



**IC Realtime 4.0
Hybrid Digital Video Recorder**

User's Manual
V4.1.0

Foreword

General

This user's manual (hereinafter referred to be "the Manual") introduces the functions and operations of the Hybrid DVR devices (hereinafter referred to as "the Device").

Safety Instructions

The following defined signal words may appear in the manual.

Signal Words	Meaning
 DANGER	Indicates a high potential hazard that, if not avoided, will result in death or severe injury.
 WARNING	Indicates a medium or low potential hazard that, if not avoided, could result in slight or moderate injury.
 CAUTION	Indicates a potential risk that, if not avoided, could result in property damage, data loss, lower performance, or unpredictable result.
 TIPS	Provides methods to help you solve a problem or save you time.
 NOTE	Provides additional information as the emphasis and supplement to the text.

Revision History

Version	Revision Content	Release Time
V4.1.2	Added new models.	June 2022
V4.1.1	Added new models.	February 2021
V4.0.0	First release.	September 2020

Privacy Protection Notice

As the device user or data controller, you may collect the personal data of others, such as their face, fingerprints, and car plate number. Ensure that any users and configurations are in compliance with the local privacy protection laws and regulations and protect the legitimate rights and interests of other people by implementing measures that include but are not limited: Providing clear and visible identification to inform people of the existence of the surveillance area and provide required contact information.

About the Manual

- The manual is for reference only. Slight differences may be found between the manual and the product.
- We are not liable for losses incurred due to operating the product in ways that are not in compliance with the manual.
- The manual will be updated according to the latest laws and regulations of related jurisdictions. For detailed information, see the paper user's manual, use our CD-ROM, scan the QR code or visit our official website. The manual is for reference only. Slight differences may be found between the electronic version and the paper version.
- All designs and software are subject to change without prior written notice. Product updates may result in some differences appearing between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.
- There may be errors in the print or deviations in the description of the functions, operations, and technical data. If there is any doubt or dispute, we reserve the right of a final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks, and company names in the manual are properties of their respective owners.
- Please visit our website, and contact the supplier or customer service if any problems occur while using the device.
- If there is any uncertainty or controversy, we reserve the right to a final explanation.

Important Safeguards and Warnings

This chapter describes the contents covering proper handling of the Device, hazard prevention, and prevention of property damage. Read the manual contents carefully before using the Device, comply with them when operating, and store the manual accordingly for future reference.

Operation Requirement

- Do not place or install the Device in a place exposed to sunlight or near the heat source.
- Keep the Device away from dampness, dust or soot.
- Keep the Device installed horizontally in a stable place to prevent it from falling.
- Wall-mounting is not supported.
- Do not drop or splash liquid onto the Device, and make sure there is no object filled with liquid on the Device to prevent liquid from flowing into the Device.
- Install the Device in a well-ventilated place, and do not block the ventilation of the Device.
- Operate the device within the rated range of power input and output.
- Do not disassemble the Device.
- Transport, use, and store the Device under the allowed humidity and temperature conditions.

Electrical Safety

- Use the battery of the specified manufacturer; otherwise, it may result in an explosion. When replacing the battery, make sure the same type is used. Improper battery use may result in fire, explosion, or inflammation.
- Follow the instructions to dispose of the used battery.
- Use the recommended power cables in the region and conform to the rated power specification.
- Use the power adapter provided with the Device, or the adapter meets the LPS standard; otherwise, it might result in people injury and device damage.
- The power source shall conform to the requirement of the Safety Extra Low Voltage (SELV) standard, and supply power with rated voltage which conforms to the Limited power Source requirement according to IEC60950-1. Please note that the power supply requirement is subject to the device label.
- Connect the device (I-type structure) to the power socket with a protective earthing.
- The appliance coupler is a disconnection device. When using the coupler, keep the angle for easy operation.

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1 Introduction

1.1 Overview

IC Realtime's Hybrid Digital Video recorder series with embedded LINUX OS features compatibility with multiple camera formats from HD-AVS, TVI, AHD, CVBS and IP. The H.265 and G.711 technologies assure the high quality image and low bit stream. The frame-by-frame play function displays more details for analysis, and provides the functions such as record, playback, and monitor and assures the synchronization for audio and video. The Device also adopts the advanced control technology and great network data transmission capability.

This HDVR adopts an embedded design to achieve high security and reliability. It can be operated in the local end and, with strong networking capability it can get connected to the desktop surveillance software (Smart ICRSS) to create a security network with remote monitoring function.

The Device is applicable to the areas such as banks, traffic monitoring, residential districts, factories, warehouses, hotels, and other facilities.

1.2 Functions



HDVR functions will differ depending on the actual model purchased as well as firmware and hardware versions.

AI Function

- Supports face detection which analyzes attributes such as age, gender, glasses, beard, and mask, and then creates and stores the structured data for quick search.
- Supports face recognition which compares the captured face snapshot with a face library database and links the configured alarms (face detection should be enabled).
- Support searching by pictures from a database.
- Support IVS function that includes tripwire and intrusion detection. The IVS Perimeter Protection function can avoid false alarms by filtering the factors such as rains, light, and animals.

Real-time Surveillance

- Supports VGA port and HDMI port to view the surveillance through monitors.
- Supports simultaneous HDMI, VGA, and TV output.

Storage Management

- This device utilizes a special data format to guarantee data security and avoid the risk of modifying data viciously.
- Supports digital watermark for tampering validation.

Compression Format

- Supports multiple-channel audio and video signals. The hardware decodes the audio and video signal from each channel to maintain video and audio synchronization.

Backup Function

- Supports backup operation through USB ports (such as USB storage disk).
- Client-end users can backup footage by downloading the files through the network.

Record & Playback

- Supports independent channel real-time recording and supports functions such as search, backward play, network monitor, record search, and download.
- Supports various playback modes: slow play, fast play, backward play, and frame-by-frame play.
- Support time title overlay so that you can view events accurately to the occurred time.
- Supports digital zooming in the selected area in the live view.

Network Operation

- Supports network remote real-time monitor, remote record search, and remote PTZ control.

Alarm Activation

- Several relay alarm outputs to realize alarm activation and on-site light control.
- The alarm input port and output port have the protection circuit to guarantee the Device's safety.

Communication Port

- RS-485 port can realize alarm input and PTZ control.
- RS-232 port can connect to a net keyboard, COM port of PC, or the matrix control.
- The standard Ethernet port can be used for network remote access functions.
- The dual-network port models include multi-address, fault tolerance, and load balance modes.

PTZ Control

- Supports PTZ serial control through RS-485 port.

Intelligent Operation

- Supports mouse operation function.
- Supports the "copy" function for the same settings.

UPnP (Universal Plug and Play)

- Supports easy port mapping connection between LAN and WAN through UPnP protocol.

Self-adaptive BNC

- The HDVR BNC inputs auto-recognizes and is compatible with the PAL or NTSC camera and HD camera formats (AVS, AHD, TVI, CVBS, CVI).

2

Getting Started

2.1 Checking the Components



The actual appearance, component, or quantity may differ depending on the model purchased.

When opening the package, please check the included contents against the following list. If any of the items are missing or damaged, contact the local retailer or after-sales engineer immediately.

No.	Checking Items		Requirement
1	Package	Appearance	No obvious damage.
		Packing materials	No broken or distorted parts that could be caused by excessive force.
2	Labels	Labels on the device	Not torn up or missing.  Do not tear up or throw away the labels; otherwise the warranty services are not ensured. You need to provide the serial number of the product when you call the after-sales service.
3	Device	Appearance	No obvious damage.
		Data cables, power cables, fan cables, mainboard	No loose connections.

2.2 Installing HDD

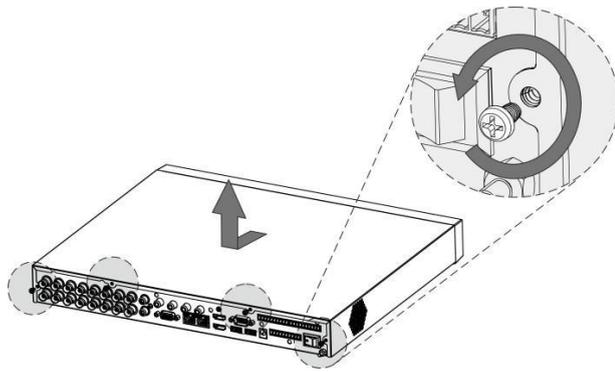
Please check whether the HDD is already installed in the HDVR when it is your first time using the Device. It is suggested to use the officially recommended HDDs. Do not use a PC HDD.



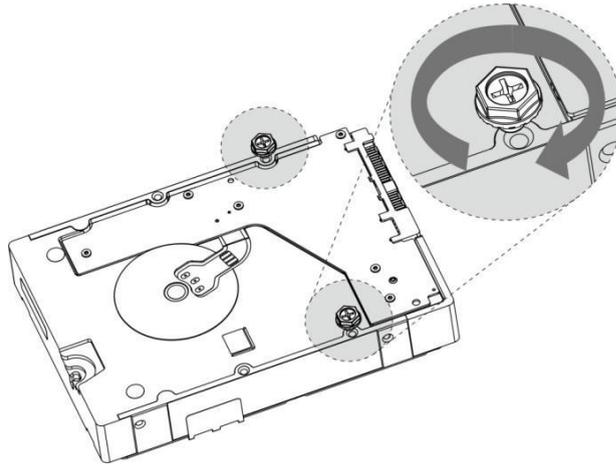
Shut down the device and then unplug the power cable before you open the case to replace the HDD.

2.2.1 1U, MINI 1U and Compact 1U

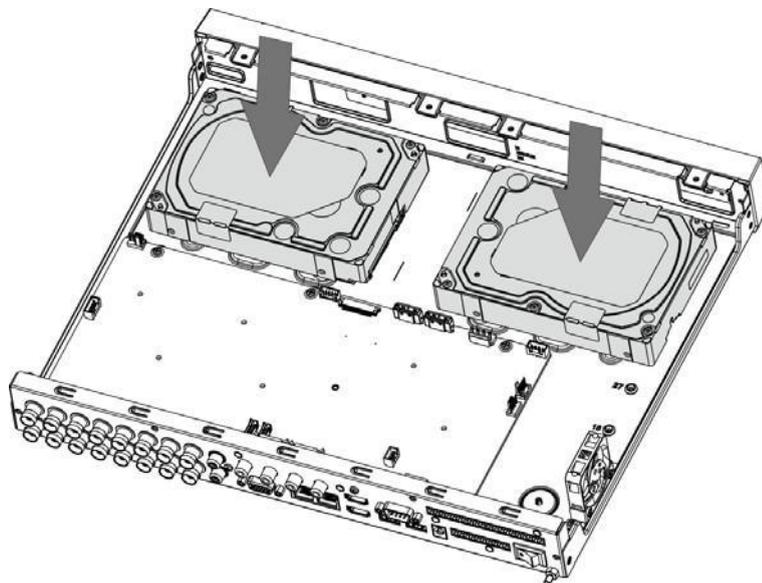
Step 1 Remove the screws to remove the top cover of the HDVR chassis.



Step 2 Install two screws on the HDD and twist one or two turns.

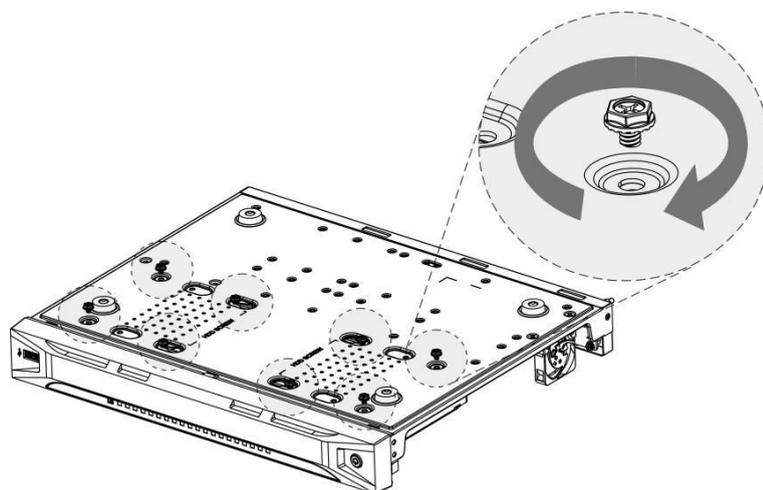


Step 3 Align the two screws with the holes on the HDVR chassis.

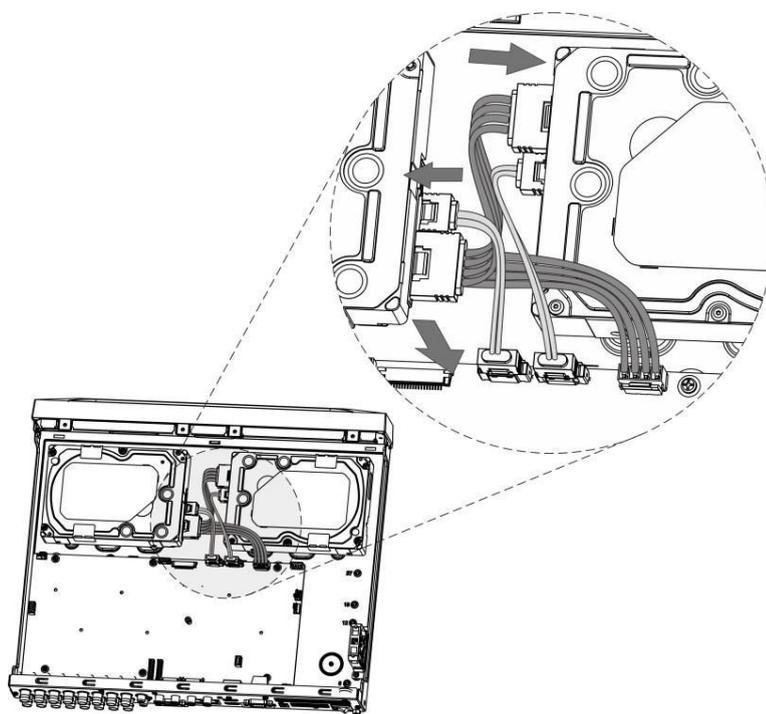


Step 4 Flip over the chassis and install the other two screws, and then secure all screws to fasten the HDD to the device.

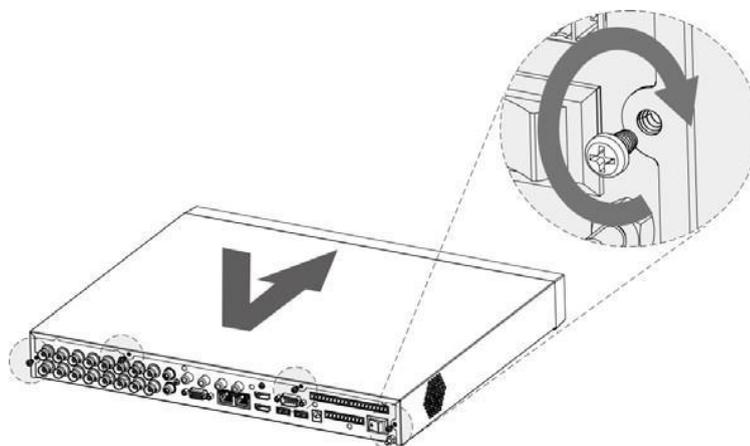
Figure 2-1



Step 5 Use the included power cable and data (SATA) cable to connect the HDVR motherboard and HDD(s).

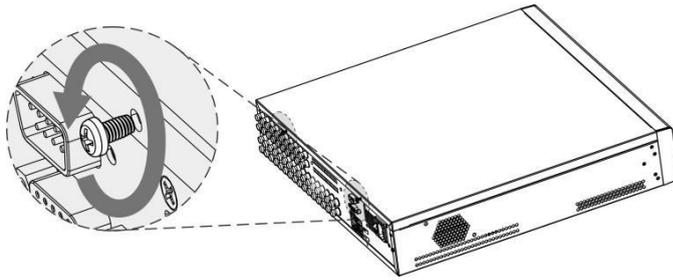


Step 6 Replace the cover and fasten the screws.

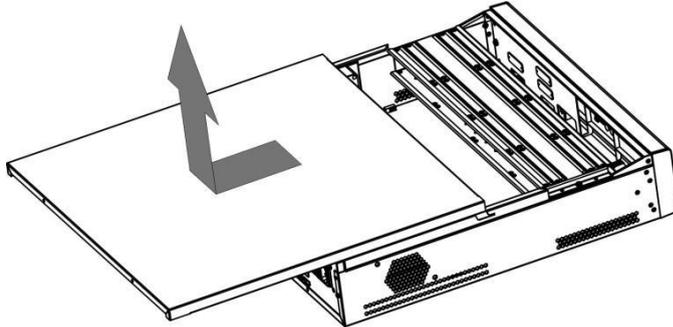


2.2.2 2U

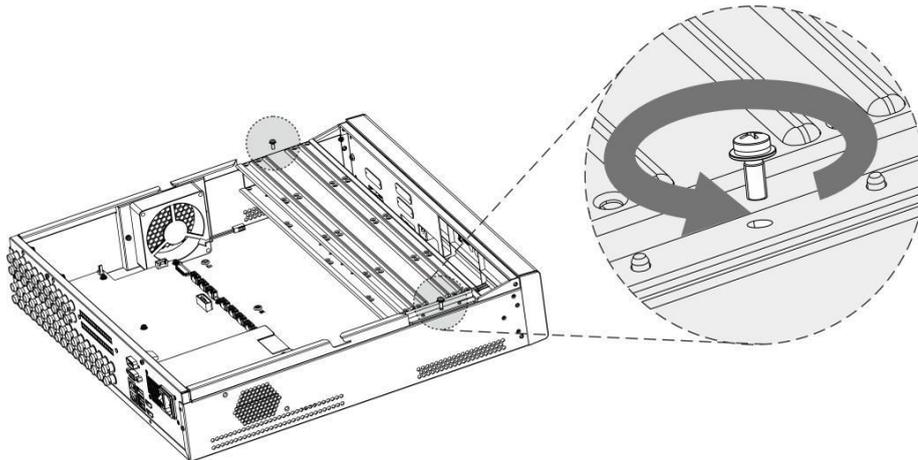
Step 1 Remove the screws from the chassis.



Step 2 Remove the cover of the chassis.

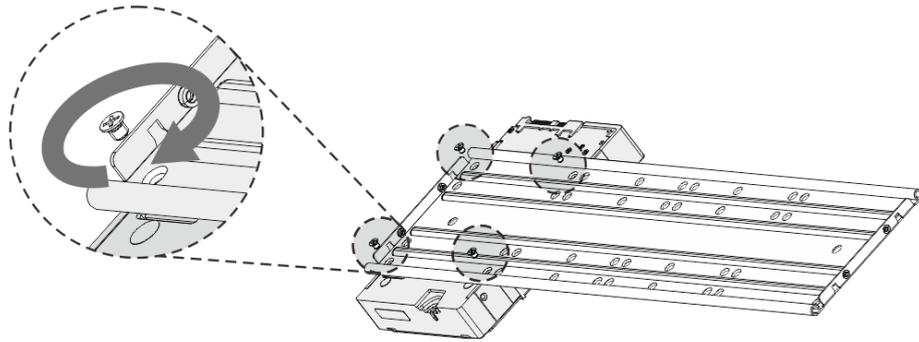


Step 3 Remove the screws from the drive bracket to take it off.

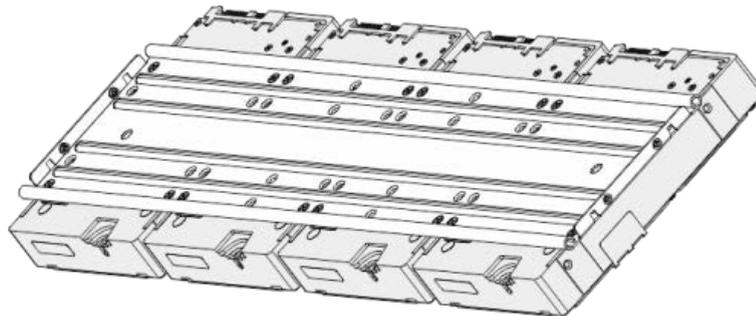


Step 4 Align the four screw holes on the disk to those on the drive bracket and assemble the disk on the bracket.

Figure 2-2



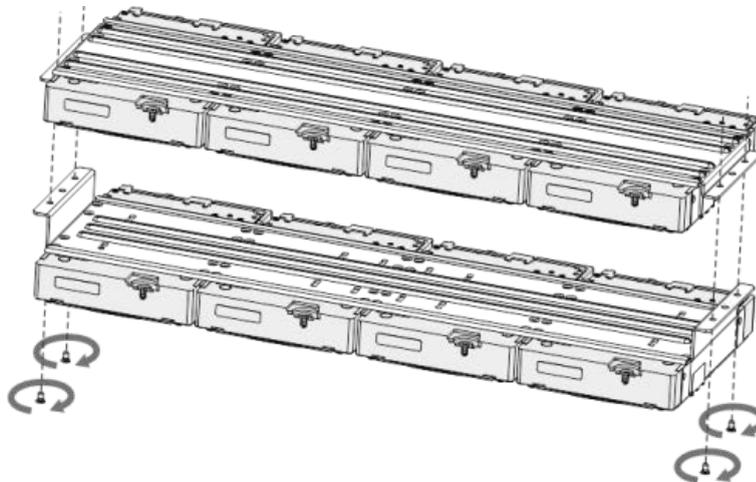
Step 5 Assemble the other disks to the bracket as needed.



Step 6 Install the two drive brackets.

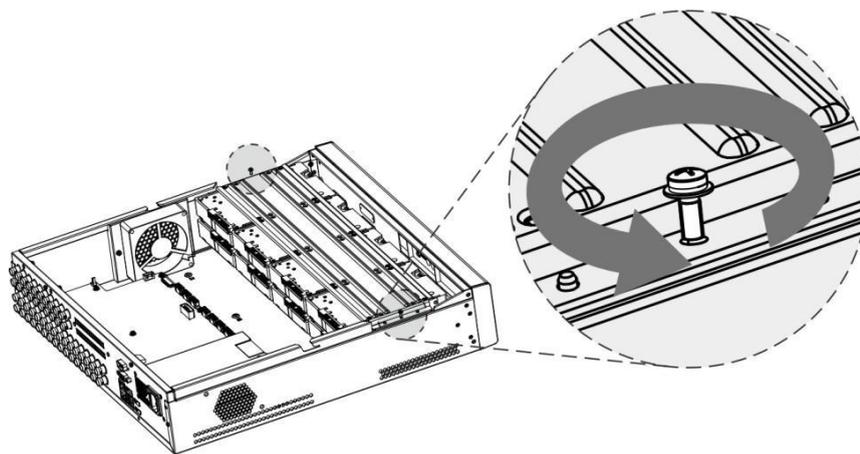


This is only required on models with 8 bays.



Step 7 Replace the drive brackets and install them in the HDVR.

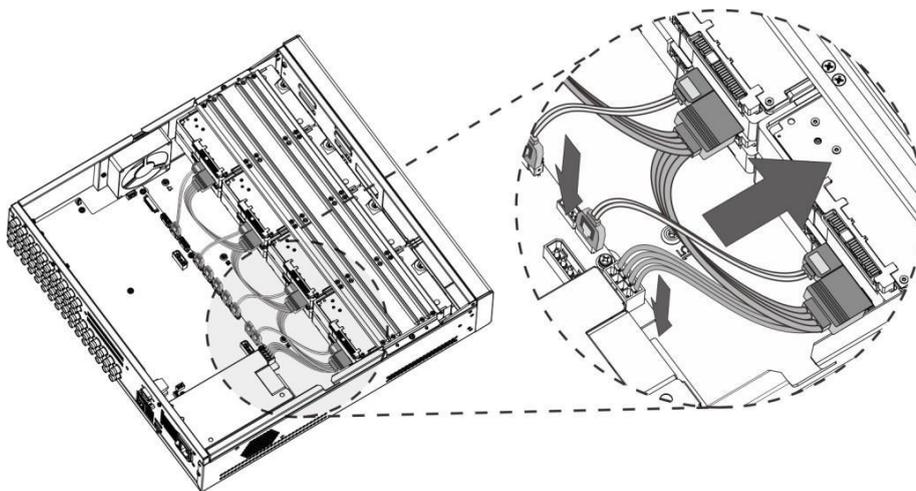
Figure 2-3



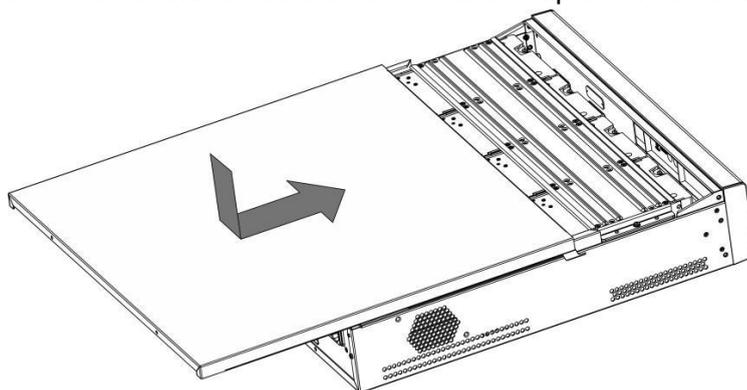
Step 8 Connect the HDDs and the HDVR with power cable and data cable.



The following figure shows the connection of 4-bay model as an example.



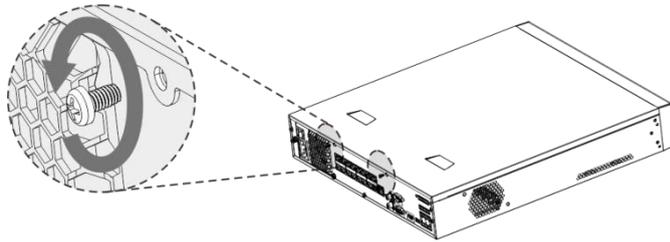
Step 9 Replace the cover and fasten the screws on the top cover to the chassis.



2.2.3 1.5U

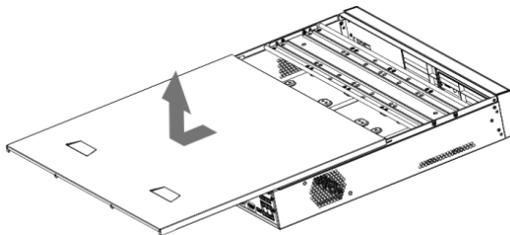
Step 1 Remove the screws on the rear panel.

Figure 2-4 Remove the screws



Step 2 Remove the cover along the direction shown in the following arrow.

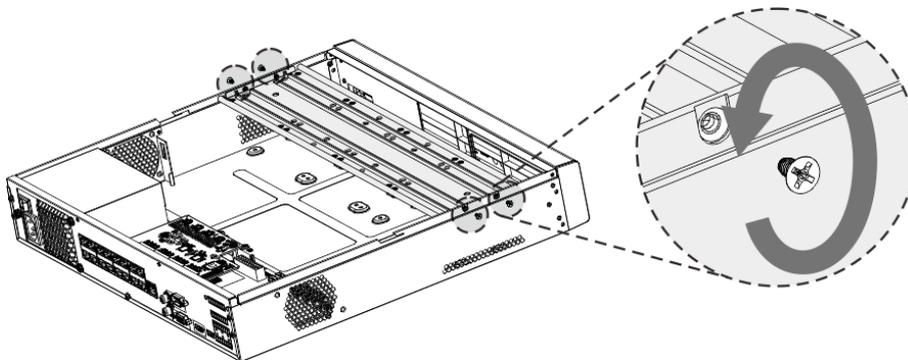
Figure 2-5 Remove case cover



Step 3 Remove the screws on the sides of HDD bracket to take out the bracket.

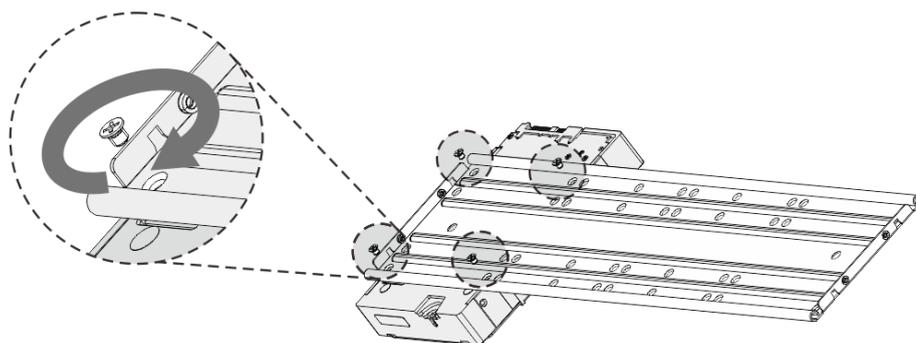
- 4-HDD NVR has one HDD bracket. For the way to remove the bracket, see the following figure

Figure 2-6 Remove HDD bracket (4-HDD)



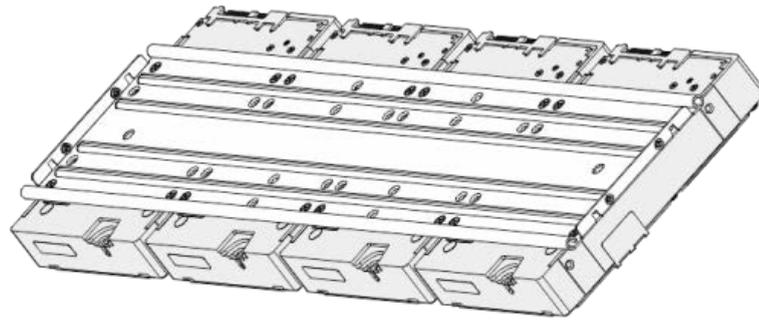
Step 4 Match the four screw holes on the HDD with the four holes on the bracket and then fasten the screws. The HDD is fixed to the bracket.

Figure 2-7 Fix the HDD (1)



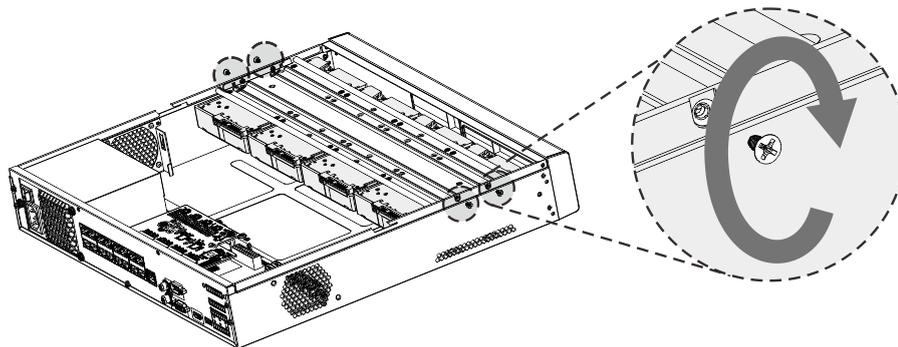
Step 5 Install other HDDs.

Figure 2-8 Fix the HDD (2)



Step 6 Place the bracket to the device and then fasten the screws on the sides of the bracket.

Figure 2-9 Fasten HDD bracket

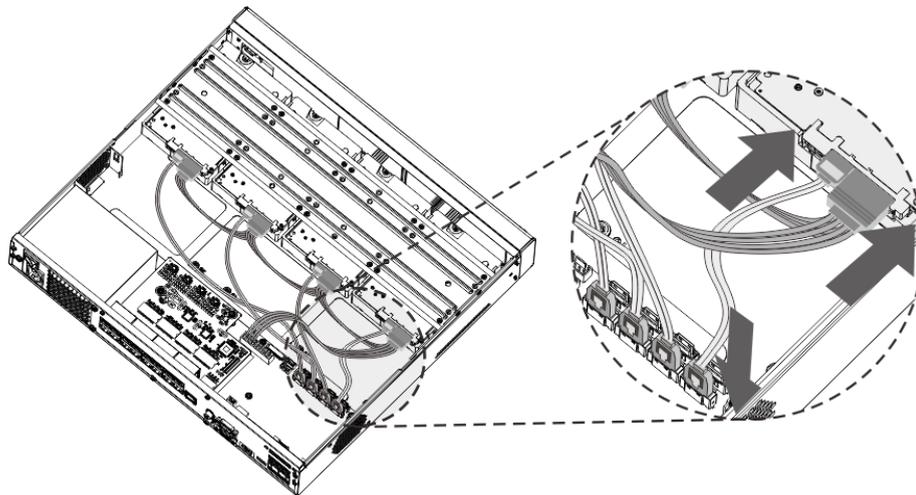


Step 7 Connect the HDD data cable and power cable to the device.



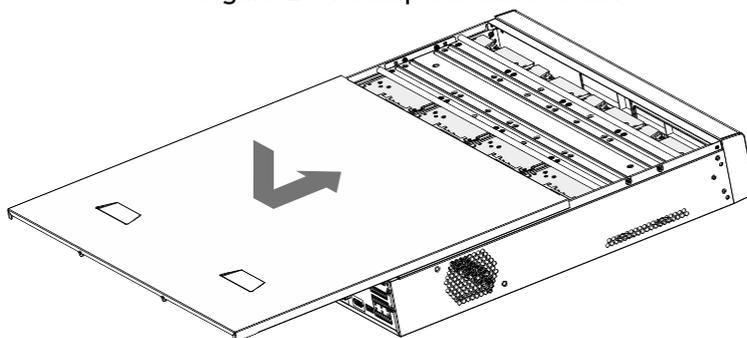
This uses a 4-HDD device as an example. The actual product shall prevail.

Figure 2-10 Connect cables



Step 8 Replace the cover and fasten the screws on the rear panel to complete the installation.

Figure 2-11 Complete installation

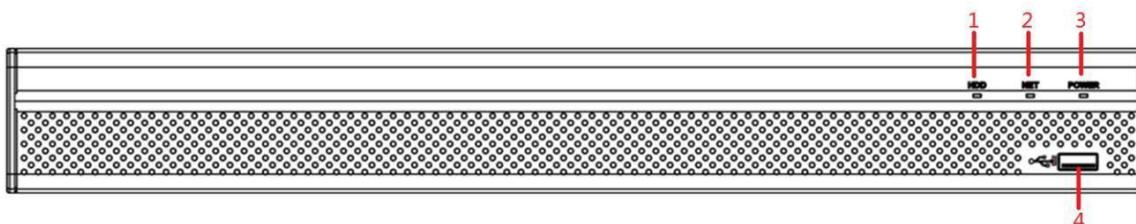


3 Panel Identification

This chapter introduces various components of the HDVR, remote control and mouse operations.

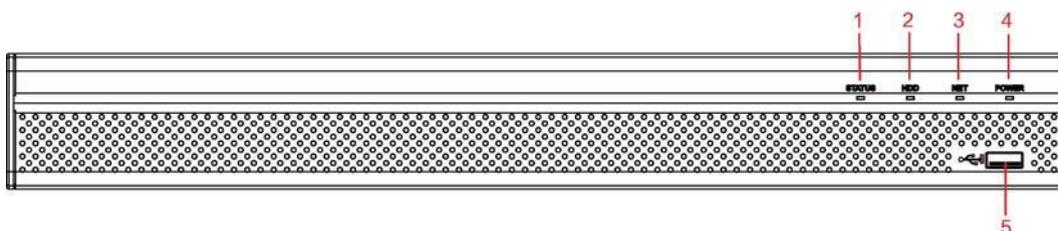
3.1 Front Panel

3.1.1 MINI 1U and Compact 1U



No.	Port Name	Function
1	HDD	Glows blue when HDD status is abnormal.
2	NET	Glows blue when network status is abnormal.
3	POWER	Glows blue when the power is connected properly.
4	USB port	Connects to peripheral devices such as USB storage device, keyboard, and mouse.

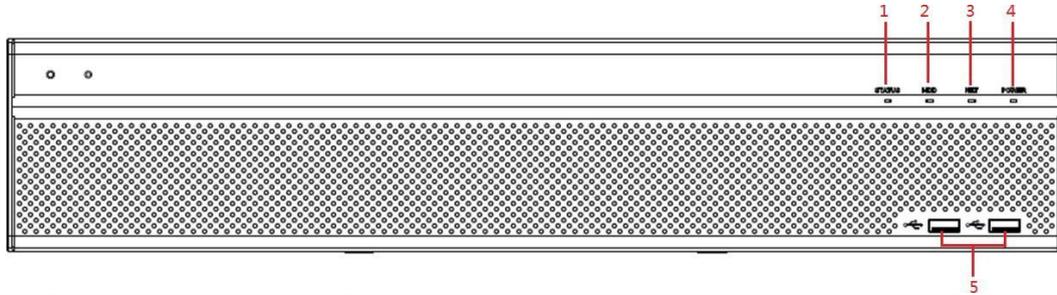
3.1.2 1U and Enhanced 1U



No.	Indicator/Port	Function
1	Status	Glows blue when the device is working properly.
2	HDD	Glows blue when HDD status is abnormal.

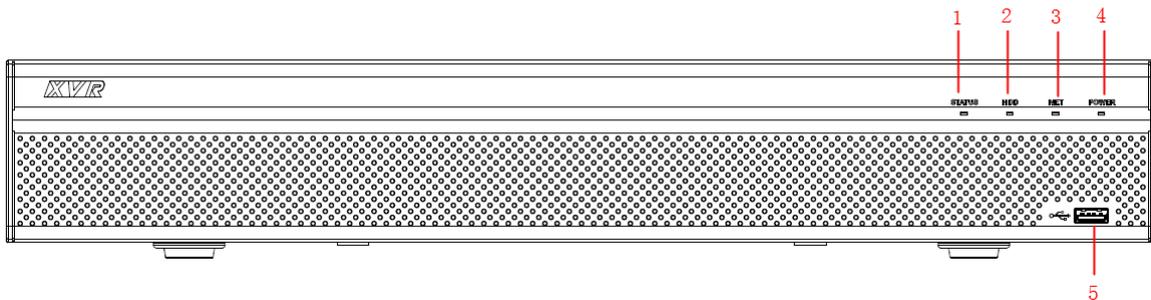
3	NET	Glow blue when network status is abnormal.
4	POWER	Glow blue when the power is connected properly.
5	USB port	Connects to peripheral devices such as USB storage device, keyboard, and mouse.

3.1.3 Enhanced 2U



No.	Port Name	Function
1	Status indicator light	Glow blue when the device is working properly.
2	HDD	Glow blue when HDD status is abnormal.
3	NET	Glow blue when network status is abnormal.
4	POWER	Glow blue when the power is connected properly.
5	USB port	Connects to peripheral devices such as USB storage device, keyboard, and mouse.

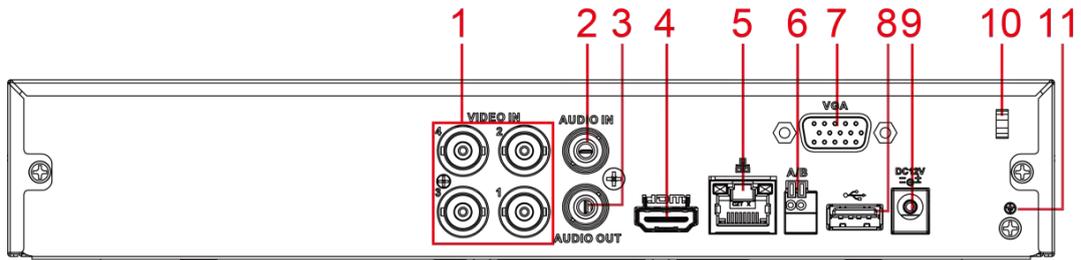
3.1.4 Enhanced 1.5U



No.	Port Name	Function
1	Status indicator light	Glow blue when the device is working properly.
2	HDD	Glow blue when HDD status is abnormal.
3	NET	Glow blue when network status is abnormal.
4	POWER	Glow blue when the power is connected properly.
5	USB port	Connects to peripheral devices such as USB storage device, keyboard, and mouse.

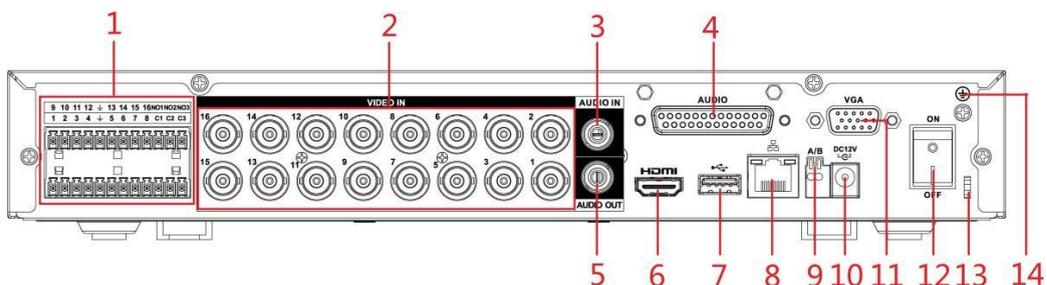
3.2 Rear Panel

3.2.1 Compact 1U



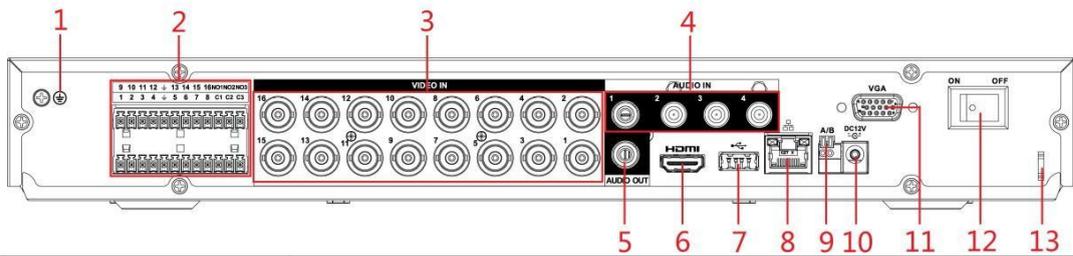
No.	Port Name	Function
1	Video input port	BNC, Connects to an analog camera to input video signal.
2	Audio input port	Receives audio signal output from the devices such as a microphone.
3	Audio output port	Outputs audio signal to the devices such as a speaker box.
4	HDMI port	High definition audio and video signal output port. The port outputs the high definition video and audio data to a connected display with an HDMI cable.
5	Network port	RJ45 port, connects with an Ethernet cable for network access.
6	RS-485 communication port	Connects to the control devices such as speed dome PTZ. RS-485_A port is connected by the cable A and RS-485_B is connected to the cable B.
7	VGA port	Outputs analog video data to the connected display with VGA port.
8	USB port	Connects to external devices such as USB storage device, keyboard and mouse.
9	Power input port	Inputs 12V DC power.
10	Power cable fastener	Use a clamp to secure the power cable on the DVR to prevent accidental power offs.
11	⊕	Ground terminal.

3.2.2 MINI 1U



No.	Port Name	Function
1	Alarm input port 1-16	<p>Four groups of alarm input ports (Group 1: port 1 to port 4; Group 2: port 5 to port 8; Group 3: port 9 to port 12; Group 4: port 13 to port 16). These ports receive the signal from an external alarm source. There are two types: NO (Normally Open) and NC (Normally Closed) which can be configured in the HDVR settings.</p>  <p>When your alarm input device is using external power, please make sure the alarm input device and the HDVR have the same ground.</p>
	Alarm output port 1-3 (NO1-NO3; C1-C3)	<ul style="list-style-type: none"> • Three groups of alarm output ports (Group 1: port NO1-C1, Group 2: port NO2-C2, Group 3: port NO3-C3). These ports output an alarm signal to the alarm device. Please make sure the power supply to the external alarm device does not exceed 1 amp. • NO: Normally open alarm output port. • C: Alarm output public end.
		Ground.
2	Video input port	BNC, Connects to an analog camera to input video signal.
3	Audio input port	Receives audio signal output from the devices such as a microphone. It corresponds to video input port 1.
4	DB25 port	Connects to the audio splitter taken from the package to convert to the audio input port which receives the audio signal from devices such as a microphone. It corresponds to video input ports 2-16.
5	Audio output port	Outputs audio signal to the devices such as the sound box.
6	HDMI port	High definition audio and video signal output port. The port outputs the high-definition video and audio data to a connected display with an HDMI cable.
7	USB port	Connects to external devices such as USB storage device, keyboard and mouse.
8	Network port	RJ45 port, connects with an Ethernet cable for network access.
9	RS-485 communication port	Connects to the control devices such as speed dome PTZ. RS-485_A port is connected by the cable A and RS-485_B is connected to the cable B.
10	Power input port	Inputs 12V DC power.
11	VGA port	Outputs analog video data to the connected display with a VGA cable.
12	Power button	Turns on/off the HDVR.
13	Power cable fastener	Use a clamp to secure the power cable on the DVR to prevent accidental power-offs.
14		Ground terminal.

3.2.3 1U

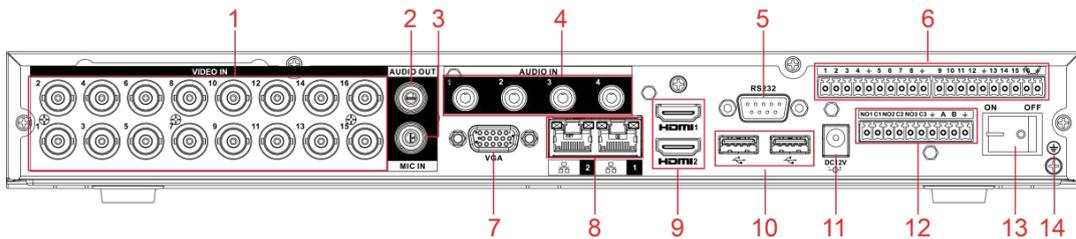


No.	Port Name	Function
1	Video input port	Connects to analog camera to input video signal.
2	Audio output port	Outputs audio signal to the devices such as the sound box.
3	MIC IN	Two-way talk input port which receives analog audio signal output from the devices such as microphone and pickup.
4	Audio input port	Receives audio signal output from the devices such as microphone.
5	RS-232 debug COM	The port is used for general COM debug to configure IP address or transfer transparent COM data.
6	Alarm input port 1-16	4 groups of alarm input ports (Group 1: port 1 to port 4; Group 2: port 5 to port 8; Group 3: port 9 to port 12; Group 4: port 13 to port 16). These ports receive the signal from the external alarm source. There are two types: NO (normal open) and NC (normal close).  When your alarm input device is using external power, please make sure the input device and the DVR connect to the same ground.
		Ground terminal.
7	VGA port	Outputs analog video data to a connected display using a VGA cable.
8	Network port	RJ45 port, connects with an Ethernet cable for network access.
9	HDMI port	High definition audio and video signal output port. The port outputs the uncompressed high-definition video and multi-channel audio data to the connected display with HDMI port.
10	USB port	Connects to the external devices such as keyboard, mouse, and USB storage device.
11	Power input port	Inputs power.

No.	Port Name	Function
		<ul style="list-style-type: none"> 5 groups of alarm output ports (Group 1: port

No.	Port Name	Function
12	Alarm output port 1-5 (NO1-NO5; C1-C5; NC5)	<p>NO1-C1, Group 2: port NO2-C2, Group 3: port NO3-C3, Group 4: port NO4-C4, Group 5: port NO5, C5, NC5). These ports output alarm signal to the alarm device. Please make sure power supply to the external alarm device.</p> <ul style="list-style-type: none"> • NO: Normal open alarm output port. • C: Alarm output public end. • NC: Normal close alarm output port.
13	Power button	Turns on/off the DVR.
14		Ground.

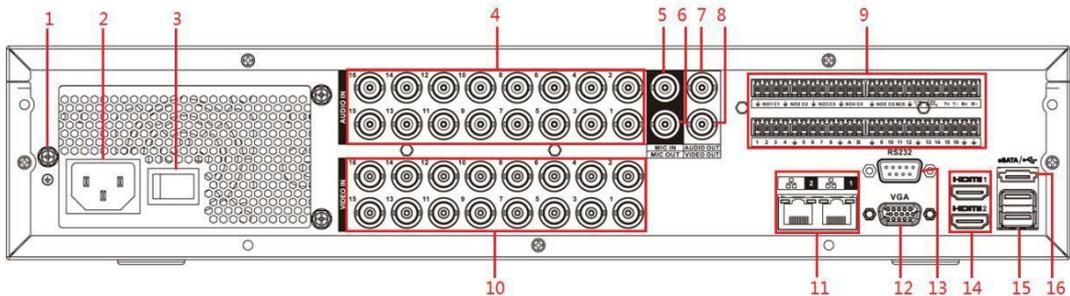
3.2.4 Enhanced 1U



No.	Port Name	Function
1	Video input port	Connects to an analog camera to input video signal.
2	Audio output port	Outputs audio signal to the devices such as the sound box.
3	MIC IN	Two-way talk input port which receives an analog audio signal output from the devices such as microphone and pickup.
4	Audio input port	Receives audio signal output from the devices such as a microphone.
5	RS-232 debug COM	The port is used for general COM debug to configure IP addresses or transfer transparent COM data.
6	Alarm input port 1-16	<p>4 groups of alarm input ports (Group 1: port 1 to port 4; Group 2: port 5 to port 8; Group 3: port 9 to port 12; Group 4: port 13 to port 16). These ports receive the signal from the external alarm source. There are two types: NO (normal open) and NC (normal close).</p>  <p>When your alarm input device is using external power, please make sure the input device and the DVR connect to the same ground.</p>
		Ground terminal.
7	VGA port	Outputs analog video data to a connected display using a VGA cable.
8	Network port	RJ45 port, connects with an Ethernet cable for network access.
9	HDMI port	High definition audio and video signal output port. The port outputs the high-definition video and audio data to a connected display with an HDMI cable.
10	USB port	Connects to external devices such as keyboard, mouse, and USB storage device.

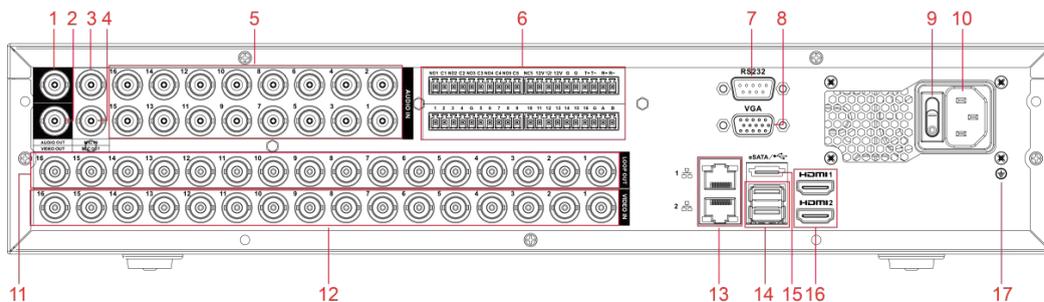
11	Power input port	Inputs power.
12	Alarm output port 1-5 (NO1-NO5; C1-C5; NC5)	<ul style="list-style-type: none"> • 5 groups of alarm output ports (Group 1: port NO1-C1, Group 2: port NO2-C2, Group 3: port NO3-C3, Group 4: port NO4-C4, Group 5: port NO5, C5, NC5). These ports output alarm signal to the alarm device. Please make sure power supply to the external alarm device. • NO: Normal open alarm output port. • C: Alarm output public end. • NC: Normal close alarm output port.
13	Power button	Turns on/off the DVR.
14		Ground.

3.2.5 Enhanced 2U



No.	Port Name	Function
1	GND	Ground.
2	Power input port	Inputs power.
3	Power button	Turns on/off the Device.
4	Audio input port	Receives the analog audio signal output from the devices such as a microphone.
5	Audio input port (MIC IN)	Tow-way talk input port which receives the analog audio signal output from the devices such as a microphone, pickup.
6	Audio output port (MIC OUT)	Tow-way talk output port which outputs the analog audio signal to the devices such as the sound box.
7	Audio output port	Outputs the analog audio signal to the devices such as the sound box.
8	Video output port	Connect to video output devices such as TV.

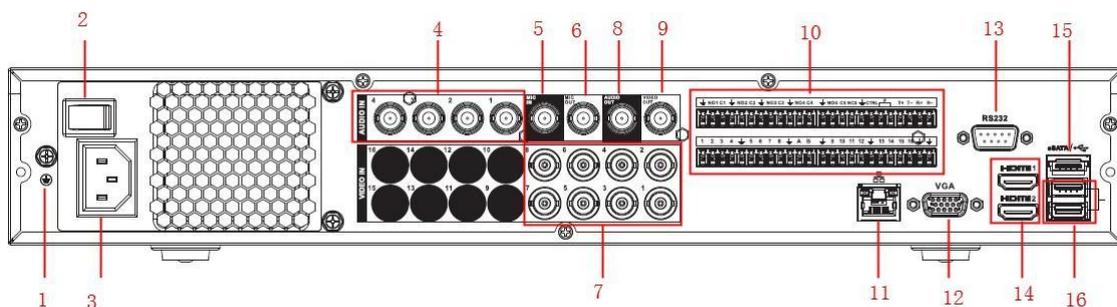
No.	Port Name	Function
9	Alarm input port 1-16	<ul style="list-style-type: none"> Four groups of alarm output ports (Group 1: port 1 to port 4; Group 2: port 5 to port 8; Group 3: port 9 to port 12; Group 4: port 13 to port 16). These ports receive the signal from the external alarm source. There are two types; NO (Normally Open) and NC (Normally Closed). When your alarm input device is using external power, please make sure the device and the NVR have the same ground.
	Alarm output port 1-5 (NO1-NO5; C1-C5; NC5)	<ul style="list-style-type: none"> Five groups of alarm output ports. (Group 1: port NO1-C1, Group 2: port NO2-C2, Group 3: port NO3-C3, Group 4: port NO4-C4, Group 5: port NO5, C5, NC5). These ports output alarm signal to the alarm device. Please make sure power supply to the external alarm device. NO: Normally open alarm output port. C: Alarm output public end. NC: Normally closed alarm output port.
	RS-485 communication port	You can connect to the control devices such as speed dome PTZ. RS-485_A port is connected by the cable A and RS-485_B is connected to the cable B.
	Four-wire full-duplex RS-485 port (T+, T-, R+, R-)	Four-wire full-duplex 485 port. T+ and T- is the output wire; R+ and R- is the input wire.
	Control power output (CTRL 12V)	Controls 12V DC power output. It is to control the on-off alarm relay output.
	12V power output port	Provides power to external devices such as camera and alarm device. Please note the supplying power shall be below 1A.
		Ground.
10	Video input port	Connect to an analog camera to input video signal.
11	Network port	Connects to Ethernet port.
12	VGA video output	Outputs analog video signal. It can connect to the monitor to view analog video.
13	RS-232 debug COM.	It is for general COM debug to configure IP addresses or transfer transparent COM data.
14	HDMI port	High definition audio and video signal output port. It outputs the same video source as VGA. It supports 4K resolution output and supports mouse operation and control. Please note when the HDMI output resolution is 4K, the VGA output stops.
15	USB port	Connects to the external devices such as keyboard, mouse, and USB storage device.
16	eSATA port	External SATA port which connects to the device with SATA port. Perform the jumper configuration when connecting HDD.



No.	Port Name	Function
1	Audio output port	Outputs the analog audio signal to the devices such as a sound box.
2	Video output port	Connect to video output devices such as TV.
3	Audio input port (MIC IN)	Tow-way talk input port which receives the analog audio signal output from the devices such as a microphone, pickup.
4	Audio output port (MIC OUT)	Tow-way talk output port which outputs the analog audio signal to the devices such as the sound box.
5	Audio input port	Receives the analog audio signal output from the devices such as microphone.
6	Alarm input port 1-16	<ul style="list-style-type: none"> Four groups of alarm output ports (Group 1: port 1 to port 4; Group 2: port 5 to port 8; Group 3: port 9 to port 12; Group 4: port 13 to port 16). These ports receive the signal from the external alarm source. There are two types; NO (Normally Open) and NC (Normally Closed). When your alarm input device is using external power, please make sure the device and the NVR have the same ground.
	Alarm output port 1-5 (NO1-NO5; C1-C5; NC5)	<ul style="list-style-type: none"> Five groups of alarm output ports. (Group 1: port NO1-C1, Group 2: port NO2-C2, Group 3: port NO3-C3, Group 4: port NO4-C4, Group 5: port NO5, C5, NC5). These ports output an alarm signal to the alarm device. Please make sure power supply to the external alarm device. NO: Normally open alarm output port. C: Alarm output public end. NC: Normally closed alarm output port.
	RS-485 communication port	You can connect to the control devices such as speed dome PTZ. RS-485_A port is connected by the cable A and RS-485_B is connected to the cable B.
	Four-wire full-duplex RS-485 port (T+, T-, R+, R-)	Four-wire full-duplex 485 port. T+ and T- is the output wire; R+ and R- is the input wire.
	Power output control for alarm (CTRL 12V)	Controls the 6 th channel power output for alarm. It is to control the on-off alarm relay output.
	12V power output port	Provides power to external devices such as camera and alarm device. Please note the supplying power shall be below 1A.
G	Ground.	

No.	Port Name	Function
7	RS-232 debug COM.	It is for general COM debug to configure IP addresses or transfer transparent COM data.
8	VGA video output	Outputs analog video signal. It can connect to the monitor to view analog video.
9	Power button	Turns on/off the Device.
10	Power input port	Inputs power.
11	Loop out	Outputs the video signal of the corresponding video input port.
12	Video input port	Connect to an analog camera to input video signal.
13	Network port	Connects to Ethernet port.
14	USB port	Connects to external devices such as keyboard, mouse, and USB storage device.
15	eSATA port	External SATA port which connects to the device with SATA port. Perform the jumper configuration when connecting HDD.
16	HDMI port	High definition audio and video signal output port. It outputs the same video source as VGA. It supports 4K resolution output and supports mouse operation and control. Please note when the HDMI output resolution is 4K, the VGA output will be disabled. Resolution varies depending on different models.
17	GND	Ground.

