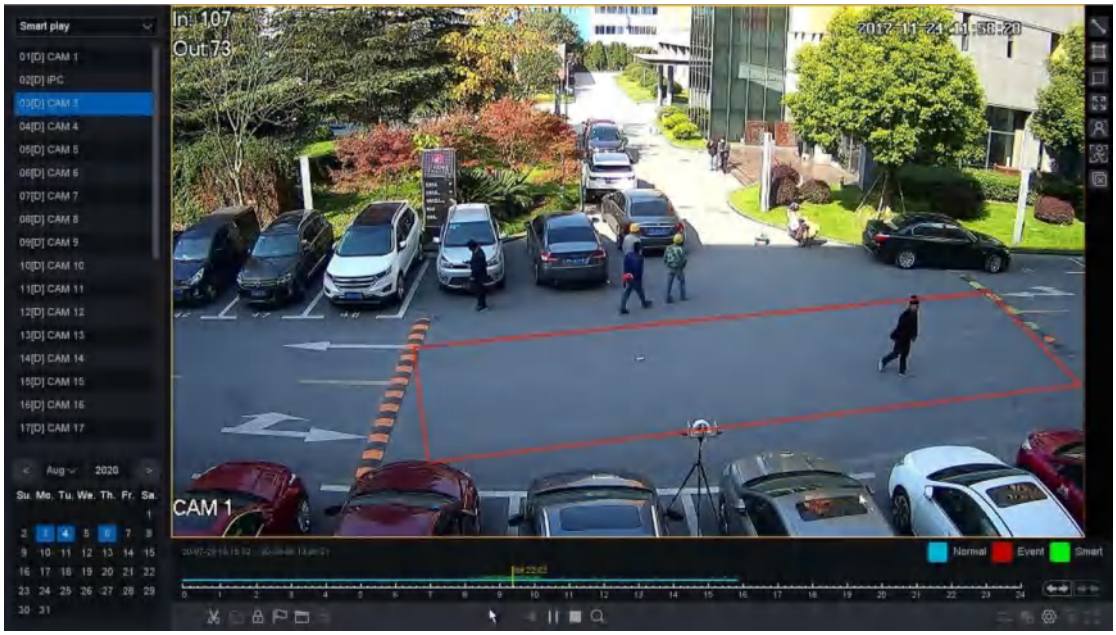


Figure 10-104 Search Result

Note

Clear all : When you click this button that means clear all the lines and rectangles you have drawn before. Then you can draw new lines and specify new rules.

10.7.4 Time Division play

Select the “Time Division Play” enters the label playback mode, on this page, you can play the recordings by time period, and distribute the 24-hour recordings evenly according to the number of windows you choose, from 1-16 windows. For example, if you chose the windows number is 4, the files of the date you chose will be divided into 4 parts.

Before You Start

Please make sure that your camera channel has recorded.

1. Go to **Playback**.
2. Select the **Time Division** play.
3. Select the channel as your desire.
4. Select division windows number and the record time.

Figure 10-105 Select Windows number

5. Click **Search**.
6. Select the corresponding window to quickly play the video period you want.

Note

If the division windows number you choose is too large, your device will not be able to play back all the windows due to the limitation of the decoding capability of the device. Please try reducing the division windows number.

10.7.5 Normal Play (Picture)

On this page, you can play back the video as picture.

Before You Start

Please make sure that the channel you choose already has pictures generated by manual capture or intelligent detection alarm.

1. Go to **Playback**.
2. Select **Normal Play** (Picture).

3. Select the channel as your desire.
4. Select the time period you want to play back.
5. Click **Search**.

Figure 10-106 Normal Play

6. As for the button of control playback including “File Manage”, “Sync/Async”, “Start/Pause”, “Backward play”, “Stop Playing”, “Slow down”, “Speed up”, and “Time-line Stretch”, “Time-line Shorten”.

Note

You can stop playback by right click and exit the playback interface by keep right click.

11. Appendix

11.1 Glossary

DVR

Acronym for Digital Video Recorder. A DVR is device that is able to accept video signals from analog cameras, compress the signal and store it on its hard drives.

NVR

Acronym for Network Video Recorder. An NVR can be a PC-based or embedded system used for centralized management and storage for IP cameras, IP Domes and other DVRs.

Dual-Stream

Dual-stream is a technology used to record high resolution video locally while transmitting a lower resolution stream over the network. The two streams are generated by the DVR, with the main stream having a maximum resolution of 4K and the sub-stream having a maximum resolution of 720p.

HDD

Acronym for Hard Disk Drive. A storage medium which stores digitally encoded data on platters with magnetic surfaces.

DHCP

Dynamic Host Configuration Protocol (DHCP) is a network application protocol used by devices (DHCP clients) to obtain configuration information for operation in an Internet Protocol network.

HTTP

Acronym for Hypertext Transfer Protocol. A protocol to transfer hypertext request and information between servers and browsers over a network.

P2P

P2P, in full peer-to-peer, type of computer network often used for the distribution of digital media files. In a peer-to-peer (P2P) network, each computer acts as both a server and a client—supplying and receiving files—with bandwidth and processing distributed among all members of the network.

DDNS

Dynamic DNS is a method, protocol, or network service that provides the capability for a networked device, such as a router or computer system using the Internet Protocol Suite, to notify a domain name server to change, in real time (ad-hoc) the active DNS configuration of its configured hostnames, addresses or other information stored in DNS.

NTP

Acronym for Network Time Protocol. A protocol designed to synchronize the clocks of computers over a network.

NTSC

Acronym for National Television System Committee. NTSC is an analog television standard used in such countries as the United States and Japan. Each frame of an NTSC signal contains 525 scan lines at 60Hz.

PAL

Acronym for Phase Alternating Line. PAL is also another video standard used in broadcast televisions systems in large parts of the world. PAL signal contains 625 scan lines at 50Hz.

PTZ

Acronym for Pan, Tilt, Zoom. PTZ cameras are motor driven systems that allow the camera to pan left and right, tilt up and down and zoom in and out.

USB

Acronym for Universal Serial Bus. USB is a plug-and-play serial bus standard to interface devices to a host computer.