3.2.6 Enhanced 1.5U



No.	Port Name	Function
1	GND	Ground.
2	Power button	Turns on/off the Device.
3	Power input port	Inputs power.
4	Audio input port	Receives the analog audio signal output from the devices such as a microphone.

No.	Port Name	Function
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5	Audio input port (MIC IN)	Tow-way talk input port which receives the analog audio signal output from the devices such as a microphone, or pickup.
6	Audio output port (MIC OUT)	Tow-way talk output port which outputs the analog audio signal to the devices such as the sound box.
7	Video input port	Connect to an analog camera to input video signal.
8	Audio output port	Outputs the analog audio signal to the devices such as the sound box.
9	Video output port	Connect to video output devices such as TV.
10	Alarm input port 1-16	<ul style="list-style-type: none"> Four groups of alarm output ports (Group 1: port 1 to port 4; Group 2: port 5 to port 8; Group 3: port 9 to port 12; Group 4: port 13 to port 16). These ports receive the signal from the external alarm source. There are two types; NO (Normally Open) and NC (Normally Closed). When your alarm input device is using external power, please make sure the device and the NVR have the same ground.
	Alarm output port 1-5 (NO1-NO5; C1-C5; NC5)	<ul style="list-style-type: none"> Five groups of alarm output ports. (Group 1: port NO1-C1, Group 2: port NO2-C2, Group 3: port NO3-C3, Group 4: port NO4-C4, Group 5: port NO5, C5, NC5). These ports output alarm signal to the alarm device. Please make sure power supply to the external alarm device. NO: Normally open alarm output port. C: Alarm output public end. NC: Normally closed alarm output port.
	RS-485 communication port	You can connect to the control devices such as speed dome PTZ. RS-485_A port is connected by the cable A and RS-485_B is connected to the cable B.
	Four-wire full-duplex RS-485 port (T+, T-, R+, R-)	Four-wire full-duplex 485 port. T+ and T- is the output wire; R+ and R- is the input wire.
	Control power output (CTRL 12V)	Controls 12V DC power output. It is to control the on-off alarm relay output.
	12V power output port	Provides power to external devices such as camera and alarm device. Please note the supplying power shall be below 1A.
		Ground.
11	Network port	Connects to Ethernet port.
12	VGA video output	Outputs analog video signal. It can connect to the monitor to view analog video.
13	RS-232 debug COM.	It is for general COM debug to configure IP addresses or transfer transparent COM data.

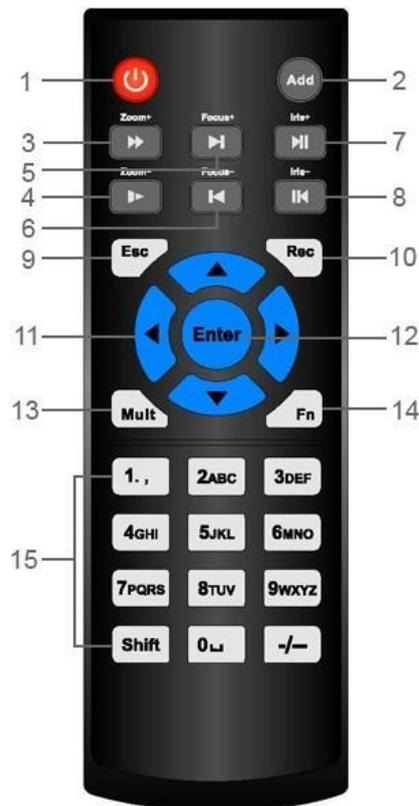
14	HDMI port	High definition audio and video signal output port. It outputs the same video source as VGA. It supports 4K resolution output and supports mouse operation and control. Please note when the HDMI output resolution is 4K, the VGA output stops.
15	eSATA port	External SATA port which connects to the device with SATA port. Perform the jumper configuration when connecting HDD.
16	USB port	Connects to external devices such as keyboard, mouse, and USB storage device.

3.3 Remote Control Operations



Please note the remote control is not our standard accessory and may not be included in the accessory bag. It is supplied depending on the model purchased.

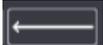
Figure 3-1



No.	Name	Function
1	Power button	Press this button to boot up or shut down the device.
2	Address	Press this button to input device serial number, so that you can control the Device.
3	Forward	Multi-step forward speed and normal speed playback.
4	Slow motion	Multi-step slow motion speed or normal playback.
5	Next record	In playback state, press this button to play back the next video.

No.	Name	Function
6	Previous record	In playback state, press this button to play back the previous video.
7	Play/Pause	<ul style="list-style-type: none"> • In normal playback state, press this button to pause playback. • In pause state, press this button to resume to normal playback. • In live view window interface, press this button to enter video search menu.
8	Reverse/pause	In the reverse playback state, press this button to pause reverse playback.
		In the reverse playback pause state, press this button to resume to playback reversing state.
9	Esc.	Go back to previous menu or cancel current operation (close front interface or control).
11	Direction keys	Switch between current activated controls by going left or right. In playback state, the keys control the playback progress bar. Aux function (such as operating the PTZ menu).
12	Enter/menu key	<ul style="list-style-type: none"> • Confirms an operation. • Go to the OK button. • Go to the menu.
13	Multiple-window switch	Switch between multiple-window and one-window.
14	Fn	<ul style="list-style-type: none"> • In single-channel monitoring mode, press this button to display the PTZ control and color setting functions. • Switch the PTZ control menu in PTZ control interface. • In motion detection interface, press this button with direction keys to complete setup. • In text mode, press and hold this button to delete the last character. To use the clearing function: Long press this button for 1.5 seconds. • In HDD menu, switch HDD recording time and other information as indicated in the pop-up message.
15	Alphanumeric keys	<ul style="list-style-type: none"> • Input password, numbers. • Switch channel. • Press Shift to switch the input method.

3.4 Mouse Operations

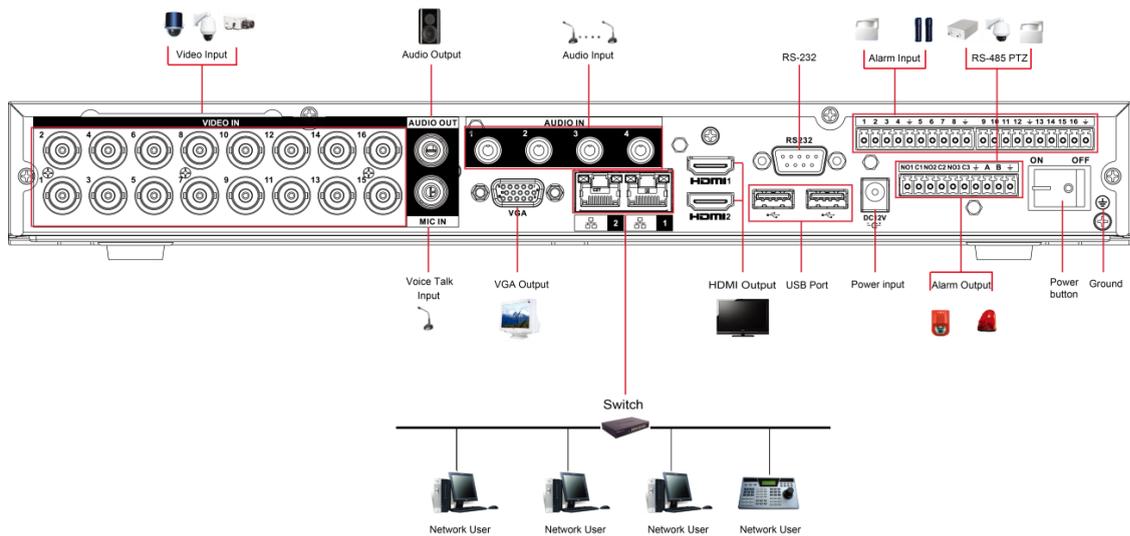
Operation	Function
Click left mouse button	The Password input dialogue box will appear if a user is not logged in. In the live view window interface, you can enter the main menu.
	If you select one menu item, click to view menu content.
	Implement the control operations.
	Modify the check box or motion detection status.
	In the text box, click the corresponding button on the panel to enter a numeral or English character (small/capitalized). <ul style="list-style-type: none"> In English input mode: Click  to enter a backspace and click  to delete the previous character. 
<ul style="list-style-type: none"> In numeral input mode: Click  to clear and click  to delete the previous character. 	
Double-click left mouse button	Implement special control operations such as double-clicking one item in the file list to play back the video.
	In multiple-window mode, double-click one channel to view in full-screen. Double-click the current video again to go back to the previous multiple-window mode.
Right-click	Right-click in the live view window interface, and the shortcut menu will be displayed. The shortcut menu may vary depending on the actual model.
	Exit the current menu without saving the modification.
Click scroll wheel button	In the numeral input box: Increase or decrease numeral value.
	Switch the items in the combo box.
	Page up or page down.
Point to select and move	Select a menu item with mouse movement.
Dragging a selection box with left mouse button	Select motion detection zone.
	Select privacy mask zone.

This chapter explains the typical connection diagrams and port connections.

4.1 Typical Connection Diagram



The following figure is for reference only. The actual product shall prevail.



4.2 Connecting to Video and Audio Input and Output

4.2.1 Video Input

The video input interface is BNC. The input video format includes: PAL/NTSC BNC (1.0V_{p-p}, 75Ω). The video signal should comply with your national and local standards.

The input video signal shall have high SNR, low distortion; low interference, natural color, and suitable lightness.

Guaranteeing the stability and reliability of the camera signal

The camera should be installed in a cool, dry place away from the conditions such as direct sunlight, inflammable, and explosive substances.

The cameras and the HDVR should have the same grounding to ensure the normal operation of the camera.

Guarantee stability and reliability of the transmission line

Please use high-quality, shielded BNC. Please select suitable BNC types and models according to the transmission distance.

If the distance is too long, it is recommended to use a twisted pair cable to add video compensation devices or use optical fiber to ensure video quality.

Keep the video signal away from the strong electromagnetic interference, especially high tension current lines.

Keeping connection lugs in contact

The signal line and shielded wire should be installed firmly and in a secure connection. Avoid dry joints, lap welding, and oxidation.

4.2.2 Video Output

Video output includes a BNC (PAL/NTSC1.0V_{p,p}, 75Ω) output, a VGA output, and HDMI output. System supports BNC, VGA and HDMI output.

When you are using a pc-type monitor to replace the monitor, please pay attention to the following points:

- To defer aging and screen burn, do not allow the pc monitor to run for a long time.
- Regular degaussing/ demagnetization will keep the device maintain a proper status.
- Keep away from strong electromagnetic interference devices.

Using a TV as a video output device is not a reliable substitution method. You will also need to reduce the working hours and control the interference from the power supply and other devices. A low-quality TV may result in device damage.

4.2.3 Audio Input

This series of products supports audio input via the same video BNC port for applicable video formats such as HD-AVS and CVI.

Due to the high impedance of audio input, please use active sound pick-ups.

Audio transmission is similar to video transmission. Try to avoid interference, dry joint, loose contact, and keep away from high tension currents.

4.2.4 Audio Output

The audio output signal parameter is typically over 200mv 1KΩ (BNC or RCA). It can connect directly to a low impedance earphone, active speaker box or amplifier-drive audio output device.

If the sound box and the pick-up are in too close of proximity, audio feedback noises will be generated. In this case, you can adopt the following measures:

- Use better sound pick-up with better directing property.
- Reduce the volume of the sound box.
- Using more sound-absorbing materials in decoration can reduce voice echo and improve the acoustics environment.
- Adjust the layout of the speaker and pickup to reduce squeaking.

4.3 Connecting to Alarm Input and Output

Please read the following before connecting.

Alarm input

- Grounding signal is needed for alarm input.
- Alarm input requires a low-level voltage signal.

- Alarm input mode can be either NC (Normally Closed) or NO (Normally Open).
- When you are connecting two DVRs or you are connecting one DVR and one other device, use a relay to separate them.

Alarm output

The alarm output port should not be connected to a high power load directly (It shall be less than 1 Amp) to avoid high current which might result in relay damage. Use a voltmeter/ multimeter to measure the connection between the alarm output port and the load.

How to connect PTZ decoder

- Ensure the decoder has the same grounding with DVR; otherwise, the PTZ might not be controlled. Shielded twisted wire is recommended and the shielded layer is used to connect to the grounding.
- Avoid high voltage. Ensure proper wiring and some thunder protection measures.
- For signal wires that are too long, 120Ω should be parallel connected between A, and B lines on the far end to reduce reflection and guarantee the signal quality.
- “485 A, B” of DVR cannot parallel connect with “485 port” of another device.
- The voltage between of A, B lines of the decoder should be less than 5V.

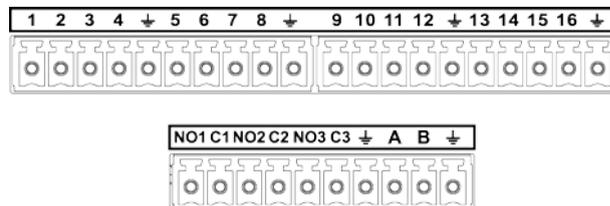
Make sure the front-end device has appropriately earthed

Improper grounding may result in device or chip damage.

4.3.1 Introducing Alarm Port



The alarm input ports differ depending on the model you purchased.



Icon	Description
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16	ALARM 1 to ALARM 16. The alarm will become active in low voltage.
NO1 C1, NO2 C2, NO3 C3	There are four groups of normally open activation output (on/off button).
	Ground cable.
485 A/B	RS 485 serial communication port. These are used to control devices such as a decoder. 120Ω should be parallel connected between A, B lines if there are too many PTZ decoders.

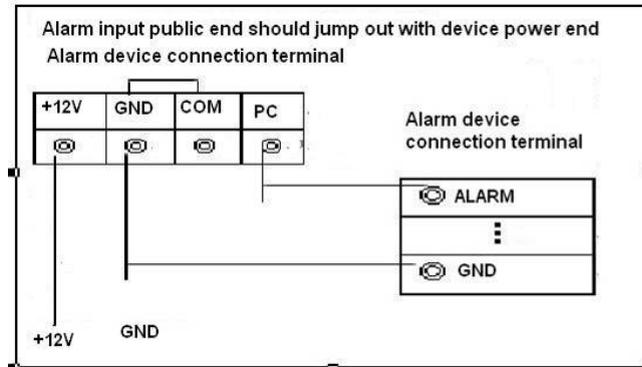
4.3.2 Alarm Input

Refer to the following figure for more information.

- Alarm inputs include NO (Normally Open) and NC (Normally Closed) type.

- Parallel connect COM end and GND end of the alarm detector (Provide external power to the alarm detector).
- Parallel connect the Ground of the DVR and the ground of the alarm detector.
- Connect the NC port of the alarm sensor to the DVR alarm input (ALARM).
- Use the same ground as that of HDVR if you use the external power to the alarm device.

Figure 4-1



4.3.3 Alarm Output

- Make sure there is power provided to the external alarm devices.
- To avoid overloading, carefully read the following relay parameters table.
- RS-485 A/B cable is for the A/B cable of the PTZ decoder.

4.3.4 Alarm Output Relay Parameters

 Refer to the actual product specification for relay model information.

Model		HFD23/005-1ZS	HRB1-S-DC5V
Material of the touch		AgNi+ gold-plating	AuAg10/AgNi10/CuNi30
Rating (Resistance Load)	Rated switch capacity	30V DC 1A/125V AC 0.5A	24V DC 1A/125V AC 2A
	Maximum switch power	62.5VA/30W	250VA/48W
	Maximum switch voltage	125V AC/60V DC	125V AC/60V DC
	Maximum switch current	2A	2A
Insulation	Between touches	400VAC 1 minute	500VAC 1 minute
	Between touch and winding	1000VAC 1 minute	1000VAC 1 minute
Turn-on Time		5ms maximum	5ms maximum
Turn-off Time		5ms maximum	5ms maximum
Longevity	Mechanical	1×10 ⁷ times (300 times/MIN)	5×10 ⁶ times (300 times/MIN)
	Electrical	1×10 ⁵ times (30 times/MIN)	2.5×10 ⁴ times (30 times/MIN)
Working Temperature		-30°C—+70°C	-40°C—+70°C

5 Local Configurations

Read the following notes prior to using the Device.



- The interfaces in the Manual are used for explaining the operations and only for reference. The actual interface may differ depending on the model or firmware version purchased. If there is an inconsistency between the Manual and the actual product, the actual product shall govern.
- This Manual is a general document for explaining the product, so there may be some functions described for the Device in the Manual that do not apply to the model you purchased.
- Conventions for mouse operations on a menu.
 - ◇ Click: On the menu, left-click the mouse once on an option to enter the option setting.
 - ◇ Right-click: On any interface, right-click the mouse once to return to the previous level. For details about mouse operations, see "3.4 Mouse Operations."

5.1 Initial Settings

5.1.1 Booting up



- Ensure the input voltage corresponds to the power requirement of the Device. Power on the Device after the power cable is properly connected.
- To protect the Device, connect the power cable to the Device first, and then connect to the power source.
- To ensure the stable work of the Device and the external devices connected to the Device and to prolong the HDD life, it is recommended to refer to the national related standard to use the power source that provides stable voltage with less interference from ripples. UPS power source is recommended.

Step 1 Connect the Device to the monitor.

Step 2 Plug in the power cable to the Device.

Step 3 Press the power button to turn on the Device. The power indicator light will turn on. On the connected monitor, the live view screen will be displayed by default. If you turn on the Device during the time period that is configured for recording, the system starts recording after it is turned on, and you will see the icon indicating recording status is working in the specific channels.

5.1.2 Initializing the Device

When booting up for the first time, you will need to configure the password information for the admin (by default) account.



It is strongly recommended to secure the password for admin and modify it regularly.

Step 1 Turn on the Device.

The **Location, Language and Video Standard** interface will be displayed. See below.

The screenshot shows the 'Device Initialization' screen with the following settings:

- Region: United States
- Language: English
- Video Standard: NTSC
- Time Zone: (UTC-08:00) Pacific Time (US & Canada)
- System Time: 06-24-2022 08:46:56 AM
- DST:
- Type: Date Week
- Start Time: Mar 2nd Sun 02:00 AM
- End Time: Nov 1st Sun 02:00 AM
- Online Update:

Below the settings, there is a notification: "Notify me when updates are available. The system checks for updates daily. To inform you of the latest firmware updates for your device, we need to collect device info such as IP address, device name, language preference, firmware version, device SN, etc. All collected info is used only for the purposes of verifying device validity and pushing update notifications. You can withdraw your consent at any time by opening Main Menu->Advanced Settings->System Operation->Maintenance->System Upgrade on device interface."

A 'Next' button is located at the bottom right of the screen.

Step 2 Select your location from the drop-down list, then language and video standards that match your location automatically. You can change the language and video standard manually.

Step 3 Click **Next**.

The **Software License Agreement** interface will be displayed.

Step 4 Tick the check box that **I have read and agree to all terms**, and then click **Next**.

The **System Zone and System Time** interface will be displayed.

Step 5 Select system zone, configure system time, and then click **Next**.

The **Enter Password** interface will be displayed.

Figure 5-1

The screenshot shows the 'Device Initialization' screen at the '1. Password Setting' step. The progress bar shows three steps: 1. Password Setting (active), 2. Unlock Pattern, and 3. Password Protection.

The form contains the following fields:

- Username: admin
- Password:
- Confirm Password:
- Password Hint:
- Unlock Pattern:

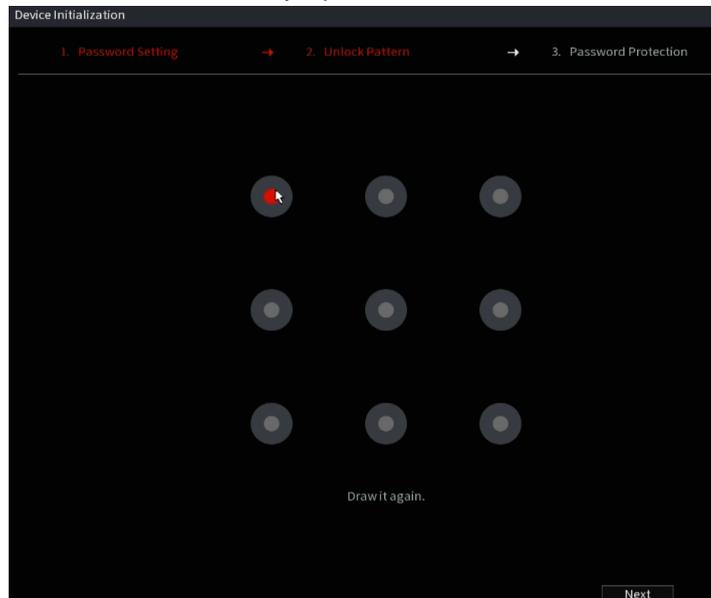
Below the form, there is a note: "Password must be 8 to 32 characters, including at least two of the following categories: numbers, uppercase letters, lowercase letters and special characters (Characters like ' " ; : & cannot be included in)." "

Step 6 Configure the password information for the admin account.

Parameter	Description
User	By default, the user is admin .
Password	The new password can be set from 8 characters to 32 characters and contains at least two types of number, letter, and special characters (excluding "", "", ";", ":" and "&"). Please enter a strong password according to the password strength bar indication.
Confirm Password	
Prompt Hint	In the Prompt Hint box, enter the information that can remind you of the password.  On the login interface, click  and the prompt will display to help you find back the password.

Step 7 Click **Next**.

The **Unlock Pattern** interface will be displayed.



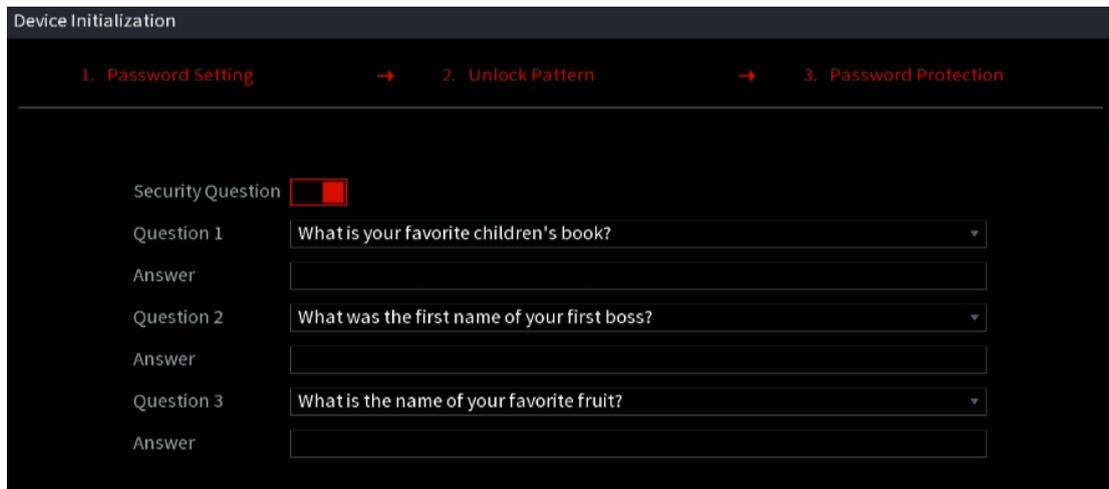
Step 8 Draw an unlock pattern.

After the setting is completed, the **Password Protection** interface will be displayed.



- The created pattern must cross at least four different points.
- If you do not want to configure the unlock pattern, click **Skip**.
- Once you have configured the unlock pattern, the system will require the unlock pattern as the default login method. If you skip this setting, enter the password for login.

Step 9 Configure the protection parameters for the password.



After configuration, if you forget the password for admin user, you can reset the password through the reserved email address or security questions. For details about resetting the password, see 5.1.2. If you do not want to configure the settings, disable the email address and security questions functions on the interface.

Password Protection Mode	Description
Security Questions	Configure the security questions and answers. If you forget the password, enter the answers to the questions can make you reset the password.
	If you want to configure the security questions function later or you want to change the configurations, select Main Menu > Advanced Settings > System Operation > ACCOUNT > Password Reset.

Step 10 Click **OK** to complete the settings.

The **End-User License Agreement** interface will be displayed.

Step 11 Select **I have read and agree to all terms** check box.

Step 12 Click **Next**. The **Startup Wizard** interface will be displayed. For details about quick settings during startup, see 5.1.3.

5.1.3 Resetting Password

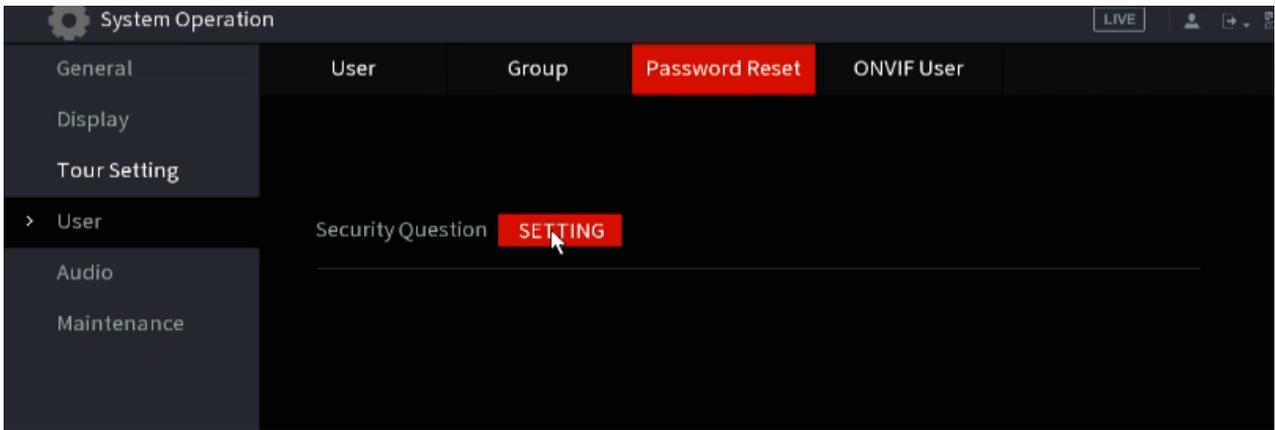
You can reset the password by answering the security questions that was set up during the device initialization

- If the password reset function is disabled or not set up, there are two options:
 - ◇ If you did not configure the security questions, you can only use the reset button on the mainboard to restore the Device to factory default.
 - ◇ Contact IC Realtime's customer support for a password reset request.

 Not all models are provided with a reset button.

5.1.3.1 Enabling Password Reset Function

Step 1 Select **Main Menu > Advanced Settings > System Operation > Account > Password Reset**. The **Password Reset** interface will be displayed.



Step 2 Click **Setting** under “Security Questions” to configure the security questions.

 The Password Reset function is enabled by default.

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

5.1.3.2 Resetting Password on Local Interface

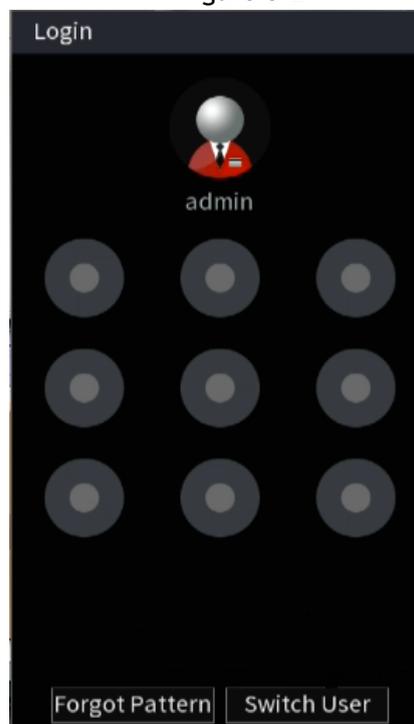
Step 1 Enter the login interface.

- If you have configured the unlock pattern, the unlock pattern login interface will be displayed. Click **Forgot Pattern**, and the password login interface will be displayed.
- If you did not configure unlock pattern, the password login interface will be displayed. Click  to display the password with plaintext.



To login with another user account, on the unlock pattern login interface, click **Switch User**; or on the password login interface, in the **User Name** list, select another user to login.

Figure 5-2



- Security questions

1) On the **Reset password** interface, in the **Reset Type** list, select **Security Questions**, and the Security Questions interface will be displayed.



If you did not configure the security questions before, in the **Reset Type** list, there will be no **Security Questions**.

2) In the **Answer** box, enter the correct answers.

Password Reset

Reset Mode: Security Question

Question 1: What is your favorite children's book?
Answer: []

Question 2: What was the first name of your first boss?
Answer: []

Question 3: What is the name of your favorite fruit?
Answer: []

Next Cancel

Step 5 Click **Next**.

The new password resetting interface will be displayed.

Password Reset

Reset the password of (admin)

New Password: []

Password must be 8 to 32 characters, including at least two of the following categories: numbers, uppercase letters, lowercase letters and special characters (Characters like ' " ; : & cannot be included in).

Confirm Password: []

OK Cancel

Step 6 In the **New Password** box, enter the new password and enter it again in the **Confirm Password** box.

Step 7 Click **Save**. The password resetting is will start.

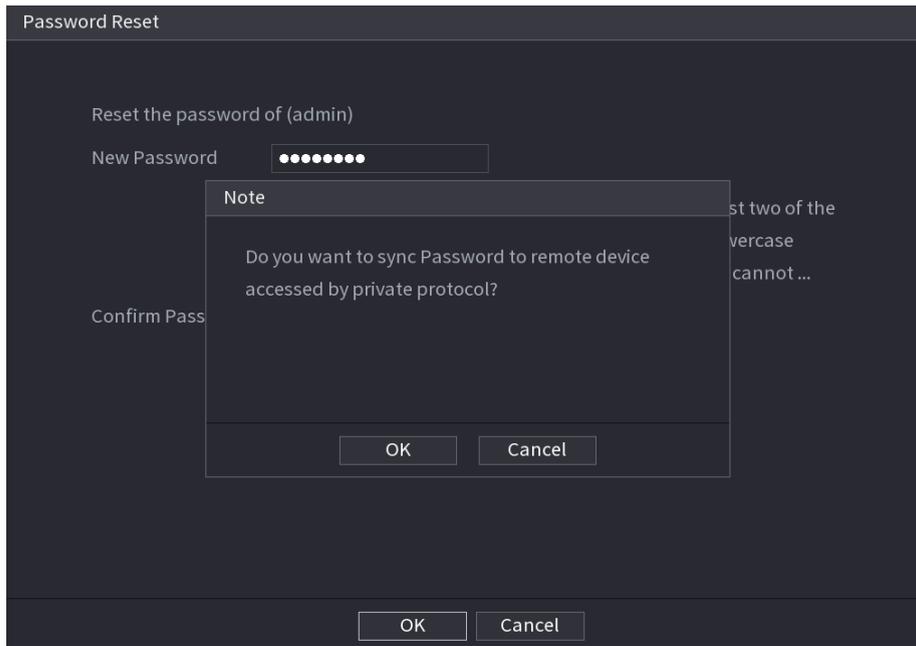
After the reset is completed, a pop-up message will be displayed.

Step 8 Click **OK**.

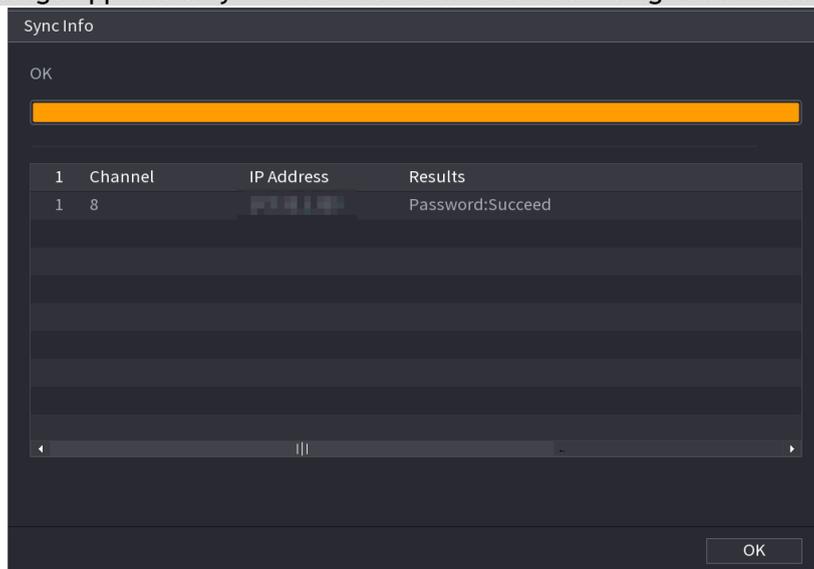
A pop-up message will be displayed asking if you want to sync the password with the IP cameras.

- Click **Cancel**, the resetting is finished.
- Click **OK**, the Sync Info interface will be displayed.

Figure 5-4



 This message appears only when there are IP channels being used instead of only analog channels.



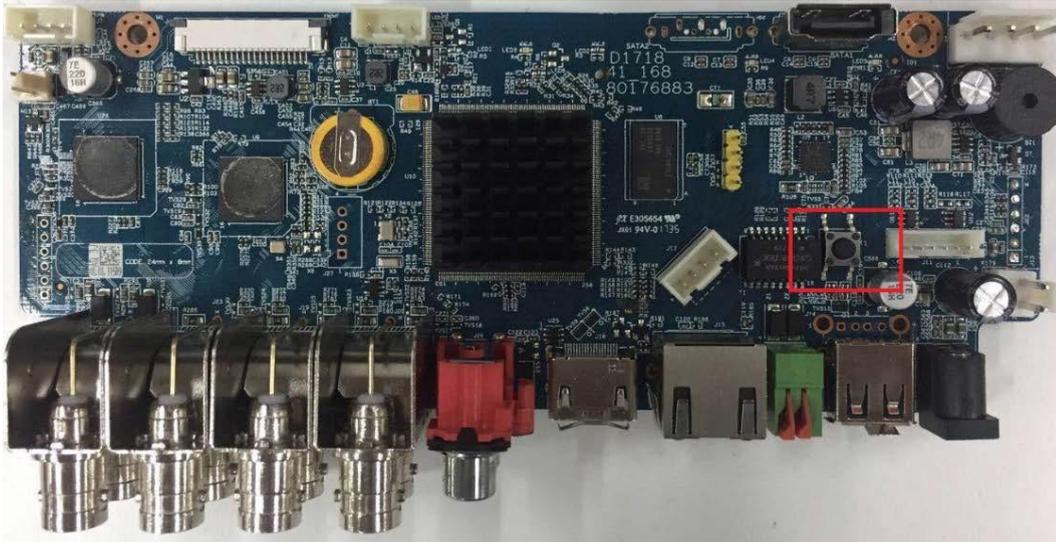
5.1.3.3 Using Reset Button on the Mainboard

You can use the reset button on the mainboard to reset the Device to the factory default if the HDVR is equipped with one.

 Not all models are provided with reset button.

Step 1 Disconnect the Device from power source, and then remove the cover panel. For details about removing the cover panel, see "2.2 Installing HDD."

Step 2 Find the reset button on the mainboard, and then press and hold the reset button for 5 seconds to 10 seconds. See the following figure for the location of the reset button.



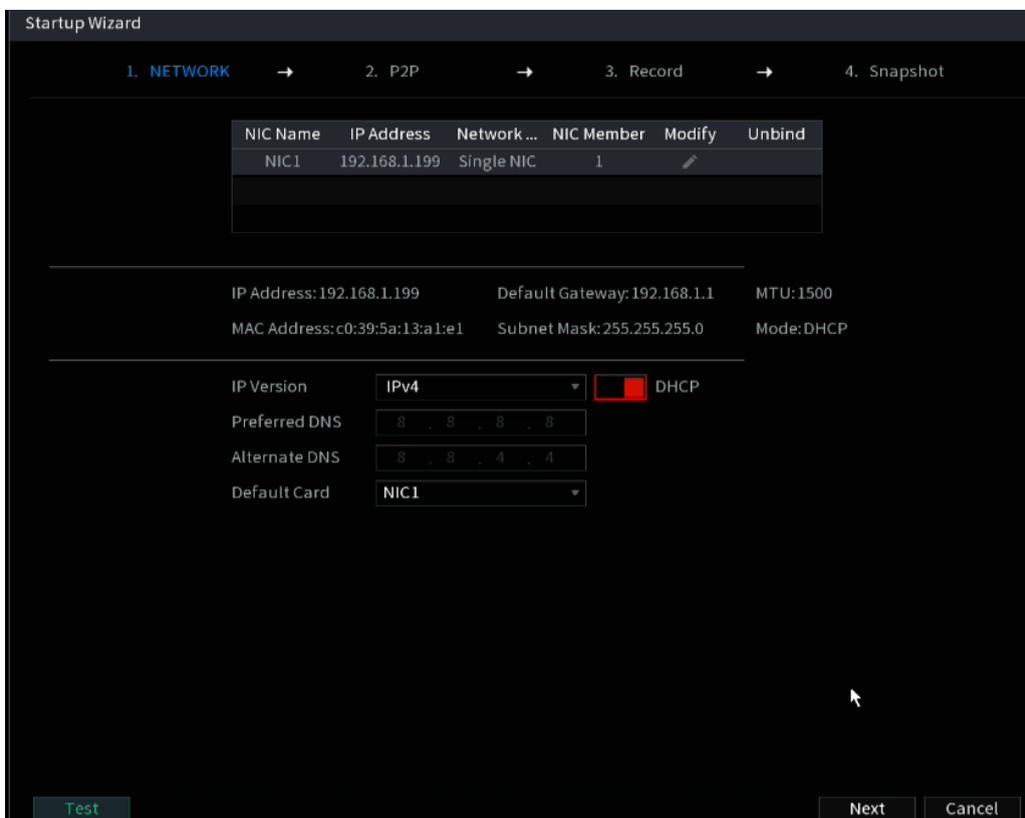
Step 3 Reboot the Device.

After the Device is rebooted, the settings have been restored to the factory default. You can start resetting the password.

5.1.4 Setting Up with the Startup Wizard

5.1.4.1 Entering Startup Wizard

The Startup Wizard will help to configure the basic settings to set up the HDVR. After you have initialized the Device, the **Startup Wizard** interface will be displayed.



-  If you select the **Auto-check for updates** check box, the system will notify you automatically when updates are available.

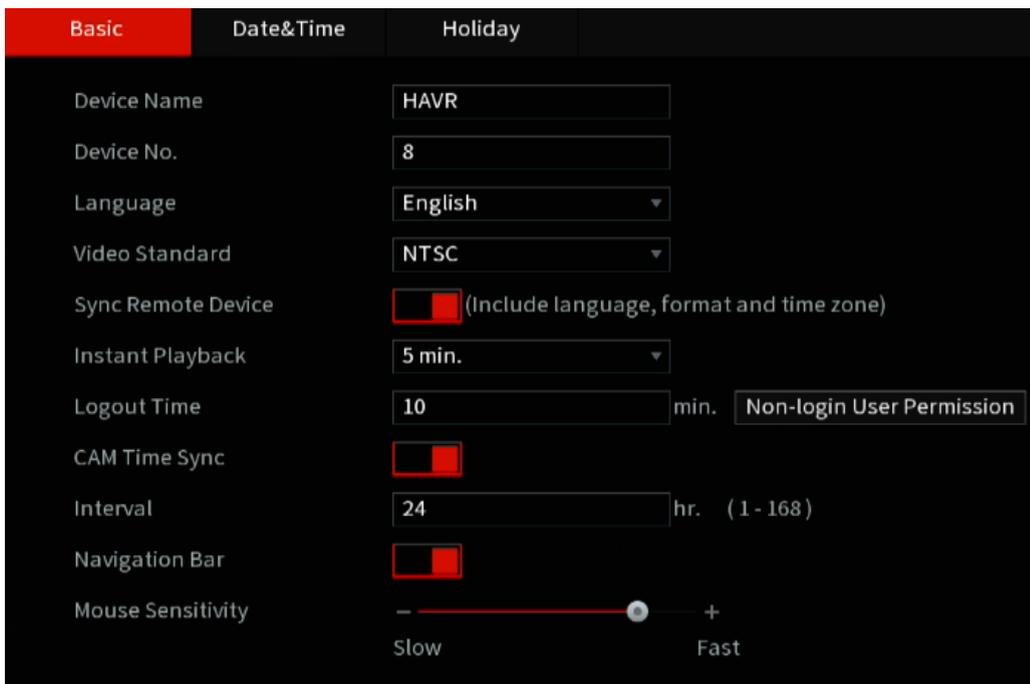
- After the auto-check function is enabled, to notify you to update timely, the system will collect information such as IP address, device name, firmware version, and device serial number. The collected information is only used to verify the legality of the Device and push upgrade notices.
- If you de-select the **Auto-check for updates** check box, the system will not perform automatic checks.

5.1.4.2 Configuring General Settings

Here, you can configure the general settings for the Device, such as Device name, language, and settings for instant playback.

You can also configure general settings by selecting **Main Menu > Advanced Settings > System Operation > General > Basic**.

Step 1 On the **Startup Wizard** interface, click **Next**.



The **Basic** interface will be displayed.

Step 2 Configure the basic settings parameters.

Parameter	Description
Device Name	In the Device Name box, enter the HDVR name.
Device No.	In the Device No. box, enter a number for the HDVR.
AI Mode	Select iMD , Face or IVS&iMD for AI function in 5.11.2 <ul style="list-style-type: none"> • When iMD is selected, only iMD is available. • When Face is selected, only face detection and face recognition are available. • When IVS&iMD is selected, only IVS and iMD are available. This parameter is supported on select models. iMD, face detection, face recognition and IVS cannot be enabled simultaneously on those models.
Language	In the Language list, select a language for the Device system.
Video Standard	In the Video Standard list, select PAL or NTSC according to your actual situation.
Instant Playback	In the Instant Playback box, enter the time length for playing back the recorded video. The value ranges from 5 to 60.

	On the live view control bar, click the instant playback button to play back the recorded video within the configured time.
Logout Time	In the Logout Time box, enter the standby time for the Device. The Device automatically logs out when it is not working for the configured time period. You need to log in to the Device again. The value ranges from 0 to 60. 0 indicates there is not standby time for the Device. Click Monitor Channel(s) when logout . Allows selecting the channels that you want to continue monitoring when an account is logged out.
Navigation Bar	Enable the navigation bar. The navigation bar will be displayed when you click on the live view screen.
Mouse Pointer Speed	Adjust the speed of double-click by moving the slider. The greater the value, the faster the double-clicking speed.

5.1.4.3 Configuring Date and Time Settings

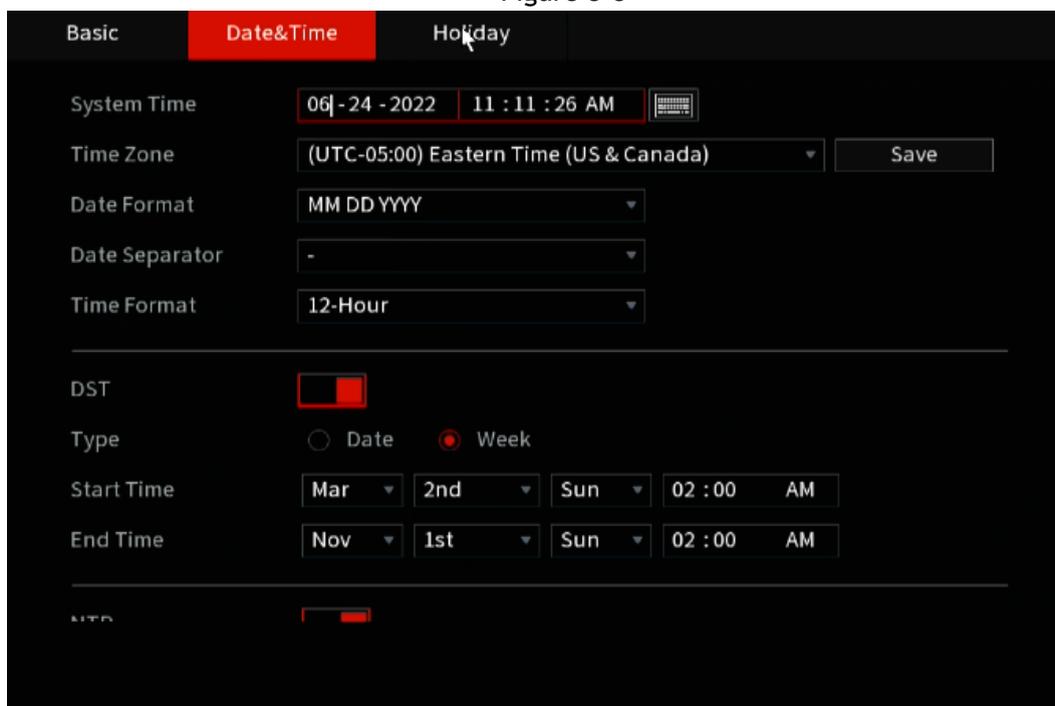
This section allows for configuring the system time, choosing the time zone, setting the daylight saving time, and enabling the NTP (Network Time Protocol) server.

You can also configure date and time settings by selecting **Main Menu > Advanced Settings > System Operation > General > Date & Time**.

Step 1 After configuring the general settings, click Next on the General interface.

The **Date & Time** interface will be displayed.

Figure 5-5



Step 2 Configure the settings for date and time parameters.

Parameter	Description
-----------	-------------

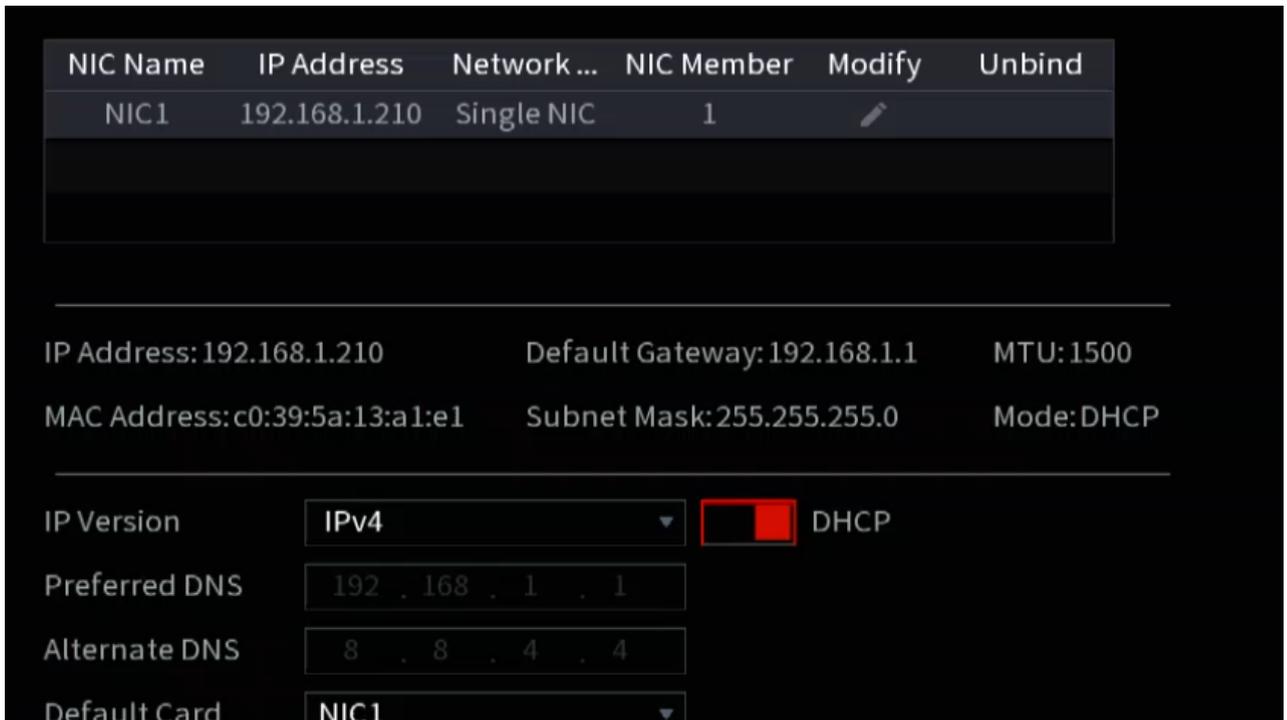
System Time	<p>In the System Time box, enter the time for the system. Click the time zone list, and you can select a time zone for the system, and the time adjusts automatically.</p>  <p>Do not change the system time randomly; otherwise, the recorded video cannot be searched. It is recommended to avoid the recording period or stop recording first before you change the system time.</p>
Time Zone	In the Time Zone list, select a time zone for the system.
Date Format	In the Date Format list, select a date format for the system.
Date Separator	In the Date Separator list, select a separator style for the date.
Time Format	In the Time Format list, select 12-HOUR or 24-HOUR for the time display style.
DST	Enable the Daylight Saving Time function. Click Week or click Date .
Start Time	Configure the start time and end time for the DST.
End Time	
NTP	<p>Enable the NTP function to sync the Device time with the NTP server.</p>  <p>If NTP is enabled, device time will be automatically synchronized with the server.</p>
Server Address	<p>In the Server Address box, enter the IP address or domain name of the corresponding NTP server.</p> <p>Click Manual Update, the Device starts syncing with the server immediately.</p>
Port	The system supports TCP protocol only and the default setting is 123.
Interval	In the Interval box, enter the amount of time you want the Device to sync with the NTP server. The value ranges from 0 to 65535.

5.1.4.4 Configuring Network Settings

This section allows for configuring the basic network settings such as net mode, IP version, and IP address of the Device.

You can also configure network settings by selecting **Main Menu > Basic Settings > NETWORK > TCP/IP**.

Step 1 After configuring the date and time settings, click Next on the Date & Time interface. The **NETWORK** interface will be displayed.



Step 2 Configure the settings for network parameters.

Parameter	Description
IP Version	In the IP Version list, you can select IPv4 or IPv6 . Both versions are supported for access.
MAC Address	Displays the MAC address of the Device.
DHCP	<p>Enable the DHCP function. The IP address, subnet mask and default gateway are not available for configuration once DHCP is enabled.</p> <ul style="list-style-type: none"> • If DHCP is effective, the obtained information will display in the IP Address box, Subnet Mask box and Default Gateway box. If not, all values show 0.0.0.0. • If you want manually configure the IP information, disable the DHCP function first. • If PPPoE connection is successful, the IP address, subnet mask, default gateway, and DHCP are not available for configuration.
IP Address	<p>Enter the IP address and configure the corresponding subnet mask and default gateway.</p> <p></p> <p>IP address and default gateway must be in the same network segment.</p>
Subnet Mask	
Default Gateway	
DNS DHCP	Enable the DHCP function to get the DNS address from router.

Parameter	Description
Preferred DNS	In the Preferred DNS box, enter the IP address of DNS.
Alternate DNS	In the Alternate DNS box, enter the IP address of alternate DNS.

MTU	<p>In the MTU box, enter a value for network card. The value ranges from 1280 byte through 1500 byte. The default is 1500.</p> <p>The suggested MTU values are as below.</p> <ul style="list-style-type: none"> • 1500: The biggest value of Ethernet information package. This value is typically selected if there is no PPPoE or VPN connection, and it is also the default value of some routers, network adapters and switches. • 1492: Optimized value for PPPoE. • 1468: Optimized value for DHCP. • 1450: Optimized value for VPN.
Test	Click Test to test if the entered IP address and gateway are interworking.

5.1.4.5 Configuring P2P Settings

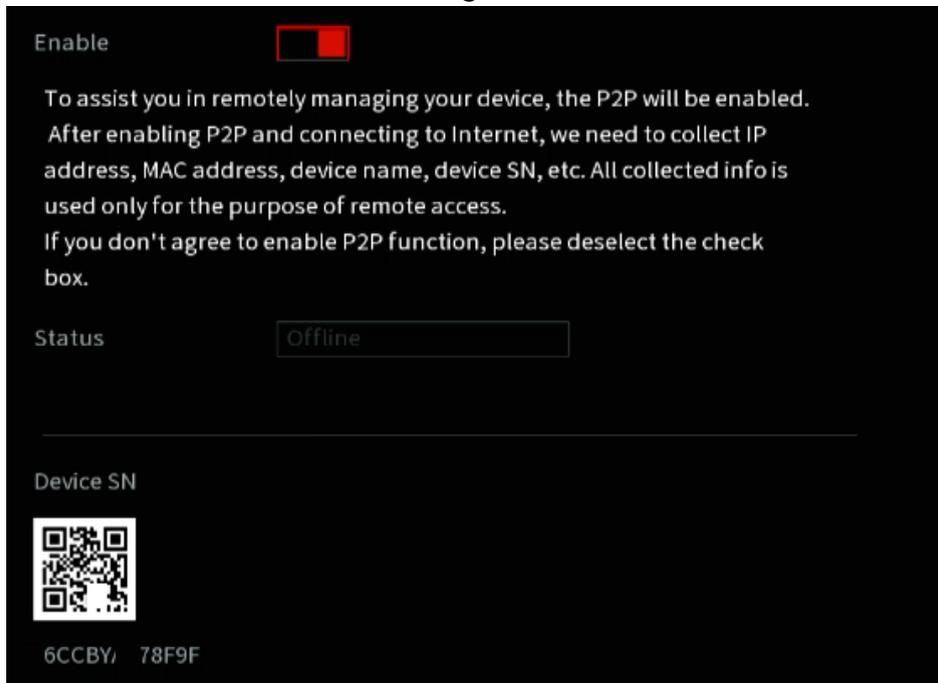
You can add the Device into your cell phone client or the platform to manage. You can also configure P2P function by selecting **Main Menu > Basic Settings > Network > P2P**.



Make sure the HDVR is connected into the Internet, and if yes, in the **Status** box of the P2P interface, it shows **Online**.

Step 1 After you have configured the network settings, on the **Network** interface, click **Next**. The **P2P** interface will be displayed.

Figure 5-6



Step 2 Enable the P2P function.



After the P2P function is enabled and connected to the Internet, the system will collect your information for remote access, and the information includes but not limited to email address, MAC address, and device serial number.

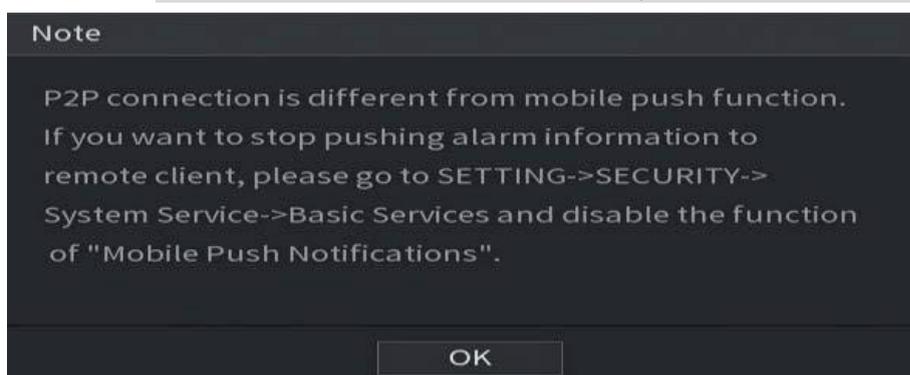
You can then start adding the device.

- Cell Phone Client (ICRSS Pro or IC View): Use your mobile phone to enter the App store. Search

for ICRSS Pro or IC View and download the desired app.

- Platform: Obtain the Device SN by scanning the QR code. Navigate to the P2P management platform and add the Device SN into the platform. Then you can access and manage the device in the WAN. For details, refer to the P2P operation manual.

-  You can also find the QR code for the HDVR by clicking on the  icon in the upper right side of the Main Menu.
- If selection of this function is disabled, the **Note** below will be displayed. Click OK.



Adding the HDVR into the Cell Phone Client

You can find these same steps in a video on our YouTube channel or on our support center.

YouTube Link: <https://www.youtube.com/c/ICRealtimeOfficial>

Help Center: <https://www.icrealtime.com/support>

Step 1 On your mobile device, go to the app store and download IC View or ICRSS Pro.

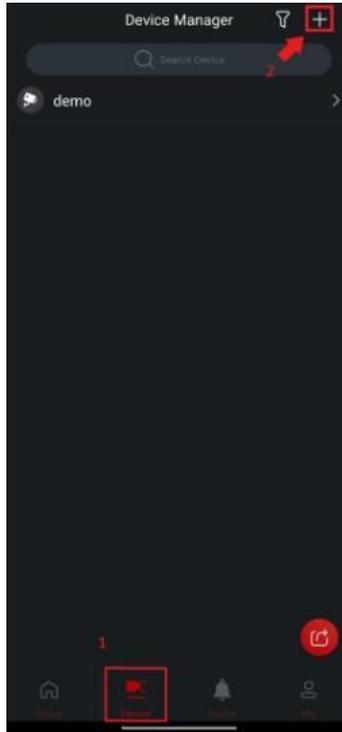
Step 2 On your cell phone, open the application and then tap the **Home** icon at the top left.

Step 3 The home menu will be displayed. Follow the steps below to add your unit.

Tap the **Device Manager** at the bottom of the screen.

The **Device Manager** interface will be displayed. See Figure 4-24.

Figure 4-24 Device manager



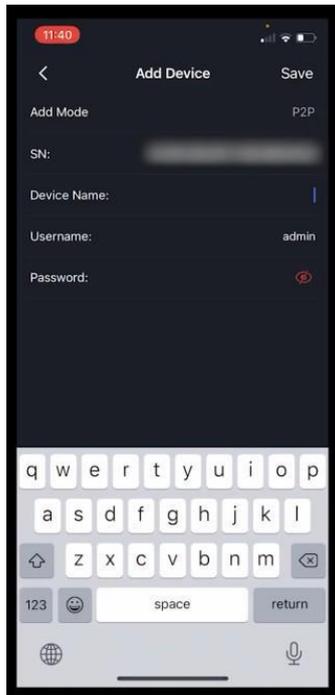
- 1) Tap (+) icon in the top right corner.
- 2) Tap **P2P/SN** from the drop-down list.
You will need to allow permissions to allow the phone app to use the phone camera. Use the camera to scan the QR Code.
- 3) Scan the QR code from your unit's interface or select **Manually Enter SN** which will allow you to manually type out the SN of the unit. See Figure 4-25.

Figure 4-25



- 1) Fill in Device Information
Scanning the QR Code will fill out the SN. Enter a name (anything) and then enter the correct username and password for the NVR. See Figure 4-26.

Figure 4-26



- 2) Tap **Start Live Preview** or **Save** at the bottom.
The Device is added and displayed on the live view interface of the cell phone.
See Figure 4-27.

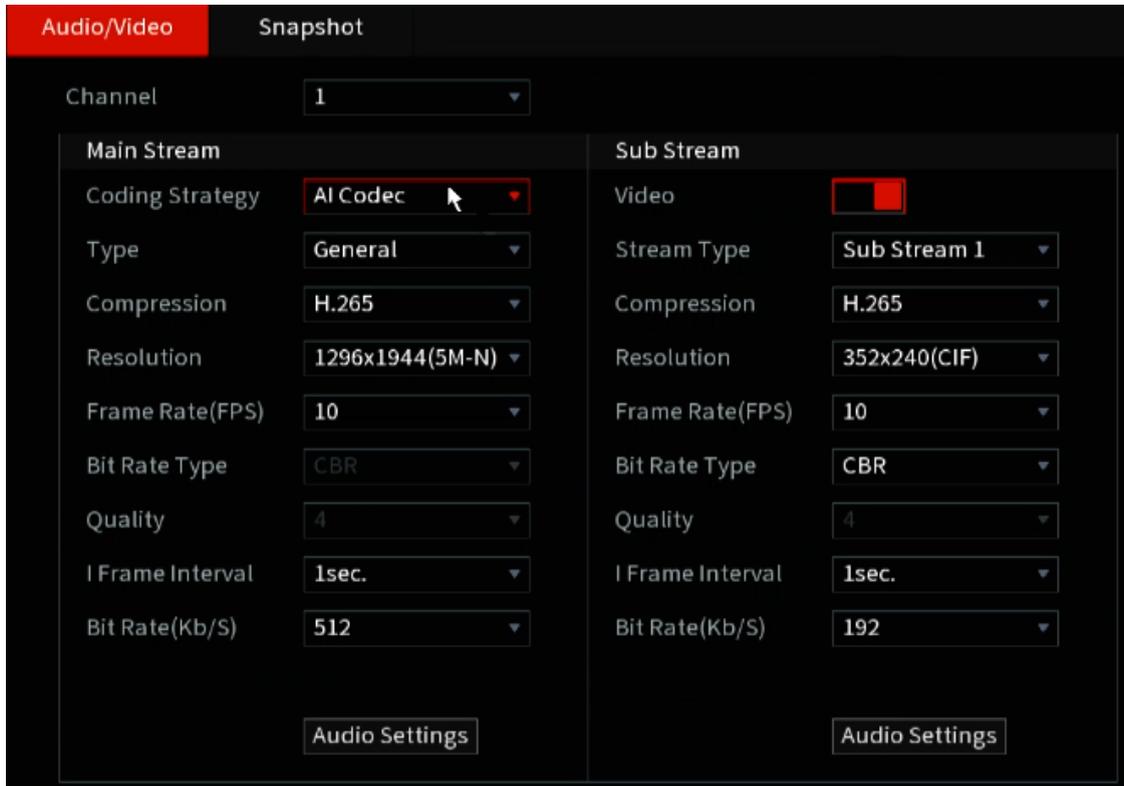
Figure 4-27



5.1.4.6 Configuring Encode Settings

This section allows for the configuration of the settings of main stream and sub stream for the Device.
You can also configure encode settings by selecting **Main Menu > Advanced Settings > CAMERA Configuration > Encode > Audio/Video**.

- Step 1 After you have configured the P2P settings, on the **Audio/Video** interface, click **Next**.
The **Encode** interface will be displayed.



Step 2 Configure the settings for the main/sub streams parameters.

Parameter	Description
Channel	In the Channel list, select the channel that you want to configure the settings for.
Smart Codec	Enable the smart codec function. This function can reduce the video bit stream for non-important recorded video to maximize the storage space.
Type	<ul style="list-style-type: none"> Main Stream: In the Type list, select General, MD (Motion Detect), or Alarm. Sub Stream: This setting is not configurable.
Compression	In the Compression list, select the encode mode. <ul style="list-style-type: none"> H.265: Main profile encoding. This setting is recommended. H.264H: High profile encoding. Low bit stream with high definition. H.264: Main profile encoding. H.264B: Baseline profile encoding. This setting requires a higher bit stream compared with other settings for the same definition.
Resolution	In the Resolution list, select the resolution for the video. The maximum video resolution may differ depending on your device model.
Frame Rate (FPS)	Configure the frames per second for the video. The higher the value is, the clearer and smoother the image will become. Frame rate changes along with the resolution. Generally, in PAL format, you can select the value from 1 through 25; in NTSC format, you can select the value from 1 through 30. However, the actual range of frame rate that you can select depends on the capability of the Device.

Bit Rate Type	In the Bit Rate Type list, select CBR (Constant Bit Rate) or VBR (Variable Bit Rate). If you select CBR , the image quality cannot be configured; if you select VBR , the image quality can be configured.
Quality	This function is available if you select VBR in the Bit Rate List . The greater the value, the better the image will become.
I Frame Interval	The interval between two reference frames.
Bit Rate (Kb/S)	In the Bit Rate list, select a value or enter a customized value to change the image quality. The greater the value, the better the image will become.
Video	Enable the function for sub stream.
Audio	Click More , the More interface will be displayed. <ul style="list-style-type: none"> Audio: This function is enabled by default for main stream. You need to manually enable it for sub stream 1. Once this function is enabled, the recorded video file is composite audio and video stream.
Audio Source	<ul style="list-style-type: none"> Audio Source: In the Audio Source list, you can select Local and HD-AVS. <ul style="list-style-type: none"> ◇ Local: The audio signal is input from the Audio In port. ◇ HD-AVS: The audio signal is input from HD-AVS camera.
Compression	<ul style="list-style-type: none"> Compression: In the Compression list, select a format that you need.

5.1.4.7 Configuring Snapshot Settings

This section allows for configuration of the basic snapshot settings such as quantity of snapshot each time, channel(s) to take snapshot, and image size and quality of snapshot.

You can also configure general settings by selecting **Main Menu > Advanced Settings > CAMERA Configuration > Encode > Snapshot**. For more information about snapshot settings, see "5.8 Configuring Snapshot Settings."

Step 1 After you have configured the encode settings, on the **Encode** interface, click **Next**.

The **Snapshot** interface will be displayed.

The screenshot shows the 'Snapshot' configuration interface. At the top, there are two tabs: 'Audio/Video' and 'Snapshot', with 'Snapshot' being the active tab. Below the tabs, there are several configuration options, each with a dropdown menu:

- Channel:** 1
- Type:** Scheduled
- Size:** 352x240(CIF)
- Quality:** 4
- Interval:** 1 sec.

Below these options, there is a horizontal line. Underneath the line, there is a 'Manual Snapshot' option with a dropdown menu set to '1' and the text '/Time' to its right.

Step 2 Configure the settings for the snapshot parameters.

Parameter	Description
Manual Snapshot	In the Manual Snapshot list, select how many snapshots you want to take each time.
Channel	In the Channel list, select the channel that you want to configure the settings for.
Type	In the Mode list, you can select Human Face , Event , or General as the event type for which you want to take a snapshot. <ul style="list-style-type: none"> • Scheduled: The snapshot is taken during the scheduled period. • Event: The snapshot is taken when there is an alarm event occurs, such as motion detection event, video loss, and local alarms. • Face Snapshot: The snapshot is taken when the face is detected. The face detection function is support only with Channel 1.
Size	In the Size list, select a value for the image. The greater the value, the better the image will become.
Quality	Configure the image quality by 6 levels. The higher the level is, the better the image will become.
Interval	Configure or customize the snapshot frequency.

5.1.4.8 Configuring Basic Storage Settings

This section allows for the configuration of the settings for the situations when the HDD is full, file length and time length of recorded video, and the settings if to auto-delete the old files.

You can also configure basic storage settings by selecting **Main Menu > Advanced Settings > STORAGE > Basic**.

Step 1 After you have configured the encode settings, on the **Snapshot** interface, click **Next**.

The **Basic** interface will be displayed.



Step 2 Configure the basic storage settings parameters.

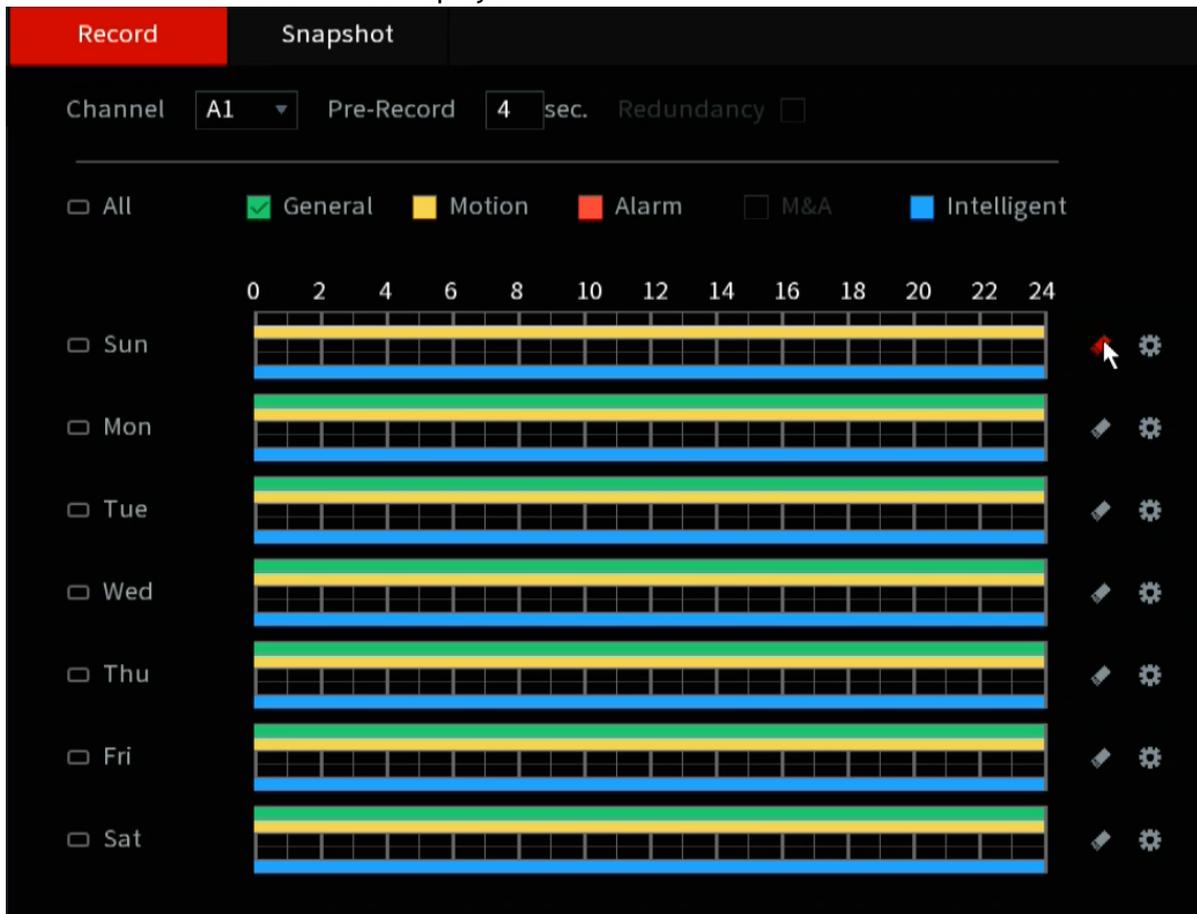
Parameter	Description
Disk Full	Configure the action to take when all the read/write disks are full, and there are no more free disks. <ul style="list-style-type: none"> • Select Stop to stop recording • Select Overwrite to overwrite the recorded video files always from the earliest time.  Locked recorded video files will not be overwritten.
Create Video Files	Configure the time length and file length for each recorded video.
Delete Expired Files	Configure whether to delete the old files and if yes, in the Delete Expired Files list, select Custom to configure the time length for how long you want to keep the old files.

5.1.4.9 Configuring Recorded Video Storage Schedule

This section allows for the configuration of the schedule for the recorded video such as channels to record, alarm settings, and the armed period.

You can also configure recorded video storage settings by selecting **Main Menu > Advanced Settings > STORAGE > Schedule > Record**.

Step 1 After you have configured the basic storage settings, on the **Basic** interface, click **Next**. The **Record** interface will be displayed.



Step 2 Configure the record settings parameters.

Parameter	Description
Channel	In the Channel list, select a channel to configure.
Pre-record	In the Pre-record list, enter the amount of time that you want to start the recording in advance.

Redundancy	<p>If there are several HDDs installed on the Device, you can set one of the HDDs as the redundant HDD to save the recorded files into different HDDs. In case one of the HDDs is damaged, you can find the backup in the other HDD.</p> <ul style="list-style-type: none"> • Select Main Menu > Advanced Settings > STORAGE > Disk Manager, and then set a HDD as redundant HDD. • Select Main Menu > Advanced Settings > STORAGE > Schedule > Record, and then select the Redundancy check box. <p>◇ If the selected channel is not recording, the redundancy function takes effect next time you record no matter whether you select the check box or not.</p> <p>◇ If the selected channel is recording, the current recorded files will be saved, and then start recording according to the new schedule.</p> <p></p> <ul style="list-style-type: none"> • Not all models support this function. • The redundant HDD only backs up recorded videos but not snapshots.
Event type	Select the check box of the event type which includes General , Motion (motion detect, video loss, tampering, diagnosis), Alarm (IoT alarms, local alarms, alarms from alarm box, IPC external alarms, IPC Offline alarms), M&A , Intelligent (IVS events, face detection), and POS .
Period	<p>Define a period during which the configured recording setting is active.</p> <p></p> <p>The system only activates the alarm in the defined period.</p>
Copy	Click Copy to to copy the settings to other channels.

Step 3 Define the video recording period by drawing or editing. By default, it is active all the time.

- Define the period by drawing.

1) Select the check box of event type.



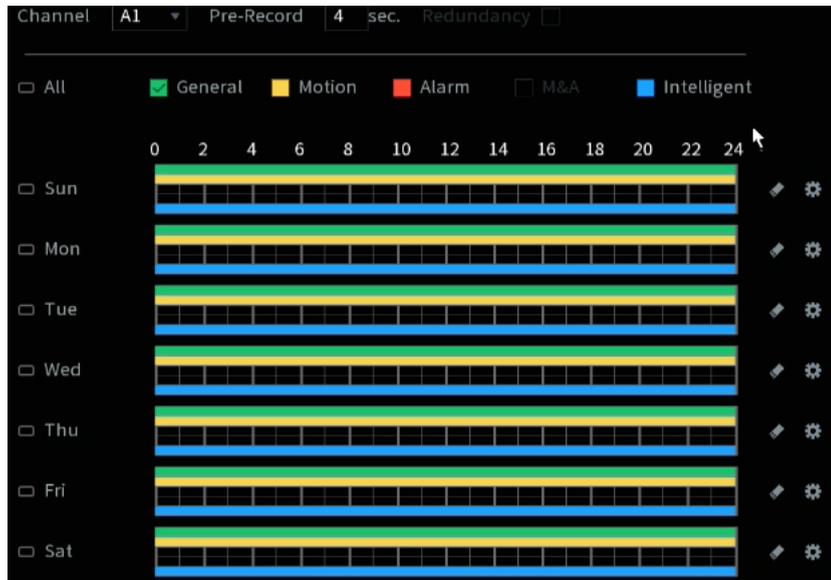
2) Define a period. The system supports maximum six periods.

- ◇ Define for the whole week: Click  next to **All**, all the icon switches to , you can define the period for all the days simultaneously.
- ◇ Define for several days of a week: Click  before each day one by one, the icon switches to . You can define the period for the selected days simultaneously.

- 3) On the timeline, drag to define a period. The Device starts recording the selected event type in
- 4) the defined period.

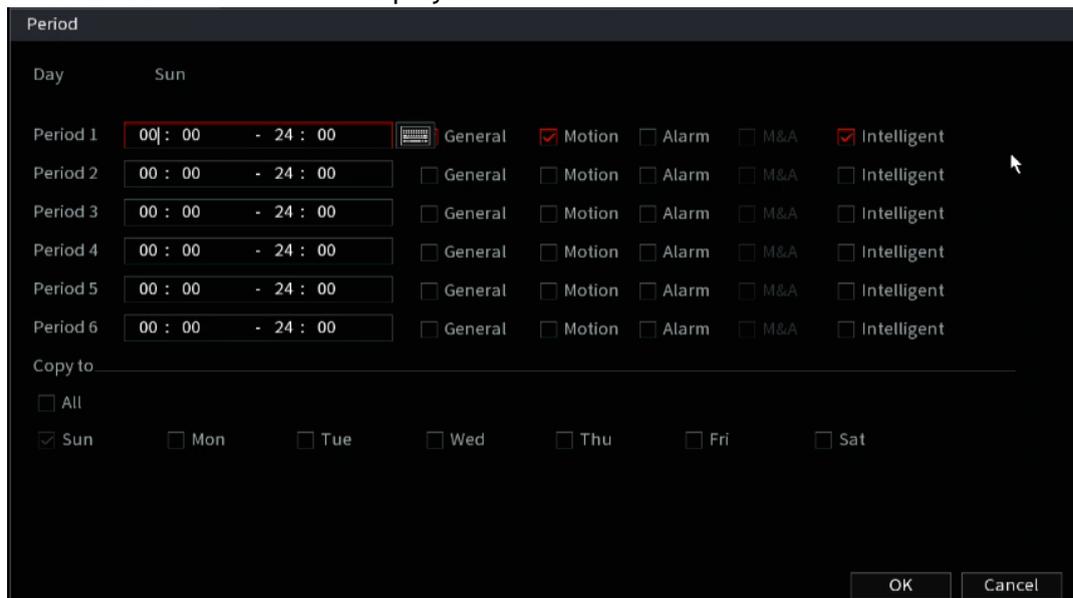
The color bar indicates the event type that is active in a defined period:





- Recording priority in case of event types are overlapped: **M&A > Alarm > Intelligent > Motion > General.**
 - When selecting MD&Alarm, the MD and Alarm check boxes will be cleared respectively.
 - Define the period by editing. Take Sunday as an example.
- 5) Click .

The **Period** interface will be displayed.



- 6) Enter the time frame for the period and select the event check box.
- ◇ There are six periods that are able to be set for each day.
 - ◇ Under **Copy to**, select **All** to apply the settings to all the days of a week, or select a specific day(s) that you want to apply the settings to.
- 7) Click **OK** to save the settings.

Step 4 Click **OK** to complete the settings.

-  Click **Copy** to copy the settings to other channels.
- After configuring the recording schedule settings, you need to perform the following operations to start recording according to the defined schedule:
 - ◇ Enable the alarm event and configure the settings for the recording channel. For details, see "5.10 Alarm Events Settings."

◇ You need to enable the recording function, see "5.9.1 Enabling Record Control."

5.1.4.10 Configuring Snapshot Storage Schedule

This section allows for the configuration of the storage schedule for the snapshot such as channels to take a snapshot, alarm settings, and the armed period.

You can also configure snapshot storage settings by selecting **Main Menu > Basic Settings> Schedule > Snapshot**.

Step 1 After you have configured the video recording settings, on the **Record** interface, click **Next**.

The **Snapshot** interface will be displayed.

Figure 5-9

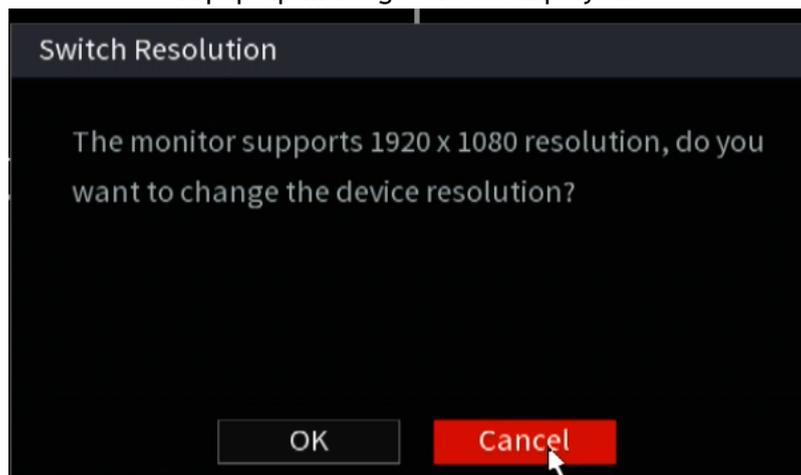


Step 2 Configure the snapshot settings parameters.

Parameter	Description
Channel	In the Channel list, select a channel to take a snapshot.
Event type	Select the check box of the event type which includes General , Motion , Alarm , M&A , Intelligent , and POS .
Period	Define a period during which the configured snapshot setting is active.
Copy	Click Copy to to copy the settings to other channels.

Step 3 Click **OK**.

A pop-up message will be displayed.



Step 4 Click **OK**.

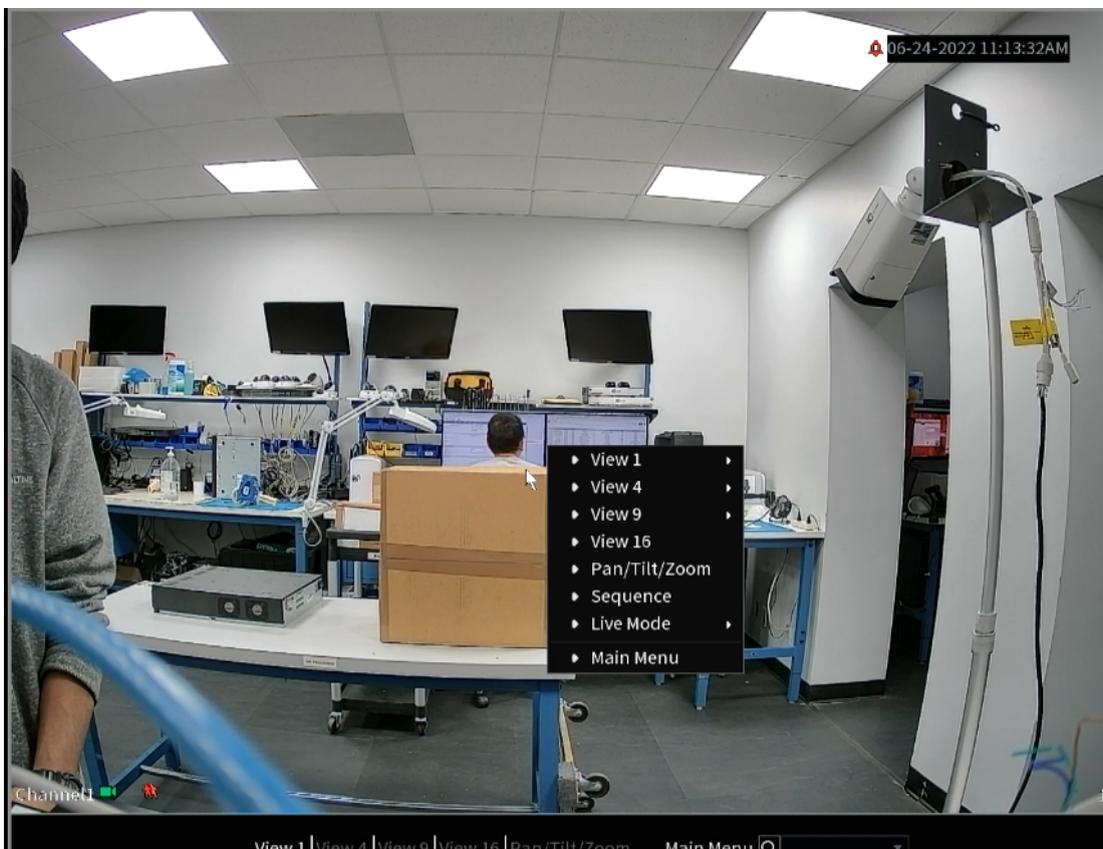
The live view screen will be displayed. The setting up with startup wizard is completed. You can start using the Device.

Step 5 (Optional) After the setting with startup wizard is completed, if the connected HDMI display resolution is inconsistent with the default resolution (1280*1024), a dialog box will pop up. Then choose to switch the resolution or not.

5.2 Live View

After you logged in to the Device, the live view will be displayed. See the image below. The number of channels displayed depends on your model.

To enter the live view screen from other interfaces, click  on the Main Menu.



5.2.1 Live View Screen

You can view the live video from the connected cameras through each channel on the screen.

- By default, the system time, channel name and channel number are displayed on each channel window. This setting can be configured by selecting **Main Menu > Advanced Settings > CAMERA Settings > Video Stream Overlay > Overlay**.
- The figure in the bottom right corner represents the channel number. If the channel position is changed or the channel name is modified, you can recognize the channel number by this figure and then perform the operations such as record query and playback.

For the icons displayed on each channel, see the image below.

Icon	Function
	Indicates recording status. This icon displays when the video is being recorded.
	This icon displays when the motion detection occurs in the scene.
	This icon displays when the video loss is detected.
	This icon displays when the channel monitoring is locked.

 TIPS

To switch the position of two channels, point to one of the two channels, and then click and drag the window to the another channel.

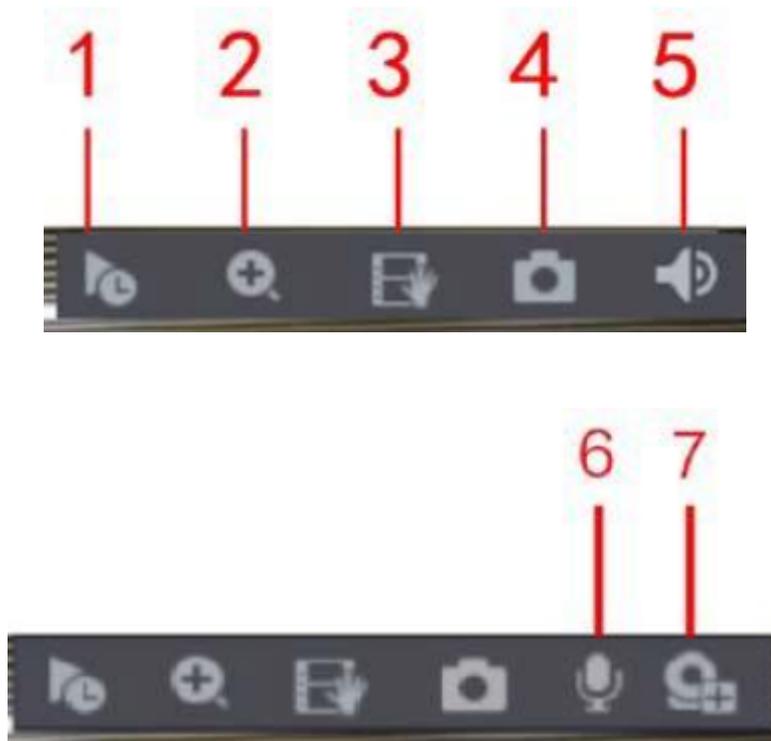
5.2.2 Live View Control bar

The live view control bar provides you access to perform the operations such as playback, zoom, real-time backup, manual snapshot, voice talk, adding remote devices, and stream switch.

When you move the pointer to the top middle position of a channel window, the live view control bar will be displayed. see the image below for an analog channel and Figure 5-10 for a digital channel.



If there is no operation for six seconds after the control bar is displayed, the control bar will hide automatically.



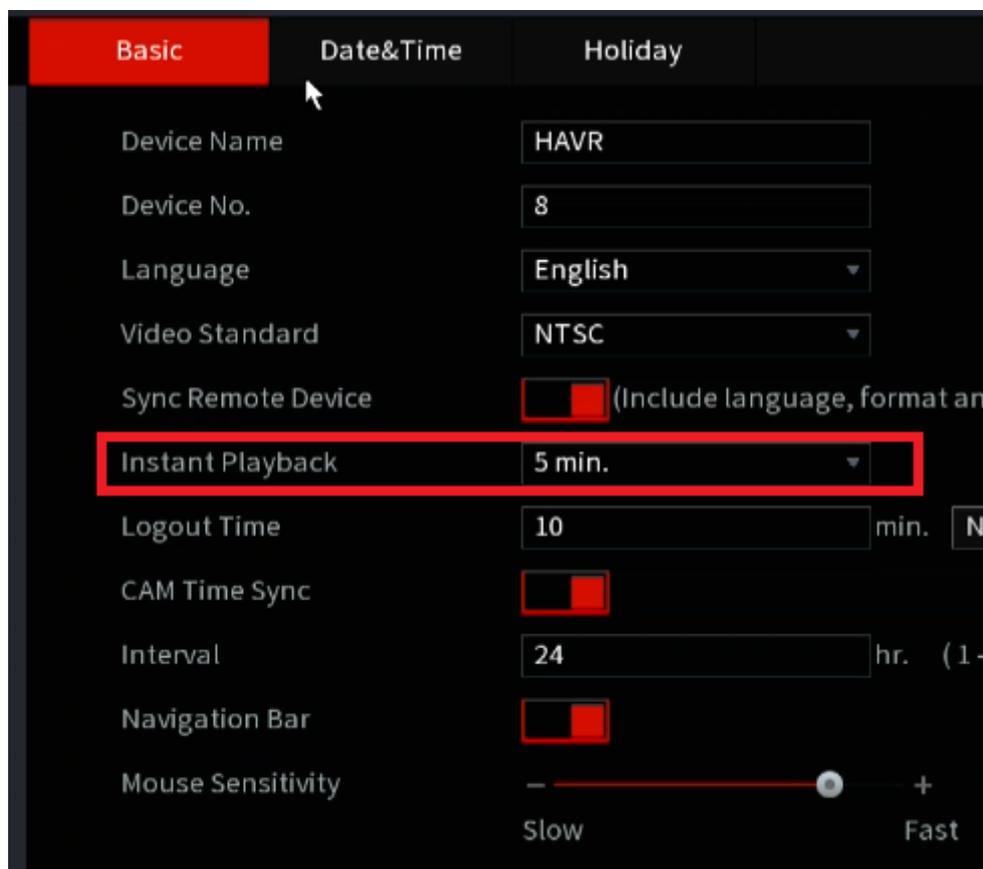
No.	Function	No.	Function	No.	Function
1	Instant Playback	4	Manual Snapshot	7	Camera Registration
2	Digital Zoom	5	Mute	/	/
3	Instant Record	6	Audio Talk	/	/

5.2.2.2 Instant Playback

The Instant Playback function allows for a quick play back the previous five to sixty minutes of recorded video on a selected channel.

By clicking , the instant playback interface will be displayed. The instant playback has the following features:

- Move the slider to choose the time you want to start playing.
- Play, pause and close playback.
- The information such as channel name and recording status icon are hidden during instant playback and will not display until exited.
- During playback, screen split layout switch is not allowed.
- To change the instant playback time, select **Main Menu > Advanced Settings > SYSTEM > General > Basic**, and in the **Instant Play** box, enter the desired playback time.



5.2.2.3 Digital Zoom

The Digital Zoom function allows you to enlarge a specific area of the image to view the details by either of the following two ways:

- Click , the icon switches to . Hold down the left mouse button to select the area you want to enlarge. The area is enlarged after the left mouse button is released.
- Point to the center that you want to enlarge, rotate the wheel button to enlarge the area.
-  For some models, when the image is enlarged in the first way described previously, the selected area is zoomed proportionally according to the window.
- When the image is in the enlarged status, you can drag the image toward any direction to view the

other enlarged areas.

- Right-click on the enlarged image to return the original status.

5.2.2.4 Instant Record

Instant Record allows you to record the video of any channel and save the video clip into a USB storage device.

By clicking , the recording is started. To stop recording, click this icon again. The clip is automatically saved into the connected USB storage device.

5.2.2.5 Manual Snapshot

You can take one to five snapshots of the video and save into a USB storage device.

By clicking , you can take snapshots. The snapshots are automatically saved into the connected USB storage device. You can view the snapshots on your PC.



To change the quantity of snapshots, select **Main Menu > Advanced Settings > CAMERA Configuration > ENCODE > Snapshot**, in the **Manual Snap** list, select the snapshot quantity.

5.2.2.6 Mute (Analog channel only)

You can mute the video sound by clicking . This function is supported in single-channel view.

5.2.2.7 White Light (Supported only on cameras with white light function)

Click  to manually control the camera to turn on the white light function.

5.2.2.8 Siren (Supported only on cameras with siren function)

Click  to manually control the camera to generate an alarm sound.

5.2.2.9 Two-way Talk (Digital channel only)

You can enable the voice interactions between the HDVR and the remote device (IP cameras). This function is supported only when the remotely connected IPC device supports bidirectional (2-way) talk.

- Click , the icon switches to , the bidirectional talk of the remote device is turned on. The bidirectional talk of other digital channels is disabled.
- Click  to cancel the bidirectional talk. The bidirectional talk of other digital channels is resumed.

5.2.2.10 Adding Camera (IP channels only)

You can view the information, add or delete remote devices such as IP cameras to the HDVR.

5.2.3 Navigation Bar

The Navigation Bar allows for quick access to perform operations through the function icons. For example, you can access Main Menu and switch window split mode.



The navigation bar is disabled by default. It does not appear in the live view screen until it is enabled. To enable it, select **Main Menu > Advanced Settings > SYSTEM > General > Basic**, enable the Navigation Bar, and then click **Apply**.



Icon	Function
	Opens the Main Menu .
	Expand or condense the navigation bar.
	Select view layout.
	Go to the previous screen.
	Go to the next screen.
	Enables the tour function. The icon  switches to  .
	Opens the PTZ control panel.
	Opens the Image interface.  This function is supported only in a single-channel layout.
	Opens the record search interface. For detail, see "5.9 Playing Back Video."
	Opens the Alarm Status interface to view the device alarm status. For details, see "5.21.3 Viewing Alarm Status Information."
	Opens the CHANNEL INFO interface to display the information of each channel.
	Open the Camera List interface. For details, see "5.6.1 Adding Remote Devices."
	Open the Network interface. For details, see "5.15.1 Configuring Network Settings."
	Open the Disk Manager interface. For details see "5.18.3 Configuring Disk Manager."



Open the **USB Management** interface. For details about USB operations, see "5.14.2 Backing up Files", "5.21.2 Viewing Log Information", "5.20.4 Exporting and Importing System Settings", "5.20.6 Updating the Device."

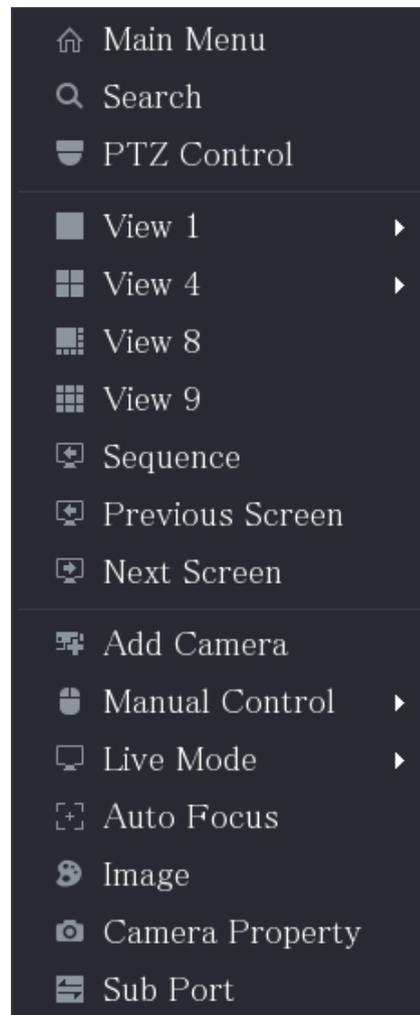
5.2.4 Shortcut Menu

You can quickly access some function interfaces such as the main menu, record search, PTZ setting, color setting and select the view split mode.

Right-click on the live view screen, the shortcut menu will be displayed.



After accessing any interface through shortcut menu, you can return to the previous screen by right-clicking on the current screen.



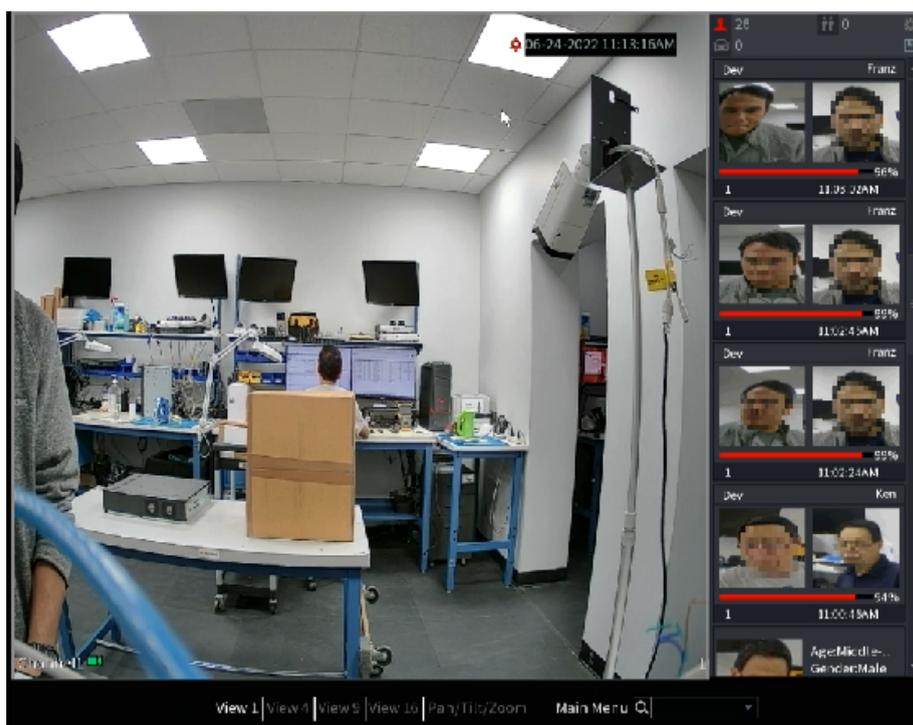
Function	Description
Main Menu	Open Main Menu interface.
Search	Open the PLAYBACK interface where you can search and play back record files.
PTZ	Open the PTZ interface.
View Layout	Configure the live multi-channel layout.
Previous Screen	Click Previous Screen to go to the previous screen. For example, if

Next Screen	you are using 4-split mode, the first screen is displaying the channel 1-4, click Next screen , you can view channel 5-8.
Add Camera	Open the Camera List interface.  This parameter displays on the right-click menu only after setting at least one channel to IP type in Main Menu > Advanced Settings > CAMERA Configuration > Channel Type .
Manual Control	<ul style="list-style-type: none"> Select Record Mode, you can configure the recording mode as Auto or Manual, or stop the recording. You can also enable or disable the snapshot function Select Alarm Mode, you can configure alarm output settings.
Live Mode	<ul style="list-style-type: none"> Select General, the layout of the live view screen is as default. Select Face, the detected face snapshots are displayed in the bottom of the live view screen.
Auto Focus	Point to the channel window and right-click on it to open the shortcut menu, and then click Auto Focus .  Not all cameras support this function.
Image	Open the Image interface where you can adjust the video image color.
Camera Property	Click to modify the camera properties.
Sub Port	Click to switch to extra screen control.

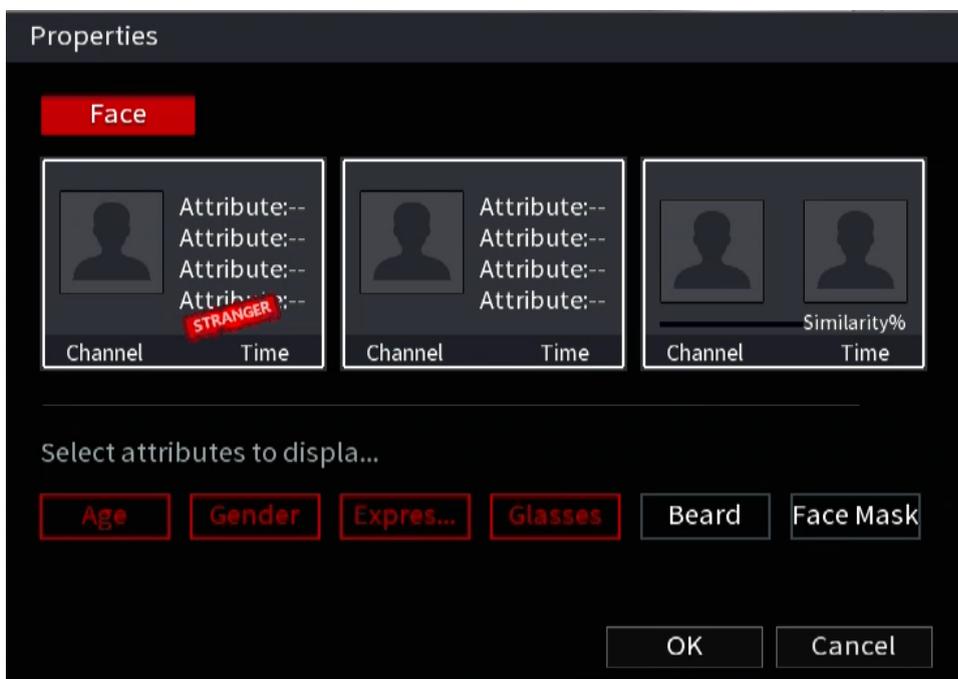
5.2.5 AI Preview Mode

AI Enabled HDVRs feature an AI mode that allows you to view the AI Rules such as detected faces, snapshots and comparison results of detected faces and the faces in the library, and play back the recorded event.

To display the AI preview mode, the face detection function must be enabled. For details, see "5.11.1.1 Face Detection." Right-click on the live view screen to display the shortcut menu, and then select **Live Mode > AI Mode**, the AI preview mode interface will be displayed.



-  15558: Indicates the quantity of detected faces from midnight to 11:59pm.
-  2943: Indicates the quantity of detected humans from midnight to 11:59pm.
-  0: Indicates the quantity of detected motor vehicles from midnight to 11:59pm..
-  14: Indicates the quantity of detected non-motor vehicles from midnight to 11:59pm.
- : Click this icon and then select the face attributes that you want to display on the AI preview mode. Maximum four attributes are supported to display.
- : Click this icon to export counting report in .csv format. The report information includes date, starting time, ending time, and the number of human, vehicle and face. The title of report is named as "device name_ XVR_AI_Statistics_starting time_ending time.csv".



5.2.6 Channel Sequence

The Channel Sequence feature allows you to customize the channel sequence displayed on the live interface.



The live view interface displays the default channel sequence after restoring factory defaults.

Step 1 Right-click on the live view interface and select **Sequence**.

The **Sequence** interface will be displayed.



- The system displays the maximum number of window splits supported by the HDVR after **selecting Sequence**.
- The Sequence interface displays only the channel name and channel number of added remote devices.

Figure 5-11 Sequence

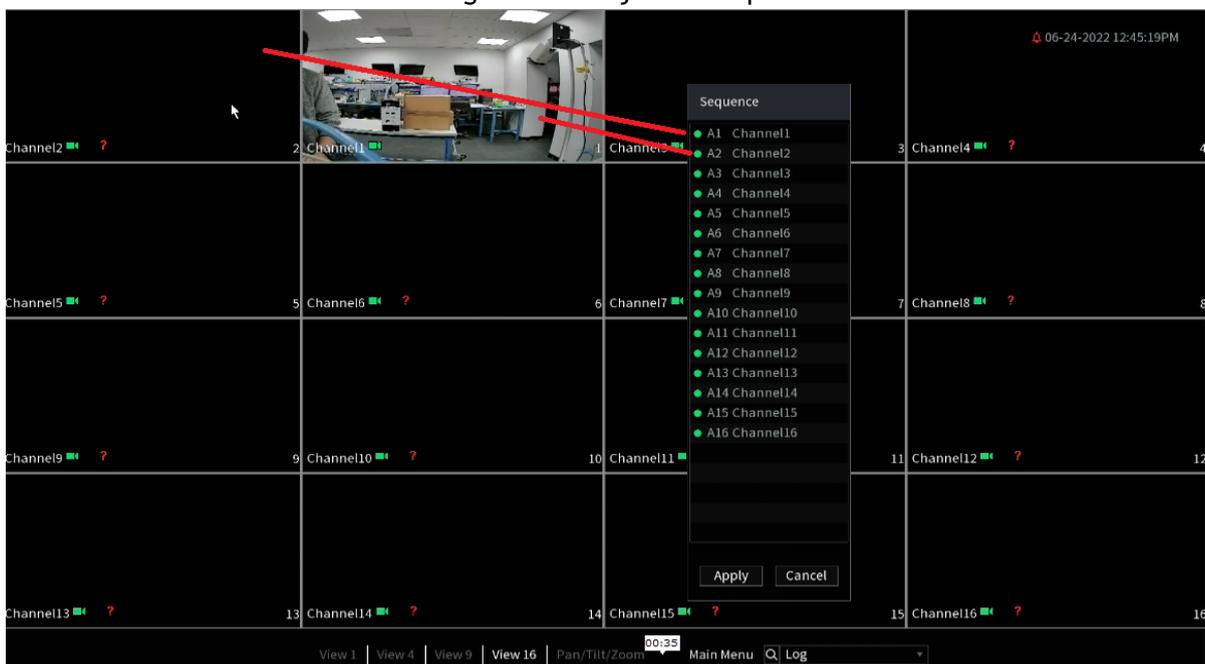


Step 2 Adjust the channel sequence.

- Drag a channel to the target window split.
- Drag a window split to another to change the sequence.

You can view the channel sequence according to the channel number on the lower-right corner of the window split.

Figure 5-12 Adjusted Sequence



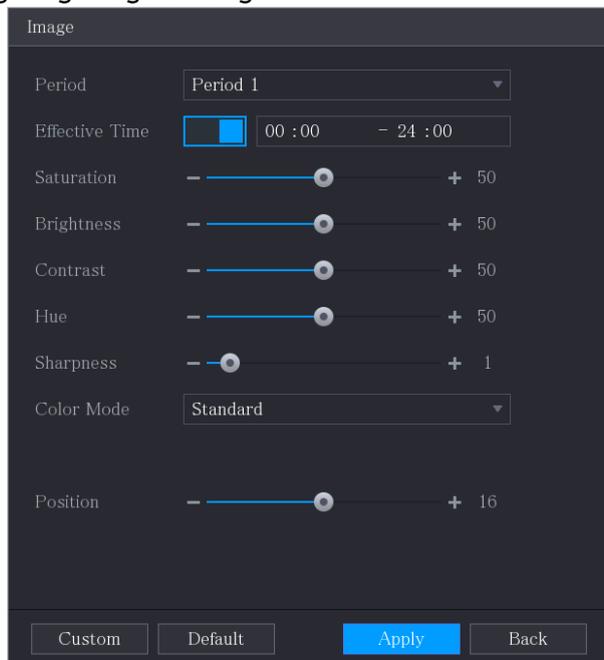
5.2.7 Color Setting

You can adjust the video image color effect such as sharpness, brightness, and contrast. The parameters are different according to the connected camera type. Take an analog channel as an example.

 Parameters displayed on the interface vary from different cameras, the actual interface shall prevail.

In the live view screen, right-click on the analog channel to see the shortcut menu, and then select **Image**, then the **Image** interface will be displayed.

For details, see "5.5.1 Configuring Image Settings."



Parameter	Description
Period	Divides 24 hours into two periods and configure the corresponding color settings.
Effective Time	Enable the function and then set the effective time for each period.
Sharpness	Adjust the sharpness of the image edge. The greater the value, the more obvious the image edge, and the noise is also greater. The value ranges from 1 to 15. The default value is 1.
Hue	Adjust the hue of the image. The value ranges from 0 to 100. The default value is 50.
Brightness	Adjust the image brightness. The value ranges from 0 to 100. The default value is 50. The greater the value, the brighter the image will become. You can adjust this value when the image as a whole looks dark or bright. However, the image is likely to become dim if the value is too great. The recommended range is between 40 and 60.

Contrast	<p>Adjust the image contrast. The greater the value, the more obvious the contrast between the light area and dark area will become. You can adjust this value when the contrast is not obvious. However, if the value is too big, the dark area is likely to become darker and the light area over-exposed. If the value is too small, the image is likely to become dim.</p> <p>The value ranges from 0 to 100. The default value is 50. The recommended range is between 40 and 60.</p>
Saturation	<p>Adjust the color shades. The greater the value, the lighter the color will become. This value does not influence the general image lightness.</p> <p>The value ranges from 0 to 100. The default value is 50. The recommended range is between 40 and 60.</p>
Color Mode	<p>In the Color Mode list, you can select Standard, Soft, Bright, Vivid, Bank, Customized 1, Customized 2, Customized 3, and Customized 4. The sharpness, hue, brightness, contrast and saturation will adjust automatically according to the selected color mode.</p>
EQ	<p>Enhance the image effect. Adjust the effect value.</p> <ul style="list-style-type: none"> Click  , image is adjusted to the optimized effect automatically. Click  , the current effect setting will be locked. <p> Only HD analog channel supports this function.</p>

Parameter	Description
Position	<p>Adjust the display position of the image in the channel window. The value indicates pixel. The default value is 16.</p> <p> This function is only supported by analog channel.</p>
Custom	<p>You can customize four color modes.</p> <ol style="list-style-type: none"> Click Custom. The Custom Color interface will be displayed. In the Color Mode list, select Custom 1, for example. Then configure the settings for sharpness, hue, brightness, contrast, and saturation. If you select All, the configuration will apply to all four customized color modes. Click OK. On the Image interface, in the Color Mode list, you can select the customized color mode.

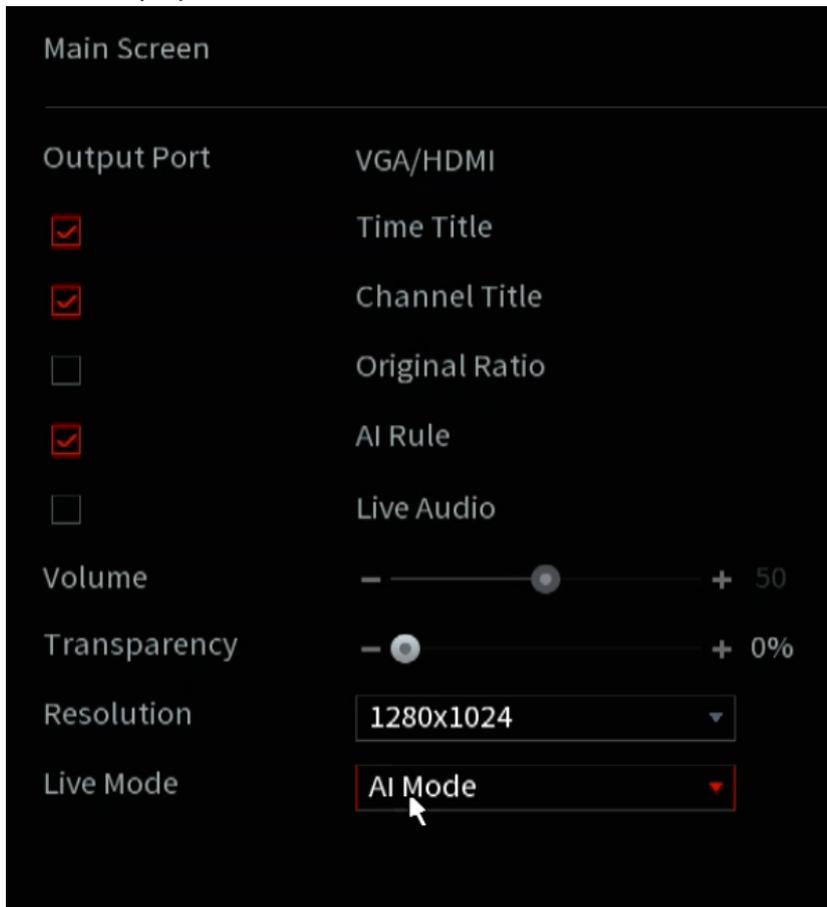
5.2.8 Live View Display

5.2.8.1 Configuring Display Settings

You can configure the display effect such as displaying the time title and channel title, adjusting image transparency, and selecting the resolution.

Step 1 Select **Main Menu > Basic Settings> DISPLAY > Display**.

The **Display** interface will be displayed.



Step 2 Configure the settings for the display parameters.

Parameter	Description	
Main Screen	Output Port	Indicates the main screen port.
	Time Title	Select the Time Title check box, the current system time displays in each channel window on live view screen. To hide the time, de-select the check box.
	Channel Title	Select the Channel Title check box, the channel name, channel number and recording status display in each channel window in the live view screen. To hide the time, de-select the check box.
	Original Ratio	Select the Original Ratio check box, and the video image displays in its actual size in the channel window.
	AI Rule	Select the AI Rule check box to enable AI rule showing function. Thi is enabled by default.
	iMD Preview	Displays the iMD rule box while previewing. It is disabled by default.
	Live Audio	Select the Live Audio check box to enable the audio adjustment function in the channel window on the live view screen. Move the slider to adjust the volume of live audio.
	Volume	
Transparency	Configure the transparency of the graphical user interface (GUI). The higher the value, the more transparent the GUI	

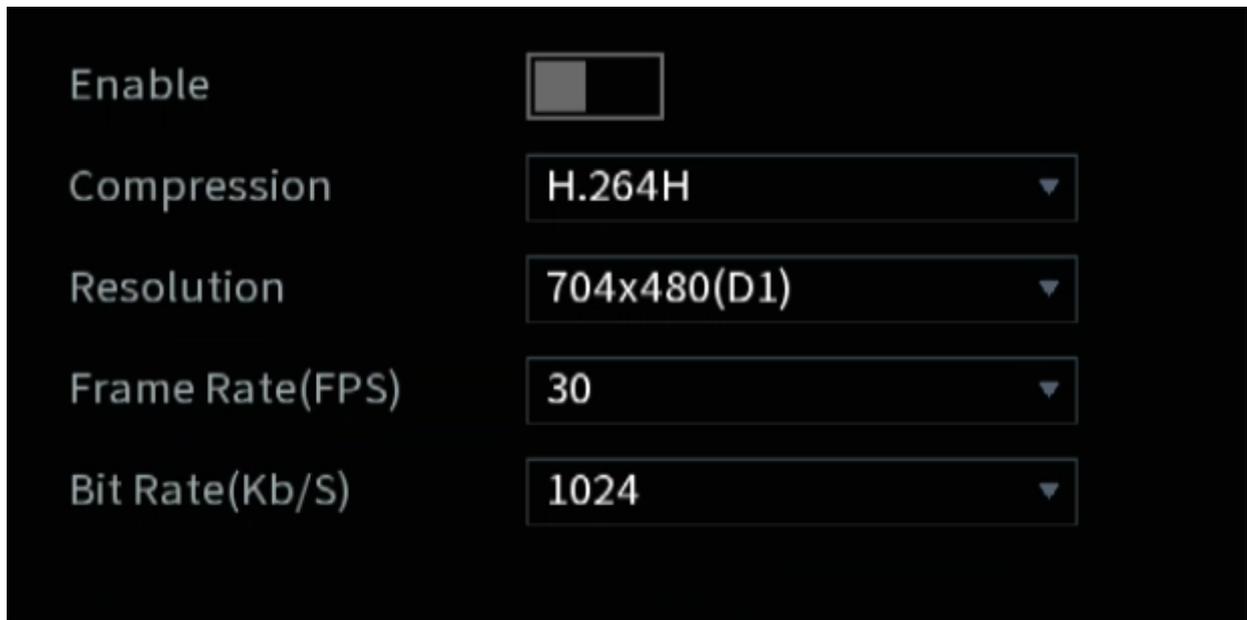
		becomes.
	Resolution	Select the resolution for the video. The default resolution for VGA port and HDMI port is 1280×1024.  Some of the resolution options may not be supported on the HDMI port.
	Live Mode	<ul style="list-style-type: none"> • General: No information will be displayed on the channel window. • AI Mode: Displays the detected face snapshots.  Not all models support this function.
Sub Screen	Enable	Enable extra screen function. After this function is enabled, you can select which port as an extra screen port, and the other port automatically becomes the main screen port.
	Output Port	Select the VGA port or HDMI port as the port connected by a secondary monitor. For example, if you select the HDMI port as the extra screen port, the VGA port automatically becomes the main screen port.
Sub Screen	Resolution	Select the resolution for the output. The default resolution for VGA port and HDMI port is 1280×720.  Some of the resolution options may not be supported on the HDMI port.
	Show Message	After it is enabled, the sub screen will display an alarm message when an alarm is triggered.
 <ul style="list-style-type: none"> • The main menu does not display on the extra screen. • If you do not enable the extra screen function, both the VGA port and HDMI port display the same image. 		

5.2.8.2 Configuring Zero-Channel Settings

You can view several video sources on one channel on the web end.

Step 1 Select **Main Menu > Advanced Settings > DISPLAY > Zero-Channel**.

The **Zero-Channel** interface will be displayed.



Step 2 Configure the settings for the zero-channel parameters.

Parameter	Description
Enable	Enable zero-channel function.
Compression	In the Compression list, select the video compression standard according to the device capability. The default is H.265.
Resolution	In the Resolution list, select the video resolution. The default is 704×576 (D1).
Frame Rate (FPS)	Select a value between 1 and 25 for PAL standard, and between 1 and 30 for NTSC standard. The actual arrange is decided and selected dependent on the Device capability.
Bit Rate (Kb/S)	The default value is 1024Kb/S. The actual arrange is decided and selected dependent on the Device capability and frame rate.

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

In the live interface on the web, click  to select one of the multi-channel modes, and then you can view the local video image.

5.2.8.3 Configuring TV

 Not all models support this function.

You can adjust the border margins in top, bottom, left and right directions as well as the brightness of the monitor connected to the HDVR.

Step 1 Select **Main Menu > Advanced Settings > DISPLAY > TV Adjust**.

The **TV Adjust** interface will be displayed.



Step 2 Configure the parameters according to your actual situation.

Step 3 Click **Apply** to complete the settings.

5.2.9 Configuring Tour Settings

This section allows for the configuration of a tour of selected channels. The selected channels will display in turn according to the channel group configured in tour settings. The system displays one channel group for a certain period and then automatically changes to the next channel group at a set interval.

Step 1 Select **Main Menu > Basic Settings > DISPLAY > Tour Setting**.

The **Tour** interface will be displayed. There are the **Main Screen** tab and **Sub Screen** tab, see below and Figure 5-13.

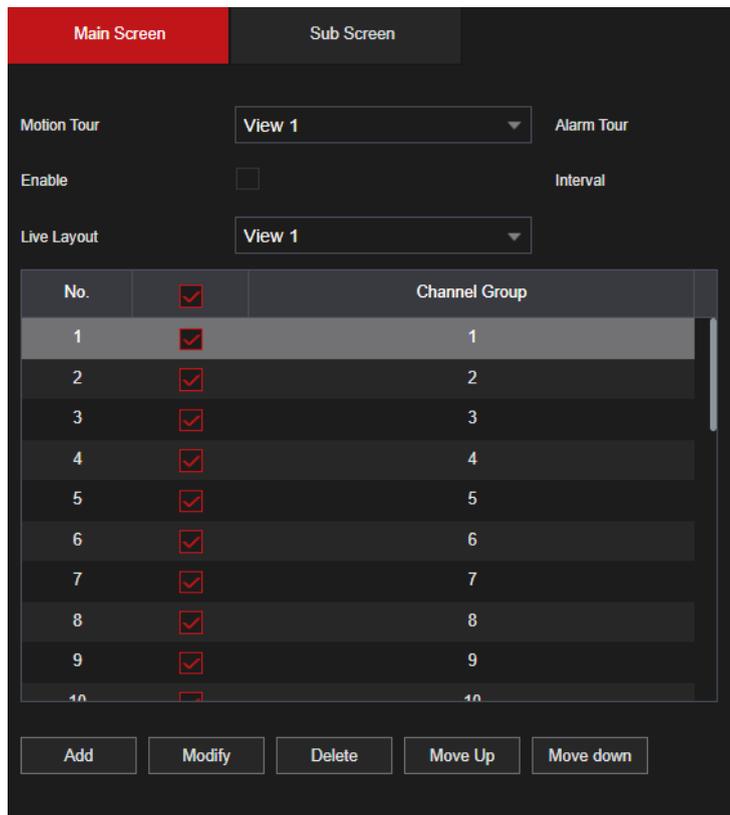


Figure 5-13

Main Screen
Sub Screen

Screen No. ▼ HDMI2

Motion Tour ▼ View 1 Alarm Tour

Enable Interval

Live Layout ▼ View 1

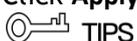
No.	<input type="checkbox"/>	Channel Group
1	<input checked="" type="checkbox"/>	1
2	<input type="checkbox"/>	2
3	<input type="checkbox"/>	3
4	<input type="checkbox"/>	4
5	<input type="checkbox"/>	5
6	<input type="checkbox"/>	6
7	<input type="checkbox"/>	7
8	<input type="checkbox"/>	8
9	<input type="checkbox"/>	9
10	<input type="checkbox"/>	10

Add
Modify
Delete
Move Up
Move down

Step 2 Configure the settings for the tour parameters for both Main Screen and Extra Screen.

Parameter	Description
Enable	Enable tour function.
Interval (Sec.)	Enter the amount of time that you want each channel group displays on the screen. The value ranges from 5 seconds to 120 seconds, and the default value is 5 seconds.
Motion Tour, Alarm Tour	Select the View 1 or View 8 for Motion Tour and Alarm Tour (system alarm events).
Live Layout	In the Live Layout list, select View 1 , View 4 , View 8 , or other modes that are supported by the Device.
Channel Group	Display all channel groups under the current Window Split setting. <ul style="list-style-type: none"> Add a channel group: Click Add, in the pop-up Add Group channel, select the channels to form a group, and then click Save. Delete a channel group: Select the check box of any channel group, and then click Delete. Edit a channel group: Select the check box of any channel group and then click Modify, or double-click on the group. The Modify Channel Group dialog box will be displayed. You can regroup the channels. Click Move up or Move down to adjust the position of channel group.

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



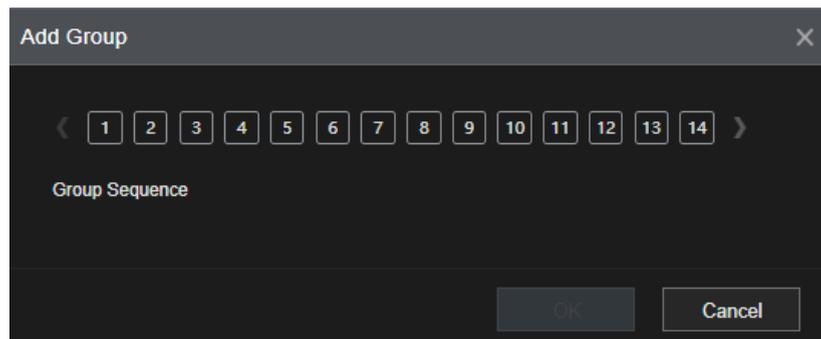
TIPS

- On the top right of the live view screen, use the left mouse button or press Shift to (allowed) to turn on/off the tour function.  
- On the navigation bar, click  to enable the tour and click  to disable it.

Adding a Channel Group

Step 1 Click **Add**.

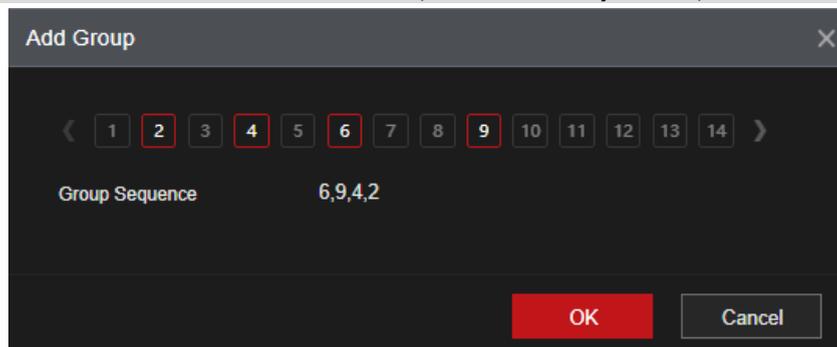
The **Add Group** interface will be displayed.



Step 2 Select the channels that you want to group for tour. see the image below.



If you want to select more than one channel, in the **Live Layout** list, do not select **View 1**.

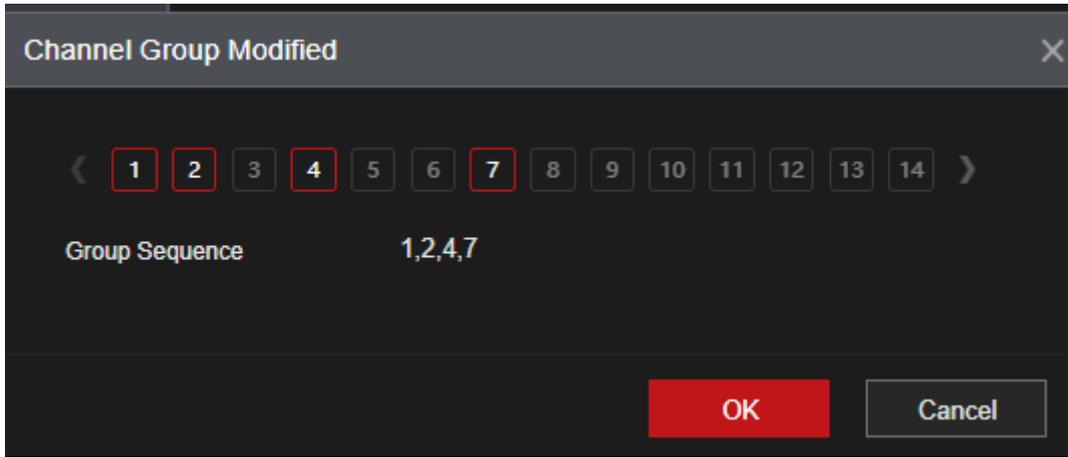


Step 3 Click **OK** to complete the settings.

Modifying a Channel Group

Double-click on a channel group, the **Channel Group Modified** interface will be displayed. You can modify channel group and click **OK** to complete the settings.

Figure 5-14



5.2.10 Navigation Bar

The Navigation Bar allows you to quickly access different split view options, Main Menu and PTZ controls.

Shortcut Icons on Navigation Bar

Table 5-1

Icon	Description
	Click to change split views.
	Click to enter the PTZ Menu interface.
	Click to enter the Main Menu
	Click to enter the Quick Menu Search

5.3 Entering Main Menu

Right-click on the live view screen, the shortcut menu will be displayed, Click Main Menu and then login the system. The Main Menu will be displayed, see the image below.

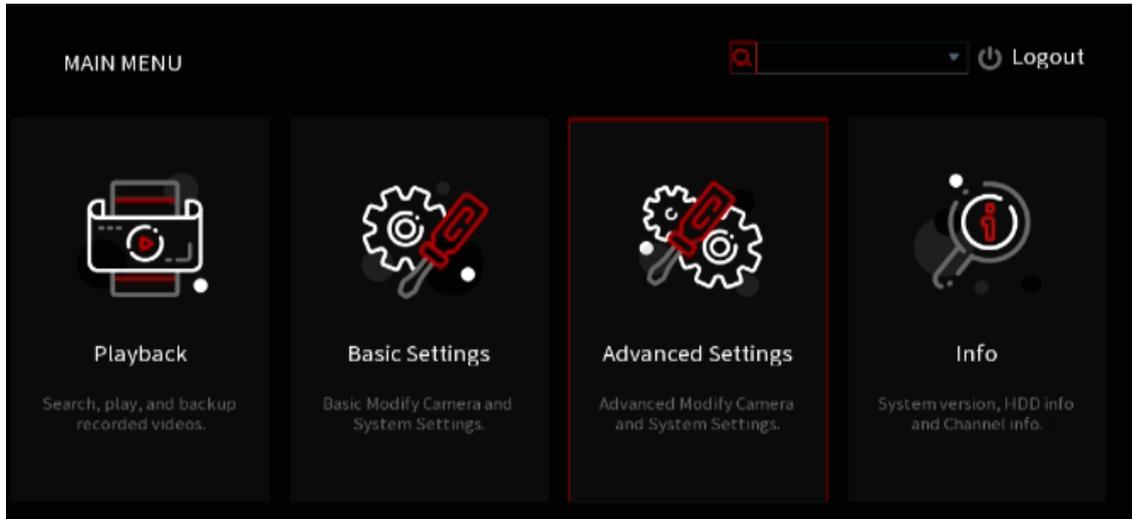


Table 5-3

Icon	Description
Basic Settings	<p>Includes six function tiles: System Config, and Advanced Search. Click each tile to open the configuration interface of the tile.</p> <ul style="list-style-type: none"> ● Playback: Basic timeline playback. ● Users: Configure Groups and Users for HDVR access. ● DISPLAY: Configure the display effect such as displaying content, image transparency, and resolution, and enable the zero-channel function. ● Network: Configure IP settings and P2P ● Motion Detect: Configure motion detect settings. ● Record Schedule: Configure recording type and time settings.
Playback	<p>Includes three function tiles: Playback, Backup and Advanced Search. Click each tile to open the configuration interface of the tile.</p> <ul style="list-style-type: none"> ● Playback: Basic timeline playback. ● Backup: Save footage from the HDVR to a USB storage device. ● Advanced Search: IVS and AI Search such as Face Detect.
Basic Settings	<p>Includes six function tiles: System Config, and Advanced Search. Click each tile to open the configuration interface of the tile.</p> <ul style="list-style-type: none"> ● Playback: Basic timeline playback. ● Users: Configure Groups and Users for HDVR access. ● DISPLAY: Configure the display effect such as displaying content, image transparency, and resolution, and enable the zero-channel function. ● Network: Configure IP settings and P2P ● Motion Detect: Configure motion detect settings. ● Record Schedule: Configure recording type and time settings.
Advanced Settings	<p>Includes six function tiles: System Config, and Advanced Search. Click each tile to open the configuration interface of the tile.</p> <ul style="list-style-type: none"> ● Playback: Basic timeline playback. ● Users: Configure Groups and Users for HDVR access. ● DISPLAY: Configure the display effect such as displaying content, image transparency, and resolution, and enable the zero-channel function. ● Network: Configure IP settings and P2P ● Motion Detect: Configure motion detect settings.

	<ul style="list-style-type: none"> ● Record Schedule: Configure recording type and time settings.
Logout	Click  to go to select Shutdown, Reboot or Logout .

5.4 Controlling PTZ Cameras

Pan-tilt-zoom (PTZ) cameras are built with mechanical parts that allow them to move left to right, tilt up and down, and zoom in and out of a scene to provide all-around view to the camera.



Before operating PTZ, ensure the PTZ is powered correctly and connected to the HDVR

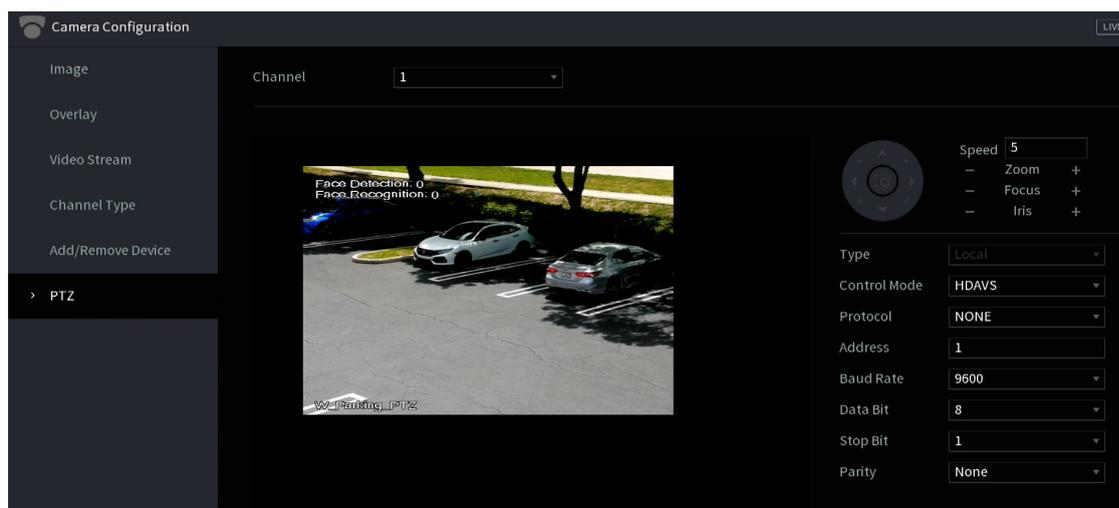
5.4.1 Configuring PTZ Connection Settings

You need to configure the PTZ connection settings before use.

- Local connection: RS-485 Port for connecting speed dome or coaxial cable for connecting coaxial camera.
- Remote connection: local area network.

Step 1 Select **Main Menu > Advanced Settings > Camera Configuration > PTZ**.

The **PTZ** interface will be displayed.



Step 2 Configure the settings for the PTZ connection parameters.

Parameter	Description
Channel	In the Channel list, select the channel that you want to connect the PTZ camera to.
Type	<ul style="list-style-type: none"> ● Local: Connect through RS-485 port or coaxial cable. ● Remote: Connect through network by adding IP address of PTZ camera to the Device.
Control Mode	In the Control Mode list, select Serial Port or HD-AVS. For AVS series products, select HD-AVS . The control signal is sent to the PTZ through the coaxial cable. For the serial mode, the control signal is sent to the PTZ through the RS-485 port.
Protocol	In the Protocol list, select the protocol for the PTZ camera. Selections include HDAVS2.0 and HDAVS3.0 .

Address	In the Address box, enter the address for PTZ camera. The default is 1.  The entered address must be the same with the address configured on the PTZ camera; otherwise the PTZ camera cannot be controlled from the Device.
Baud Rate	In the Baud Rate list, select the baud rate for the PTZ camera. The default is 9600.
Data Bits	The default value is 8.
Stop Bits	The default value is 1.
Parity	The default value is NONE.

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



Click **Copy** to copy the settings to other channels.

5.4.2 Working with PTZ Control Panel

The PTZ control panel allows for operations such as directing the camera in eight directions, adjusting zoom, focus and iris settings, and quick positioning.

Basic PTZ Control Panel

Right-click on the live view screen and then select **PTZ**. The PTZ control panel will be displayed.



The functions with buttons in gray are not supported.

Parameter	Description
Speed	Controls the movement speed. The greater the value, the faster the movement will be.
Zoom	 : Zoom out.  : Zoom in.
Focus	 : Focus far.  : Focus near.
Iris	 : Image darker.  : Image brighter.

PTZ movement	Supports eight directions.
	<p>Fast positioning button.</p> <ul style="list-style-type: none"> Positioning: Click  to enter the fast positioning screen, and then click anywhere on the live view screen, the PTZ will turn to this point and move it to the middle of the screen. Zooming: On the fast positioning screen, drag to draw a square on the view. The square supports zooming. <ol style="list-style-type: none"> Dragging upward is to zoom out, and dragging downward is to zoom in. The smaller the square, the larger the zoom effect. <p> Not all models support this function and can only be controlled through mouse operations.</p>
	Click  , you can control the four directions (left, right, up, and down) PTZ movement through mouse operation.
	Click  to open the expanded PTZ control panel.

Expanded PTZ Control Panel

On the basic PTZ control panel, click  to open the expanded PTZ control panel to find more options.



- The functions with buttons in gray are not supported by the system.
- Right-click once to return to the interface of PTZ basic control panel.

Icon	Function	Icon	Function
	Preset		Pan
	Tour		Flip
	Pattern		Reset

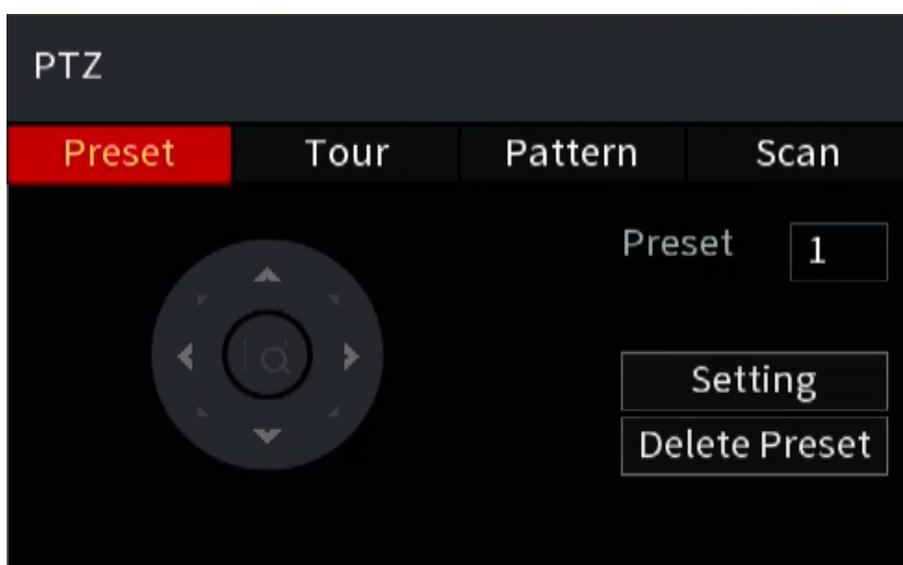
	Scan		Click the Auxiliary Config icon to open the PTZ functions settings interface.
	Auxiliary		Click the Enter Menu icon to open the MENU OPERATION interface.

5.4.3 Configuring PTZ Functions

5.4.3.1 Configuring Presets

Step 4 On the Expanded PTZ Control Panel, click .

The **Preset** interface will be displayed.



Step 5 Click the direction arrows to the required position.

Step 6 In the **Preset** box, enter the value to represent the required position.

Step 7 Click **Setting** to complete the preset settings.

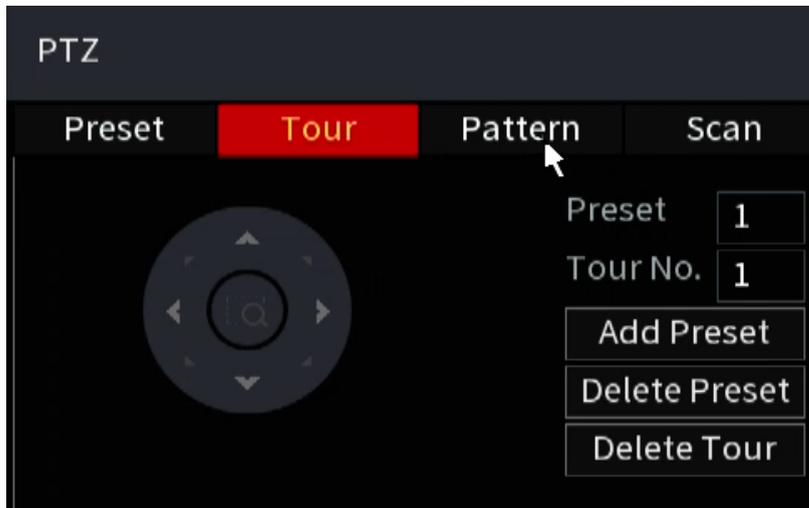
5.4.3.2 Configuring Tours

Step 8 On the Expanded PTZ Control Panel, click .

The **PTZ** interface will be displayed.

Step 9 Click the **Tour** tab.

The **Tour** interface will be displayed.



Step 10 In the **Tour No.** box, enter the value for the tour route.

Step 11 In the **Preset** box, enter the preset value.

Step 12 Click **Add Preset**.

A preset will be added for this tour.



- You can repeat adding more presets.
- Click **Delete Preset** to delete the preset for this tour. This operation can be repeated to delete more presets. Some protocols do not support deleting.

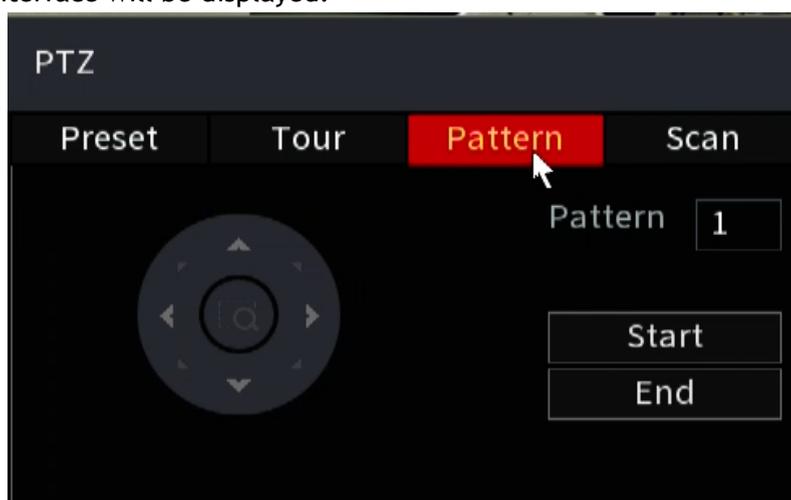
5.4.3.3 Configuring Patterns

Step 1 On the Expanded PTZ Control Panel, click .

The **PTZ** interface will be displayed.

Step 2 Click the **Pattern** tab.

The **Pattern** interface will be displayed.



Step 3 In the **Pattern** box, enter the value for pattern.

Step 4 Click **Start** to perform the directions operations. You can also go to the PTZ Control Panel to perform the operations of adjusting zoom, focus, iris, and directions.

Step 5 On the **PTZ** interface, click **End** to complete the settings.

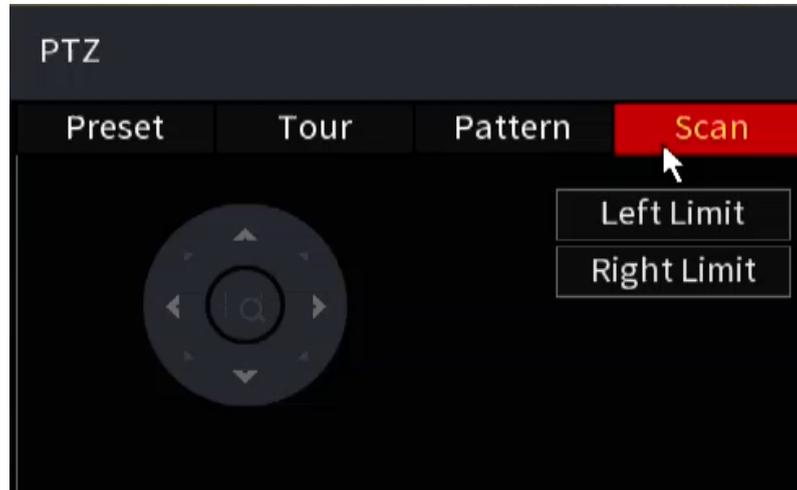
5.4.3.4 Configuring Scan

Step 1 On the Expanded PTZ Control Panel, click .

The PTZ interface will be displayed.

Step 2 Click the Scan tab.

The Scan interface will be displayed.



Step 3 Click the direction arrows to position the left and right limits.

5.4.4 Calling PTZ Functions

After you have configured the PTZ settings, you can call the PTZ functions for monitoring from the Expanded PTZ Control Panel.



5.4.4.1 Calling Presets

Step 1 On the expanded PTZ Control Panel, in the No. box, enter the value of the preset that you want to call.

Step 2 Click  to call the preset.

Step 3 Click  again to stop calling the preset.

5.4.4.2 Calling Tours

Step 1 On the Expanded PTZ Control Panel, in the No. box, enter the value of the tour that you want to call.

Step 2 Click  to call the tour.

Step 3 Click  again to stop calling the tour.

5.4.4.3 Calling Patterns

Step 1 On the Expanded PTZ Control Panel, in the **No.** box, enter the value of the pattern that you want to call.

Step 2 Call  to call the pattern.

The PTZ camera moves according to the configured pattern repeatedly.

Step 3 Click  again to stop calling the pattern.

5.4.4.4 Calling AutoScan

Step 1 On the Expanded PTZ Control Panel, in the **No.** box, enter the value of the border that you want to call.

Step 2 Click .

The PTZ camera performs scanning according to the configured borders.

Step 3 Click  again to stop auto scanning.

5.4.4.5 Calling AutoPan

Step 1 On the Expanded PTZ Control Panel, click  to start moving in horizontal direction.

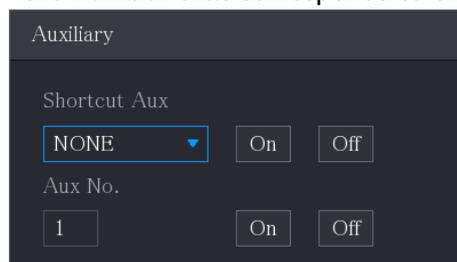
Step 2 Click  again to stop moving.

5.4.4.6 Using AUX Button

5.4.4.7

On the Expanded PTZ Control Panel, click , the AUX setting interface will be displayed. see the image below.

- In the **Shortcut Aux** list, select the option that corresponds to the applied protocol.
- In the **Aux No.** box, enter the number that corresponds to the AUX switch on the decoder.

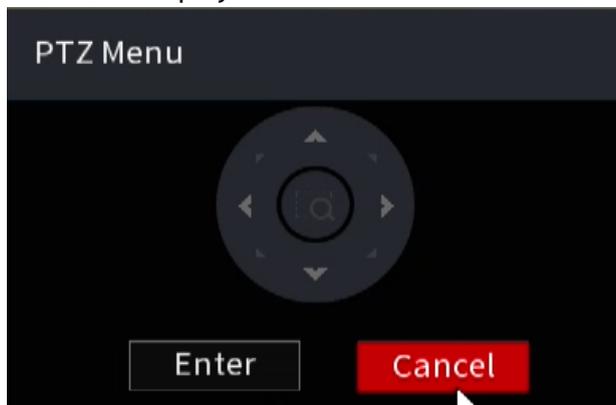


5.4.5 Calling OSD Menu

For the coaxial camera, you can call the OSD menu through the Expanded PTZ Control Panel.

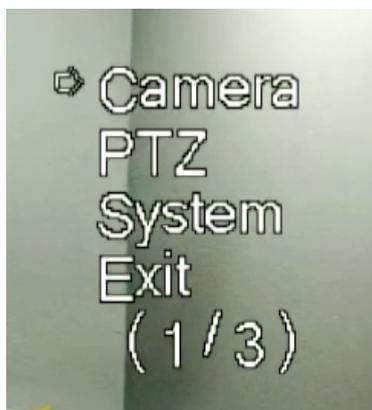
Step 1 On the Expanded PTZ Control Panel, click .

The **PTZ Menu** interface will be displayed.



Step 2 Click **Enter**.

The OSD menu will be displayed.



Step 3 On the **PTZ Menu** interface, click the arrow button to select the on-screen parameters.

Step 4 Click **Enter** to complete the settings.

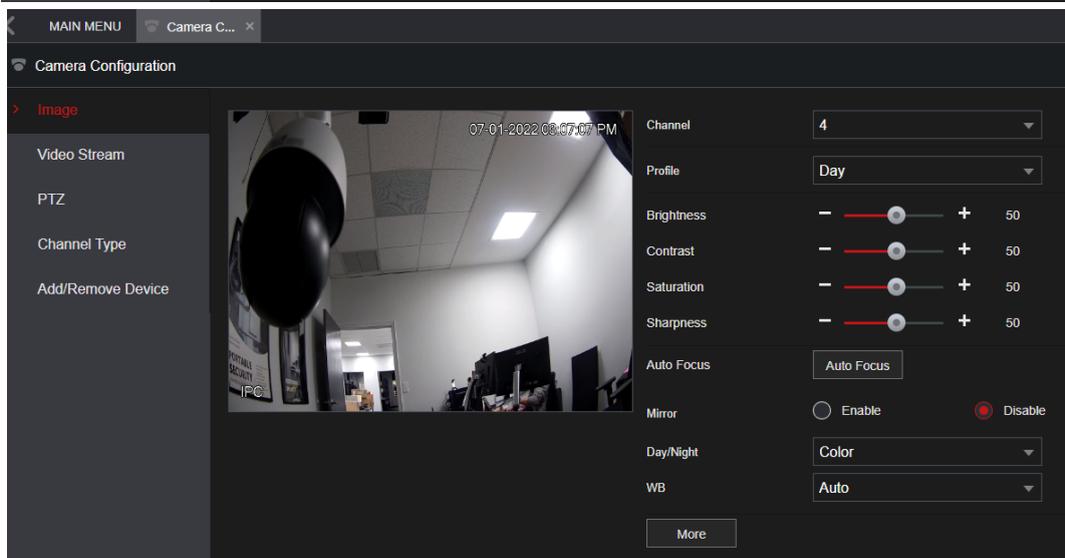
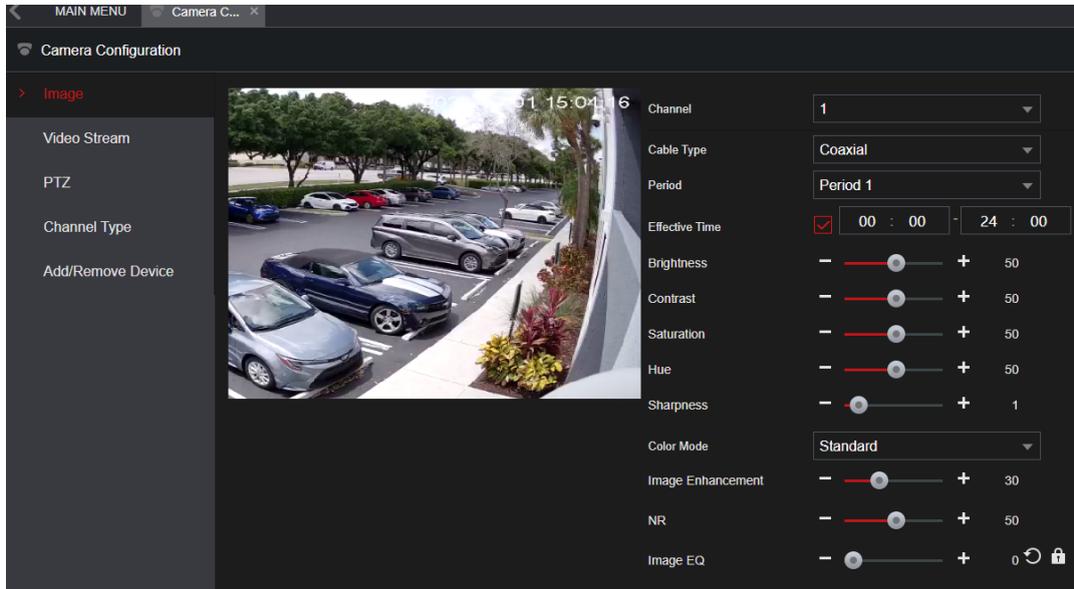
5.5 Configuring Camera Settings

5.5.1 Configuring Image Settings

This section allows for the configuration of the image settings such as saturation, contrast, brightness, and sharpness for each connected camera.

Step 1 Select **Main Menu > Advanced Settings > CAMERA Configuration > Image**.

The **Image** interface will be displayed. see the image below for analog channel and 0 for a digital channel.



Step 2 Configure the settings for the image parameters.

On the digital channel interface, click **More** to display more parameters.

Parameter	Description
Channel	In the Channel list, select the channel that you want to configure.
Cable Type	In the Cable Type list, select the cable type that the camera uses.  Not all models support this function.
Period	In the Period list, select a time period for the image settings. The image settings will be only used during the selected period.
Effective Time	Enable the effective function. In the Effective Time box, enter the start time and end time for the period you selected.
Saturation	Adjusts the color shades. The greater the value, the lighter the color will become. This value does not influence the general image brightness. The value ranges from 0 to 100. The default value is 50. The recommended range is between 40 and 60.
	Adjusts the image contrast. The greater the value, the more obvious the contrast between the light area and dark area will become. You can adjust this value when the contrast is not obvious.

Contrast	<p>However, if the value is too big, the dark area is likely to become darker and the light area over exposed. If the value is too small, the image is likely to become dim.</p> <p>The value ranges from 0 to 100. The default value is 50. The recommended range is between 40 and 60.</p>
Brightness	<p>Adjusts the image brightness. The greater the value, the brighter the image will become. You can adjust this value when the image as a whole looks dark or bright. However, the image is likely to become dim if the value is too big.</p> <p>The value ranges from 0 to 100. The default value is 50. The recommended range is between 40 and 60.</p>

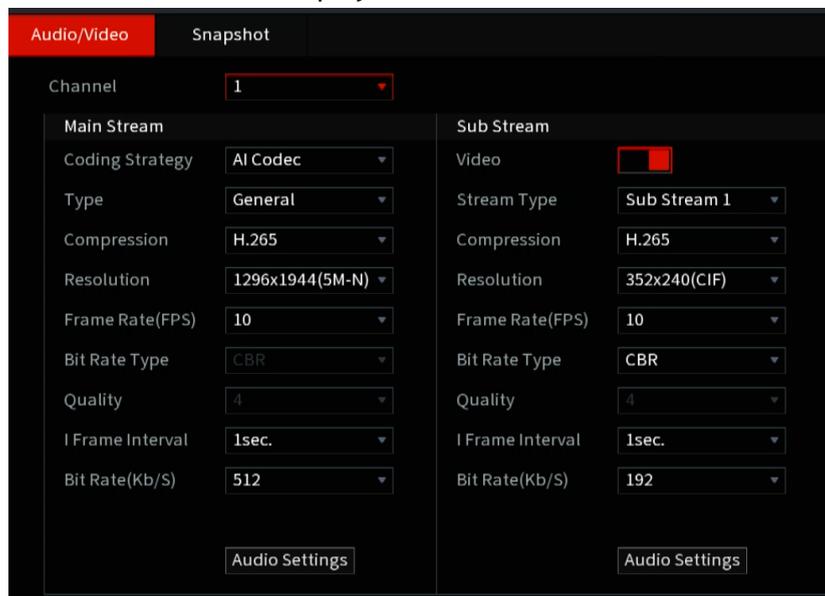
Parameter	Description
Hue	Adjusts the hue of image. The value ranges from 0 to 100. The default value is 50.
Sharpness	Adjusts the sharpness of image edge. The greater the value, the more obvious the image edge, and the noise is also greater. The value ranges from 1 to 15. The default value is 1.
Image Enhance	Adjusts the image definition. The greater the value, the clearer the image will become, but there will be more noises.
NR	Reduces the noises from image. The greater the value, the better the image will become.
Config File	<p>In the Config File list, select Day, Night, Normal, or Switch By Period. The system configures the parameters correspondingly.</p> <ul style="list-style-type: none"> • Day: Apply the configuration during daytime. • Night: Apply the configuration during nighttime. • Normal: Apply the configuration during day and night. • Switch by Period: If you select this option, you need to configure the sunrise time and sunset time where you are located.
Mirror	Enable the function, the left and right side of the video image will be switched. It is disabled by default.
3D Denoise	This function specially applies to the image which frame rate is configured as 2 at least. It reduces the noises by making use of the information between two frames. The greater the value, the better the effect.
Flip	In the Flip list, you can select 180° to change the video image display. By default, the setting is No Flip .
Light	In the Light list, select Close or Enable to use the backlight compensation or not.

Scene Mode	<p>Configure the white balance to adjust the general hue of the image. The default setting is Auto.</p> <ul style="list-style-type: none"> • Auto: Automatically apply white balance to different colors to make the image color display normally. • Sunny: Apply the threshold value to sunny environment. • Night: Apply the threshold value to night. • Customized: Manually adjust the Red Gain and Blue Gain values.
Day & Night	<p>Configure the color and black&white mode of the image. This setting is not affected by the configuration files. The default setting is Auto.</p> <ul style="list-style-type: none"> • Color: The camera outputs color image only. • Auto: Depends on the camera, such as overall brightness and whether there is an IR light, either color image or black&white image is output. • B/W: The camera outputs Black and white image only. • By Time: The camera outputs image according to the configured sunrise time and sunset time.

Step 3 Click **Apply** to complete the settings.

5.5.2 Configuring Encode Settings

Step 1 Select **Main Menu > Advanced Settings> Camera Configuration > Video Stream > Audio/Video**. The **Audio/Video** interface will be displayed.



Step 2 Configure the settings for the main/sub streams parameters.

Table 5-4

Parameter	Description
Channel	In the Channel list, select the channel that you want to configure the settings for.

Coding Strategy	<ul style="list-style-type: none"> • General: Uses general coding strategy. • Smart Codec: Enables the smart codec function. This function can reduce the video bit stream for non-important recorded video to maximize the storage space. • AI Codec: Enables the AI codec function. This function can reduce the video bit stream for non-important recorded video to maximize the storage space.
Type	<ul style="list-style-type: none"> • Main Stream: In the Type list, select General, Motion, or Alarm. • Sub Stream: This setting is not configurable.
Compression	<p>In the Compression list, select the encode mode.</p> <ul style="list-style-type: none"> • H.265: Main profile encoding. This setting is recommended. • H.264H: High profile encoding. Low bit stream with high definition. • H.264: General profile encoding. • H.264B: Baseline profile encoding. This setting requires higher bit stream compared with other settings for the same definition.
Bit Rate Type	<p>In the Bit Rate Type list, select resolution for the video. The maximum video resolution may differ depending on your device model.</p>
Frame Rate (FPS)	<p>Configure the frames per second for the video. The higher the value, the clearer and smoother the image will become. Frame rate changes along with the resolution.</p> <p>In PAL format, you can select the value from 1 through 25; in NTSC format, you can select the value from 1 through 30. However, the specific range of frame rates you can select depends on the device's capability.</p>
Quality	<p>This function is available if you select VBR in the Bit Rate List. The higher the value, the better the image will become.</p>
I Frame Interval	<p>The interval between two reference frames.</p>
Bit Rate (Kb/S)	<p>In the Bit Rate list, select a value or enter a customized value to change the image quality. The greater the value, the better the image will become.</p>
Video	<p>Enable the function for sub stream.</p>
Audio	<p>Click More, and the More interface will be displayed.</p> <ul style="list-style-type: none"> • Audio: This function is enabled by default for main stream. You need to manually enable it for sub stream 1. Once this function is enabled, the recorded video file is composite audio and video stream.
Audio Source	<ul style="list-style-type: none"> • Audio Source: You can select LOCAL and HD-AVS in the Audio Source list. <ul style="list-style-type: none"> ◇ LOCAL: The audio signal is input from Audio input port. ◇ AVS: The audio signal over coax from an AVS camera.
Compression	<ul style="list-style-type: none"> • Audio Format: In the Compression list, select the format you need.

Step 3 Click **Apply** to complete the settings.



Click **Copy** to copy the settings to other channels.

5.5.3 Configuring Snapshot Settings

Step 1 Select **Main Menu > Advanced Settings > Camera Configuration > Video Stream > Snapshot**.

The **Snapshot** interface will be displayed.

Audio/Video
Snapshot

Channel

1

Type

Scheduled

Size

352x240(CIF)

Quality

4

Interval

1 sec.

Manual Snapshot

1

/Time

Step 2 Configure the settings for the snapshot parameters.

Parameter	Description
Manual Snapshot	In the Manual Snapshot list, select how many snapshots you want to take each when triggered.
Channel	In the Channel list, select the channel that you want to configure the settings for.
Type	In the Type list, you can select Scheduled , Event , or Face Snapshot as the event type for which you want to take a snapshot. <ul style="list-style-type: none"> Scheduled: The snapshot is taken during the scheduled period. Event: The snapshot is taken when there is an alarm event occurs, such as a motion detection event, video loss, and local alarms.
Size	In the Size list, select a value for the image. The greater the value, the better the image will become.
Quality	Configures the image quality by 6 levels. The higher the level, the better the image will become.
Interval	Configures or customizes the snapshot frequency. You can select 1 second per one snapshot to 7 seconds per one snapshot. The maximum is 3600 seconds per one snapshot.

Step 3 Click **Apply** to complete the settings.

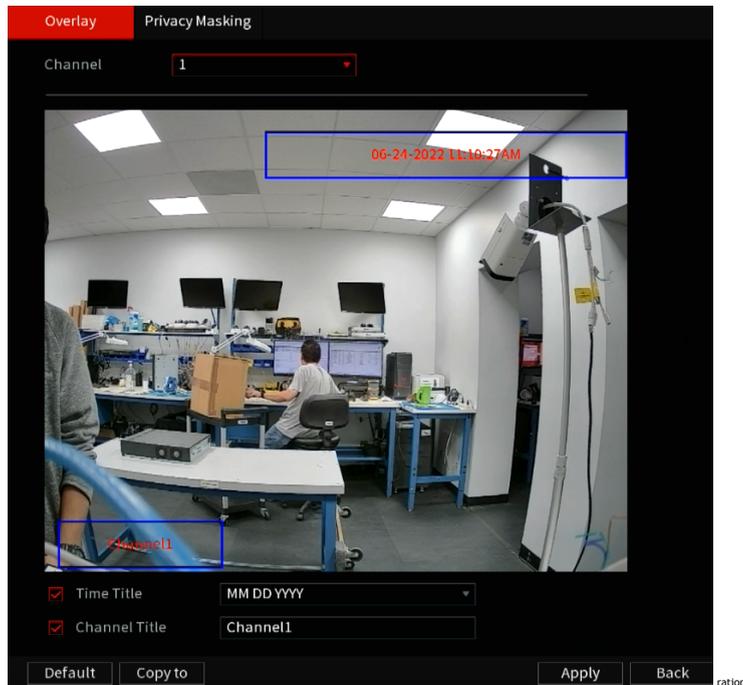


Click **Copy** to to copy the settings to other channels.

5.5.4 Configuring Overlay Settings

This section allows for the configuration to display system time and channel names on each channel window in the live view screen.

Step 1 Select **Main Menu > Advanced Settings > Camera Configuration > Video Stream > Overlay**. The **Overlay** interface will be displayed.



Step 2 Configure the settings for the text overlay parameters.

Parameter	Description
Channel	In the Channel list, select the channel that you want to configure the settings for.
Time Title	Select the Time Title check box to display the system time on each channel window in the live view screen. In the Time Title list, select time display style.
Channel Title	Select the Channel Title check box to display the channel name on each channel window in the live view screen. In the Channel Title box, enter the name for the selected channel.

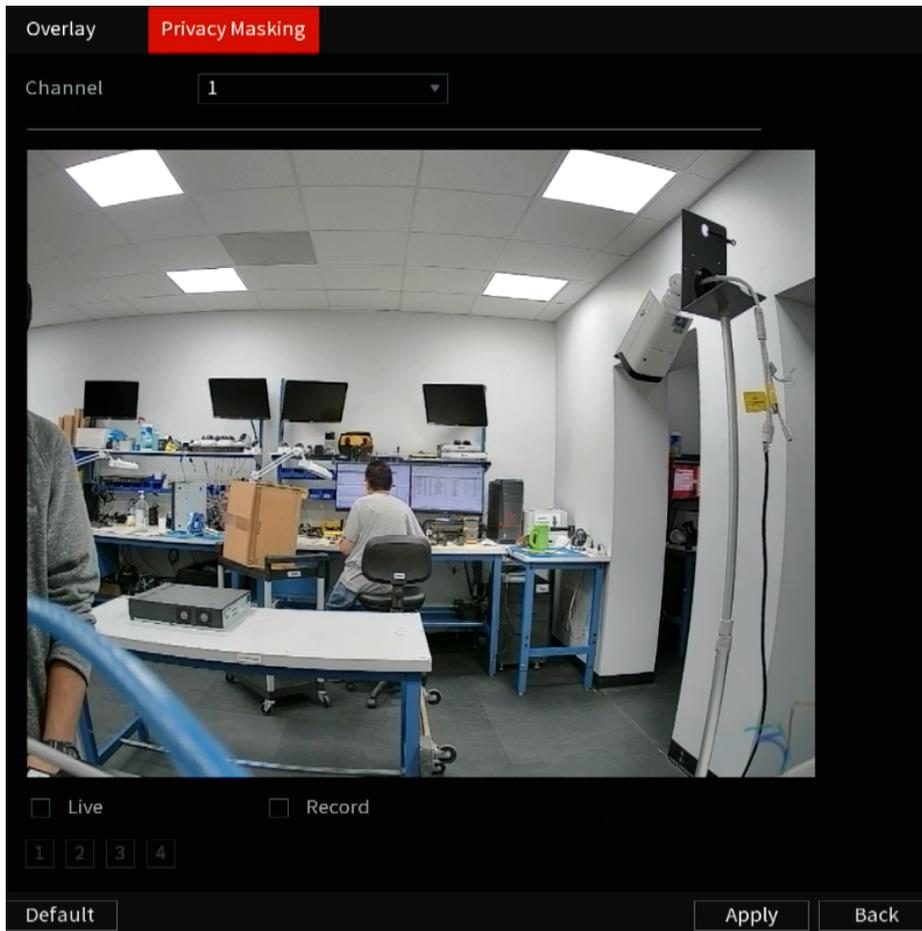
Step 3 Click **Apply** to complete the settings.



Click **Copy to** to copy the settings to other channels.

5.5.5 Configuring Covered Area Settings

Step 1 Select **Main Menu > Advanced Settings > Camera Configuration > Video Stream > Overlay > Privacy Masking**.
The **Privacy Masking** interface will be displayed.



Step 2 Configure the settings for the covered area parameters.

Parameter	Description
Channel	In the Channel list, select the channel that you want to configure the settings for.
Live	<ul style="list-style-type: none"> Preview: Select the Live check box to apply the configured covered block to the selected channel window in the live view screen. Record: Select the Record check box to apply the configured covered block to the selected channel window during recording.
Record	<p>To configure covering block, do the following:</p> <ol style="list-style-type: none"> Select the Live check box or the Record check box, or select the both. The "1, 2, 3, 4" buttons are activated. Click the buttons to select blocks. A triangle solid black block will be displayed. Drag the block to the area that you want to cover and adjust the size of the block. You can configure total 4 covered blocks.

Step 3 Click **Apply** to complete the settings.

5.5.6 Configuring Channel Type

This section allows for selecting the configuration of the channel type as **Analog** or **IP** channel.

Step 1 Select **Main Menu > Advanced Settings > CAMERA Configuration > Channel Type**.
The **Channel Type** interface will be displayed.

Channel	HDAVS					IP <input type="checkbox"/>
	AUTO <input type="checkbox"/>	AVS <input type="checkbox"/>	AHD <input type="checkbox"/>	CVBS <input type="checkbox"/>	TVI <input type="checkbox"/>	
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
16	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
17 - 24						<input type="checkbox"/>

Note: An analog channel can be converted to an IP channel after it is disabled. Channel conversion must start from the last analog channel.

Step 2 Configure the channels.

- Analog Channel: Select the transmission medium such as AVS, AHD, CVBS, and then follow the onscreen instructions to complete the settings.
- IP Channel: You can enable the IP channels by disabling the corresponding analog channels. The Device also provides expanded IP channels for your use, such as the 17–64 channels in 0.



The 17-64 channels are only for IP cameras and the range changes depending on the model purchased.

- The channel selection for analog camera or IP camera is in sequence, for example, if you want to select channels for an IP camera, you need to select from the last channel number Channel 16 first, which means you cannot navigate to select the channel 15 directly until you have selected the channel 16.

Step 3 Click **Apply** and follow the onscreen instructions to complete the settings.

5.6 Configuring Remote Devices

5.6.1 Adding Remote Devices



This function is available after you have configured the channel type as IP channel as described in the previous section, see "5.5.7 Configuring Channel Type."

You can add remote devices by automatically or manually adding the IP address.

Select **ain Menu > Advanced Settings > CAMERA Configuration > Add/Remove Device > Add Camera**, the **Add Camera** interface will be displayed.

Figure 5-15

Camera List Device Status Firmware Update

Search Device Plug and Play Initialize

All Not Initialized Not Auto Connected Filter

23	<input type="checkbox"/>	Modify IP	Live	Status	IP Address	Manufacturer	Type	MAC Address	Port
1	<input type="checkbox"/>		Live	✓	192.168.69.83	Private	IP Camera	00:26:e6:0ef3:5a	37777
2	<input type="checkbox"/>		Live	✓	192.168.69.154	Private	NVR	00:26:e6:0f:ae:9c	32789
3	<input type="checkbox"/>		Live	✓	192.168.69.219	Private	IPEL-B20F-LPR	00:26:e6:c1:24:7f	37777
4	<input type="checkbox"/>		Live	✓	192.168.69.137	Private	HAVR	20:de:88:00:0b:4d	32789
5	<input type="checkbox"/>		Live	✓	192.168.69.69	Private	DSS	20:de:88:00:60:b7	5050
6	<input type="checkbox"/>		Live	✓	192.168.69.237	Private	NVR8000	20:de:88:00:76:93	32789

Add Manual Add Modify IP Change Camera Login Password

Added Device

Channel	Edit	Delete	Status	IP Address	Port	Device Name	Remote CH No.	Camera Name

Delete Import Export

Remaining Bandwidth/Total Bandwidth: 129.50Mbps/129.50Mbps

Parameter	Description
Uninitialized	When the Uninitialized function is enabled, the uninitialized devices out of the searched devices are displayed in the searched device list.
Initialize	Select an uninitialized device from the uninitialized device list, and then click Initialize to start initializing the device.
Filter	In the Filter list, select the remote device type that you want to display in the searched device list. <ul style="list-style-type: none"> • None: Display all types of devices. • IPC: Display the front-end devices. • DVR: Display all storage devices such as NVR, DVR and HCVR. • OTHER: Display the devices that do not belong to IPC or DVR type.
Searched Device List	Displays the searched devices. You can view the device information such as status, IP address.
Search	Click Search , the searched devices display in the searched device list. To adjust the display sequence, in the title line, you can click the IP address, Type or Device Name text. For example, click the IP address text, the sequence icon IP Address will be displayed.  <p>*** will be displayed next to the added device.</p>
Add	In the Searched Device List area, select the device that you want to add.
Manual Add	Add the device by manually configuring settings such as IP address, channel selection. For details, see "5.6.1.4 Adding Remote Devices Manually."
Added Device List	Displays the added devices. You can edit and delete the device, and view the device information.

Parameter	Description
Delete	Select the check box of the added device, and then click Delete to delete the added device.
Import	Select the searched devices and then click Import to import the devices in batches.
Export	Select the added devices and then click Export . The exported devices information is saved into the USB storage device.

5.6.1.2 Initializing Remote Devices

You can reset the password and IP address of the remote devices through initializing.

Step 1 Click **Search Device**.

The devices found are displayed in the table.

No.	Live	Status	IP Address	Port	Device Name	Manufacturer	Type	MAC Address
7	LIVE	✓	192.168.1.104	32789	HAVR	Private	HAVR	b4:4c:3b:15:3e:66
8	LIVE	✓	192.168.1.79	37777	ICR Main Dinger	Private	Dinger	20:de:88:02:22:a9
9	LIVE	✓	192.168.1.129	37777	ICR Main Flooder	Private	Flooder	20:de:88:02:2c:19
10	LIVE	✓	192.168.1.211	80	IPFX-D40V-IRW2	ONVIF	IPFX-D40V-IRW2	
11	LIVE	✓	192.168.1.139	37777	IPMXB40FW1LED2109G36800003	Private	IPMX-B40F-W1-LED	20:de:88:03:79:11

Step 2 Enable the Initialized function.

The uninitialized devices are displayed.

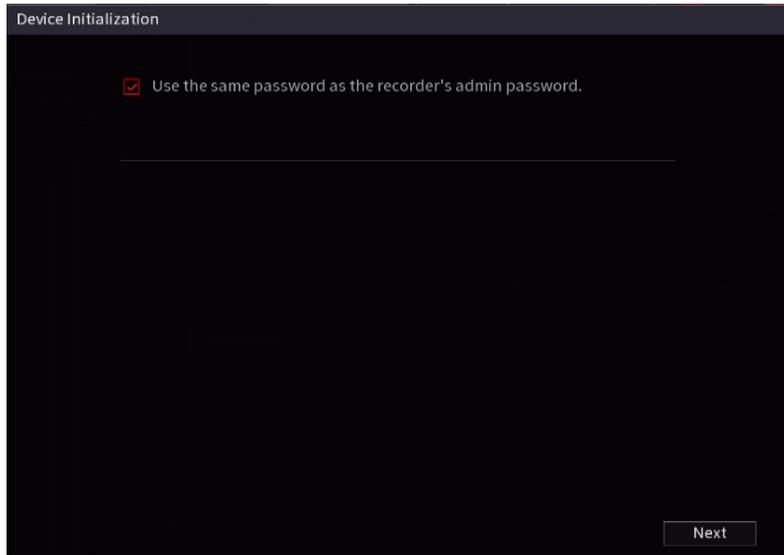
Figure 5-16

IP Address	Live	Status	IP Address	Manufact
1	✓	Modify	192.168.1.139	Private

Step 3 Select the uninitialized device that you want to initialize.

Step 4 Click **Initialize**.

The **Enter Password** interface will be displayed.



Step 5 Configure the password and email information.



If you select the **Using current device password and email info** check box, the remote device automatically uses the current password and email information, so you do not need to set the password and email address again and can go to Step 6.

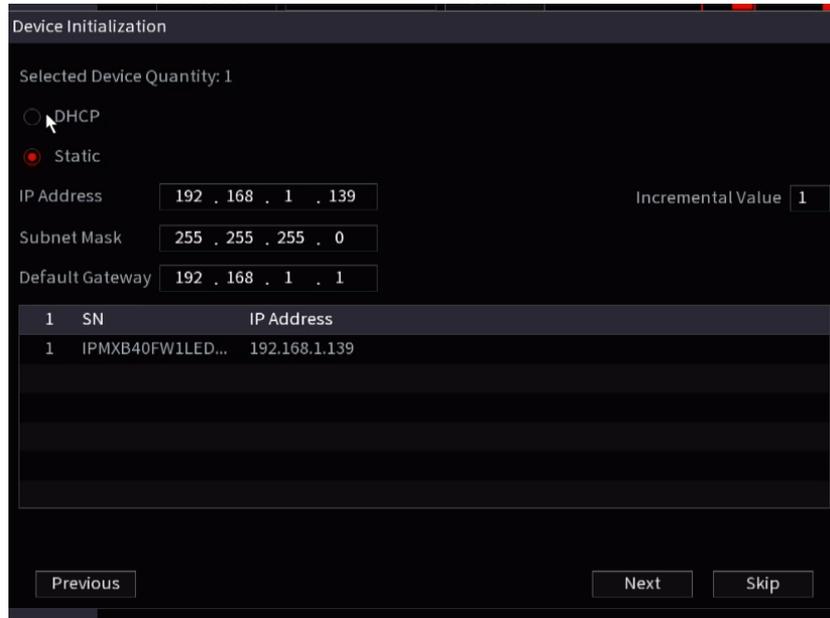
- 1) If un-checking the **Using current device password** check box. The password setting interface will be displayed.
- 2) Configure the settings for the password setting parameters.

Parameter	Description
User	The default is admin.
Password	The new password can be set from 8 characters to 32 characters and contains at least two types of number, letter, and special characters (excluding "", "", ";", ":" and "&").
Confirm Password	

- 3) Click **Next**.

Step 6 Click **Next**.

The **NETWORK** interface will be displayed.



Step 7 Configure the IP address.

- Select the **DHCP** check box, you do not need to enter the IP address information, because the system will allocate one IP address to the remote device.
- Select the **STATIC** check box, you need to enter the IP address, subnet mask, default gateway, and incremental value. The system will allocate the IP address to the remote devices by progressively increasing the last part of the IP address when initializing devices in batches.

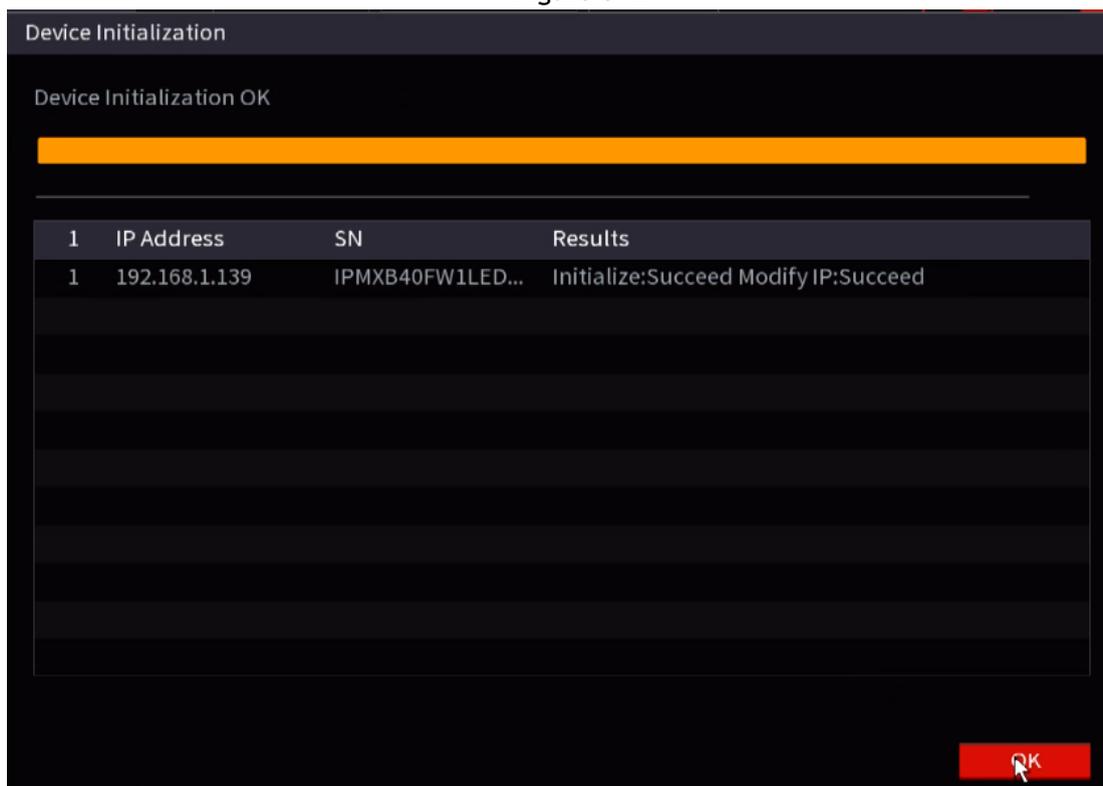


When configuring IP addresses for multiple remote devices which were not in the same network segment, these remote devices will belong to the same network segment after configuration.

Step 8 Click **Next**.

The initializing is started. After the process is completed, see Figure 5-17.

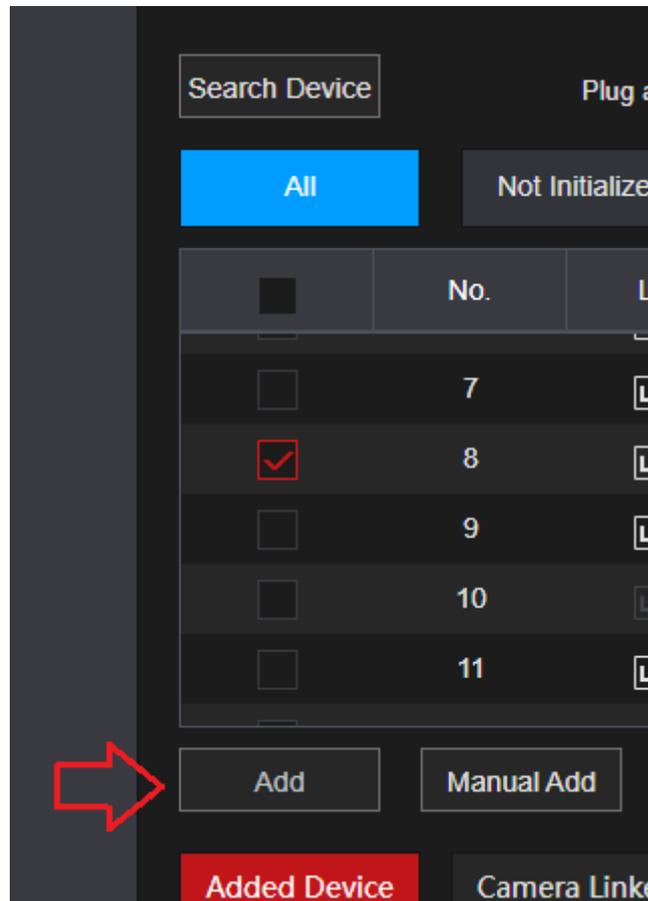
Figure 5-17



Step 9 Click **OK** to complete the settings.

5.6.1.3 Adding Remote Devices Automatically

Step 1 On the **Registration** interface, click **Device Search**
The devices found are displayed.



Step 2 Select the check box of the device.

Step 3 Click **Add**.

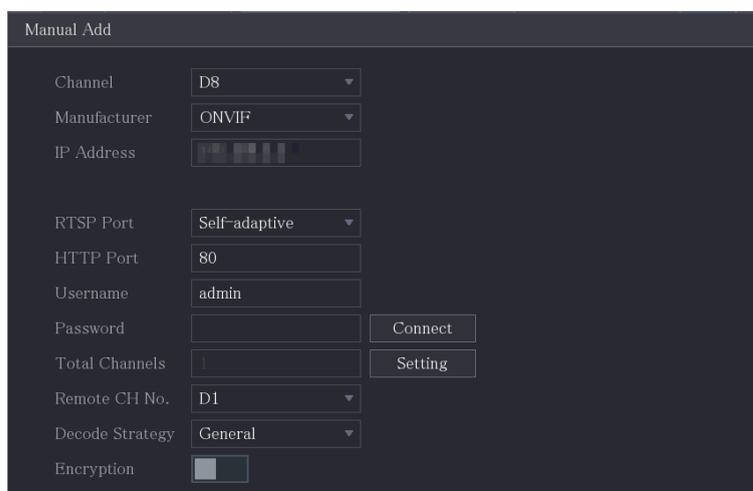
The device is added into the **Added Device** area.



- You can also double-click the device to add it into the **Added Device** area.
- You can add devices in batches.

5.6.1.4 Adding Remote Devices Manually

Step 1 On the **Add Camera** interface, click **Manual Add**.
The **Manual Add** interface will be displayed.

A screenshot of the 'Manual Add' interface. It features several configuration fields: 'Channel' (D8), 'Manufacturer' (ONVIF), 'IP Address' (a field with four dots), 'RTSP Port' (Self-adaptive), 'HTTP Port' (80), 'Username' (admin), 'Password' (empty), 'Total Channels' (1), 'Remote CH No.' (D1), 'Decode Strategy' (General), and 'Encryption' (a toggle switch). There are two buttons: 'Connect' and 'Setting'.

Step 2 Configure the settings for the manual adding device parameters.

Parameter	Description
Channel	This is the channel the IP camera will be saved to in the HDVR.
Manufacturer	In the Manufacturer list, select the manufacturer of the remote device.
IP Address	In the IP Address box, enter the IP address of the remote device.  The default is 192.168.0.0 which the system cannot connect to.
RTSP Port	The default value setting is 554. You can enter the value according to your actual situation.
HTTP Port	The default value setting is 80. You can enter the value according to your actual situation. If you enter another value, for example, 70, then you should enter 70 after the IP address when logging in to the Device by the browser.
TCP Port	The default value setting is 37777. You can enter the value according to your actual situation.
User Name	Enter the user name of the remote device.
Password	Enter the password of the user for the remote device.
Remote CH No.	Enter the remote channel number of the remote device that you want to add. This is for multi-channel devices.
Decoder Strategy	In the Decoder Strategy list, select Default , Realtime , or Fluent .

Parameter	Description
Protocol Type	<ul style="list-style-type: none"> • If the remote device is added through private protocol, the default type is TCP. • If the remote device is added through ONVIF protocol, the system supports Auto, TCP, UDP, or MULTICAST. • If the remote device is added through other manufacturers, the system supports TCP and UDP.
Encryption	<p>If the remote device is added through ONVIF protocol, enabling the Encryption check box will provide encryption protection to the data being transmitted.</p>  <p>To use this function, the HTTPS function should be enabled for the remote IP camera.</p>

Step 3 Click **OK** to save the settings.



- Only one device can be added manually at one time.

-  indicates successful connection and  indicates connection failed.

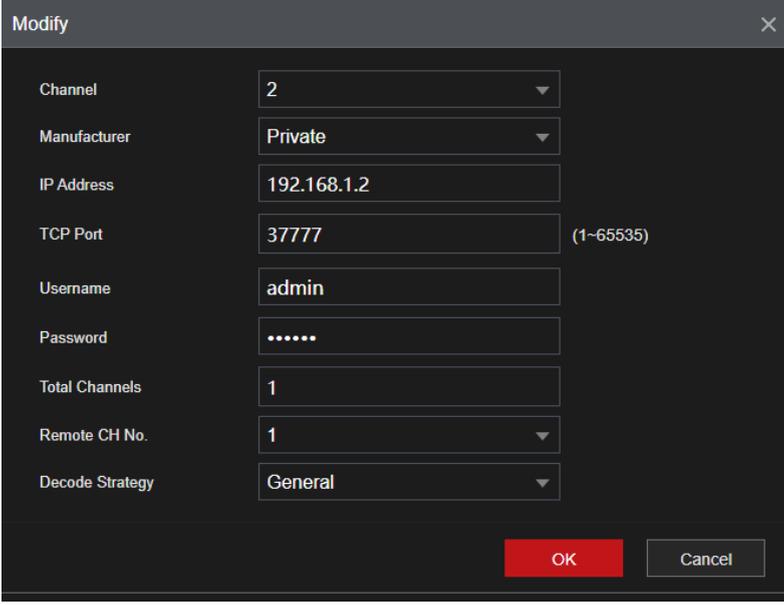
5.6.1.5 Modifying or Deleting Remote Devices

You can modify and delete the added devices.

- To modify the remote devices, do the following:

Step 1 Click  or double-click a device. The **Modify** interface will be displayed.

Figure 5-18



Step 2 In the **Channel** list, select the channel that you want to modify settings for.

Step 3 Click **OK** to save the settings.

- To delete one or more added devices, do the following:
 - ◇ Click  to delete one device.
 - ◇ Select the check box of the devices that you want to delete, and then click **Delete**.

5.6.1.6 Modifying IP Address

You can modify a single IP address or multiple IP addresses of remote devices at one time.



You can only modify the IP address of initialized cameras.

- To modify a single IP address, do the following:

Step 1 In the Searched Device list area, click  for the device that you want to modify IP. The **Modify IP** interface will be displayed.

Figure 5-19

Modify IP
✕

Selected Device Quantity: 1

Username:

Password:

DHCP
 Static

IP Address:

Subnet Mask:

Default Gateway:

Incremental Value:

SN	IP Address
IPMXB40FW1LED2109G36B...	192.168.1.139

OK
Cancel

Step 2 Configure the settings for IP address, subnet mask, default gateway, user name, and password.

Step 3 Click **OK** to save the settings.

- To modify IP address in batches, do the following:

Step 1 In the Searched Device list area, select the devices that you want to modify IP address in batches.

Step 2 Click .

The **Modify IP** interface will be displayed.

Figure 5-20

SN	IP Address
IPMXB40FW1LED2109G36B...	192.168.1.139
ORBIT2101ZE6B00009	192.168.1.180

Step 3 Set incremental value.



The system will add the incremental value to the fourth segment of IP addresses of selected devices.

Step 4 Configure the settings for start IP address (the IP address is allocated in sequence), subnet mask, default gateway, user name, and password.

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

5.6.1.7 Exporting IP Address

You can export the added IP address to the USB storage device.



The exported information is saved in .csv file, which includes IP address, port number, channel number, manufacturer, user name, and password.

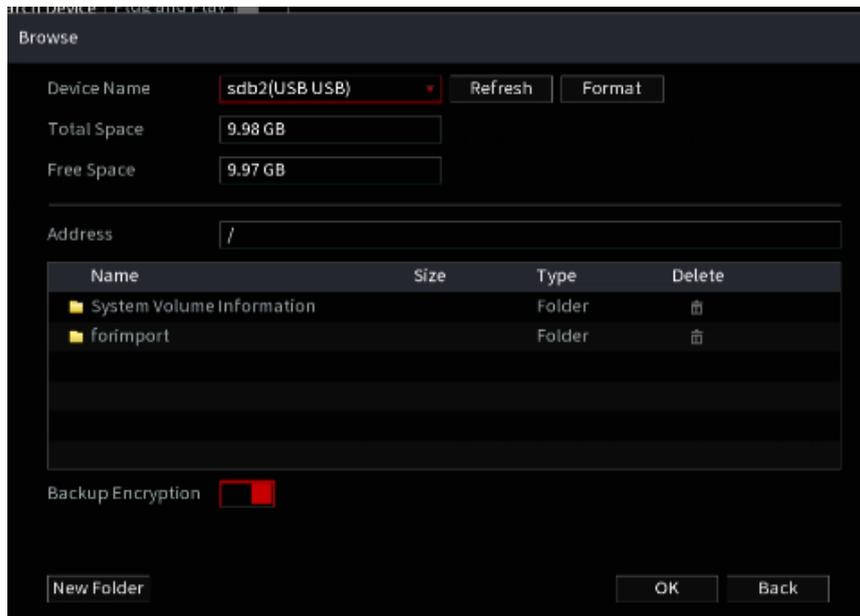
Step 1 Insert the USB storage device to the USB port of the Device.

Step 2 Click **Export**.

The **Browse** interface will be displayed.

Figure 5-21

Step 3



Configure the save path.

Step 4 Click **OK** to save the settings.

A pop-up message indicating "Successfully exported" will be displayed.

Step 5 Click **OK**.



When exporting IP address, the **Backup Encryption** check box is selected by default. The file information includes IP address, port, channel number, manufacturer, user name, and password.

- If you select the **Backup Encryption** check box, the file format is .backup.
- If you de-select the **Backup Encryption** check box, the file format is .csv. In this case, there may be a risk of a data breach.

5.6.1.8 Importing IP Address

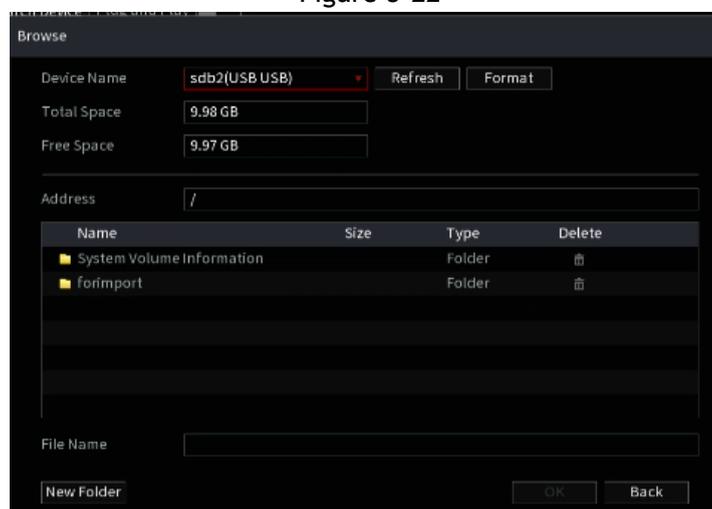
You can add remote devices by importing IP address information.

Step 1 Insert the USB storage device to the USB port of the Device.

Step 2 Click **Import**.

The **Browse** interface will be displayed.

Figure 5-22



Step 3 Select the file that you want to import.

Step 4 Click **OK** to start importing.

After importing is completed, a pop-up message indicating "The import succeeded" is displayed.



If the IP address that you want to import already exists in the Device, the system will pop up a message to ask you whether to overwrite the existing content.

- Click **OK** to replace the existing one.
- Click **Cancel** to add it as a separate device in the **Added Device** area.



- You can edit the exported .csv file and be cautious not to change the file format; otherwise, the file cannot be imported as it will be flagged as invalid.
- The language of .csv file must match the Device language.
- The import and export through customized protocol is not supported.

5.6.2 Managing Remote Devices

You can view the status of remote devices and upgrade.

5.6.2.1 Viewing Status

This section allows you to view the device information such as connection status, IP address, motion detection, video loss detection, camera name, and manufacturer.

Select **Main Menu > Advanced Settings > Camera Configuration > Add Remove Device**, the **Status** interface will be displayed.

Figure 5-23

Channel	Status	IP Address	Motion	Video Loss	Video Ta...	External Alarm	Camera Name	Manufacturer	Type
2	●	192.168.1.139	●	●	●	●	IPC	Private	IPMX-B40F-W1-LED
3	●	192.168.1.147	--	--	--	--	IPC	Private	IP Camera
4	●	192.168.1.117	●	●	●	●	IPC	Private	IP Camera
5	●	192.168.1.196	--	--	--	--		ONVIF	IPFX-B40V-IRW2

5.6.2.2 Viewing Firmware Information

You can view the device firmware information such as channel number, IP address, manufacturer, system version, video input, audio input, and alarm in.

Select **Main Menu > Advanced Settings > Camera Configuration > Add Remove Device > Firmware**, the **Firmware** interface will be displayed.

5.6.2.3 Upgrading Remote Devices

Step 1 Select **Main Menu > Advanced Settings > Camera Configuration > Add Remove Device > Update**.

The **Update** interface will be displayed.

Camera List	Device Status	Firmware	Update				
Camera Update(0/5)						Device Type	None ▾
<input type="checkbox"/> Channel	Status	IP Address	System Version	Status	Update	Port	Type
<input type="checkbox"/> 2	●	192.168.1.139	2.800.00KL007.0.R,2021-0...	Pending	Check	37777	IPMX-B40F-W1-LED
<input type="checkbox"/> 3	●	192.168.1.147		Pending	Check	37777	IP Camera
<input type="checkbox"/> 4	●	192.168.1.117	2.840.00KL003.0.R,2022-0...	Pending	Check	37777	IP Camera
<input type="checkbox"/> 5	●	192.168.1.196		Pending	Check	80	IPFX-B40V-IRW2
<input type="checkbox"/> 6	●	192.168.1.84	2.812.00KL000.0.R,2022-0...	Pending	Check	37777	

Step 2 Upgrade the device.

- File Update
 - 1) Insert a USB storage device containing the upgrade files into the USB port of the Device.
 - 2) Select the devices that you want to upgrade.
 - 3) Click **File Update**.
The **File Update** interface will be displayed.
 - 4) Select the upgrading files and click **Apply**.
- Online Update
 - 1) Click **Detect** or select the check box for the device that you want to upgrade and click **Manual Check**.
The system starts detecting if there is a new version on the online server.
 - 2) Select the check box of all the devices that have a new version.
 - 3) Click **Online Update**.



- The system will pop up a message to indicate if the upgrading is successful.
- You can use the Type list to filter the devices so that you can find the devices quickly.

5.7 Configuring Record Settings

The Record section allows you to manually or automatically configure the video recording settings of the main stream and sub stream respectively.

5.7.1 Enabling Record Control



- Manual recording operation requires the user have permission to access **STORAGE** settings.
- Check to ensure the HDD installed in the Device has been formatted properly.

To enter the record control interface, do the following:

Step 1 Right-click on the live view screen, and the shortcut menu will be displayed. On the shortcut menu, select **Manual Control > Record Control**.

The **Record Mode** interface will be displayed.

Main Stream	All	1	2	3	4	5	6
Auto	<input type="radio"/>	<input checked="" type="radio"/>					
Manual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Off	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sub Stream							
Auto	<input type="radio"/>	<input checked="" type="radio"/>					
Manual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Off	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Snapshot							
On	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Off	<input type="radio"/>	<input checked="" type="radio"/>					

Step 2 Configure the settings for the record control parameters.

Parameter	Description
Channel	Displays all the analog channels and the connected digital channels. You can select a single channel or select All.
Main Stream/Sub Stream	<ul style="list-style-type: none"> • Auto: Automatically record according to the record type and recording time as configured in the recording schedule. • Manual: Keep general recording for 24 hours for the selected channel. • Stop: Do not record.
Snapshot	Enable or disable the scheduled snapshot for the corresponding channels.

Step 3 Click Apply.

5.7.2 Configuring Recorded Video Storage Schedule

Configuring the recording schedule allows you to control the types of video recorded such as constant, event or alarm triggered, and the times they will record.

5.8 Configuring Snapshot Settings

5.8.1 Configuring Snapshot Trigger

The snapshot is divided into scheduled snapshot, event-triggered snapshot, and face detection triggered snapshot. When both are enabled, the event-triggered snapshot has priority.

- If there is no alarm event, the system performs a scheduled snapshot.
- If there is an alarm event, the system performs an event-triggered snapshot.

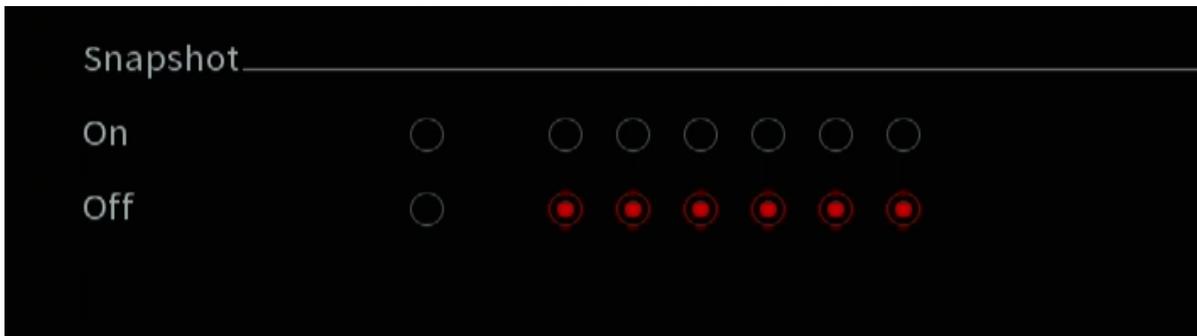
5.8.1.1 Configuring Scheduled Snapshot

Step 1 Right-click on the live view screen, and the shortcut menu will be displayed.

Step 2 On the shortcut menu, select **Manual Control > Record Control**.

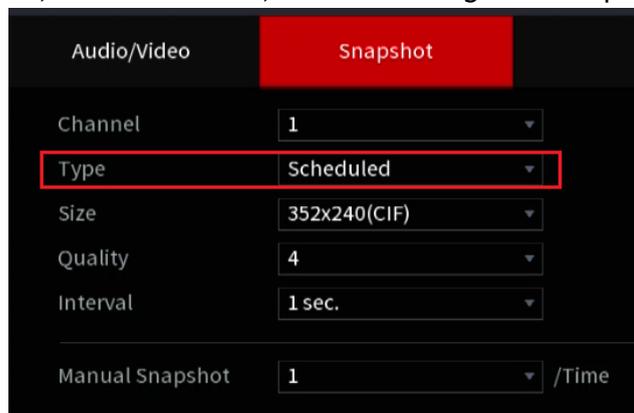
The **Record Mode** interface will be displayed.

Step 3 In the **Snapshot** area, enable the snapshot for the channels if needed.



Step 1 Select **Main Menu > Advanced Settings > Camera Configuration > Video Stream > Snapshot**.
The **Snapshot** interface will be displayed.

Step 2 In the **Type** list, select **Scheduled**, and then configure other parameters.



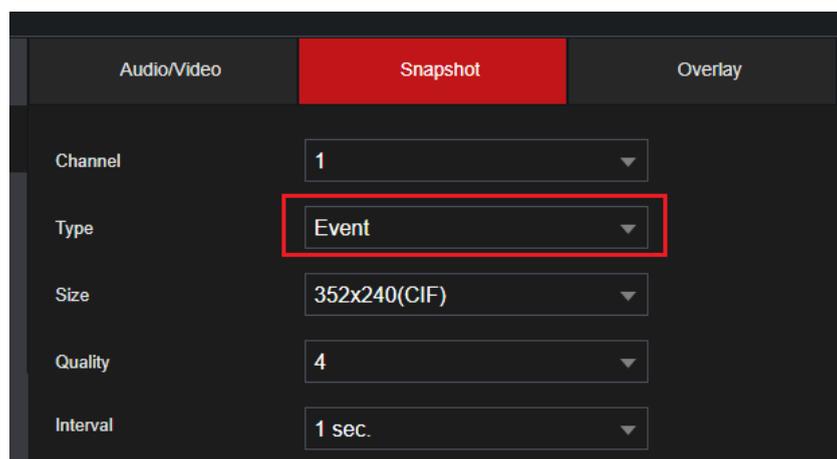
Step 3 Click **Apply** to save the settings.

- If you have configured the snapshot schedule, the configuration has been completed.
- If you have not configured the snapshot schedule, see "5.1.4.10."

5.8.1.2 Configuring Event-Triggered Snapshot

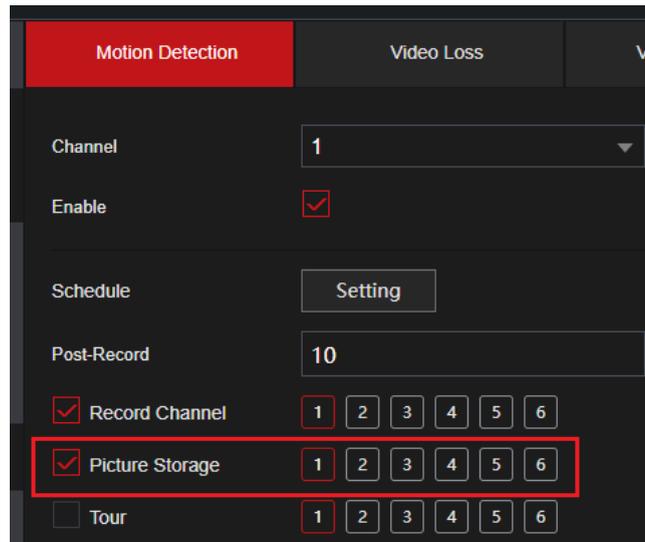
Step 1 Select **Main Menu > Advanced Settings > Camera Configuration > Video Stream > Snapshot**.
The **Snapshot** interface will be displayed.

Step 2 In the **Type** list, select **Event**, and then configure other parameters.



Step 3 Select **Main Menu > Advanced Settings > Alert Center > Video Detection**, and select the event type to configure, for example, select the **Motion Detection** tab.

Figure 5-24



Step 4 Click **Setting** next to **Picture Storage** check box and select the corresponding channel

Step 5 Click **Apply**.

5.8.2 Configuring Snapshot Storage Schedule

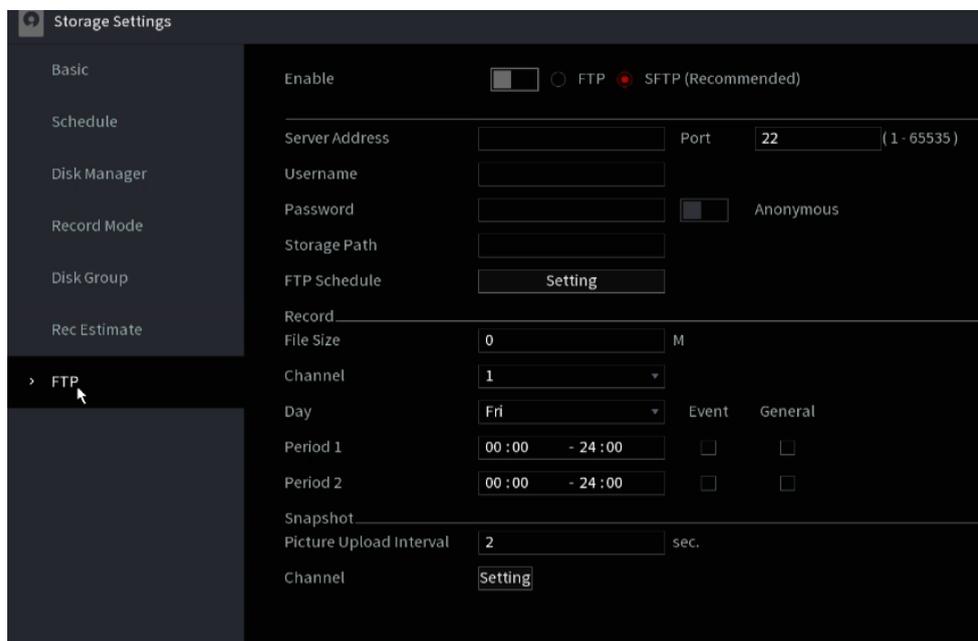
You need to configure the storage schedule for the snapshot so that the snapshot can be saved.

5.8.3 Backing up Snapshots to FTP

Step 1 Select **Main Menu > Advanced Settings > Storage > FTP**.

The FTP interface will be displayed.

Figure 5-25



Step 2 Enable the FTP function and configure the parameters. For details, see "5.18.9 Configuring FTP Storage Settings."

The snapshots will be uploaded to FTP for backup.

5.9 Playing Back Video

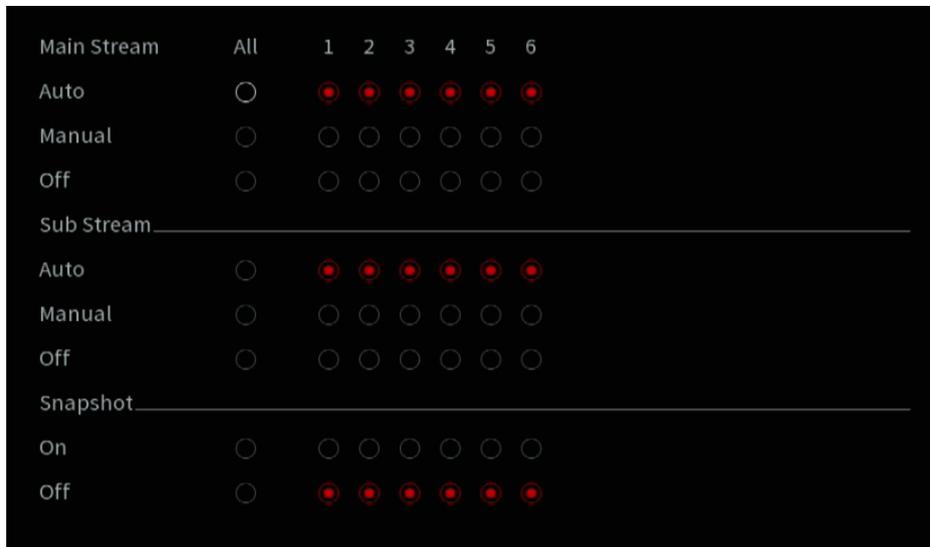
5.9.1 Enabling Record Control

- Manual recording operation requires the user have permission to access **STORAGE** settings.
- Check to ensure the HDD installed in the Device has been formatted properly.

To enter the record control interface:

Step 1 Right-click on the live view screen, and the shortcut menu will be displayed. On the menu, select **Main Menu > Advanced Settings > Storage > Record Mode**. The **Record Mode** interface will be displayed.

Figure 5-26



Step 2 Configure the settings for the record control parameters.

Parameter	Description
Channel	Displays all the analog channels and the connected digital channels. You can select a single channel or select All .
Main Stream/Sub Stream	<ul style="list-style-type: none"> • Auto: Automatically record according to the record type and recording time as configured in the recording schedule. • Manual: Keep general recording for 24 hours for the selected channel. • Stop: Do not record.
Snapshot	Enable or disable the scheduled snapshot for the corresponding channels.

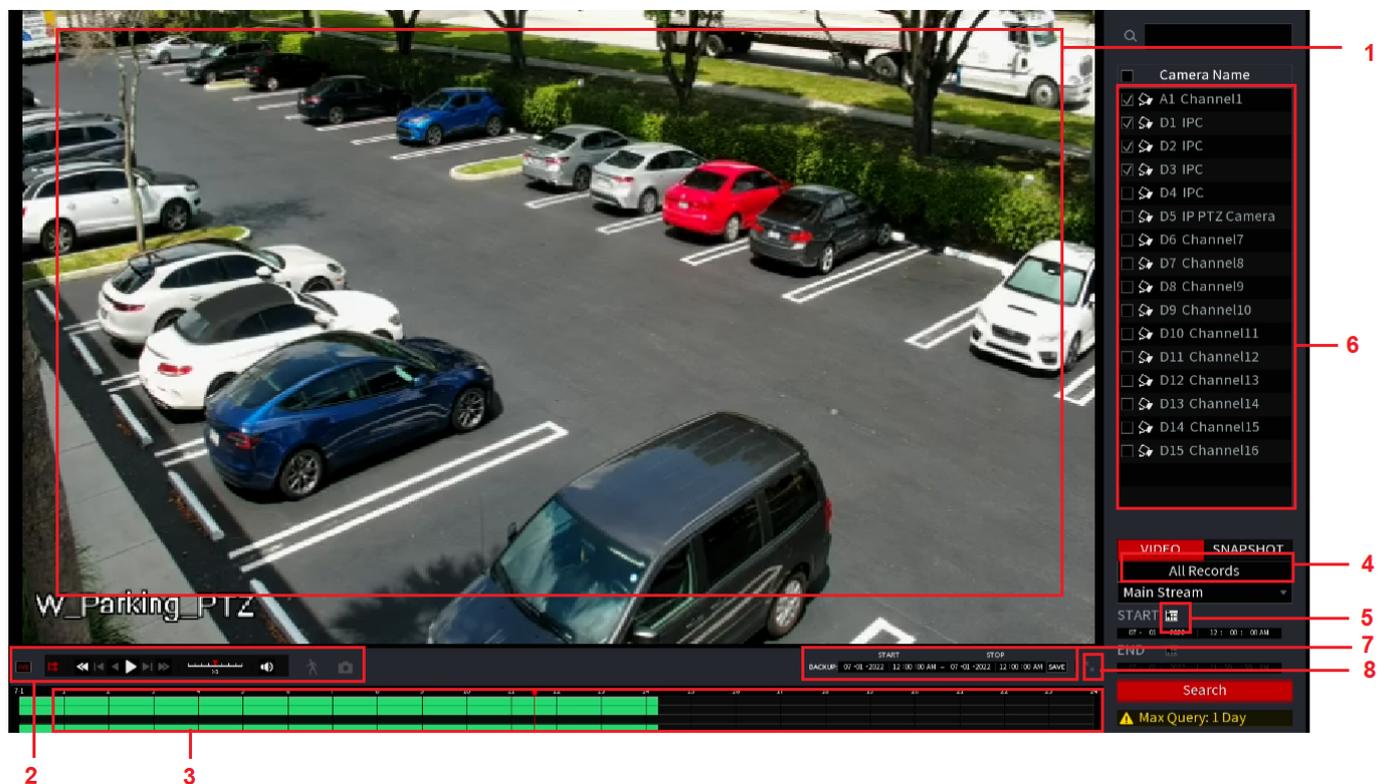
5.9.2 Instant Playback

The instant playback function allows you to play back the previous five to sixty minutes of the recorded video on any channel. For details about the instant playback function, see "5.2.2.2 Instant Playback."

5.9.3 Video Playback Main Interface

You can search for and play back the recorded video saved on the Device. Select **Main Menu > Playback**, the video search interface will be displayed.

Figure 5-27

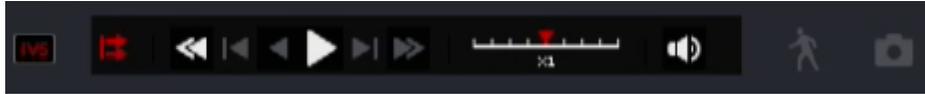


No.	Function	Description
1	Display Window	Displays the searched recorded video or picture. Supports simultaneously playing in single-channel, 4-channel, 9-channel, and 16-channel.  To digitally zoom in, play back a video in single channel mode, then click and hold to select the area that you want to enlarge. The area will be enlarged after the left mouse button is released. To exit the zoomed mode, right-click on the image.
2	Playback Controls Bar	Playback control buttons. For details about the control buttons, see "5.9.3.2 Introducing Playback Controls."

3	Time Bar	<p>Displays the type and time period of the currently recorded video.</p> <ul style="list-style-type: none"> • In the 4-channel layout, there are four time bars are displayed; in the other view layouts, only one time bar will be displayed. • Click on the colored area to start playback from a certain time. • Time bar colors: Green indicates general type; Red indicates external alarm; Yellow indicates motion detection; Blue indicates intelligent events; Purple indicates POS events. • For some models, when you are clicking on the blank area in the time bar, the system will automatically move to the next time point where there is a recorded video located. • Click and hold the time bar, and the mouse pointer will change to a hand icon, then you can drag to view the playback of the target time. • You can drag the vertical orange line on the time bar to rapidly view the playback in iframe format. • When playing back video in single channel mode, you can move the mouse pointer to the time bar to display thumbnail pictures for the video of the target time. • When playing back video, you can select other channels as needed. The time bar of newly added channels will be added up to the time bar of earlier base channels. The type and time period of newly added channels are the same as early base channels.
4	Record type	Select the check box to define the recording type to search for.
5	Calendar	<p>Click the date that you want to search, and the time bar displays the corresponding record.</p> <p>The dates with records or snapshots have a small solid circle under the date.</p>
6	View Layout and Channel Selection	<p>In the Camera Name list, select the channel(s) that you want to play back.</p> <ul style="list-style-type: none"> • The window split is decided by how you select the channel(s). For example, if you select one channel, the playback will be displayed in the single-channel view; if you select two to four channels, the playback will be displayed in the four-channel view. The maximum is eight channels.
7	Video Splice/ Clip	Splice a section of recorded video and save it. For details about splicing a recorded video, see "5.9.3.4 Clipping Recorded Video."
8	Full Screen	<p>Click  to display in full screen. In the full screen mode, point to the bottom of the screen, the time bar will be displayed. Right-click on the screen to exit full screen mode.</p>

5.9.3.2 Playback Controls Bar

You can perform the operations such as controlling the speed of playback, toggling sound, and taking snapshots through the playback controls bar.



The play backward function and playback speed differ depending on the product hardware version. The actual product shall govern.

Table 5-5

Icon	Function
	Play/Pause. During playing back, you can switch between play and pause.
	Stop. During playing back, you can click the Stop button to stop playback.
	Play Backward. <ul style="list-style-type: none"> During playing back, click the Play Backward button to backward play the recorded video, the button switches to ; click to stop playing backward. During playing back, click to start playing forward.
	Previous Frame/Next Frame. <ul style="list-style-type: none"> When the playback is paused, click or click to play single-frame recorded video. When playing back single-frame recorded video, click to start playing forward.
	Slow Playback. <ul style="list-style-type: none"> During playing back, click to set the speed of slow playback as SlowX1/2, SlowX1/4, SlowX1/8, or SlowX1/16. During fast playback, click to slow down the speed of fast playback.
	Fast Playback. <ul style="list-style-type: none"> During playing back, click to set the speed of fast playback as FastX2, FastX4, FastX8, or FastX16. During slow playback, click to speed up slow playback.

	<p>Previous Day/Next Day.</p> <p>Click  or click  to play the previous day or next day of the current recorded video.</p>
	Adjust volume of playback.
	Enable smart search function. For details about using the smart search, see "5.9.4 Smart Search."
	Add filter criteria of smart search. You can select Human , Vehicle , or uncheck.
	In the full screen mode, click  to take a snapshot and save into the USB storage device or mobile HDD.
	During playback, click this icon to display or hide AI rulers. For more details, see "5.9.5 Showing AI Rule during Playback."
	Show playback video in full screen.

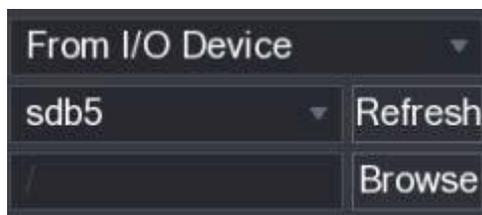
5.9.3.3 Selecting Search Type

You can search between the recorded videos, splices, or snapshots from the internal HDD or external storage device.

- **From R/W Disk:** Recorded videos or snapshots playback from HDD of the Device.



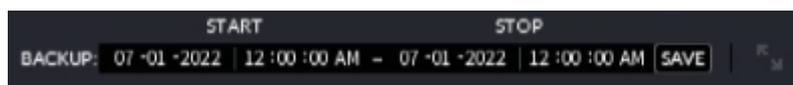
- **From I/O Device:** Recorded videos playback from external storage device. see the image below. Click **Browse**, select the save path of recorded video file that you want to play. Double-click the video file or click  to start playing.



5.9.3.4 Clipping Recorded Video

During playback, clip sections of recorded video and save to the USB storage device. For the video clip interface, see Figure 5-28.

Figure 5-28



Step 1 Select a recorded video that you want to play.

- Click  to start playing from the beginning.
- Double-click anywhere in the time bar colored area to start playback.

Step 2 Click on the time bar to select the start time, and then click  to start clipping. **Step 3**

Click on the time bar to select the end time, and then click  to stop clipping.

Step 4 Click .

The **BACKUP** dialog box will be displayed. You can back up the files.



- You can clip the video of a single-channel or multiple channels.
- Maximum 1024 files can be backed up at one time.
- The files that are selected in the **File List** cannot be clipped.

5.9.3.5 Backing up Recorded Video

You can back up the recorded video file or splice video files into the USB storage device.

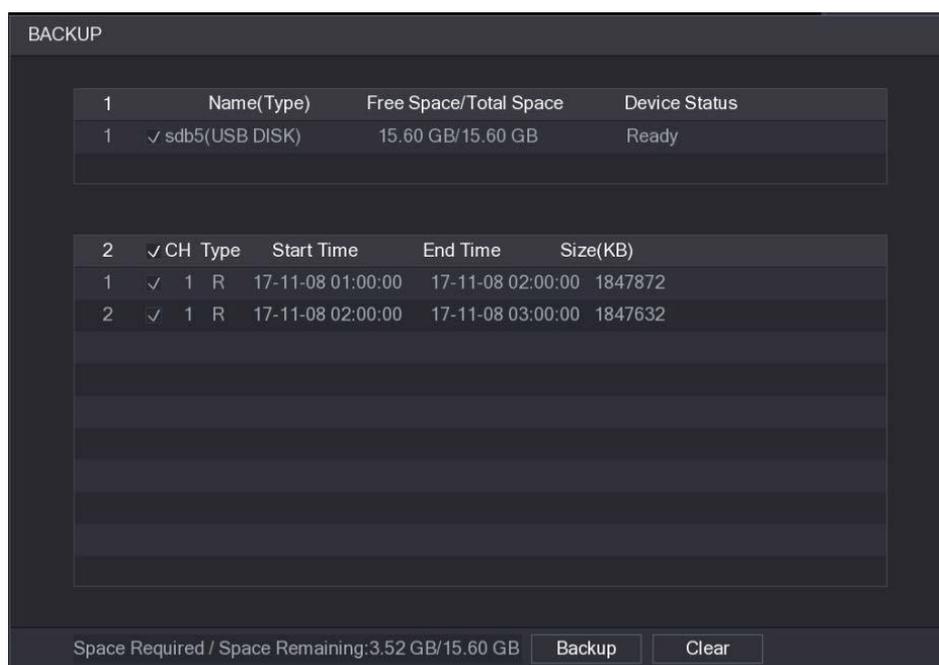
Step 1 Select the recorded video file that you want to back up. You can select the following two types of files:

- Recorded video file: Click , the **File List** area will be displayed. Select the file(s) that you want to back up.
- Splice video file. For details about splicing video file, see "5.9.3.4 Clipping Recorded Video."

Step 2 Click .

The **BACKUP** dialog box will be displayed.

Figure 5-29



Step 3 Click **Backup**.



If you do not want to back the file, un-check the check box.

5.9.4 Smart Search

The Smart Search allows you to analyze a certain area in playback to find if there was any motion detection event that occurred. The system will display the images with motion events of the recorded video.



Not all models support this function.

To use the Smart Search function, you need to enable the motion detection for the channel by selecting **Main Menu > Advanced Settings > Alert Center > Video Detection**. To utilize the Smart Search function:

Step 1 Select **Main Menu > SEARCH**, and the video search interface will be displayed.

Step 2 In the **Camera Name** list, select the channel(s) that you want to play.

Step 3 Click  or double-click anywhere in the time bar colored area to start playback.

Step 4 Click .

The grid will be displayed on the screen.



- Only single-channel view supports smart search.
- If multi-channels are selected, double-click on the channel window to display this channel only on the screen, and then you can start using smart search function.

Step 5 Drag the pointer to select the searching area.



The grid area supports 22×18(PAL) and 22×15(NTSC).

Step 6 Click  to add filter criteria. You can check **Human** box, **Vehicle** box, or uncheck.

- Human: Display the motion alarm of humans during the selected time and searching area.
- Vehicle: Display the motion alarm of vehicles during the selected time and searching area.
- Unchecking: Display the general motion alarm which includes both human and vehicle, during selected time and searching area.

Step 7 Click .

The screen starts playing back the motional splices of recorded video for the selected searching area.

Step 8 Click  to exit the smart searching while playback.

5.9.5 Showing AI Rule during Playback

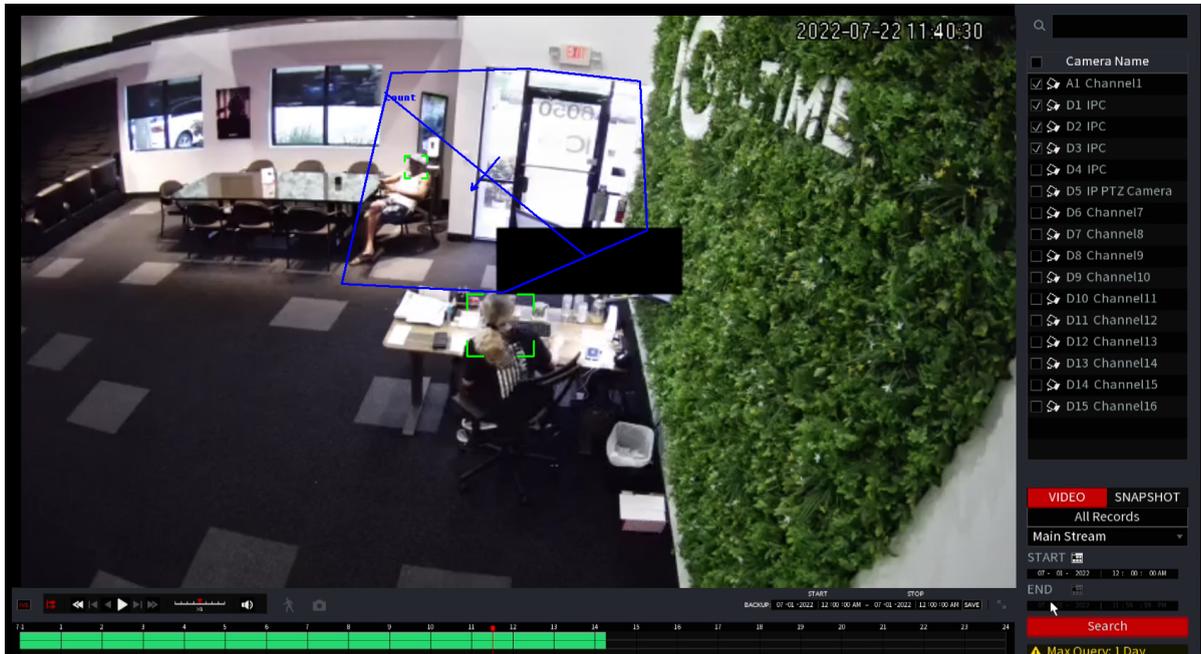
To use the AI rule showing function:

Step 1 Select **Main Menu > SEARCH**, and the video search interface will be displayed.

Step 2 In the **Camera Name** list, select the channel(s) that you want to play.

Step 3 Click  or double-click anywhere in the time bar colored area to start playback.

Click  to view the AI rule during playback. This function is enabled by default.



5.9.6 Marking and Playing Back Video

You can mark the recording for somewhere important. Then you can easily find the marked recording by searching time and mark name.

Marking a Video

Step 1 Select **Main Menu > SEARCH**, the video search interface will be displayed.

Step 2 In the playback mode, click .

The **Add Tag** dialog box will be displayed.

Add Tag

Tag Time

Tag Name

Step 3 In the **Tag Name** box, enter a name.

Step 4 Click **OK**.

This marked video file displays in the **Tag List**.

Playing Back Marked Video

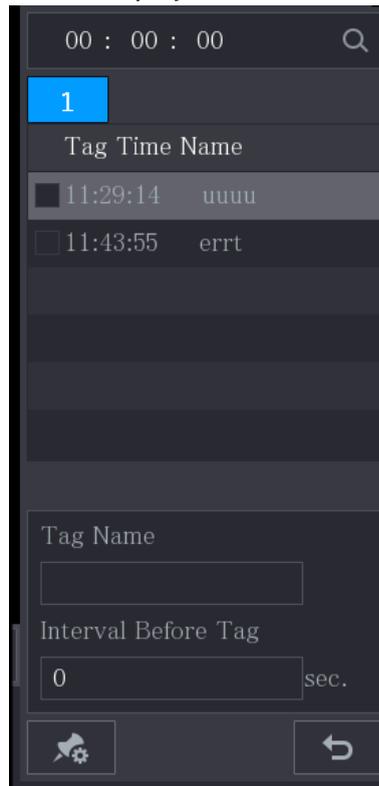


This function is supported on single-channel playback.

Step 1 In the **Camera Name** list, select one channel.

Step 2 Click .

The Mark List interface will be displayed.



Step 3 Double-click the file that you want to play back.

To search the marked video by time, in the **SEARCH** box on the top of the interface, enter the time, and then click .

Playing Back Time before the Tag

You can configure to play N seconds of the tagged video before the tagged time.

Step 1 In the **Tag Name** box, enter the name of a tagged video.

Step 2 In the **Interval Before Tag** box, enter N seconds.

Step 3 Click .

The playback starts from N seconds before the tagged time.



If there is N seconds exist before the marked time, the playback starts from N seconds before the tagged time. If there is not, it plays back as much as there is.

Managing Tagged Video

On the **Tag List** interface, click , the **Tag Management** interface will be displayed.

Tag Management

Channel

Start Time

End Time

	CH	Tag Time	Tag Name
1	8	2020-01-04 11:29:14	uuuu
2	8	2020-01-04 11:43:55	errt

- Be default, it manages all the tagged videos of the selected channel.
- To search the tagged video, select channel number from the **Channel** list, enter time in **Start Time** box and **End Time** box, and then click **Search**.
- All the tagged videos display in time order.
- To modify the name of tagged video, double-click a tagged video, the **Modify Tag** dialog box will be displayed.
- To delete the marked video, select the tagged video, and then click **Delete**.



After opening the **Tag Management** interface, the playback will pause until exiting this interface. If the marked video that was in playing back is deleted, the playback will start from the first tagged video in the **Tag List**.

5.9.7 Playing Back Snapshots

You can also search and play back the snapshots.

Step 1 Select **Main Menu > Playback > Playback**, the video search interface will be displayed.

Step 2 In the **Search Type** list, select **Picture**.

Step 3 In the **Channel** list, select a channel number.

Step 4 In the **Calendar** area, select a date.

Step 5 Click .

The system starts playing snapshots according to the configured intervals.

5.9.8 Using the File List

The **File List** allows you to view a list of all the recorded videos within a certain period from any channel.

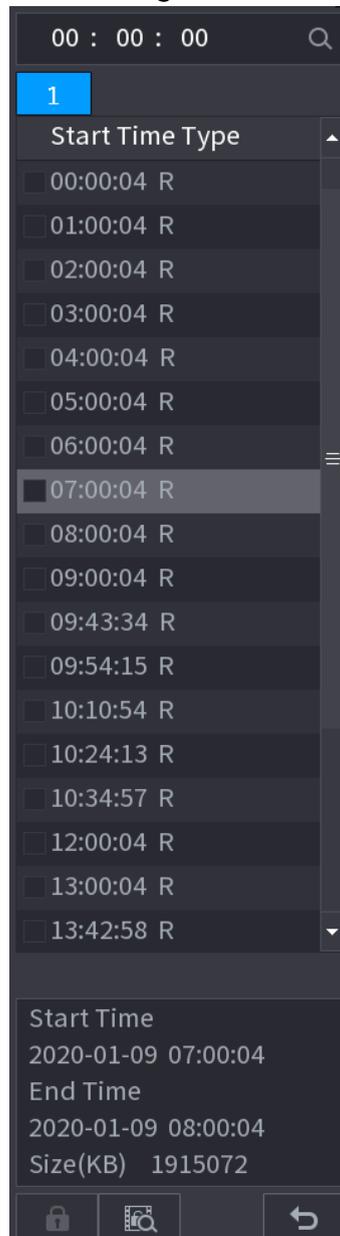
Step 1 Select **Main Menu > VIDEO**, the video search interface will be displayed.

Step 2 Select a channel(s).

Step 3 Click .

The **File List** interface will be displayed.

Figure 5-30



Step 4 Start playback.

- Click , the playback starts from the first file by default.
- Click any file, and the system plays back this file.
-  In the time box on the top of the file list interface, you can enter the specific time to search the file that you want to view.
- In the File List area, a max of 128 files can be displayed.
- File type: **R** indicates general recorded video; **A** indicates recorded video with external alarms; **M** indicates recorded video with motion detection events; **I** indicates recorded video with intelligent vents.
- Click  to return to the interface with the calendar and CAM NAME list.

Locking and Unlocking the Recorded Video

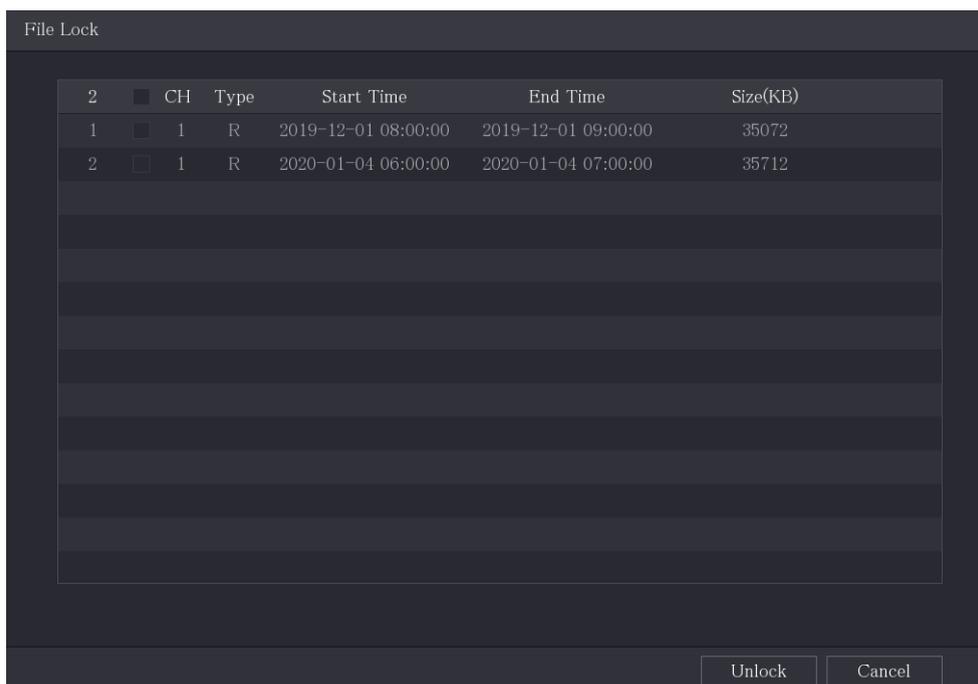
Locking a video allows the video to prevent from being overwritten on the Hard Drive.

- To lock the recorded video, on the **File List** interface, select the check box of the recorded video, and then click . The locked video will not be covered.
- To view the locked information, click , the **File Lock** interface will be displayed.



The recorded video that is under writing or overwriting cannot be locked.

- To unlock the recorded video, in the **File Lock** interface, select the video, and then click **Unlock**.



2	CH	Type	Start Time	End Time	Size(KB)
1	1	R	2019-12-01 08:00:00	2019-12-01 09:00:00	35072
2	1	R	2020-01-04 06:00:00	2020-01-04 07:00:00	35712

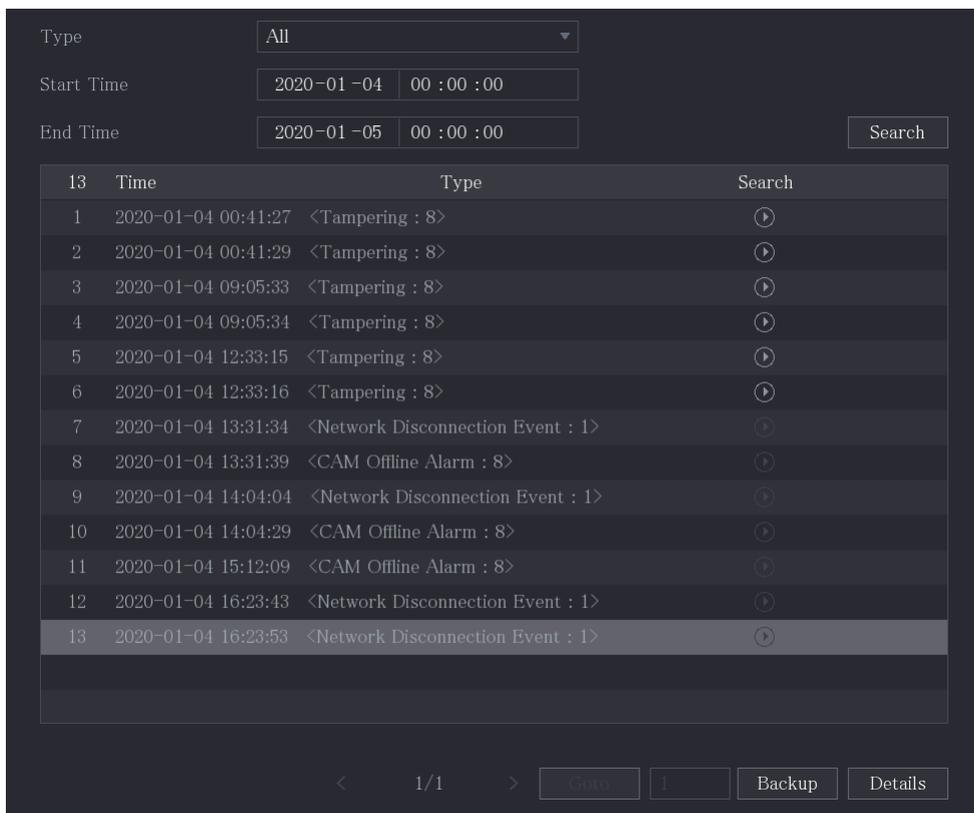
5.10 Alarm Events Settings

5.10.1 Alarm Information

This section allows you to search, view and back up the alarm and event information.

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Alarm > Alarm Info**.

The **Alarm Info** interface will be displayed.



Step 2 In the **Type** list, select the event type; In the **Start Time** box and **End Time** box, enter the specific time.

Step 3 Click **Search**.

The search results are displayed.

Step 4 Click **Backup** to back up the search results into the external storage device.

5.10.2 Alarm Input Settings

Connect the alarm input and output ports by referring to "4.3 Connecting to Alarm Input and Output." You can configure the alarm settings for each channel individually or apply the settings to all channels and then save the settings.

5.10.2.1 Configuring Local Alarms

You can connect the device to the device's alarm input port. When the alarm is activated on the alarm device, the alarm information will be uploaded to the Device, and then the Device outputs the local alarms in the way that you configure in this section.

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Alarm > Alarm-in Port > Local**.

The **Local** interface will be displayed.

Figure 5-31

Step 2 Configure the settings for the local alarms.

Parameter	Description
Alarm-in Port	Select the channel number.
Alarm Name	Enter the customized alarm name.
Enable	Enables or disables the local alarm function.
Device Type	In the Device Type list, select NO or select NC as the voltage output type depending on the device attached.
Schedule	Click Setting to display the setting interface. Define a period during which the motion detection is active. For details, see "Setting Motion Detection Period" section in "5.10.4.1 Configuring Motion Detection Settings."
Anti-Dither	Configure the time period from the end of event detection in which the events will not trigger.
Alarm-out Port	Click Setting to display the setting interface. <ul style="list-style-type: none"> Local Alarm: Enable alarm activation through the alarm devices connected to the selected output port.
Post-Alarm	Set a length of time for the Device to delay turning off the alarm after the external alarm has ended. The value ranges from 0 seconds to 300 seconds, and the default value is 10 seconds.
Show Message	Select the Show Message check box to enable a pop-up message in your local host PC software.
Report Alarm	Select the Report Alarm check box to enable the system to upload the alarm signal to the network (including alarm center) when an alarm event occurs.
Send Email	Select the Send Email check box to enable the system to send an email notification when an alarm event occurs. To use this function, make sure the email function is enabled in Main Menu > Advanced Settings > Network > Email .

Parameter	Description
Record Channel	Select the channel(s) that you want to record. The selected channel(s) will record when the event has been triggered.  The recording for local alarm recording and auto recording must be enabled.
PTZ Linkage	Click Setting to display the PTZ interface. Enables PTZ linkage actions, such as selecting the preset that you want to be called when an alarm event occurs.
Post Record	Set a length of time for the Device to delay turning off recording after the event has ended. The value ranges from 10 seconds to 300 seconds, and the default value is 10 seconds.
Tour	Select the Tour check box to enable a tour of the selected channels.
Picture Storage	Select the Snapshot check box to take a snapshot of the selected channel.  To use this function, select Main Menu > Advanced Settings > Camera Configuration > Video Stream > Snapshot , in the Type list, select Event .
Sub Screen	Select the check box to enable the function. When an alarm event occurs, the extra screen outputs the settings configured in Main Menu > DISPLAY > Tour Setting > Sub Screen .  <ul style="list-style-type: none"> • Not all models support this function. • To use this function, extra screen shall be enabled.
Video Matrix	Select the check box to enable the function. When an alarm event occurs, the video output port outputs the settings configured in Main Menu > DISPLAY > Tour Setting .  Not all models support this function.
Buzzer	Select the check box to activate the onboard buzzer of the Recorder.
Log	Select the check box to enable the Device to record a local alarm log.

Step 3 Click **Apply** to complete the settings.



- Click **Default** to restore the default setting.
- Click **Copy to**, in the **Copy to** dialog box, select the additional channel(s) that you want to copy the local alarm settings to, and then click **Apply**.

5.10.2.2 Configuring Alarms from External IP Cameras

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Alarm > Alarm-in Port > CAM Ext**.
The **CAM Ext** interface will be displayed.

Figure 5-32

Step 2 Configure the alarm input settings from the external IPC.

Step 3 Click **Apply** to complete the settings.



- Click **Default** to restore the default setting.
- Click **Copy to** to copy the settings to other channels.
- Click **Refresh** to refresh configured settings.

5.10.2.3 Configuring Alarms for IP Camera Offline

This section allows you to configure the alarm settings for the situation when the IP camera is offline.

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Alarm > Alarm-in Port > CAM Offline**.

The **CAM Offline** interface will be displayed.

Figure 5-33

Step 2 Configure the alarm input settings from the offline IPC.

Step 3 Click **Apply** to complete the settings.

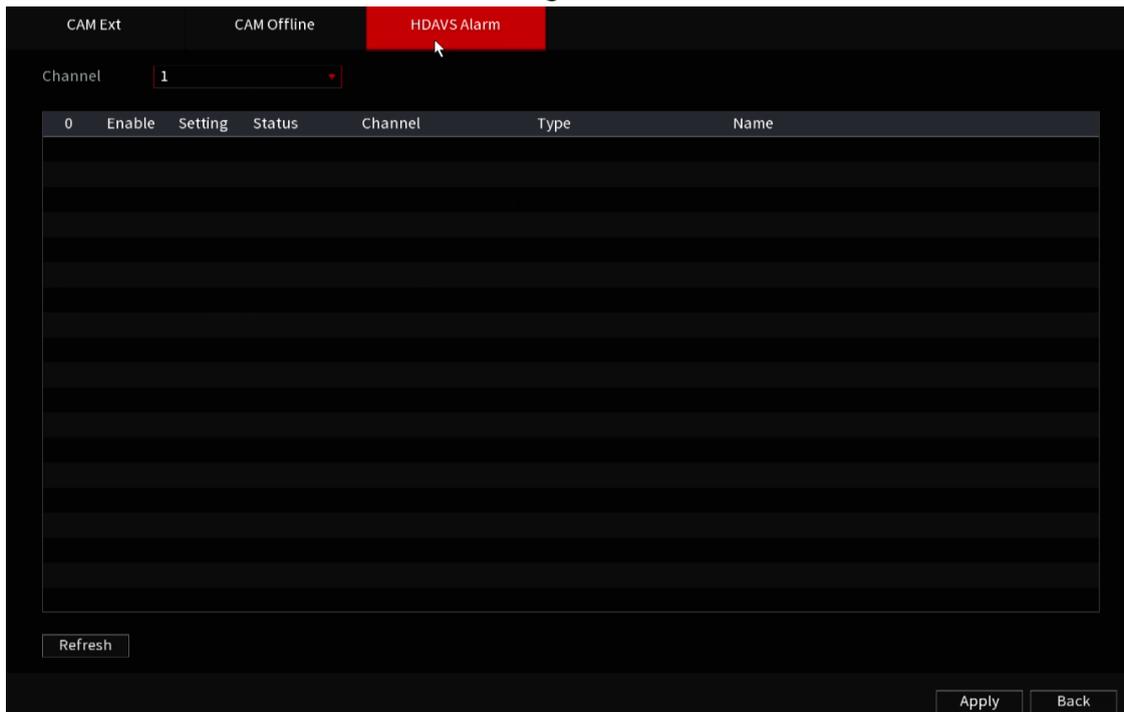


- Click **Default** to restore the default setting.
- Click **Copy to** to copy the settings to other channels.

5.10.2.4 Configuring Alarms from HD-AVS Devices

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Alarm > Alarm-in Port > HD-AVS Alarm**. The **HD-AVS Alarm** interface will be displayed.

Figure 5-34



Step 2 In the **Channel** list, select a channel or **All**.

Step 3 Click .

Step 4 Configure the settings for other parameters of the Alarm Box. For details, see the image below.

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

Step 6 Click **Apply** to complete the settings.

5.10.3 Alarm Output Settings

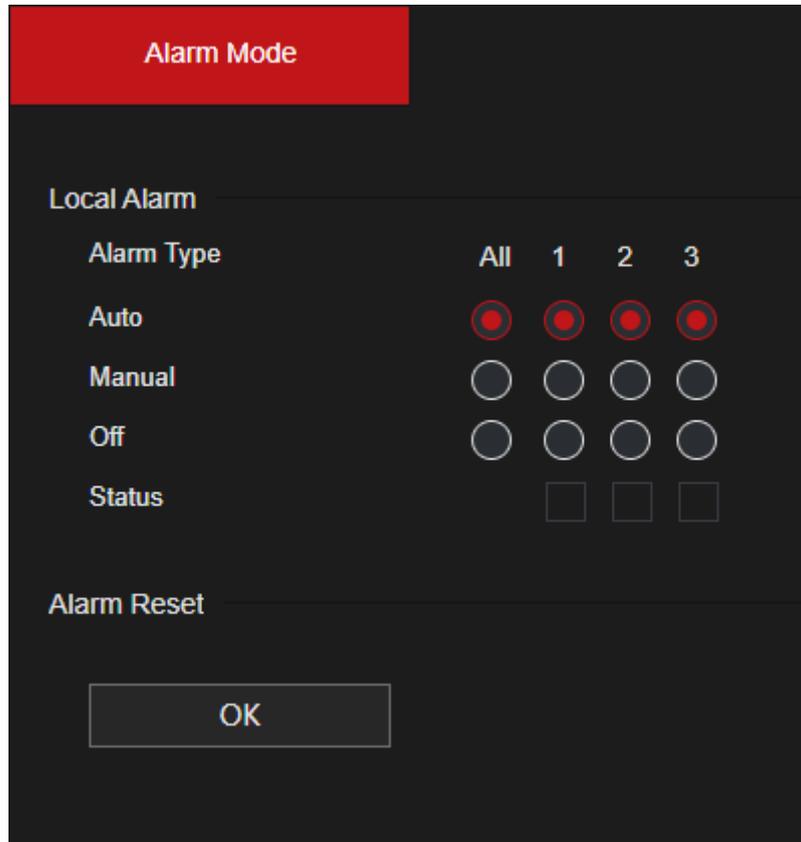
5.10.3.1 Configuring Alarm Output

This section allows you to configure devices connected to the alarm outputs after an event has been triggered.

- **Auto**: When an alarm event is triggered on the Device, the connected alarm device generates alarms.
- **Manual**: The alarm device is forced to keep generating alarms.
- **Stop**: The alarm output function is not enabled.

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Alarm > Alarm-out Port > Alarm Mode**. The **Alarm Mode** interface will be displayed.

Figure 5-35



Step 2 Configure the settings for the alarm output.

Parameter		Description
Local Alarm	Alarm Type	Select alarm type for each alarm output port.
	Status	Indicates the status of each alarm output port.
Alarm Reset		Click OK to clear all alarm output status.

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

5.10.4 Video Detection

The HDVR will trigger an event if there are considerable pixelation changes on the video such as moving objects or if the camera has been tampered with and moved from its original position.

5.10.4.1 Configuring Motion Detection Settings

When the moving object appears and moves fast enough to reach the preset sensitivity value, the system activates the alarm.

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Video Detection > Motion Detection**.

The **Motion Detection** interface will be displayed.

Figure 5-38

Step 2 Configure the settings for the motion detection parameters.

Parameter	Description
Channel	In the Channel list, select a channel to set the motion detection.
Region	Click Setting to define the motion detection region.
Enable	Enable or disable the motion detection function.
PIR Alarm	<p>PIR function helps enhance the accuracy and validity of motion detection. It can filter the meaningless alarms that are activated by the objects such as falling leaves, flies. The detection range by PIR is smaller than the field angle.</p> <p>PIR function is enabled by default if it is supported by the cameras. Enabling PIR function will allow the Passive IR to be enabled automatically to generate motion detection alarms; if the PIR function is not enabled, the motion detect will use pixelation change.</p> <ul style="list-style-type: none"> The PIR function can only be enabled when the channel type is AVS. If the camera does not support the PIR function, it will be unusable.
Schedule	Define a period during which the motion detection is active.
Anti-Dither	Configure the time period from the end of event detection in which the events will not trigger.

Parameter	Description
Alarm-out Port	<p>Click Setting to display the setting interface.</p> <ul style="list-style-type: none"> General Alarm: Enable alarm activation through the alarm devices connected to the selected output port.
Post-Alarm	<p>Set a length of time for the Device to delay turning off alarm after the external alarm has ended. The value ranges from 0 seconds to 300 seconds, and the default value is 10 seconds. If you enter 0, there will be no delay.</p>
Show Message	<p>Select the Show Message check box to enable a pop-up message in your local host PC.</p>
Report Alarm	<p>Select the Report Alarm check box to enable the system to upload the alarm signal to the network (including alarm center) when an alarm event occurs.</p>
Send Email	<p>Select the Send Email check box to enable the system to send an email notification when an alarm event occurs.</p> <p> To use this function, make sure the email function is enabled in Main Menu > Advanced Settings > Network > Email.</p>
Record Channel	<p>Select the channel(s) that you want to record. The selected channel(s) will record when the event has been triggered.</p> <p> The recording for motion detection and auto recording function must be enabled.</p>
PTZ Linkage	<p>Click Setting to display the PTZ interface.</p> <p>Enable PTZ linkage actions, such as selecting the preset that you want to be called when an alarm event occurs.</p> <p> Motion Detect can only activate PTZ presets.</p>
Post Record	<p>Set a length of time for the Device to delay turning off recording after the event has ended. The value ranges from 10 seconds to 300 seconds, and the default value is 10 seconds.</p>
Tour	<p>Select the Tour check box to enable a tour of the selected channels.</p>
Picture Storage	<p>Select the Snapshot check box to take a snapshot of the selected channel.</p> <p> To use this function, select Main Menu > Advanced Settings > Camera Configuration > Video Stream > Snapshot, in the Type list, select Event.</p>
Sub Screen	<p>Select the check box to enable the function. When an alarm event occurs, the extra screen outputs the settings configured in Main Menu > DISPLAY > Tour > Sub Screen.</p> <p></p> <ul style="list-style-type: none"> Not all models support this function. To use this function, extra screen should be enabled.

Parameter	Description
Video Matrix	Select the check box to enable the function. When an alarm event occurs, the video output port outputs the settings configured in Main Menu > DISPLAY > Tour .  Not all models support this function.
Buzzer	Select the check box to activate the onboard buzzer of the Recorder.
Log	Select the check box to enable the Device to record a local alarm log.
Alarm Tone	Select to enable audio broadcast/alarm tones in response to a motion detection event.
White Light	Select the check box to enable white light alarm of the camera.
Siren	Select the check box to enable sound alarm of the camera.

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



- Click **Default** to restore the default setting.
- Click **Copy to**, in the **Copy to** dialog box, select the additional channel(s) that you want to copy the motion detection settings to, and then click **Apply**.
- Click **Test** to test the settings.

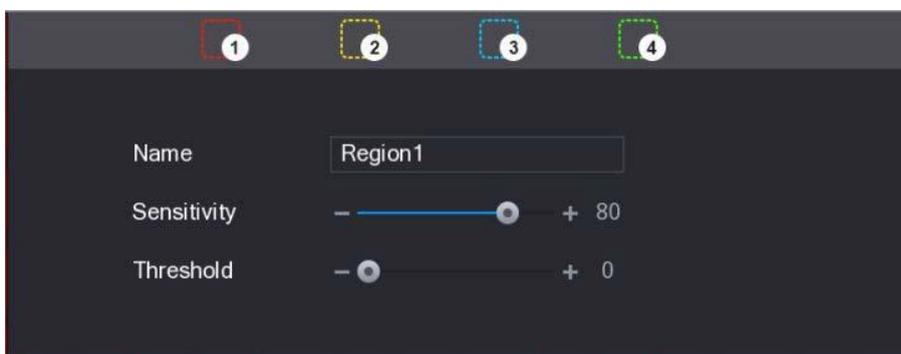
Setting the Motion Detection Region

Step 1 Next to **Region**, click **Setting**.

The region setting screen will be displayed. **Step 2**

Point to the middle top of the interface.

The setting interface will be displayed.



Step 3 Configure the regions settings. You can configure totally four regions.

- 1) Select one region, for example, click .
- 2) Drag on the screen to select the region that you want to detect. The selected area shows the color that represents the region.
- 3) Configure the parameters.

Parameter	Description
Name	Enter a name for the region.
Sensitivity	Every region of every channel has an individual sensitivity value. The greater the value, the easier the alarms can be activated.
Threshold	Adjust the threshold for motion detection. Every region of every channel has an individual threshold. The lesser the value, the easier the alarms can be activated.



When anyone of the four regions activates the motion detect alarm, the channel where this region belongs will activate motion detect alarm.

Step 4 Right-click on the screen to exit the region setting interface.

Step 5 On the **Motion Detection** interface, click **Apply** to complete the settings.

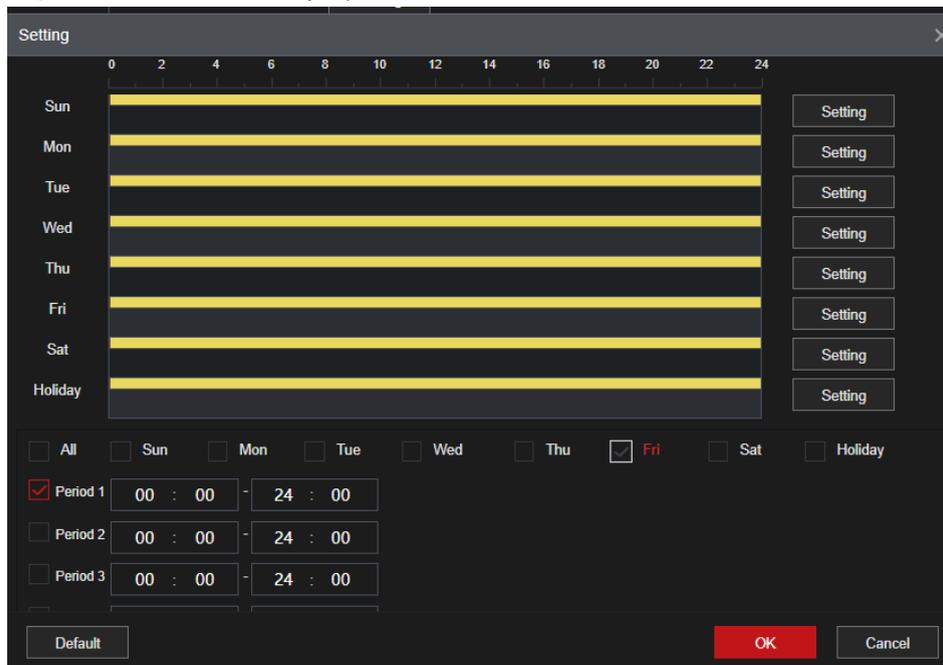
Setting Motion Detection Period



The system only activates the alarm in the defined period.

Step 1 Next to **Schedule**, click **Setting**.

The **Setting** interface will be displayed.



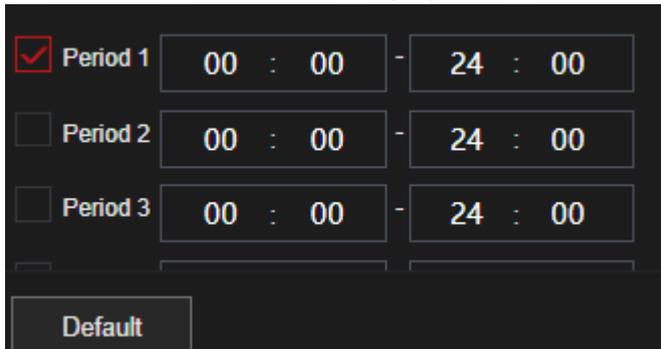
Step 2 Define the motion detection period. By default, it is active all the time.

- Define the period by drawing.
 - ◇ Define for a specified day of a week: On the timeline, click the half-hour blocks to select the active period.
 - ◇ Define for several days of a week: Click  before each day, the icon switches to . On the timeline of any selected day, click the half-hour blocks to select the active periods, all the days with  will take the same settings.
 - ◇ Define for all days of a week: Click **All**, all  switches to . On the timeline of any day, click the half-hour blocks to select the active periods, all the days will take the same settings.

- Define the period by editing. Take Sunday as an example.

1) Click .

The **Period** interface will be displayed.



- 2) Enter the time frame for the period, and then select the check box to enable the settings.
 - ◇ There are six periods for you to set for each day.
 - ◇ Under **Copy to**, select **All** to apply the settings to all the days of a week, or select specific day(s) that you want to apply the settings to.
- 3) Click **OK** to save the settings.

Step 3 On the **Motion Detection** interface, click **Apply** to complete the settings.

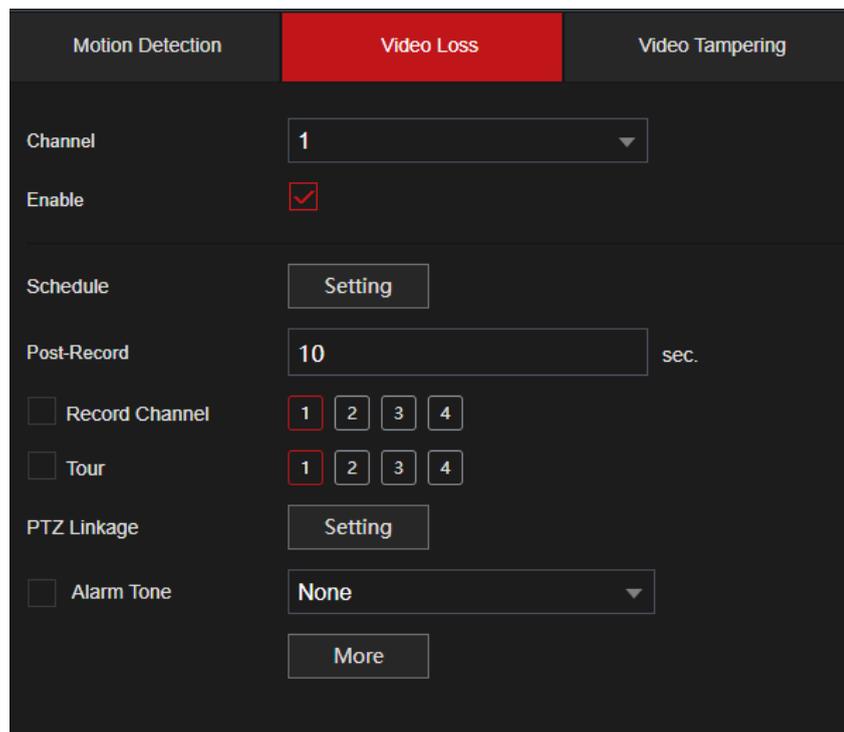
5.10.4.2 Configuring Video Loss Settings

When the video loss occurs, the system activates the alarm.

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Video Detection > Video Loss**.

The **Video Loss** interface will be displayed.

Figure 5-39



Step 2 To configure the settings for the video loss detection parameters, see “5.10.4.1 Configuring Motion Detection Settings.”



For PTZ activation, different from motion detection, the video loss detection can activate PTZ preset, tour, and pattern.

Step 3 Click **Apply** to complete the settings.



- Click **Default** to restore the default setting.
- Click **Copy to**, in the **Copy to** dialog box, select the additional channel(s) that you want to copy the motion detection settings to, and then click **Apply**.

5.10.4.3 Configuring Tampering Settings

When the camera lens is covered, or the video will be displayed in a single color because of the causes such as sunlight status, the monitoring cannot be continued normally. To avoid such situations, you can configure the tampering alarm settings.

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Video Detection > Video Tampering**.

The **Video Tampering** interface will be displayed.

Figure 5-40

Motion Detection	Video Loss	Video Tampering
Channel	1	
Enable	<input checked="" type="checkbox"/>	Sensitivity 3
Schedule	Setting	
Post-Record	10 sec.	
Record Channel	<input type="checkbox"/> 1 2 3 4	
Picture Storage	<input type="checkbox"/> 1 2 3 4	
Tour	<input type="checkbox"/> 1 2 3 4	
PTZ Linkage	Setting	
Alarm Tone	<input type="checkbox"/> None	
	More	

Step 2 To configure the settings for the tampering detection parameters, see “5.10.4.1 Configuring Motion Detection Settings.”



For PTZ activation, different from motion detection, the video loss detection can activate PTZ preset, tour, and pattern.

Step 3 Click **Apply** to complete the settings.



- Click **Default** to restore the default setting.
- Click **Copy to**, in the **Copy to** dialog box, select the additional channel(s) that you want to copy the motion detection settings to, and then click **Apply**.

5.10.5 System Events

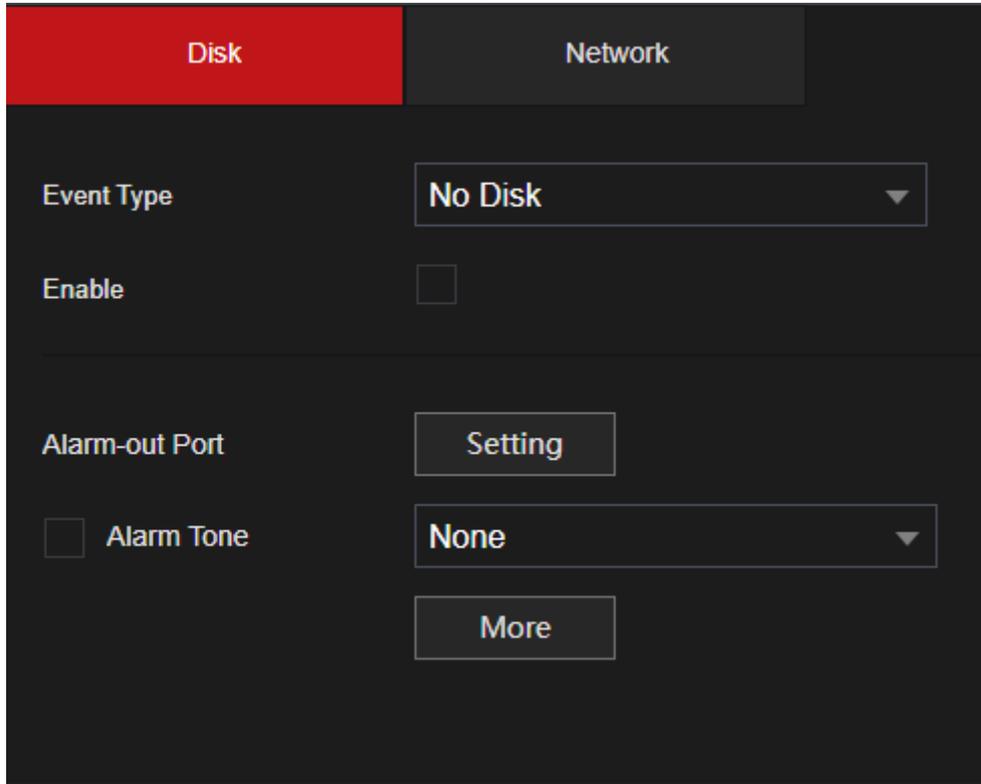
This section allows for the configuration of the alarm output for three types of system event (HDD, Network,

and User). When there is an abnormal system event occurs, the system activates alarms in the way that you configure in this section.

5.10.5.1 Configuring HDD Event Settings

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Alarm > Abnormality > Disk**. The **Disk** interface will be displayed.

Figure 5-41



Step 2 Configure the settings for the HDD event.

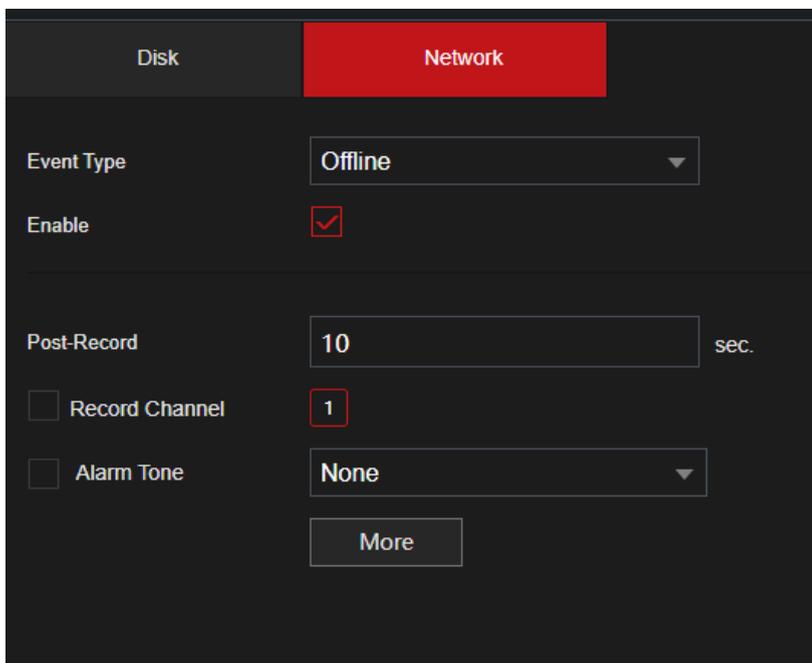
Parameter	Description
Event Type	In the Event Type list, select No Disk , Disk Error , or Low Space as the event type.
Enable	Enable or disable the HDD event detection function.
Alarm-out Port	Click Setting to display the setting interface. <ul style="list-style-type: none"> Local Alarm: Enable alarm activation through the alarm devices
Post-Alarm	Set a length of time for the Device to delay turning off the alarm after the external alarm has ended. The value ranges from 10 seconds to 300 seconds, and the default value is 10 seconds.
Show Message	Select the Show Message check box to enable a pop-up message in your desktop software.
Report Alarm	Select the Report Alarm check box to enable the system to upload the alarm signal to the network (including alarm center) when an alarm event occurs.

Send Email	Select the Send Email check box to enable the system to send an email notification when an alarm event occurs.  To use this function, make sure the email function is enabled in Main Menu > Advanced Settings > Network > Email .
Buzzer	Select the check box to activate the onboard buzzer of the Recorder.
Log	Select the check box to enable the Device to record a local alarm log.
Alarm Tone	Select to enable audio broadcast/alarm tone in response to a HDD alarm event.

Step 3 Click **Apply** to complete the settings.

5.10.5.2 Configuring Network Event Settings

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Abnormality > Network**.
The **Network** interface will be displayed.



Step 2 Configure the settings for the Network event.

Parameter	Description
Event Type	In the Event Type list, select Offline , IP Conflict , or MAC Conflict as the event type.
Enable	Enable or disable the Network event detection function.
Alarm-out Port	Click Setting to display setting interface. <ul style="list-style-type: none"> General Alarm: Enable alarm activation through the alarm devices connected to the selected output port. External Alarm: Enable alarm activation through the connected alarm box. Wireless Siren: Enable alarm activation through devices connected by USB gateway or camera gateway.

Post-Alarm	Set a length of time for the Device to delay turning off alarm after the external alarm has ended. The value ranges from 10 seconds to 300 seconds, and the default value is 10 seconds.
Show Message	Select the Show Message check box to enable a pop-up message in your local host PC.

Parameter	Description
Send Email	Select the Send Email check box to enable the system to send an email notification when an alarm event occurs.  To use this function, make sure the email function is enabled in Main Menu > Advanced Settings > Network > Email .
Buzzer	Select the check box to activate the onboard buzzer of the Recorder.
Log	Select the check box to enable the Device to record a local alarm log.
Post Record	Continue to record for some time after the alarm is ended. The value ranges from 10 seconds to 300 seconds.
Alarm Tone	Select to enable audio broadcast/alarm tones in response to a network alarm event.

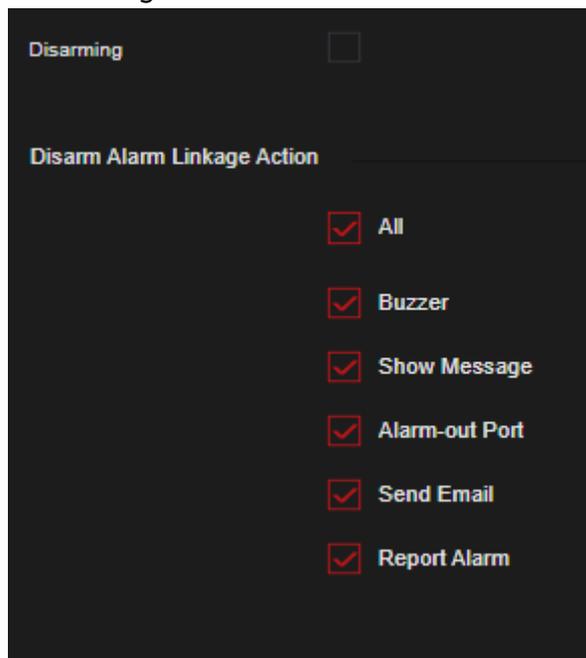
Step 3 Click **Apply** to complete the settings.

5.10.6 Configuring Disarming

This section allows you to disarm all alarm linkage actions as needed.

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Alarm > Disarming**.

Step 2 Click  to enable disarming.



Step 3 Select alarm linkage actions to disarm.



All alarm linkage actions will be disarmed when you select **All**.

Step 4 Click **Apply**.

5.11 AI / IVS Functions

5.11.1 HDMX and EL Series HDVRs



Any faces shown are purposely pixelated to comply with relevant regulations.

The HDVR's AI module provides face detection, recognition, IVS functions, and Metadata. These functions take effect after they are configured and enabled.

- **Face detection:** The Device can analyze the faces captured by the camera and link the configured alarms when detected.
- **Face recognition:** The Device can compare the captured faces with the face library and then link the configured alarms depending on if there is a match.
- **IVS:** The IVS function processes and analyzes the human and vehicle images to extract the key information to match with the preset rules. When the detected behaviors match with the rules, the system activates alarms. The IVS function can avoid wrong alarms by filtering the factors such as rain, light, and animals.
- **Metadata:** The device can detect and extract key features from the video's human bodies and non-motor vehicles and then build a structured database. You can search any target you need with these features. For example, you can search any person wearing a yellow short sleeve shirt.

5.11.1.1 Face Detection

Some HDVR models can analyze the pictures captured by the camera to detect whether the faces are on the pictures. You can search and filter the recorded videos the faces and play back.



NOTE

If you enable AI or IVS, you can only choose one AI or IVS function (face detection and recognition, IVS function, and Metadata) for the same channel.

5.11.1.1.1 Configuring Face Detection Parameters

The alarms are generated according to the configured parameters.

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Parameters > Face Detection**.

The **Face Detection** interface will be displayed.

Figure 5-42

Enable 1

Rule Setting

Schedule Setting

Post-Record 10 sec.

Record Channel 1 2 3 4

Tour 1 2 3 4

PTZ Linkage Setting

Alarm Tone None

More

Step 2 In the **Channel** list, select a channel that you want to configure the face detection function and then enable it.

Step 3 Configure the parameters.

Parameter	Description
Type	You can select from AI by Camera and AI by Device . (Not available in all models) <ul style="list-style-type: none"> • AI by Camera: This option requires certain AI cameras. The camera will process all the AI analysis, and then send the results to the DVR. • AI by Device: The camera only transmits a normal video stream to the DVR, and then the DVR will process all the AI analysis.
Rule	Click View Setting to draw areas to filter the target. You can configure two filtering targets (maximum size and minimum size). No alarms will be activated when the target is smaller than the minimum or larger than the maximum size. The maximum size should be larger than the minimum size.
Schedule	Define a period during which the detection is active. For details, see the "Setting Motion Detection Period" section in "5.10.4.1 Configuring Motion Detection Settings."

Alarm-out Port	<p>Click Setting to display setting interface.</p> <ul style="list-style-type: none"> • General Alarm: Enable general alarm and select the alarm output port. • Ext. Alarm: Connect the alarm box to the Device and then enable it. • Wireless Siren: Connect the wireless gateway to the Device and then enable it. For details, see "5.12 IoT Function." <p>When an alarm event occurs, the system connects the peripheral alarm devices to the selected output port.</p>
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Parameter	Description
Post-Alarm	Set a length of time for the Device to delay turning off alarm after the external alarm has ended. The value ranges from 0 seconds to 300 seconds. If you enter 0, there will be no delay.
Show Message	Select the Show Message check box to enable a pop-up alarm message in your local host PC.
Report Alarm	<p>Select the Report Alarm check box to enable the system to upload the alarm signal to the network (including alarm center) when an alarm event occurs.</p>  <ul style="list-style-type: none"> • Not all models support this function. • The corresponding parameters in the alarm center should be configured.
Send Email	<p>Select the Send Email check box to enable the system to send an email notification when an alarm event occurs.</p>  <p>To use this function, make sure the email function is enabled in Main Menu > Advanced Settings > Network > Email.</p>
Record Channel	<p>Select the channel(s) that you want to record. The selected channel(s) will record after the event has been triggered.</p>  <p>The recording for intelligence event and auto recording function must be enabled."</p>
PTZ Linkage	<p>Click Setting to display the PTZ interface.</p> <p>Enable PTZ linkage actions, such as selecting the preset that you want to be called when an alarm event occurs.</p>  <p>To use this function, the PTZ operations must be configured.</p>
Post Record	Set a length of time for the Device to delay turning off recording after the event has ended. The value ranges from 10 seconds to 300 seconds.
Tour	<p>Select the Tour check box to enable a tour of the selected channels.</p>  <ul style="list-style-type: none"> • To use this function, the tour setting must be configured. • After the tour is ended, the live view screen returns to the view layout before tour started.

Picture Storage	<p>Select the Picture Storage check box to take a snapshot of the selected channel.</p>  <p>To use this function, make sure the snapshot function is enabled in Main Menu > Advanced Settings> StorageSchedule > Snapshot.</p>
-----------------	--

Parameter	Description
Video Matrix	<p>Select the check box to enable the function. When an alarm event occurs, the video output port outputs the settings configured in "Main Menu > DISPLAY > TOUR > Extra Screen."</p>  <ul style="list-style-type: none"> • Not all models support this function. • The extra screen must be enabled to support this function.
Buzzer	Select the check box to activate the onboard buzzer of the Recorder.
Log	Select the check box to enable the Device to record a local alarm log.
Alarm Tone	Select to enable audio broadcast in response to a face detection event.
White Light	Select the check box to enable the white light alarm of the camera.
Siren	Select the check box to enable the sound alarm of the camera.

Step 4 Click **Apply** to complete the settings.

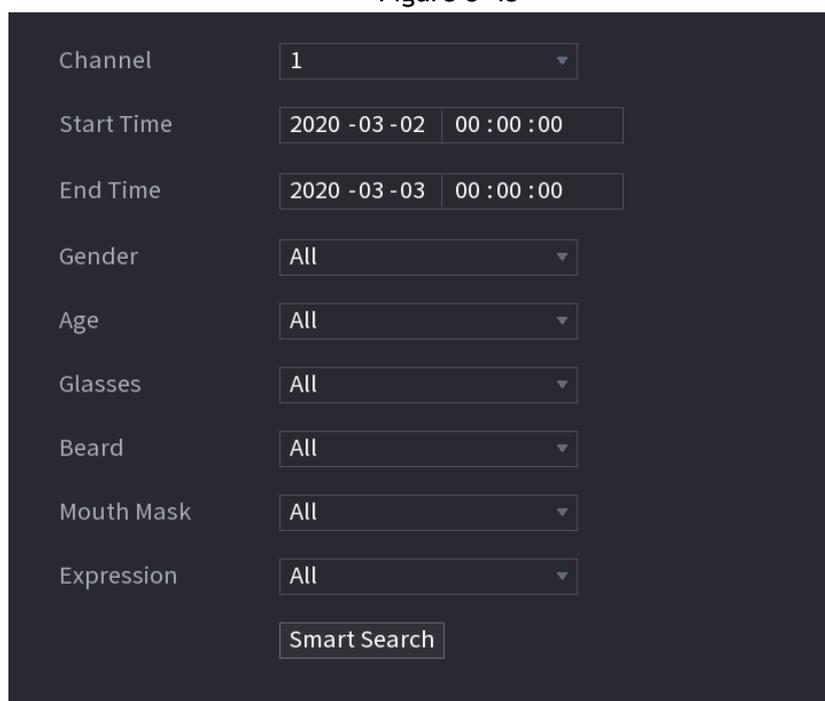
5.11.1.1.2 Searching for and Playing Detected Faces

You can search the detected faces and play back.

Step 1 Select **Main Menu > Playback > Advanced Search > Face Detection.**

The **Face Detection** interface will be displayed.

Figure 5-43



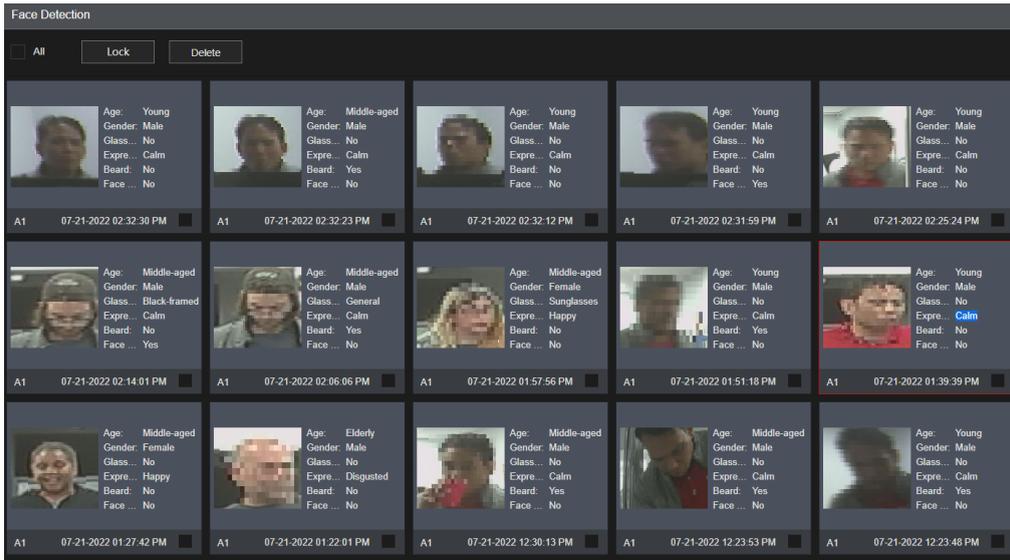
The screenshot shows a dark-themed interface with the following elements:

- Channel:** A dropdown menu with '1' selected.
- Start Time:** A date and time input field showing '2020 -03 -02 00 :00 :00'.
- End Time:** A date and time input field showing '2020 -03 -03 00 :00 :00'.
- Gender:** A dropdown menu with 'All' selected.
- Age:** A dropdown menu with 'All' selected.
- Glasses:** A dropdown menu with 'All' selected.
- Beard:** A dropdown menu with 'All' selected.
- Mouth Mask:** A dropdown menu with 'All' selected.
- Expression:** A dropdown menu with 'All' selected.
- Smart Search:** A button located at the bottom of the filter list.

Step 2 Select the channel, enter the start time and end time, and set for the gender, age, glasses, beard, and mask.

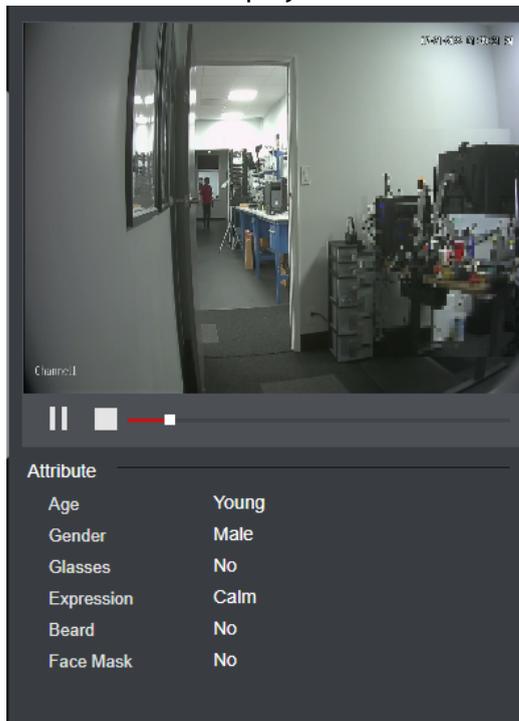
Step 3 Click **Smart Search**.

The results are displayed.



Step 4 Select the face that you want to play back.

The picture with registered information will be displayed.

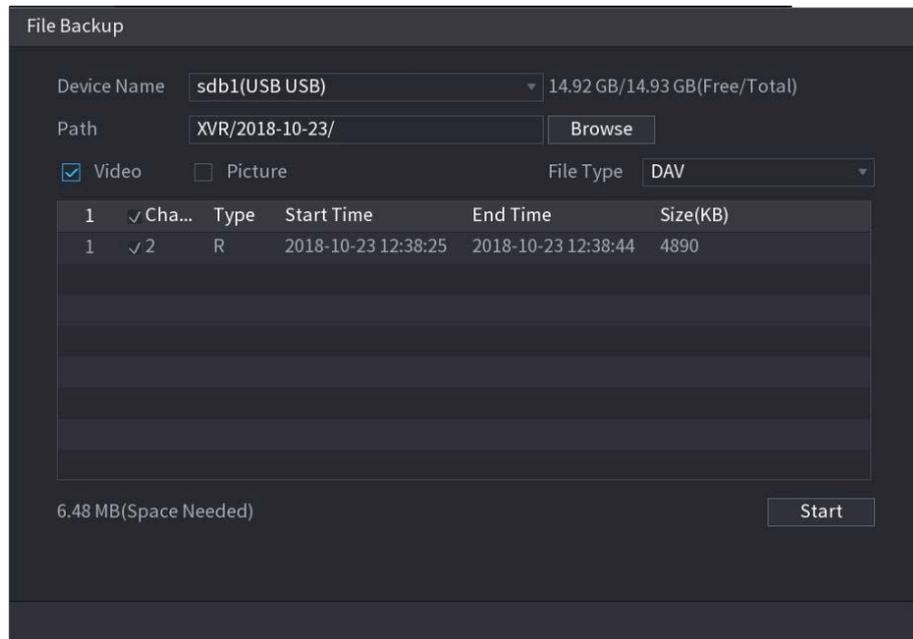


Step 5 Click  to start playing back the recorded detected face snapshots.

 Double-click on the playing interface to switch between full screen playing and thumbnail playing. You can also do the following operations to the recorded files.

- To export the database file (.csv) to the external storage device, select files, click **Export**, and then select the save path.
- To back up the recorded files to the external storage device, select files, click **Backup**, select the save path and file type, and then click **Start**.

Figure 5-44



- To lock the files to make it unable to be overwritten, select the files, and then click **Lock**.
- To add a mark to the file, select the files and then click **Add Tag**.

5.11.1.2 Face Recognition

Face recognition can be utilized with the AI preview mode and smart search.

- AI preview mode: Supports real-time comparing the detected faces with the face library, and display the comparison results on the local display/ web interface.
- Smart search: Supports faces searching by faces attributes or portraits.



- If you enable AI or IVS, you can only choose one AI or IVS function (face detection and recognition, IVS function, and Metadata) for the same channel.
- Before enabling face recognition function for a channel, face detection must first be enabled for that channel.

5.11.1.2.1 Face Library Management

A face library must be created to compare the detected faces to the faces in the library.

Creating a Face Library

- Step 1** Select **Main Menu > Advanced Settings > Alert Center > Database > Face Database Config**.
The **Face Database Config** interface will be displayed.

Figure 5-45

1	Name	Register No.	Failed No.	Error No.	Status	Modify	Details
1	hdvr-dev	20	0	0	Arming		

Modeling Refresh Backup Add Delete

Step 2 At **Type**, you can select **Local** or **Remote**.

- **Local:** Viewing the existing face databases or adding new one on the DVR.
- **Remote:** If you have a face recognition IP camera, you can select this to view, add or modify the face databases stored in the IP camera.

Click **Add**.

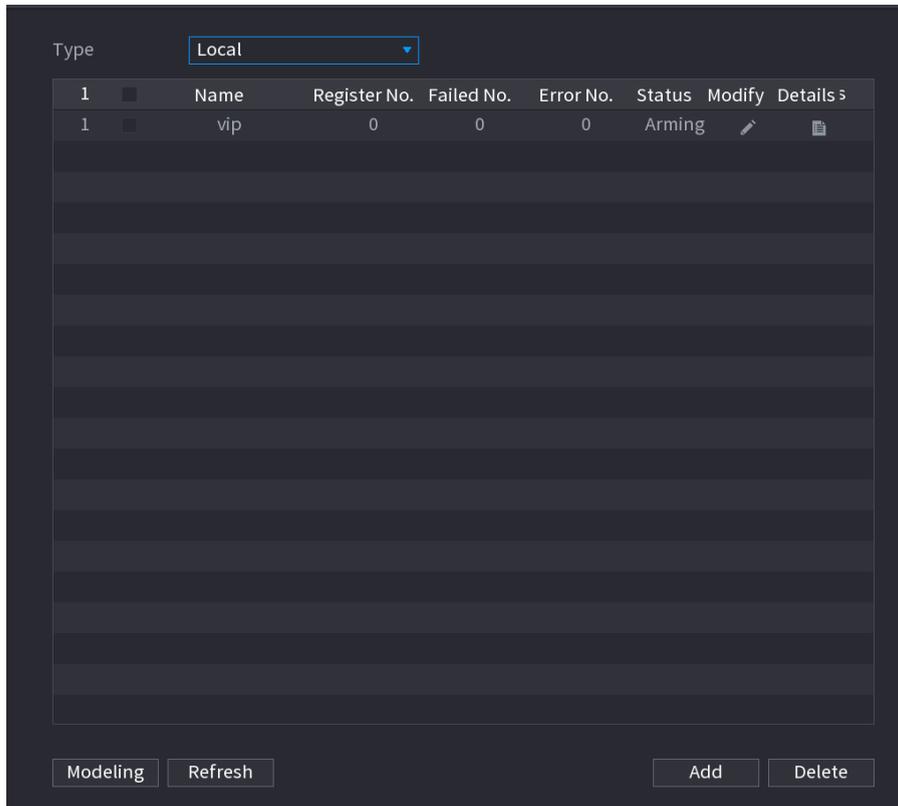
The **Add** interface will be displayed.

Add ✕

Name

Step 3 Enter the face library name, and then click **OK**. The created library will be displayed.

- Click  to modify the library name.
- Click  to view the library details and add new faces to the library. For details, see "Adding Face Pictures"
- Select the library, and then click **Modeling**. The system will extract the attributes of face pictures in the library for future comparison.
- Select the library, and then click **Delete** to delete the library.



Adding Face Pictures

You can add face pictures to the existing libraries in a single picture, batches, or from the detected faces.



To add face pictures one by one or by batch, you need to get the pictures from the USB storage device. The picture size should be smaller than 256K with a resolution between 200×200-6000×5000.

Adding One Face Picture

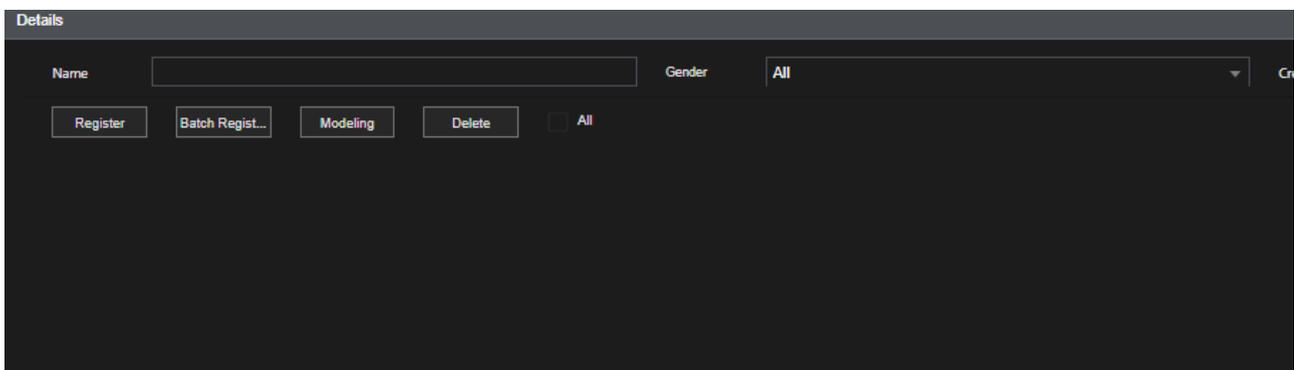
Step 1 Select **Main Menu > Advanced Settings > Alert Center > Database > Face Database Config**.

The **Face Database Config** interface will be displayed.

Step 2 Click  of the library that you want to configure.

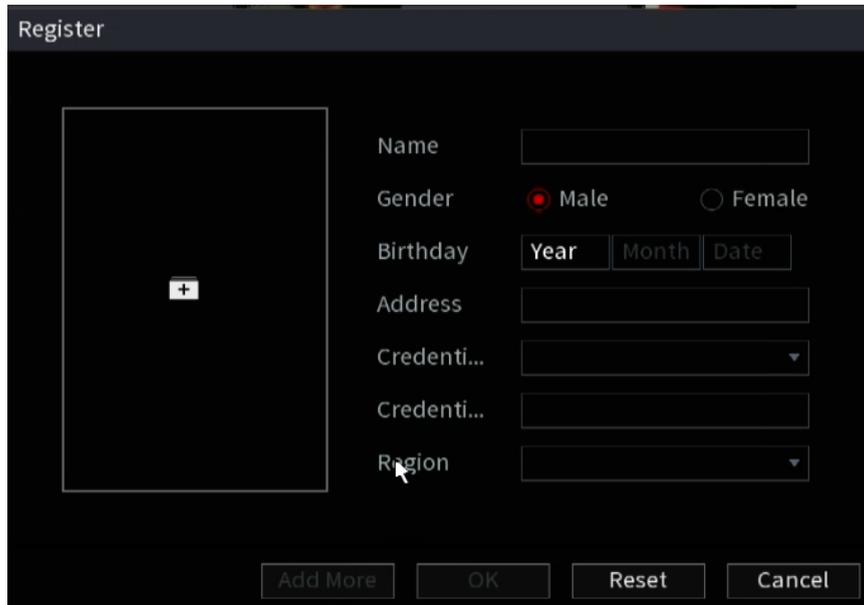
The **Details** interface will be displayed.

Figure 5-46



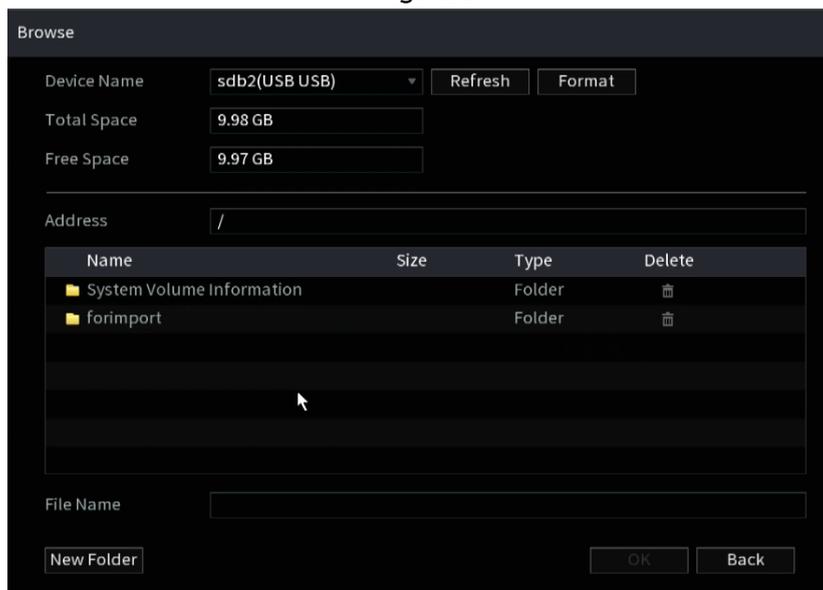
Step 3 Click **Register ID**.

The **Register ID** interface will be displayed.



Step 4 Click  to add a face picture. The **Browse** interface will be displayed.

Figure 5-47



Step 5 Select a face picture and enter the registration information.

Step 6 Click **OK**.
The system prompts the registration to be successful.

Step 7 On the **Details** interface, click **Search**.
The system prompts modeling is successful.



If the system prompts the message indicating modeling is in process, wait a while and then click **Search** again. If modeling is failed, the registered face picture cannot be used for face recognition.

Figure 5-48



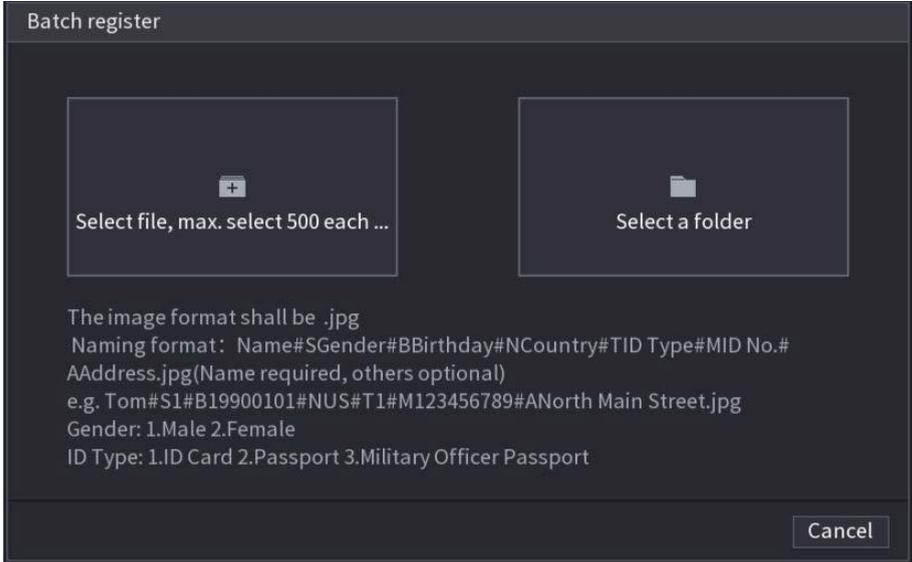
Adding Face Pictures in Batch

Step 1 Give a name to the face picture by referring to 0.

Naming format	Description
Name	Enter the name.
Gender	Enter 1 or 2. 1 represents male, and 2 represents female.
Birthday	Enter numbers in the format of yyyy-mm-dd.
Country	Enter the abbreviation of country. For example, CN for China.
ID Type	1 represents ID card; 2 represents passport; 3 represents military officer password.
ID No.	Enter the ID number.
Address	Enter the address.

Step 2 On the **Details** interface, click **Batch register**.
The **Batch register** interface will be displayed.

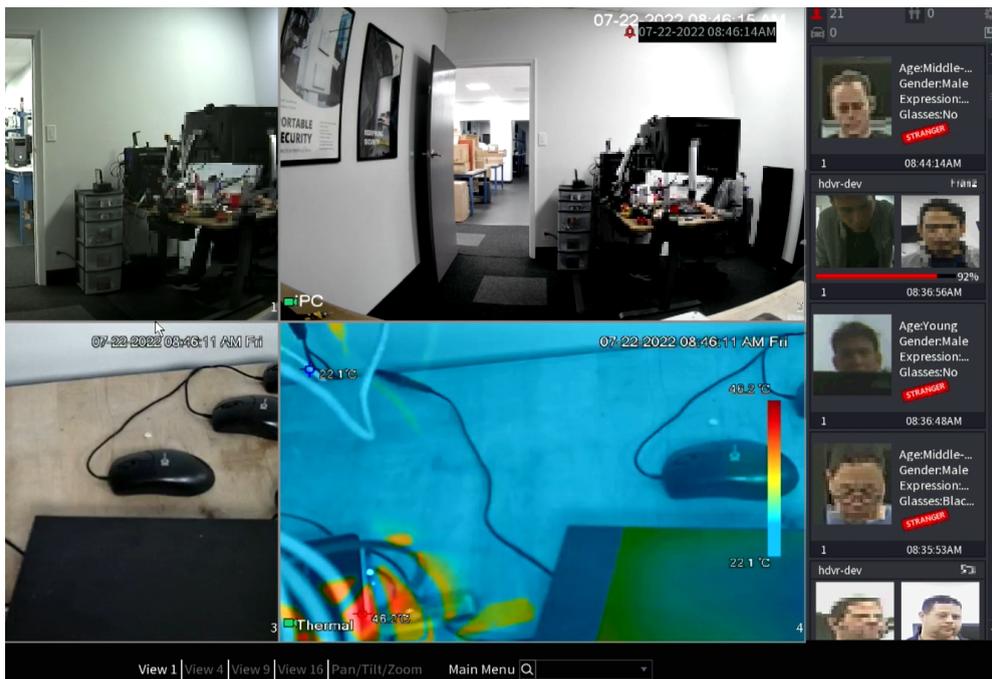
Figure 5-49



Step 3 Click **Select file, max select 500 each time** or **Select a folder** to import face pictures. Step 4 Click **OK** to complete batch registration.

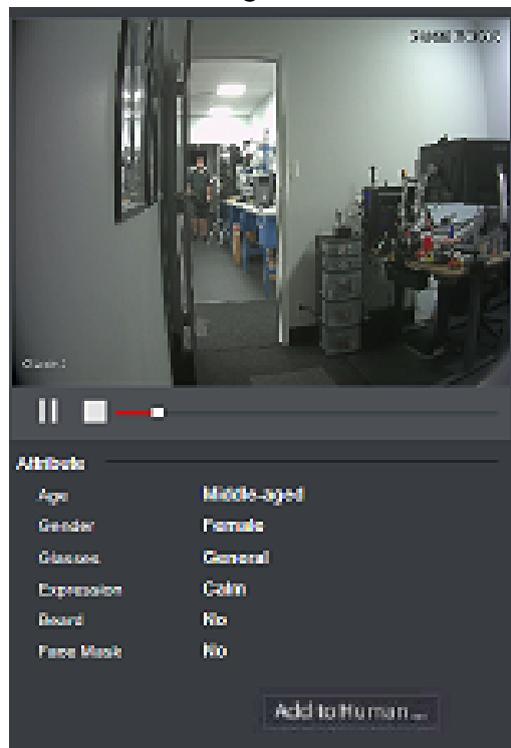
Adding the Detected Faces

- Step 1** Right-click on the live view screen and select **Live Mode > AI Mode**.
The AI Mode live view screen will be displayed.



- Step 2** Double-click the detected face snapshot that you want to add.
The snapshot playing back interface will be displayed.

Figure 5-50



- Step 3** Click **Add to Human Face Database**. The **Register ID** interface will be displayed.

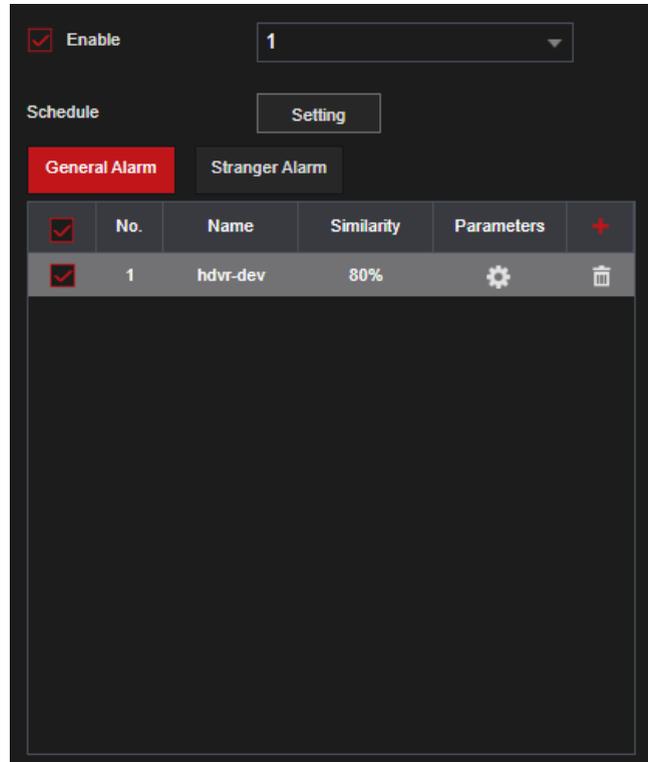
- Step 4** Select the face library and enter the ID information.

- Step 5** Click **OK** to complete registration.

5.11.1.2.2 Face Recognition Configuration

You can compare the detected faces with the faces in the library to judge if the detected face belongs to the library. The comparison result will be displayed on the AI mode live view screen and smart search interface and link to the alarms.

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Parameters > Face Recognition**.
The **Face Recognition** interface will be displayed.



Step 2 In the **Channel** list, select a channel that you want to configure the face recognition function and then enable it.

Step 3 At **Type**, you can select **AI by Camera** and **AI by Device**. (Not available in all recorders)

- **AI by Camera:** This option requires certain AI cameras. The camera will do all the AI analysis, and then give the results to the DVR.
- **AI by Device:** The camera only transmits a normal video stream to the DVR, and then the DVR will do all the AI analysis.

Step 4 Set the **Schedule**. For details, see "5.10.4.1 Configuring Motion Detection Settings."

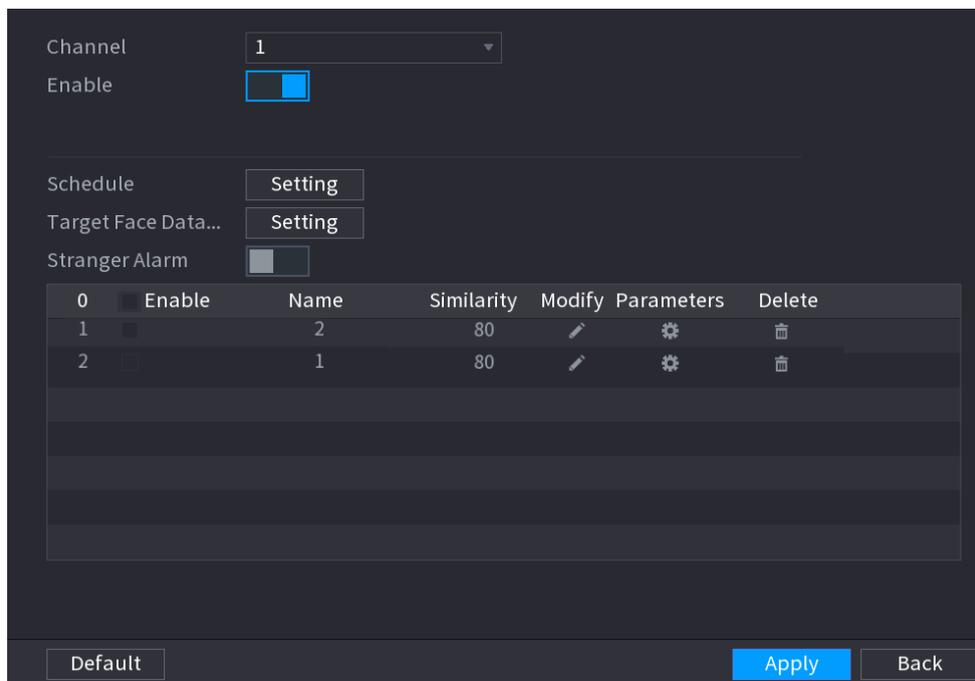
Step 5 Set the **Target Face Database**.

1) Click **Setting**.

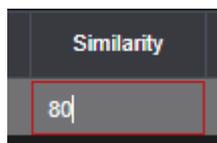
The **Face Database** interface will be displayed.

Figure 5-51

- 2) Select one or multiple face libraries.
- 3) Click **OK**.
The selected face library is listed.



Step 6 Configure the added face library.



- Click the Similarity field to modify the similarity. The lower the number, the easier the alarm linkage will trigger.
- Click to delete the face library.
- Click to set the alarm linkage.
- After the setting is completed, click **OK**.

Step 7 (Optional) Enable the **Stranger Mode**.

- 4) Enable the Stranger mode () . When the detected faces do not belong to the face library, the system remarks the face as "Stranger."
- 5) Click **Setting** to set the alarm linkage.
- 6) After the setting is completed, click **OK**.

Step 8 Click **Apply** to complete the settings.

After the face recognition function is enabled, right-click on the live view screen and select **Live Mode > AI Mode**. The AI mode live view screen will be displayed.

- If the detected face belongs to the enabled face library, the similarity result will be displayed.
- If the detected face does not belong to the enabled face library, the face will be remarked as "Stranger."

5.11.1.2.3 Smart Search for Face Recognition

You can compare the detected faces with the face library and play back.

- Search by attributes: Search the face library by the face attributes.
- Search by picture: Search the face library by uploading face pictures.

Searching by Attributes

Step 1 Select **Main Menu > Playback > Advanced Search > Face Recognition > Search by Attributes**.

The **Search by Attributes** interface will be displayed.

Figure 5-52

Search by Attributes Search by Picture

Channel: 1

Period: Today

07-22-2022 12:00:00 AM - 07-22-2022 11:59:59 PM

Gender: All

Age: All

Glasses: All

Beard: All

Face Mask: All

Expression: All

Similarity: 80 %

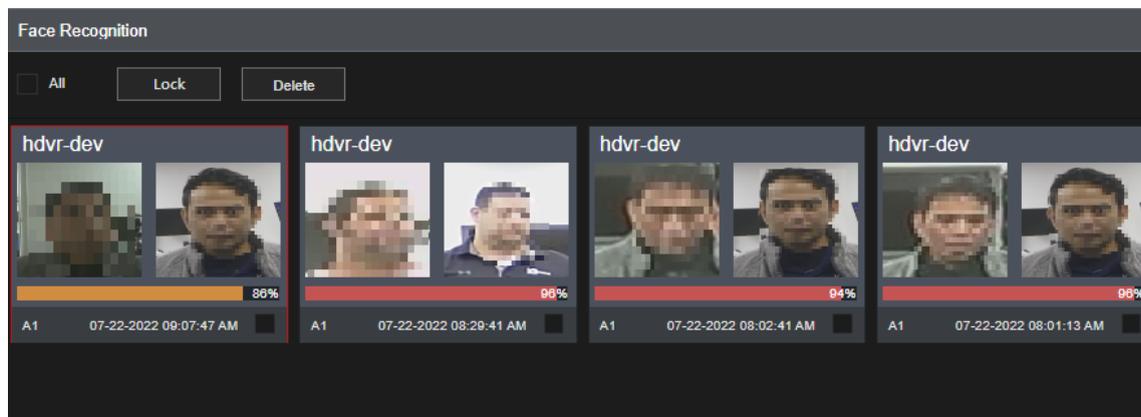
Search

Step 2 Select the channel and set the parameters such as start time, end time, gender, age, glasses, beard, mask, and similarity according to your requirement.

Step 3 Click **Smart Search**.

The search result will be displayed.

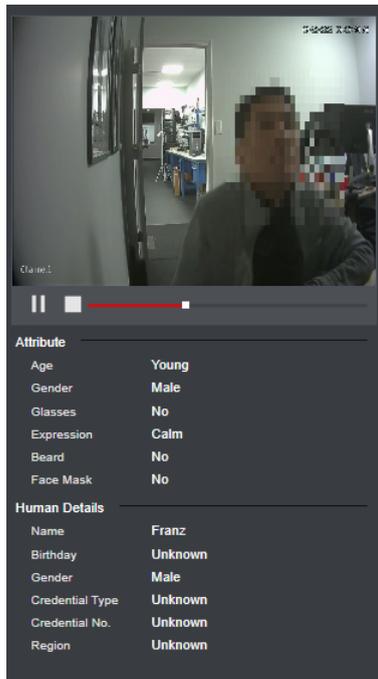
Figure 5-53



Step 4 Click the picture that you want to play back.

The picture with registered information will be displayed.

Figure 5-54



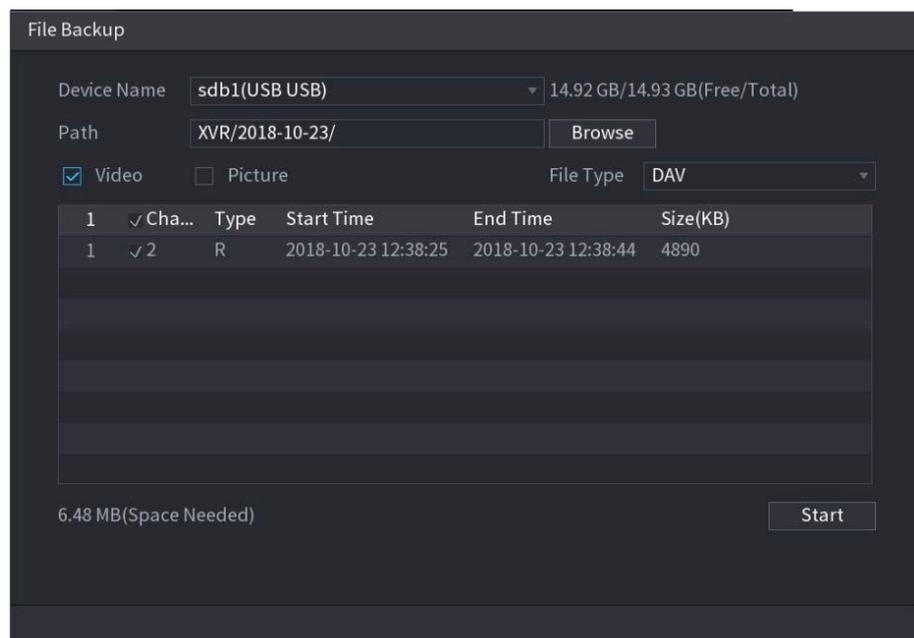
Step 5 Click  to play back the recorded video.



Double-click on the playing interface to switch between full screen playing and thumbnail playing. You can also do the following operations to the recorded files.

- To export the database file (.csv) to the external storage device, select files, click **Export**, and then select the save path.
- To back up the recorded files to the external storage device, select files, click **Backup**, select the save path and file type, and then click **Start**.

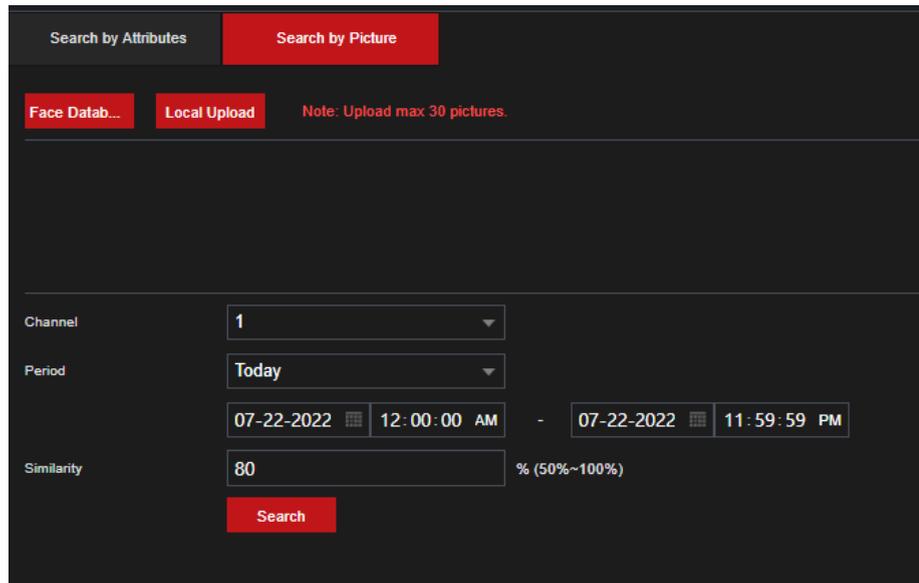
Figure 5-55



- To lock the files to make it unable to be overwritten, select the files, and then click **Lock**.
- To add a mark to the file, select the files and then click **Add Tag**.

Search by Picture

Step 1 Select **Main Menu > Playback > Advanced Search > Face Recognition > Search by Picture**.
The **Search by Picture** interface will be displayed.



Step 2 Upload face pictures from **Face Database** or **Local Upload**.



Maximum 30 pictures can be uploaded at one time, and the system support searching 8 pictures at one time.

- Face Database

1) Click **Face Database**.

The **Face Database** interface will be displayed.

- 2) Set the searching parameters by selecting the face library and gender, and entering name and ID No. according to your actual requirement.
- 3) Click **Search** to display the results that satisfy the requirement.

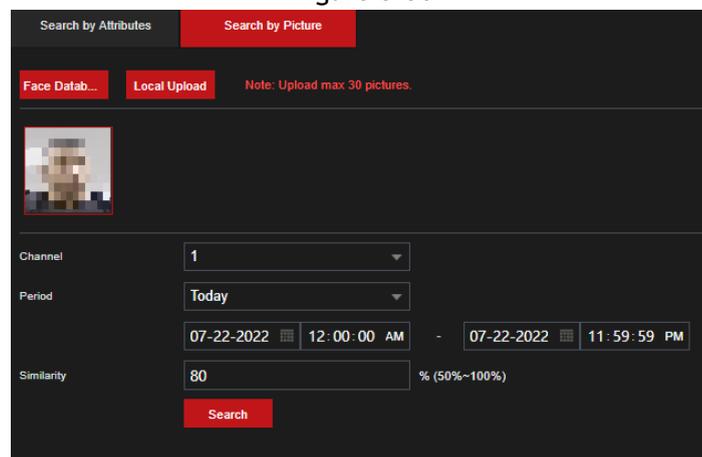


Click **Reset** to clear the searching parameters.

- 4) Select the picture and then click **OK**.

The picture will be displayed on the Search by Picture interface.

Figure 5-56



- Local Upload
- Plug the USB storage device (with face pictures) to the Device, and then click **Local Upload**. Then select the picture from the USB storage device, and then click **OK**. The selected face pictures are uploaded.

Step 3 After the face pictures are uploaded, continue to configure other parameters (channel, start time, end time, and similarity).

Step 4 Click **Smart Search**.

The search results are displayed.

Step 5 Select the face picture that you want to play back.

Step 6 Click  to play back the recorded video.

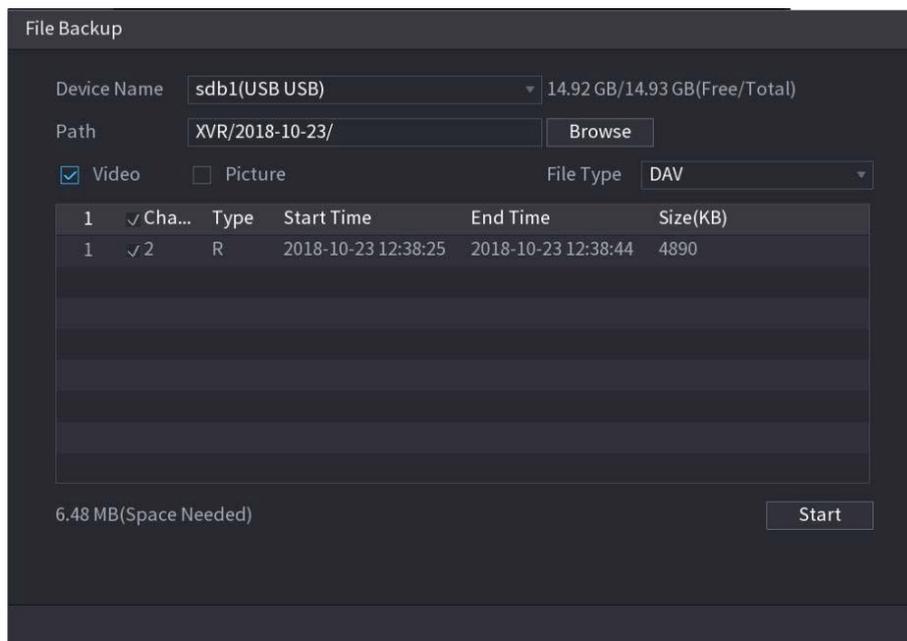


Double-click on the playing interface to switch between full screen playing and thumbnail playing.

You can also do the following operations to the recorded files.

- To add a mark to the file, select the files and then click **Add Tag**.
- To lock the files to make it unable to be overwritten, select the files, and then click **Lock**.
- To back up the recorded files to the external storage device, select files, click **Backup**, select the save path and file type, and then click **Start**. See Figure 5-57.

Figure 5-57



5.11.1.3 IVS Function

The IVS function processes and analyzes the images to extract the key information to match the preset rules. When the detected behaviors trigger the rules, the system can activate events and alarms.



If you enable AI or IVS, you can only choose one AI or IVS function (face detection and recognition, IVS function, and Metadata) for the same channel.

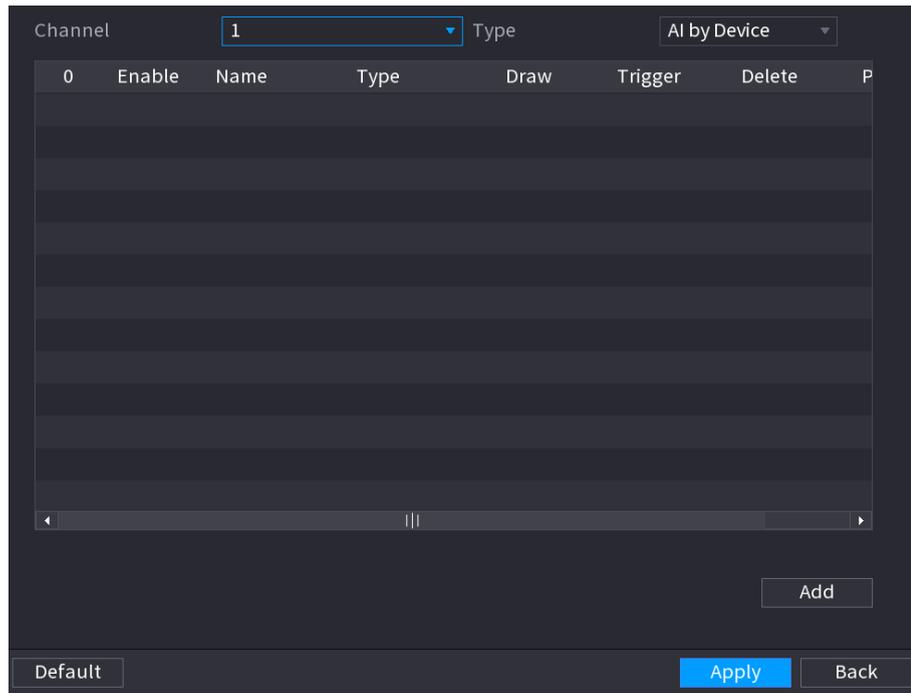
5.11.1.3.1 Configuring IVS Parameters

The alarms are generated according to the configured parameters. Step 1

Select **Main Menu > Advanced Settings > Alert Center > Parameters > IVS**.

The **IVS** interface will be displayed.

Figure 5-58

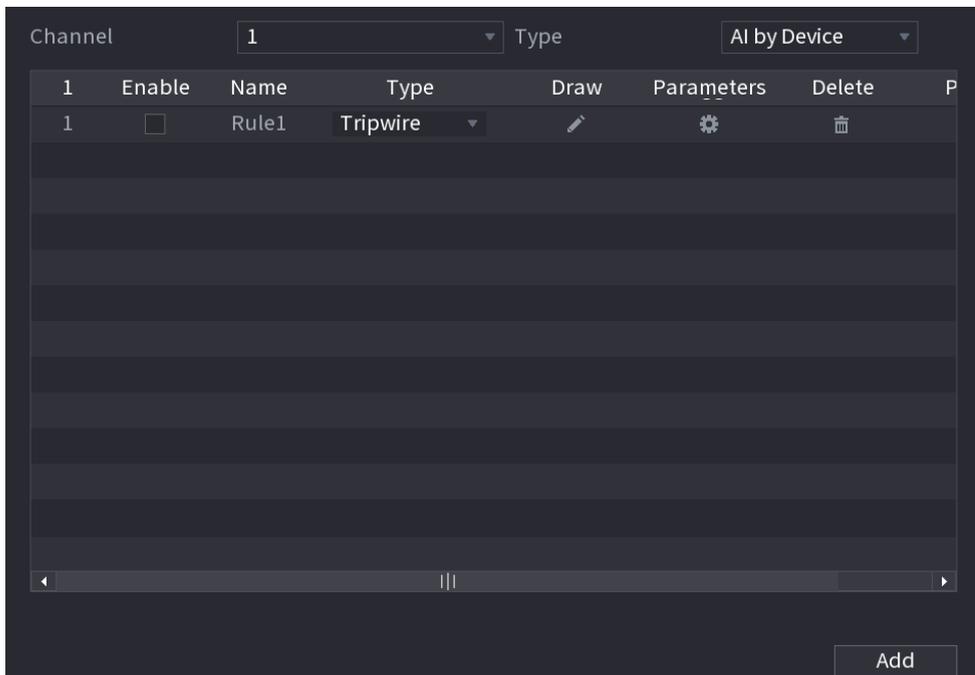


Step 2 In the **Channel** list, select the channel number that you want to configure the IVS function. **Step 3** At **Type**, you can select from **AI by Camera** and **AI by Device**.

- **AI by Camera:** This option requires certain AI cameras. The camera will do all the AI analysis, and then give the results to the DVR.
- **AI by Device:** The camera only transmits normal video stream to the DVR, and then the DVR will do all the AI analysis.

Step 4 Click **Add**.

One line of rule will be displayed.



Step 5 Configure the parameters for the rule that you selected. **Step 6** Select the check box of the rule to enable it.

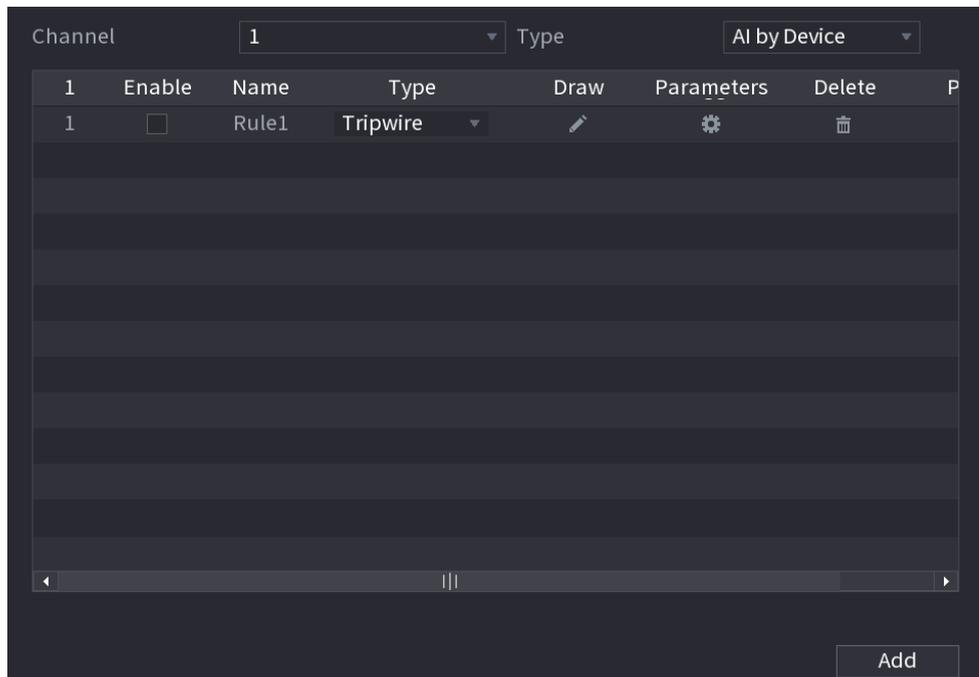
Step 7 Click **Apply** to complete the settings.

Configuring Tripwire Rules

When the target object crosses the tripwire in the defined direction, the system activates alarms.

- The tripwire can be configured as a straight line or broken line.
- Supports detecting one-way or two-way tripwire crossing.
- Supports multiple tripwires in the same scenario to meet the complexity.
- Supports size filtering for target.

Step 1 On the rule line that you added, in the **Type** list, select **Tripwire**.

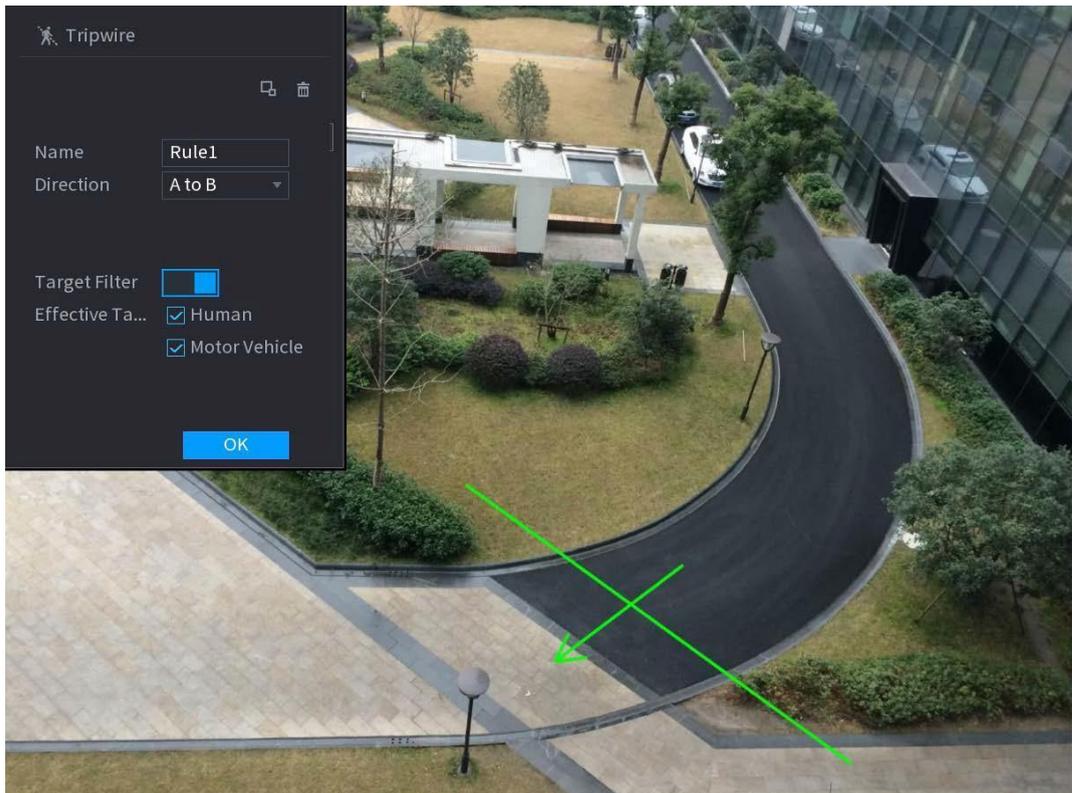


Step 2 Draw a tripwire.

- 1) In the **Channel** list, select the channel that you want to configure the rules for.
- 2) Click .

The monitoring screen to configure the tripwire rules will be displayed.

Figure 5-59



3) Configure the settings for the parameters of drawing rules.

Parameter	Description
Name	Enter the customized rule name.
Direction	Set the direction of the tripwire. You can choose A to B (left to right), B to A (right to left), and Both .
Target Filter	Click  to draw areas to filter the target. You can configure two filtering targets (maximum size and minimum size). When the target that is crossing the tripwire is smaller than the minimum size or larger than the maximum size, no alarms will be activated. The maximum size should be larger than the minimum size.
Effective Target	Enable the AI Recognition function (). By default, Human and Motor Vehicle are selected for alarm object.

4) Drag to draw a tripwire. The tripwire can be a straight line, broken line or polygon.

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

Step 3 Click  to set the actions to be triggered.

The **Trigger** interface will be displayed.

Figure 5-60

Step 4 Configure the triggering parameters.

Parameter	Description
Schedule	Define a period during which the detection is active. For details, see "Setting Motion Detection Period" section in "5.10.4.1 Configuring Motion Detection Settings."
Alarm-out Port	<p>Click Setting to display setting interface.</p> <ul style="list-style-type: none"> General Alarm: Enable general alarm and select the alarm output port. Ext. Alarm: Connect the alarm box to the Device and then enable it. Wireless Siren: Connect the wireless gateway to the Device and then enable it. <p>When an alarm event occurs, the system links the peripheral alarm devices connected to the selected output port.</p>
Post-Alarm	Set a length of time for the Device to delay turning off alarm after the external alarm has ended. The value ranges from 0 seconds to 300 seconds. If you enter 0, there will be no delay.
Show Message	Select the Show Message check box to enable a pop-up alarm message in your local host PC.

Report Alarm	<p>Select the Report Alarm check box to enable the system to upload the alarm signal to the network (including alarm center) when an alarm event occurs.</p>  <ul style="list-style-type: none"> • Not all models support this function. • The corresponding parameters in the alarm center should be configured.
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Parameter	Description
Send Email	<p>Select the Send Email check box to enable the system to send an email notification when an alarm event occurs.</p>  <p>To use this function, make sure the email function is enabled in Main Menu > Advanced Settings > Network > EMAIL.</p>
Record Channel	<p>Select the channel(s) that you want to record. The selected channel(s) will record after the event has been triggered.</p>  <p>The recording for intelligence event and auto recording function must be enabled."</p>
PTZ Linkage	<p>Click Setting to display the PTZ interface.</p> <p>Enable PTZ linkage actions, such as selecting the preset that you want to be called when an alarm event occurs.</p>  <p>To use this function, the PTZ operations must be configured. "</p>
Post-Record	<p>Set a length of time for the Device to delay turning off recording after the event has ended. The value ranges from 10 seconds to 300 seconds.</p>
Tour	<p>Select the Tour check box to enable a tour of the selected channels.</p>  <ul style="list-style-type: none"> • To use this function, the tour setting must be configured. • After the tour is ended, the live view screen returns to the view layout before tour started.
Picture Storage	<p>Select the Picture Storage check box to take a snapshot of the selected channel.</p>  <p>To use this function, make sure the snapshot function is enabled for Intel in Main Menu > Advanced Settings> StorageSchedule > Picture Storage.</p>

Video Matrix	<p>Select the check box to enable the function. When an alarm event occurs, the video output port outputs the settings configured in "Main Menu > DISPLAY > Tour > Sub Screen."</p>  <ul style="list-style-type: none"> • Not all models support this function. • The extra screen must be enabled to support this function.
Buzzer	Select the check box to activate the onboard buzzer of the Recorder.
Log	Select the check box to enable the Device to record a local alarm log.
Alarm Tone	Select to enable audio broadcast in response to a face detection event.

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

Step 6 Select the **Enable** check box, and then click **Apply**.

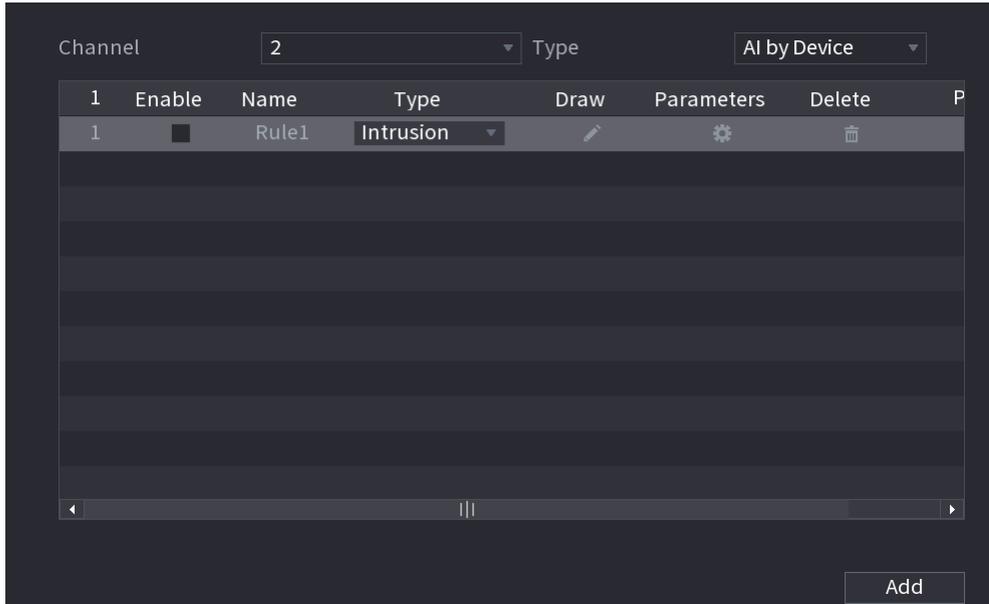
The tripwire detecting function is active. When the target object crosses the tripwire in the defined direction, the system activates alarms.

Configuring Intrusion Rules

When the target enters and leaves the defined detection area, or the target appears in the defined area, the system activates alarms.

- You can define the shape and quantity of intrusion areas.
- Supports detecting the behaviors that enter and leave the intrusion areas.
- Supports detecting the behaviors that are moving in the intrusion areas. The quantity of areas and lasting time can be configured.
- Supports size filtering for target.

Step 1 On the rule line that you added, in the **Type** list, select **Intrusion**.



Step 2 Draw an area.

1) In the **Channel** list, select the channel that you want to configure the rules for.

2) Click .

The monitoring screen to configure the intrusion rules will be displayed.

Figure 5-61



3) Configure the settings for the parameters of drawing rules.

Parameter	Description
Name	Enter the customized rule name.
Action	Configure the actions that are defined as intrusion. You can select the Appear check box and the Cross check box.
Direction	In the Direction list, select the direction of crossing the configured area. You can select Enter&Exit , Enter , and Exit .
Target Filter	Click  to draw areas to filter the target.  You can configure two filtering targets (maximum size and minimum size). When the target that is crossing the tripwire is smaller than the minimum size or larger than the maximum size, no alarms will be activated. The maximum size should be larger than the minimum size.
Effective Target	Enable the AI Recognition function (). By default, Human and Motor Vehicle are selected for alarm object.

4) Drag to draw an area.

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

Step 3 Click  to set the actions to be triggered.

Step 4 Select the **Enable** check box, and then click **Apply**.

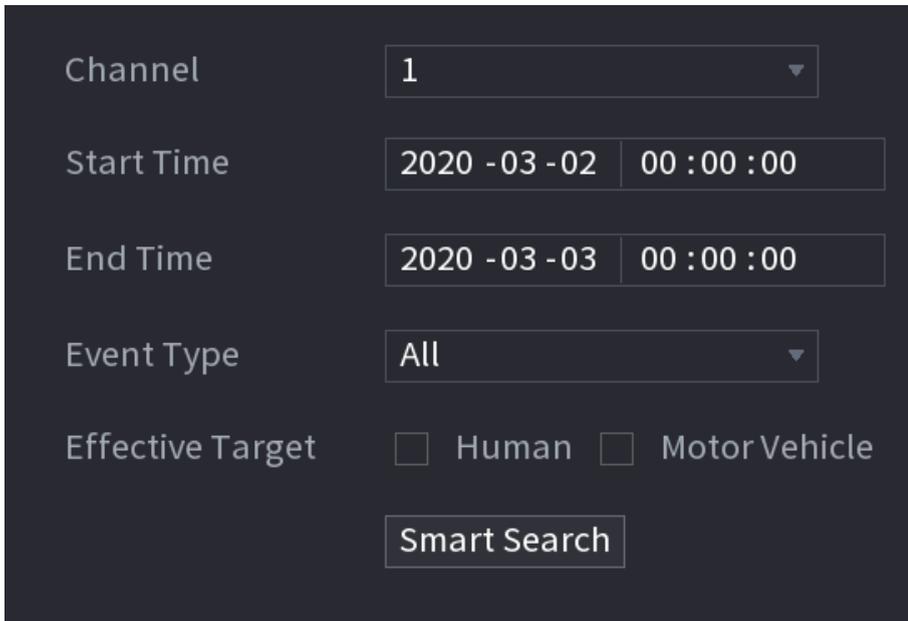
The intrusion detecting function is active. When the target enters and leaves the area, or the target appears in the defined area, the system activates alarms.

5.11.1.3.2 Smart Search for IVS Function

You can search for the intelligent events and play back.

Step 1 Select **Main Menu > Playback > Advanced Search > SMART SEARCH > IVS**.

The **IVS** interface will be displayed.

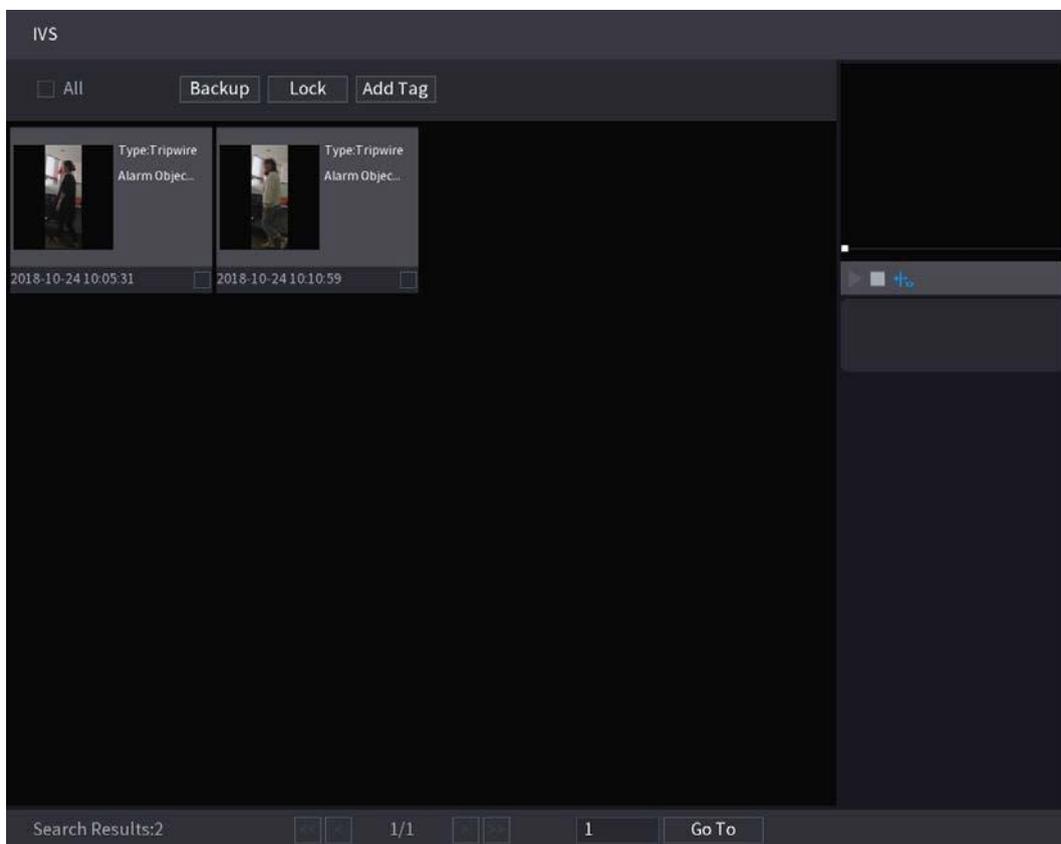


Step 2 In the **Channel** list, select the channel that you want to search for the events, and then set other parameters such as start time, end time, event type, and alarm object.

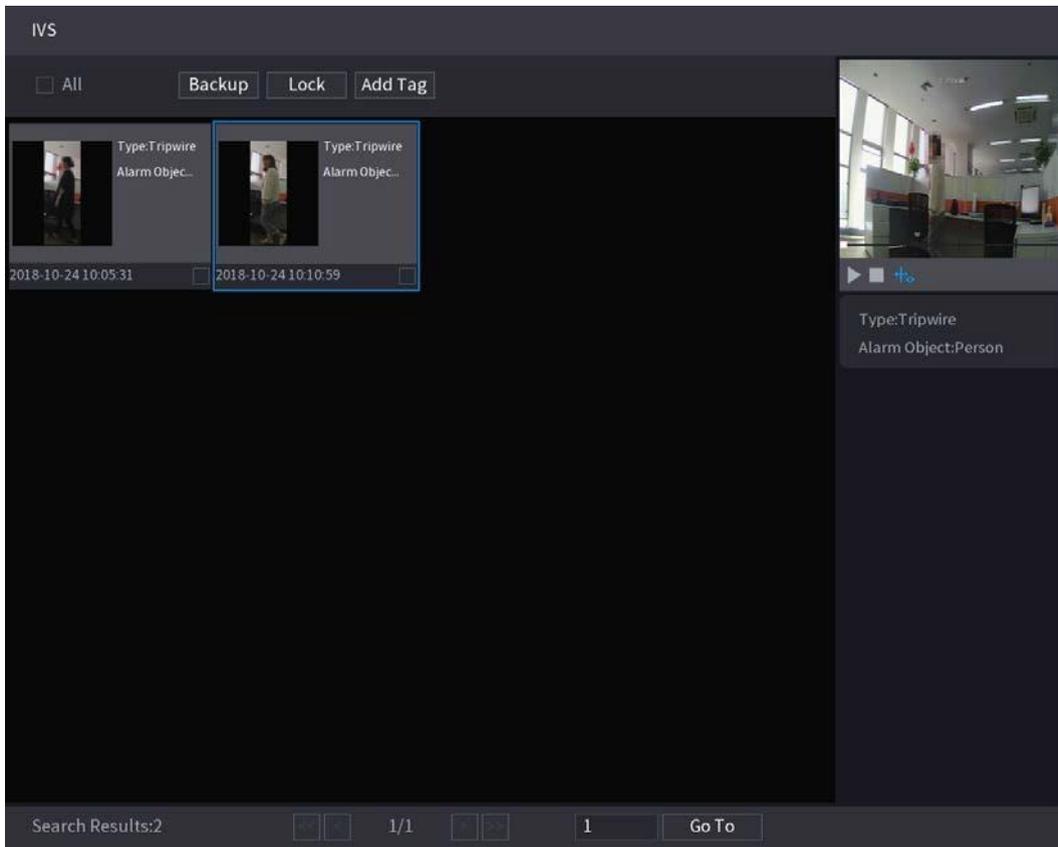
Step 3 Click **Smart Search**.

The results that satisfy the searching conditions are displayed.

Figure 5-62



Step 4 Click the picture that you want to play back.

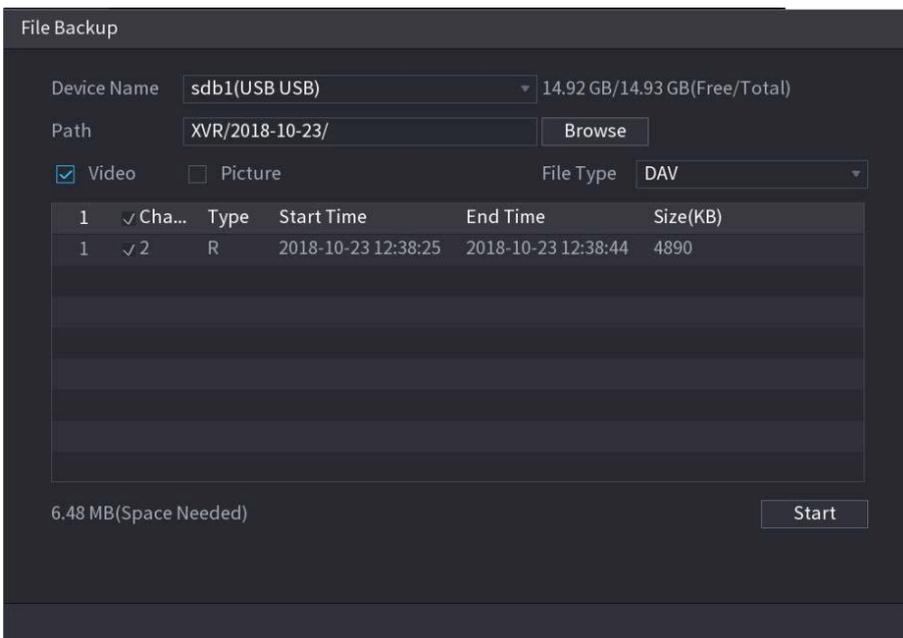


Step 5 Click  to play back the recorded video.


Double-click on the playing interface to switch between full screen playing and thumbnail playing.

You can also do the following operations to the recorded files.

- To back up the recorded files to the external storage device, select files, click **Backup**, select the save path and file type, and then click **Start**.



- To lock the files to make it unable to be overwritten, select the files, and then click **Lock**.
- To add a mark to the file, select the files and then click **Add Tag**.

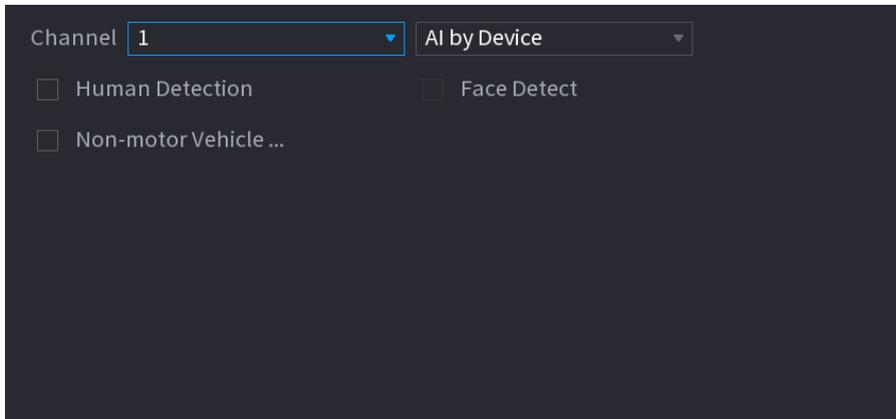
5.11.1.4 Metadata

The device can detect and extract key features from the video's human bodies and non-motor vehicles and then build a structured database. You can search any target you need with these features.

5.11.1.4.1 Configuring Metadata

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Parameters > Metadata**.
The **Metadata** interface will be displayed.

Figure 5-63



Step 2 In the **Channel** list, select a channel that you want to configure the Metadata function and then enable it.

Step 3 At **Type**, you can select **AI by Camera** and **AI by Device** (This option is not available in all HDVR models).

- **AI by Camera:** This option requires certain AI cameras. The camera will do all the AI analysis, and then give the results to the DVR.
- **AI by Device:** The camera only transmits normal video stream to the DVR, and then the DVR will do all the AI analysis.

Step 4 You can select from **Human Detection**, **Face Detect**, and **Non-motor Vehicle**.

- **Human Detection:** Select this option, and then the device will analyze all the human body features in the video, including Top, Top Color, Bottom, Bottom Color, Hat, Bag, Gender, Age, and Umbrella. You can search the target you need with these features. See "Human Body Detection" in "5.11.1.4.2 Smart Search for Metadata."
- **Face Detection:** This option only appears if you select **Human Detection**. When a human face appears in the video, the HDVR will extrapolate features in the human body detection results, including Glasses, Expression, Mask, and Beard. You can search the target you need with these features. See "Human Body Detection" in "5.11.1.4.2 Smart Search for Metadata."
- **Non-motor Vehicle:** Select this option, and then the device will analyze all the non-motor vehicle features in the video, including Type, Vehicle Color, People Number, and Helmet. You can search the target you need with these features. See "Non-motor Vehicle Detection" in "5.11.1.4.2 Smart Search for Metadata."

Step 5 Click **Apply**.

5.11.1.4.2 Smart Search for Metadata

You can search the target you need with human body features or non-motor vehicle features

Human Body Detection

Step 1 Select **Main Menu > Playback > Advanced Search > Human Body Detection**.
The **Human Body Detection** interface will be displayed.

Figure 5-64

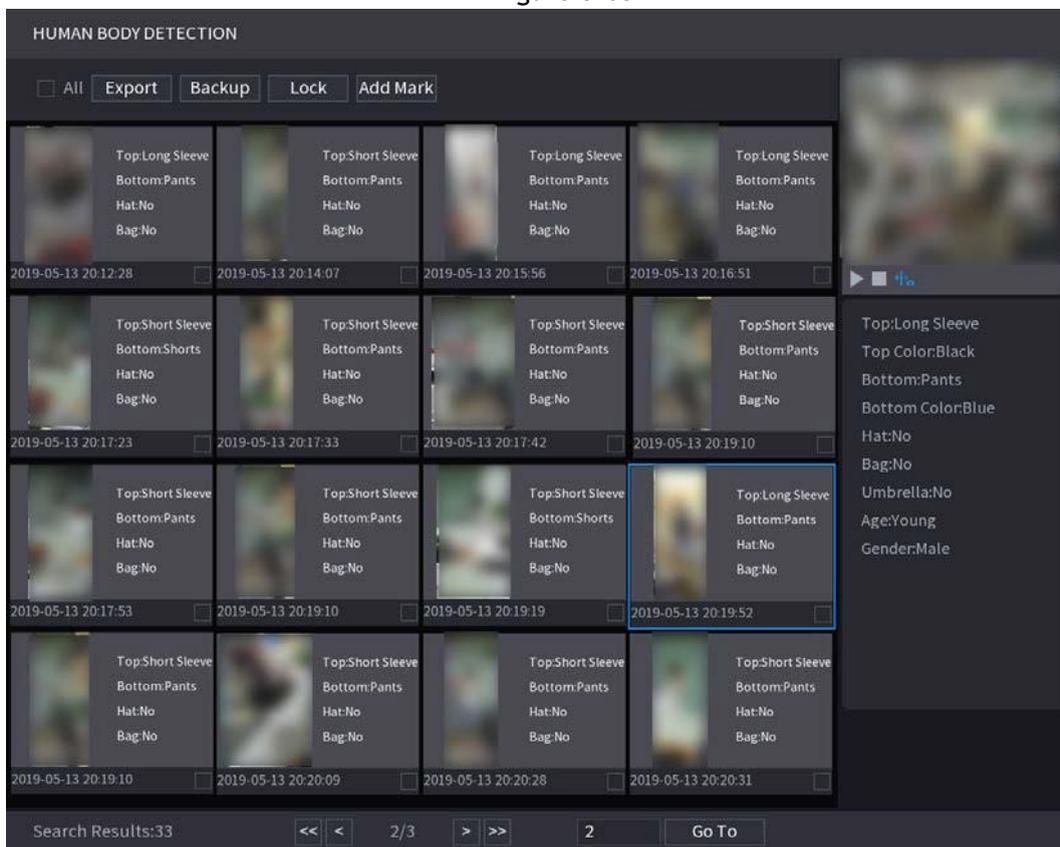
Channel	1
Start Time	2019 -05 -13 00 :00 :00
End Time	2019 -05 -13 23 :59 :59
Top	All
Top Color	All
Bottom	All
Bottom Color	All
Hat	All
Bag	All
Gender	All
Age	All
Umbrella	All
	Smart Se...

Step 2 Select the channel and the time and then select one or multiple features from **Top**, **Top Color**, **Bottom**, **Bottom Color**, **Hat**, **Bag**, **Gender**, **Age**, or **Umbrella**.

Step 3 Click **Smart Search**. The search result will be displayed.

- If you only selected **Human Body Detection** and did not select **Face Detection** in "5.11.1.4.1 Configuring Metadata," only human body features will be displayed in the results.

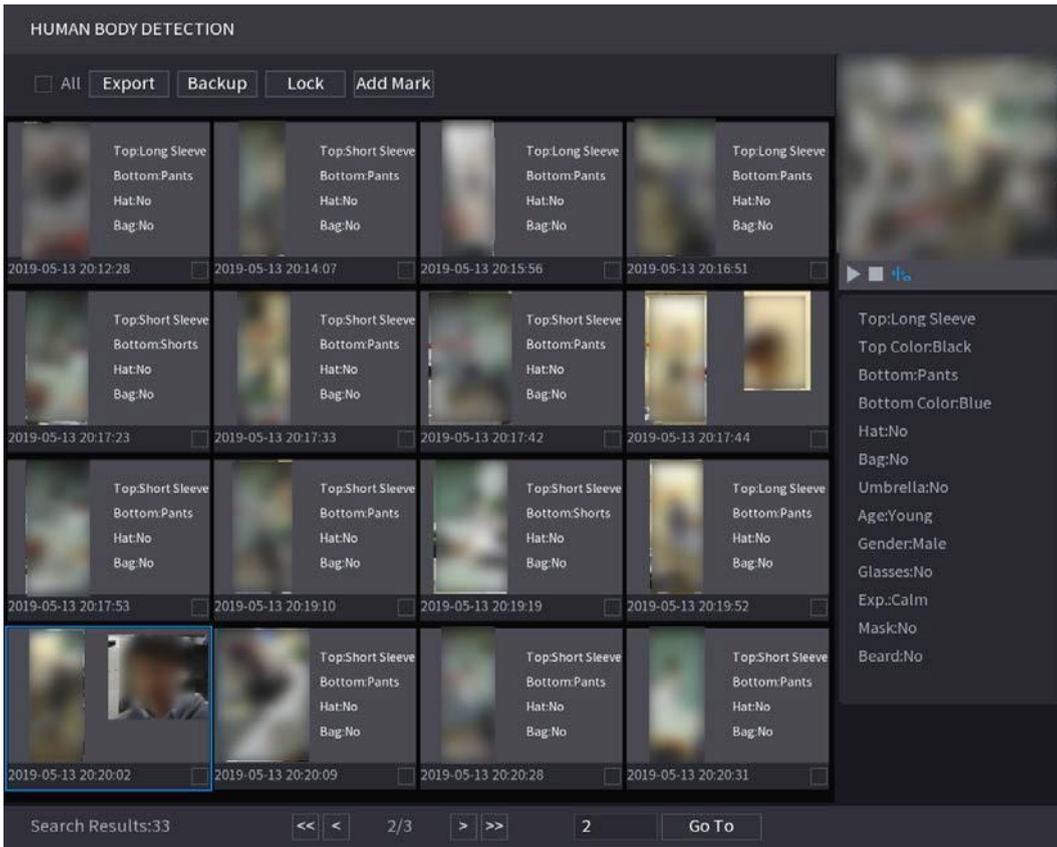
Figure 5-65



- If you selected **Human Body Detection** and **Face Detection** in "5.11.1.4.1 Configuring Metadata", and there is any human face appears in the video, there will be extra face features displayed in the

results.

Figure 5-66



Step 4 Select one or multiple results, and then you can

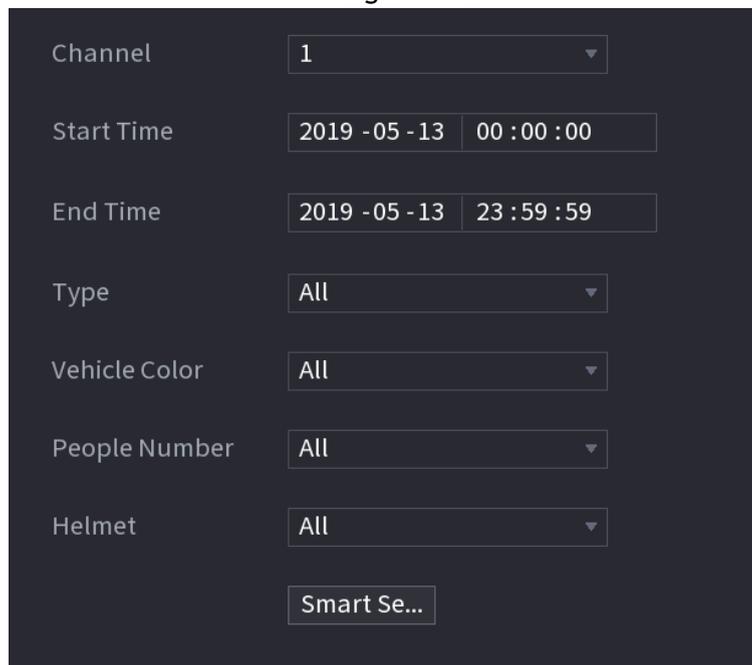
- Click **Export** to export them to the USB device
- Click **Backup** to make backup in the DVR
- Click **Lock** so that they don't get overwritten or deleted
- Click **Add Tag** to name them as needed.

Non-motor Vehicle Detection

Step 1 Select **Main Menu > Playback > Advanced Search > Non-motor Vehicle Detection**.

The **Non-motor Vehicle Detection** interface will be displayed.

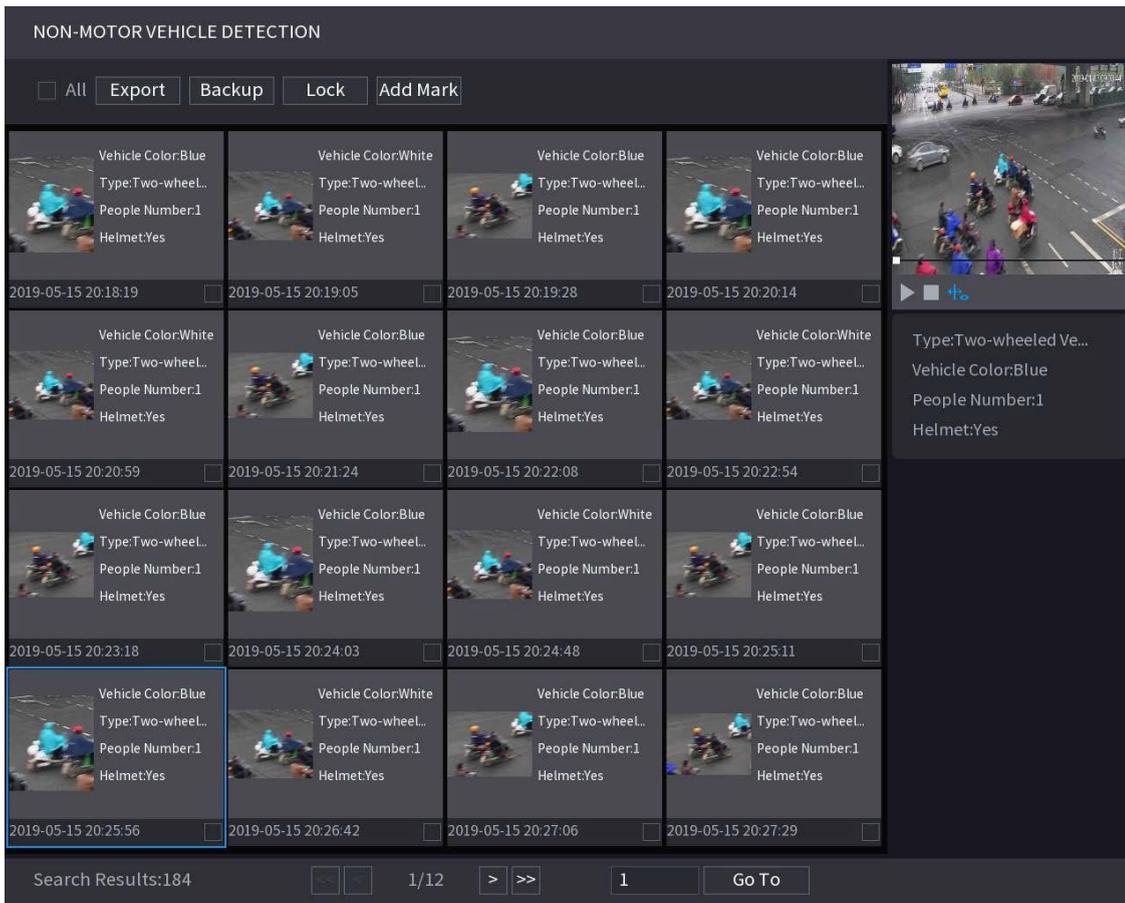
Figure 5-67



Step 2 Select the channel and the time, and then select one or multiple features from **Type**, **Vehicle Color**, **People Number**, or **Helmet**.

Step 3 Click **Smart Search**.

The search result will be displayed.



Step 4 Select one or multiple results, and then you can

- Click **Export** to export them to the USB device
- Click **Backup** to make backup in the DVR
- Click **Lock** so that they don't get overwritten or deleted
- Click **Add Tag** to name them as needed.

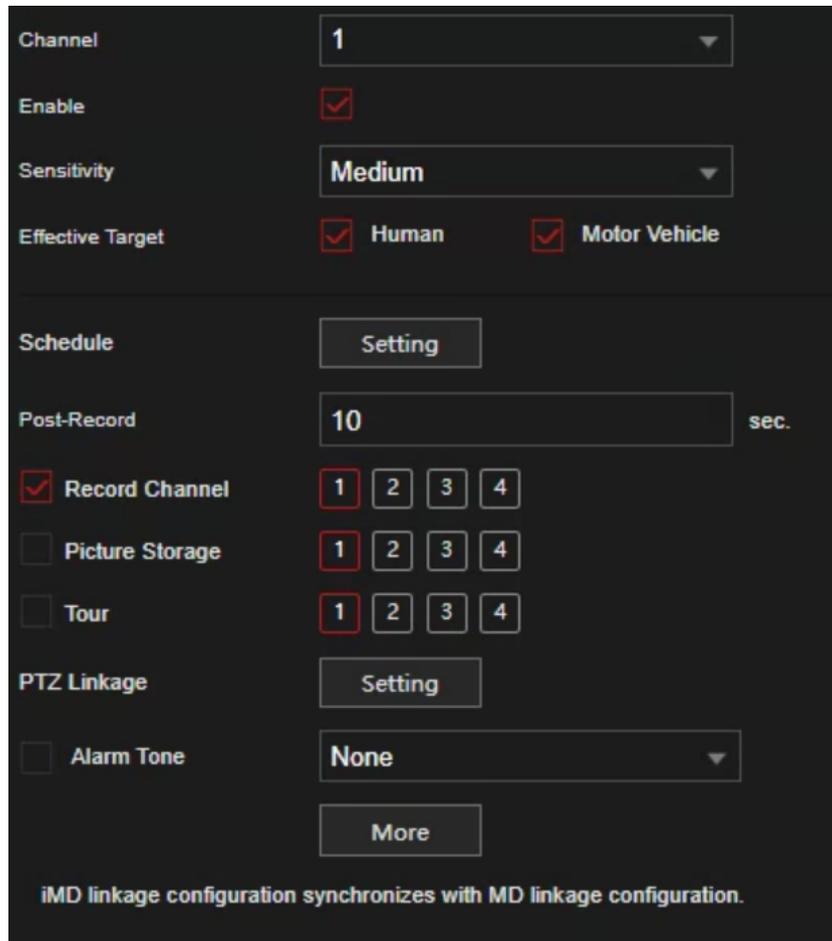
5.11.2.1 iMD

Intelligent Motion Detect allows the AI algorithm to detect and human or vehicle objects in the live video when motion is detected.

5.11.2.1.1 Configuring iMD Parameters

Step 1 Select **Main Menu > Advanced Settings > Alert Center > Parameters > iMD**. The iMD interface will be displayed.

Figure 5-68



Step 2 In the **Channel** list, select a channel that you want to configure face detection function, and then enable it.

Step 3 Configure the parameters according to your needs. See below for parameters and description.

Parameter	Description
Channel	In the Channel list, select a channel to set the motion detection.
Enable	Enable or disable the motion detection function.
Sensitivity	Set the sensitivity for Intelligent Motion detection.
Effective Target	Select human or motor vehicle or both. iMD will only be triggered when the chosen target is detected.
Schedule	Define a period during which the motion detection is active.
Post Record	Set a length of time for the Device to delay turning off recording after the event has ended. The value ranges from 10 seconds to 300 seconds, and the default value is 10 seconds.
Record Channel	Select the channel(s) that you want to record. The selected channel(s) will record after the event has been triggered.  The recording for motion detection and auto recording function must be enabled.
Picture Storage	Select the Snapshot check box to take a snapshot of the selected channel.  To use this function, select Main Menu > Advanced Settings > Camera Configuration > Video Stream > Snapshot , in the Type list, select Event .
Tour	Select the Tour check box to enable a tour of the selected

	channels.
PTZ Linkage	Click Setting to display the PTZ interface. Enable PTZ linkage actions, such as selecting the preset or tour that you want to be called when an alarm event occurs. Motion Detect can only activate PTZ preset.
Alarm Tone	Select to enable audio broadcast/alarm tones in response to a motion detection event.

More

Clicking the  button will allow for more options below:

Parameter	Description
Anti-Dither	When an event occurs, there will be a specified time delay before another event can trigger The range is 0 to 600 seconds
Show Message	Select the Show Message check box to enable a pop-up message in your local host PC.
Buzzer	Select the check box to activate the onboard buzzer of the Recorder.
Report Alarm	Select the Report Alarm check box to enable the system to upload the alarm signal to the network (including alarm center) when an alarm event occurs.
Log	Select the check box to enable the Device to record a local alarm log.
Send Email	Send Email When selected, the NVR sends an Email to the set receivers when the event is triggered. Email settings must be configured prior. For details, see "4.12.10 Email".

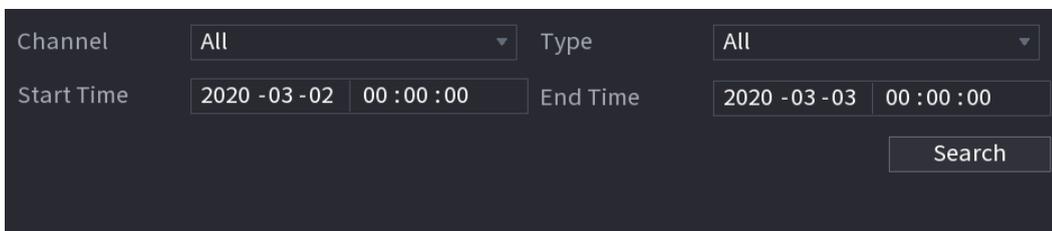
Step 4 Click **Apply** to complete the settings.

5.11.2.1.2 Searching for iMD Reports

You can search the detection history by channel, object type, and time.

Step 1 Select **Main Menu > Playback > Advanced Search > iMD**.

The **iMD** interface will be displayed.



Step 2 Select the channel, enter the start time and end time, and select the object type you need.

Step 3 Click **Search**.

The results will be displayed.

- 1) You can select channels and back up into a USB drive. To back up the recorded files to the external storage device, select files, click **Backup**, select the save path and file type, and then click **Start**.
- 2) Click  to view the event playback. The event will be displayed in a window.



Double-click on the playing interface to switch between full screen playing and thumbnail playing.

Figure 5-74



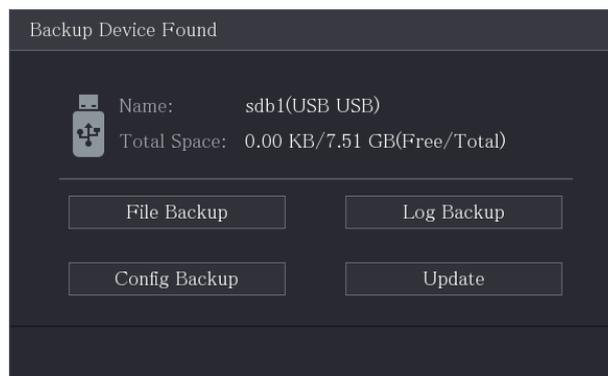
5.12 Configuring Backup Settings

5.12.1 Finding USB Device

When a USB storage device is inserted into the HDVR, the HDVR will detect the USB storage device, and a prompt will appear to **Find USB device** interface, which provides you a shortcut to perform backup and other operations. See Figure 5-98.

For details, see "5.14.2 Backing up Files", "5.21.2 Viewing Log Information", "5.20.4 Exporting and Importing System Settings", and "5.20.6 Updating the Device."

Figure 5-98

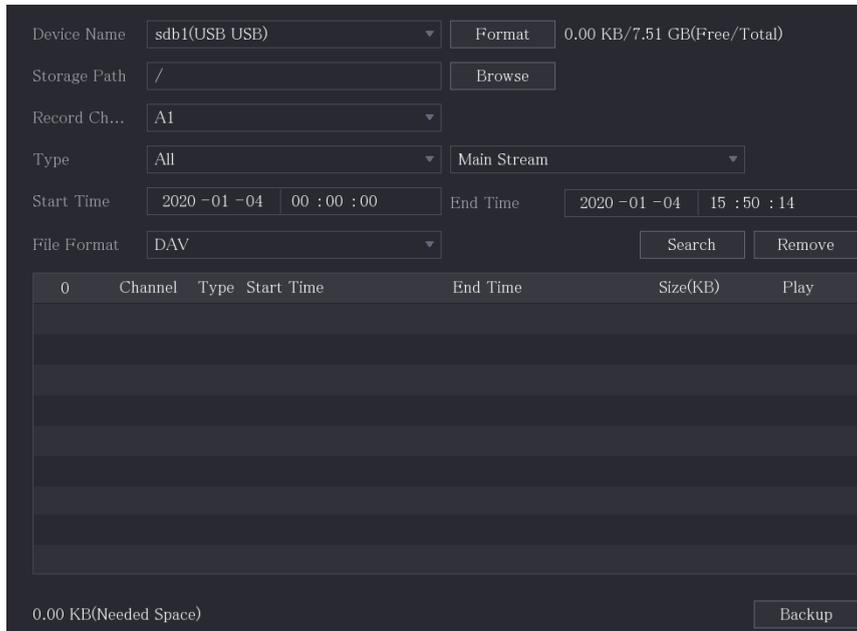


5.12.2 Backing up Files

This section allows you to back up the recorded videos and snapshots.

Step 1 Select **Main Menu > Search > Backup**.

The **Backup** interface will be displayed.



Step 2 Configure the settings for the backup parameters.

Parameter	Description
Device Name	In the Device Name list, select the device that you want to back up the files to.
Format	Click Format , the Format interface will be displayed. <ul style="list-style-type: none"> If the capacity of the external storage device is less than 2TB, you can select FAT32 or NTFS to format it. If the capacity of an external storage device is equal to or more than 2TB, you can only select NTFS to format it.
Path	Click Browse , the Browse interface will be displayed. Select the route where you want to search for the files.
Record Channel	In the Record Channel list, select the channel where you want to search for the files.
Type	In the Type list, select the file type that you want to search.
Start Time	Enter the start and end times for the files you want to search for.
End Time	
File Format	In the File Format list, select the file format as DAV or MP4 (if available) that you want to search.

Step 3 Click **Search** to search the files that meet the configured settings.

The searched results will display in the table.

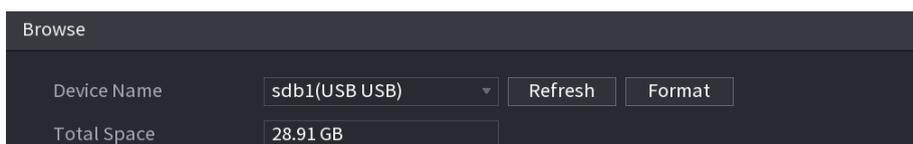
Step 4 Select the files that you want to back up.

Step 5 Click **Backup** to back up the selected files to the configured path.



Click **Remove** to remove all the searched results.

The system will display a backup progress bar. A dialog box will be prompted When backup is completed.



Step 6 Click **OK**.

5.13 Network Management

5.13.1 Configuring Network Settings

This section allows you to configure the network settings of the recorder, such as TCP/IP, P2P, DDNS and E-mail (SMTP)

5.15.1.1 Configuring TCP/IP Settings

This section allows for configuration of the settings for the Device such as IP address, subnet mask and DNS according to the local networking requirements. Configure according to the local network requirements.

Select **Main Menu > Basic Settings > Network > TCP/IP**, and the **TCP/IP** interface will be displayed.

NIC Name	IP Address	Network...	NIC Member	Modify	Unbind
NIC1	192.168.1.209	Single NIC	1		

IP Address: 192.168.1.209 Default Gateway: 192.168.1.1 MTU: 1500
 MAC Address: c0:39:5a:13:a1:e1 Subnet Mask: 255.255.255.0 Mode: DHCP

IP Version DHCP

Preferred DNS

Alternate DNS

Default Card

Parameter	Description
Net Mode	<ul style="list-style-type: none"> • Multi-address (only with dual Network port models): The two Ethernet ports work separately through either of which you can request the Device to provide the services such as HTTP and RTSP. You will need to configure a default Ethernet port (usually the Ethernet port 1 by default) to the local network (if this is the case, the second Ethernet port will be configured for the IP camera IP scheme. If one of the two Ethernet ports is disconnected as detected by the NVR network monitor, the system network status is regarded as offline. • Fault Tolerance: The two Ethernet ports share one IP

	<p>address. Normally, only one Ethernet port is working and when this port fails, the other port will start working automatically to ensure a constant network connection.</p> <ul style="list-style-type: none"> • When both of the two Ethernet ports are disconnected, the NVR network monitor will regard this as offline. The two Ethernet ports are used under the same LAN. • Load Balance: The two network cards share one IP address and they are working at the same time to share the average network load. <p> The Device with a single Ethernet port does not support this function.</p>
Default Ethernet Port	<p>In the Ethernet Card list, select an Ethernet port as a default port. This is typically the port going to the local network.</p> <p>This setting is available only when the Multi-address is selected in the Net Mode list.</p>
IP Version	In the IP Version list, you can select IPv4 or IPv6. Both versions are supported for access.
MAC Address	Displays the MAC address of the Device.
DHCP	<p>Enables the DHCP function. The IP address, subnet mask and default gateway are not available for configuration once DHCP is enabled.</p> <ul style="list-style-type: none"> • If DHCP is successful, the obtained information will display in the IP Address box, Subnet Mask box and Default Gateway box. If not, all values show 0.0.0.0. • If you want manually configure the IP information, disable the DHCP function. • If PPPoE connection is successful, the IP address, subnet mask, default gateway, and DHCP are not available for configuration.
IP Address	<p>Enter the IP address and configure the corresponding subnet mask and default gateway.</p> <p> IP address and default gateway must be in the same network segment.</p>
Subnet Mask	
Default Gateway	
DNS DHCP	Enable the DHCP function to get the DNS address from the router.
Preferred DNS	In the Preferred DNS box, enter the IP address of DNS.
Alternate DNS	In the Alternate DNS box, enter the IP address of alternate DNS.
	Maximum transmission unit. In the MTU box, enter a value for network card. The value ranges from 1280 byte through 1500 byte. The default is 1500.

MTU	<p>The suggested MTU values are shown below.</p> <ul style="list-style-type: none"> • 1500: The greatest value of the Ethernet information package. This value is typically selected if there is no PPPoE or VPN connection, and it is also the default value of some routers, network adapters, and switches. • 1492: Optimized value for PPPoE. • 1468: Optimized value for DHCP. • 1450: Optimized value for VPN.
Test	Clicking this button will test if the entered IP address and gateway is valid.

5.15.1.2 Configuring Port Settings

This section allows for the configuration of the maximum devices allowed to access the HDVR from Clients such as WEB GUI, Smart ICRSS, and Mobile Apps, as well as configures each port settings.

Step 1 Select **Main Menu > Advanced Settings > Network > Port**.
The **Port** interface will be displayed.

Figure 5-99

Max Connection	<input type="text" value="128"/>	(0-128)
TCP Port	<input type="text" value="32789"/>	(1025-65535)
UDP Port	<input type="text" value="37778"/>	(1025-65535)
HTTP Port	<input type="text" value="80"/>	(1-65535)
HTTPS Port	<input type="text" value="443"/>	(1-65535)
RTSP Port	<input type="text" value="554"/>	(1-65535)
NTP Server Port	<input type="text" value="123"/>	(1-65535)
RTSP Format	<code>rtsp://<Username>:<Password>@<IP Address>:<Port>/cam/realmonitor?channel=1&subtype=0</code> channel: Channel, 1-4; subtype: Stream Type, Main Stream 0, Sub Stream 1.	

Step 2 Configure the settings for the connection parameters.

Parameter	Description
Max Connection	The allowable maximum clients accessing the device simultaneously, such as WEB, Desktop Software, and Mobile Apps. Select a value between 1 and 128. The default value setting is 128.
TCP Port	The default value setting is 37777. You can enter the value according to your actual requirements.
UDP Port	The default value setting is 37778. You can enter the value according to your actual requirements.

HTTP Port	The default value setting is 80. You can enter the value according to site requirements. If you enter another value, for example, 70, and then you should enter “:70” after the IP address when logging in the Device by browser.
RTSP Port	The default value setting is 554. Enter the value according to your actual requirements.
POS Port	Data transmission. The value range is from 1 through 65535. The default value is 38800.
NTP Server Port	The default value setting is 123. Enter the value according to your actual requirements.
HTTPS Port	HTTPS communication port. The default value setting is 443. You can enter the value according to your actual requirements.

Step 3 Click **Apply** to complete the settings.

5.15.1.3 Configuring PPPoE Settings

PPPoE is another way for the Device to access the network. You can establish a network connection by configuring PPPoE settings to give the NVR a dynamic WAN IP address. To use this function, you will need to obtain a user name and password from the Internet Service Provider the NVR will be utilizing.

Step 1 Select **Main Menu > Advanced Settings > Network > PPPoE**. The PPPoE interface will be displayed.

Step 2 Enable the PPPoE function.

Step 3 In the **Username** box and **Password** box, enter the user name and password accordingly provided by the Internet Service Provider.

Step 4 Click **Apply** to complete the settings.

A prompt will appear to indicate the settings were successfully saved. The IP address appears on the PPPoE interface. You can use this IP address to access the Device.



When the PPPoE function is enabled, the IP address on the **TCP/IP** interface cannot be modified.

5.15.1.4 Configuring DDNS Settings

If the WAN IP the NVR is utilizing is Dynamic (Frequently changes), the DDNS function can dynamically refresh the correspondence between the domain name on the DNS and the IP address, ensuring remote access to the

NVR by using the domain name. This function is typically used when port forwarding for remote access and not P2P.

Background Information

IC Realtime devices come with a built-in ICDDNS registration for your convenience. If you select other DDNS services, you will need to login to the respective web site for the DDNS service for additional configuration.

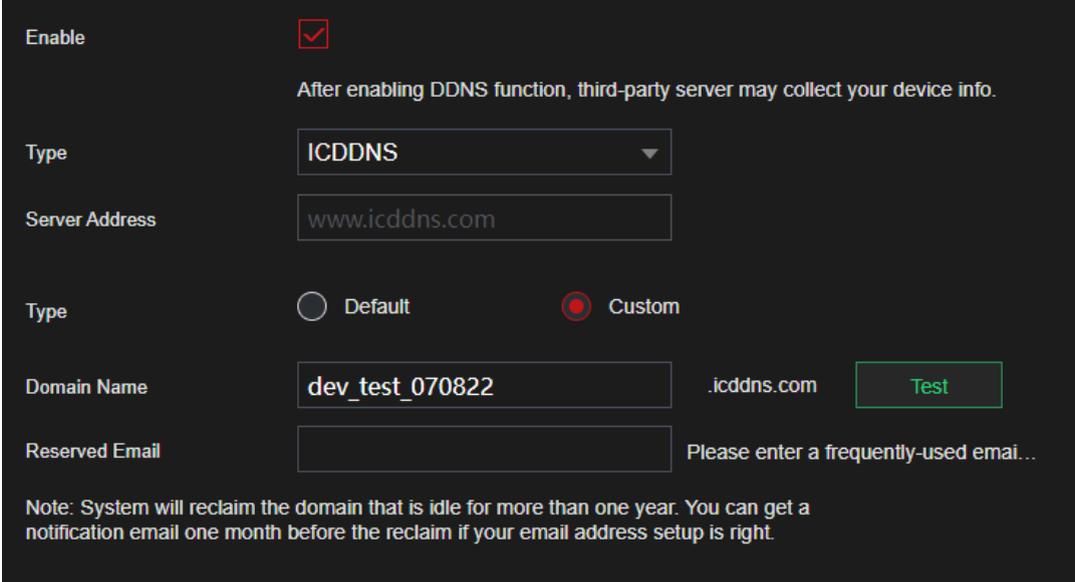
 After you have registered an account and logged in the ICDDNS website successfully, you can view the information of all the connected devices under your account.

Configuring Steps

Step 1 Select **Main Menu > Advanced Settings > Network > DDNS**.

The **DDNS** interface will be displayed.

Figure 5-100



Step 2 Configure the settings for the DDNS parameters.

Parameter	Description
Enable	Enables the DDNS function.  After enabling DDNS function, third-parties may collect your Device information.
Type	Type and address of DDNS service provider.
Server Address	<ul style="list-style-type: none"> Type: ICDDNS; address: icddns.com
Domain Name	Input a custom domain name to register.
Test	If using ICDDNS, click the Test button to register the custom domain name.
Reserved Email	Input an email that will be notified one month before the ICDDNS domain expires. This allows for domain renewal.
User Name	Enter the user name and password obtained from DDNS service provider. If ICDDNS is not selected, you will need to register (including user name and password) on the website of the DDNS service provider.
Password	

Step 3 Click **Apply** to complete the settings.

You can use a PC with the commands prompt to ping the DDNS URL. If successful, it will return with the public IP address that the NVR is connected to.

5.15.1.5 Configuring EMAIL Settings

This section allows the NVR (Sender) to send emails to a set of defined receivers. This must be set up correctly in order to use “Send Email” functions on events such as iMD, Motion Detection or any other event.

Step 1 Select **Main Menu > Advanced Settings > Network > Email**.

The **Email** interface will be displayed.

The screenshot shows the 'Email' configuration page. It features a dark background with white text and input fields. The 'Enable' checkbox is unchecked. The 'SMTP Server' is set to 'smtp.gmail.com'. The 'Port' is '587'. The 'Anonymous' checkbox is unchecked. The 'Username' and 'Password' fields are empty. The 'Sender' field is empty. The 'Encryption Type' is set to 'TLS'. The 'Subject' is 'HAVR ALERT'. The 'Attachment' checkbox is checked. The 'Receiver' field is empty. The 'Sending Interval' is '120' seconds. The 'Health Mail' checkbox is unchecked. The 'Sending Interval' is '60' minutes. There is a 'Setting' button and a 'Test' button at the bottom.

Step 2 Configure the settings for the email parameters.

Parameter	Description
Enable	Enables the email function.
SMTP Server	Enter the address of SMTP server of sender’s email account.
Port	The port value of SMTP server. Enter the value according to your actual requirements (465 or 587).
Anonymous	If enabled, you can log in as anonymous.
Username	Enter the email of sender’s email account.
Password	Enter the password of sender’s email account. If utilizing the “App Password” feature of an Email client, input the app password here.
Sender	The E-mail of the sender.
Receiver	In the Receiver list, add the email receivers that you want to receive the notification. A maximum of up to three receivers..

Subject	Enter the email subject. It supports maximum 64 characters.
Attachment	Enable the attachment function. When there is an alarm event, the system can attach snapshots as an attachment to the email.
Encryption Type	Select the encryption type: NONE , SSL , or TLS .  For SMTP server, the default encryption type is TLS .
Sending Interval (sec.)	The system will not be able to send another email after the set linterval time.This setting helps to avoid the large amount of emails caused by frequent alarm events. The value ranges from 0 to 3600. 0 means that there is no interval.
Health Mail	Enable the health test function. The system can send a test email to check the connection.
Health Mail Sending Interval (Min.)	This is the interval that the system sends a health test email. The value ranges from 30 to 1440. 0 means that there is no interval.
Schedule	Configures the date of the week and times in which the Email notifications are allowed to be sent.
Test	Click Test to test the email sending function. If the configuration is correct, the receiver's email account will receive an email.  Before testing, click Apply to save the settings.

Step 3 Click **Apply** to complete the settings.

5.15.1.6 Configuring UPnP Settings

You can map the relationship between the LAN and the WAN to access the Device on the LAN through the IP address on the WAN.

Preparation for Configuration

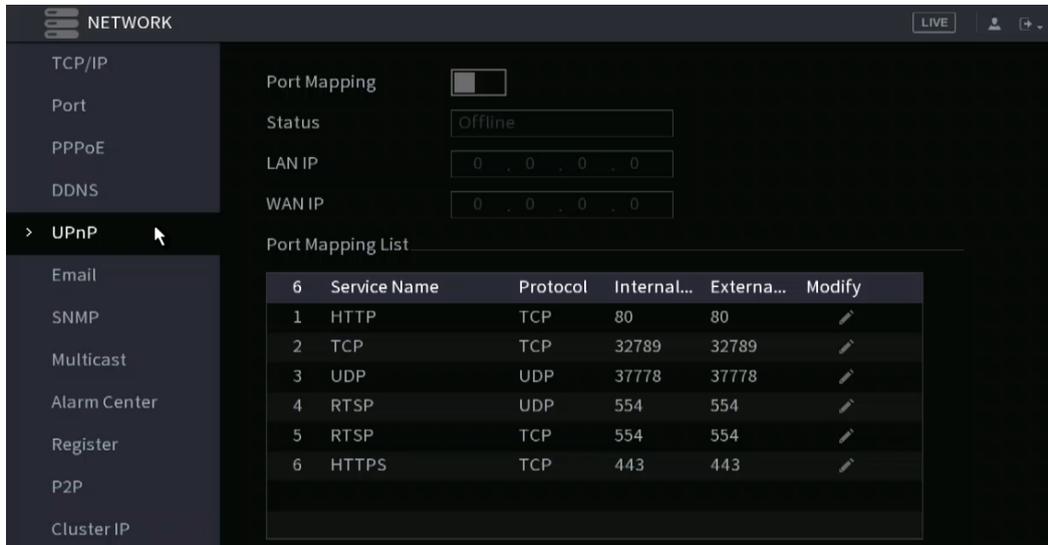
- Login the router to set the WAN port to enable the IP address to connect into the WAN.
- Enable the UPnP function at the router.
- Connect the Device with the LAN port on the router to connect into the LAN.
- Select **Main Menu > Advanced Settings > Network > TCP/IP**, configure the IP address into the router IP address range, or enable the DHCP function to obtain an IP address automatically.

Configuration Steps

Step 4 Select **Main Menu > Advanced Settings > Network > UPnP**.

The **UPnP** interface will be displayed.

Figure 5-101



Step 5 Configure the settings for the UPnP parameters.

Parameter	Description
Port Mapping	<p>Enable the UPnP function.</p> <p> When enabled, the intranet services and ports will be mapped to extranet. Proceed with caution.</p>
Status	<p>Indicates the status of UPnP function.</p> <ul style="list-style-type: none"> Offline: Failed. Online: Succeed.
LAN IP	<p>Enter IP address of router on the LAN.</p> <p> After mapping succeeds, the system obtains IP address automatically without performing any configurations.</p>
WAN IP	<p>Enter IP address of router on the WAN.</p> <p> After mapping succeeds, the system obtains IP address automatically without performing any configurations.</p>
Port Mapping List	<ul style="list-style-type: none"> Service Name: Name of network server. Protocol: Type of protocol. Int. Port: Internal port that is mapped on the Device. Ext. Port: External port that is mapped on the router. To avoid port the conflict, when setting the external port, try to use the ports from 1024 through 5000 and avoid popular ports from 1 through 255 and system ports from 256 through 1023. When there are several devices in the LAN, reasonably arrange the ports mapping to avoid mapping to the same external port. When establishing a mapping relationship, ensure the mapping ports are not occupied or limited. The internal and external ports of TCP and UDP must be the same and cannot be modified. Click to modify the external port.

Step 6 Click **Apply** to complete the settings.

In the browser, enter http://WAN IP: External IP port. You can visit the LAN Device.

5.15.1.7 Configuring SNMP Settings



Not all models support this function.

SNMP allows the NVR to be managed by a database such as a MIB. Once configured, you can utilize software such as MIB Builder and MG-SOFT MIB Browser to manage and control the NVR from the software.

Preparation for Configuration

- Install the software that can manage and control the SNMP, such as MIB Builder and MG-SOFT MIB Browser
- Obtain the MIB files that correspond to the current version from the technical support.

Configuration Steps

Step 1 Select **Main Menu > Advanced Settings > Network > SNMP**. The **SNMP** interface will be displayed.

Figure 5-102

Step 2 Configure the settings for the SNMP parameters.

Parameter	Description
Enable	Enable the SNMP function.
Version	Select the check box of SNMP version(s) that you are using. The default version is V3. There may be a security risk if selecting V1 or V2.
SNMP Port	Indicates the monitoring port on the agent program.
Read Community	Indicates the read/write strings supported by the agent program.
Write Community	

Trap Address	Indicates the destination address for the agent program to send the Trap information.
Trap Port	Indicates the destination port for the agent program to send the Trap information.
Read-Only Username	Enter the user name that is allowed to access the Device and has the "Read Only" permission.
Read/Write Username	Enter the user name that is allowed to access the Device and has the "Read and Write" permission.
Authentication Type	Includes MD5 and SHA. The system will recognize automatically.
Authentication Password	Enter the password for authentication type and encryption type. The password should be no less than eight characters.
Encryption Password	
Encryption Type	In the Encryption Type list, select an encryption type. The default setting is CBC-DES.

Step 3 Compile the two MIB files by MIB Builder.

Step 4 Run MG-SOFT MIB Browser to load in the module from a compilation.

Step 5 On the MG-SOFT MIB Browser, enter the Device IP that you want to manage, and then select the version number to query.

Step 6 On the MG-SOFT MIB Browser, unfold the tree-structured directory to obtain the configurations of the device, such as the channel quantity and software version.

5.15.1.8 Configuring Multicast Settings

Multicast allows you to view the NVR if the connected users have exceeded the limit. Multicast enables information (in this case, video streams and such) to be sent to multiple receivers at the same time.

Step 1 Select **Main Menu > Advanced Settings > Network > Multicast**.

The **Multicast** interface will be displayed.

The screenshot shows a configuration interface with a dark background. It contains three rows of settings:

- Enable:** A checkbox that is currently unchecked.
- IP Address:** A text input field containing "239 . 255 . 42 . 42" with a range "(224.0.0.0-239.255.255.255)" shown to the right.
- Port:** A text input field containing "36666" with a range "(1025-65000)" shown to the right.

Step 2 Configure the settings for the multicast parameters.

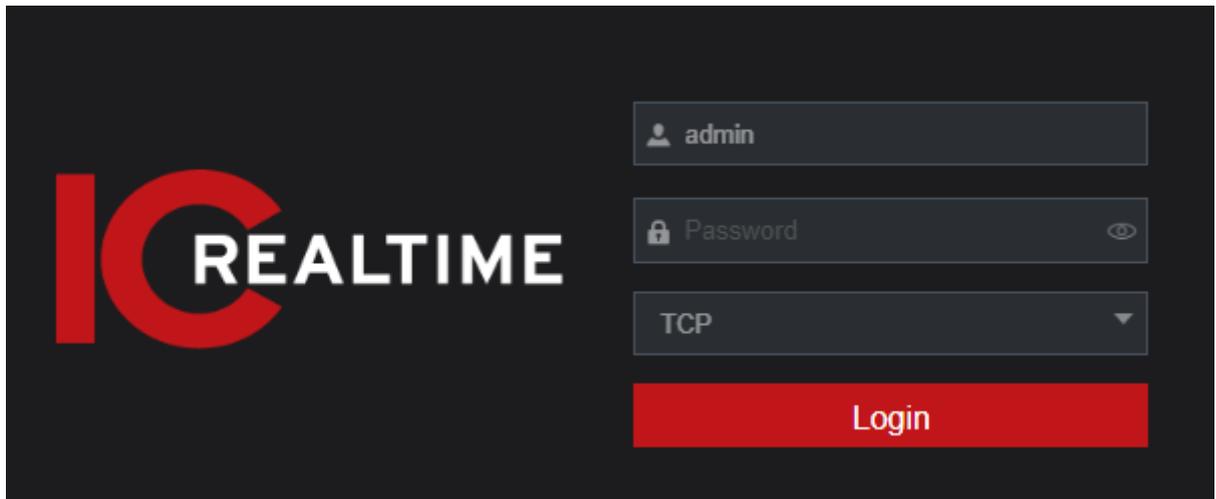
Parameter	Description
Enable	Enable the multicast function.
IP Address	Enter the IP address that you want to use as the multicast IP. The IP address ranges from 224.0.0.0 through 239.255.255.255.
Port	Enter the port for the multicast. The port ranges from 1025 through 65000.

Step 3 Click **Apply** to complete the settings.

You can use the multicast IP address to login to the web GUI.

On the web login dialog box, in the Type list, select MULTICAST. The web will automatically obtain the

multicast IP address and join. You can then view the video through the multicast function.



5.15.1.9 Configuring Register Settings

You can register the HDVR into the designated proxy server, which acts as the transit to make it easier for the client software to access the Device.

Step 1 Select **Main Menu > Advanced Settings > Network > Register**.

The **Register** interface will be displayed.

Figure 5-103

Step 2 Configure the settings for the register parameters.

Parameter	Description
Enable	Enable the register function.
No.	The default value is 1.
Server IP Address	Enter the server IP address or domain you want to register.
Port	Enter the port of the server.
Sub Service ID	This ID is allocated by the server and used for the Device.

Step 3 Click **Apply** to complete the settings.

5.15.1.10 Configuring Alarm Center Settings

You can configure the alarm center server to receive the uploaded alarm information. To use this function, the Alarm Upload check box must be selected. For details about alarm event settings, see "5.10 Alarm Events

Settings."

Step 4 Select **Main Menu > Advanced Settings > Network > Alarm Center**.
The **Alarm Center** interface will be displayed.

Figure 5-104

Step 5 Configure the settings for the alarm center parameters.

Parameter	Description
Enable	Enable the alarm center function.
Protocol Type	In the Protocol Type list, select protocol type. The default is ALARM CENTER .
Server Address	The IP address and communication port of the PC installed with alarm client.
Port	
Auto Report Plan	In the Auto Report Plan list, select time cycle and specific time for uploading alarm.

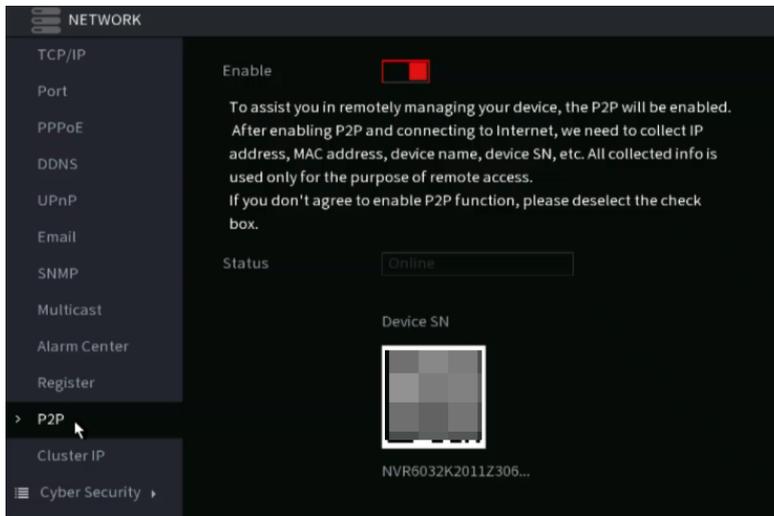
Step 6 Click **Apply** to complete the settings.

5.15.1.11 Configuring P2P Settings

P2P allows for easy remote access without having to configure the router. You will just need an internet connection to the NVR and the mobile app (IC View/ ICRSS Pro) or desktop software (Smart ICRSS) for remote viewing.

Make Sure the Recorder is connected with a network cable to a local network with internet. It is recommended to have the TCP/IP Setting to DHCP when first setting up P2P.

Step 1 Select **Main Menu > Basic Settings > NETWORK > P2P**.
The **P2P** interface will be displayed.



Step 2 Enable the P2P function. The Status section will indicate if the P2P connection is successful.



After the P2P function is enabled and connected to the Internet, the system will collect your information for remote access. The information includes and is not limited to email address, MAC address, and device serial number.

You can now add the device.

- Cell Phone Client: Use your mobile phone to scan the QR code to add the device into the Mobile App (IC View/ ICRSS Pro), input the login information access the NVR.
- Desktop Software: Obtain the Device. Go to the Main Menu, then Devices. Click “+Add” and input the Device SN and login credentials. Click “Add” to save the settings and connect.

5.14 Configuring Account Settings

This section allows you to manage the users, user group and ONVIF user, as well as configure the admin (recovery) security questions.



- The user name supports 31 characters, and the group name supports up to 15 characters. The user name can consist of letter, number, “_”, “@”, “.”.
- You can set a maximum 64 users and 20 groups. The group name by “User” and “Admin” cannot be deleted. You can set up other groups and define the relevant permissions. However, the admin account’s permissions cannot be modified.
- You can manage the account by user and group. A user or group name must have unique names. Every user must belong to a group, and a user can only belong to one group.

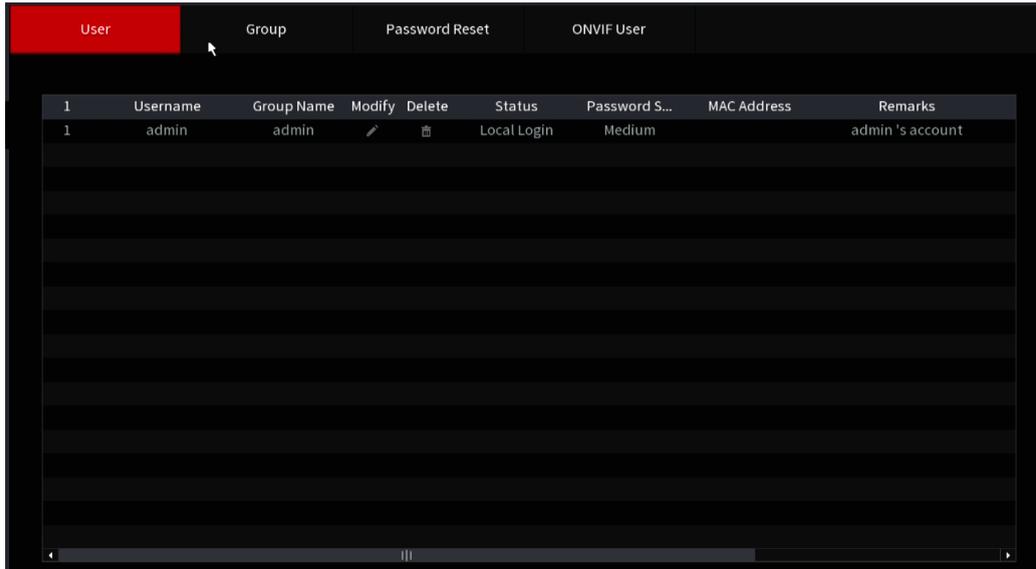
5.14.1 Configuring User Account

5.16.1.1 Adding a User Account

Step 1 Select Main Menu > Advanced Settings > System Operation > Account > User.

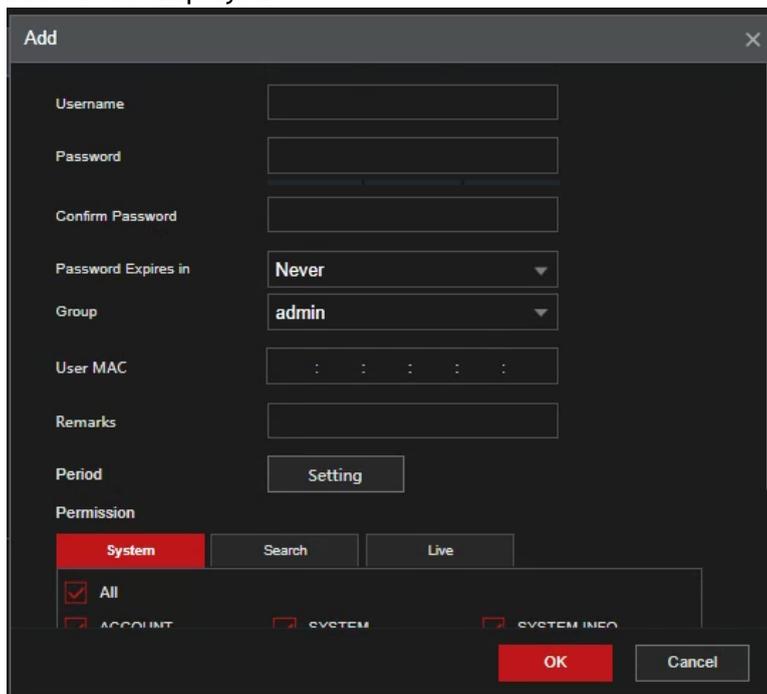
The User interface will be displayed.

Figure 5-109



Step 2 Click Add.

The Add interface will be displayed.



Step 3 Configure the settings for the parameters of adding a user account.

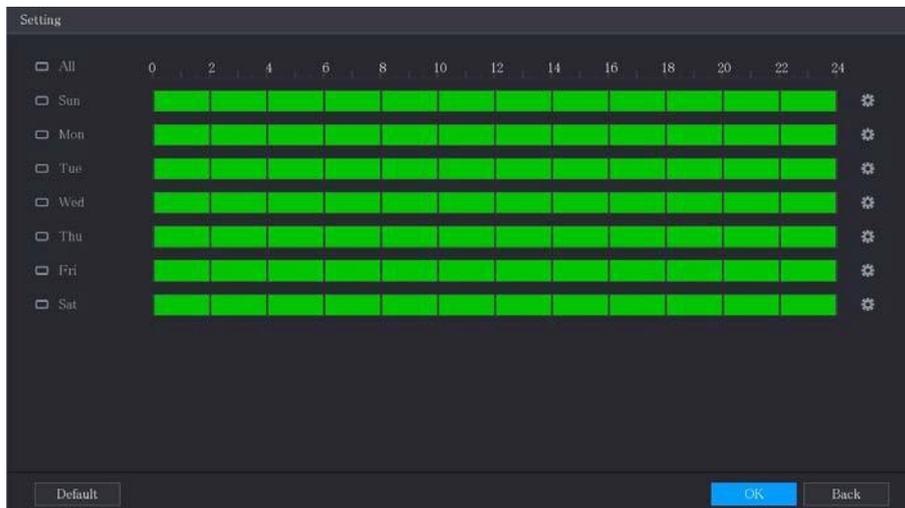
Parameter	Description
Username	Enter a user name and password for the account.
Password	
Confirm Password	Re-enter the password.
Password Expires in	Optional. You can set an expirational date for the user. After the given time, the user will no onger be able to login.
Remarks	Optional. You can enter a note or description of the account.
User MAC	Optional. The user can only log in from a device with the given MAC address.
Group	Select a group for the account. The user rights must be within the group permission.

Period	Click Setting to display Setting interface. Define a period during which the new account can login the device. The new account cannot login the device during the time beyond the set period.
Permission	In the Permission area, select the check boxes in the System tab, Playback tab, and Monitor tab.  To manage the user account easily, when defining the user account authority, it is recommended not to give the authority to the common user account higher than the advanced user account.

Step 4 Click **OK** to complete the settings.

Setting Permitted Period

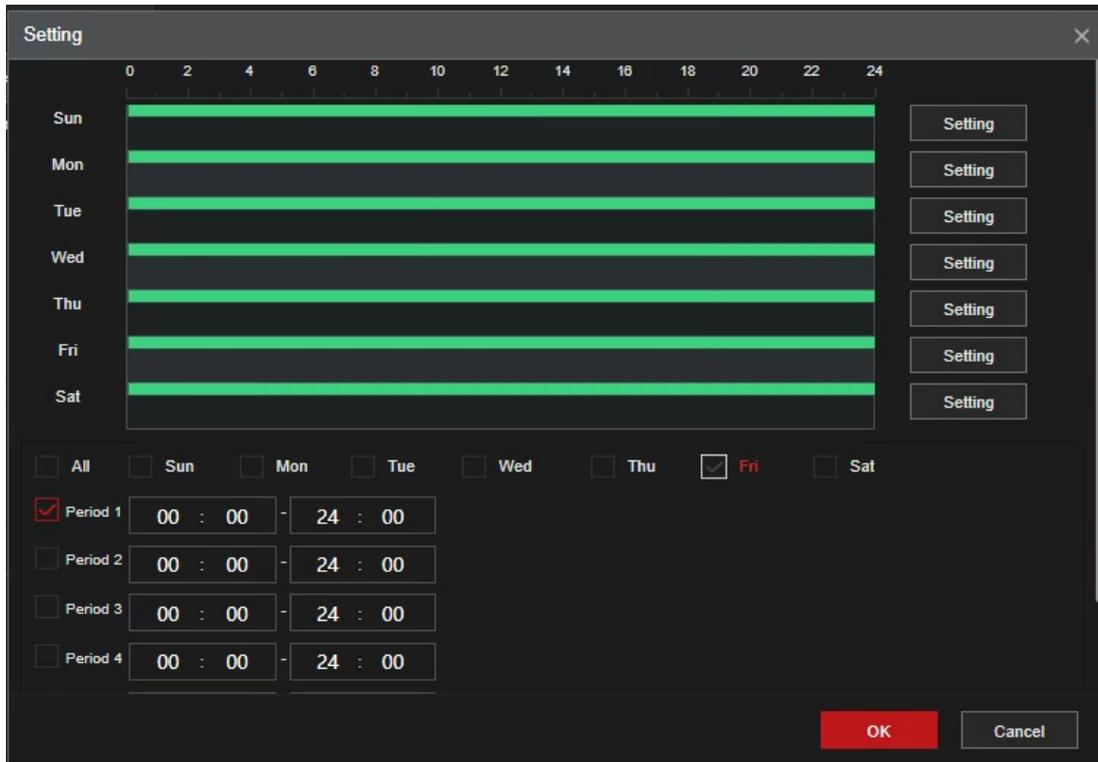
Step 1 Next to **Period**, click **Setting**. The **Set** interface will be displayed.



Step 2 Define the permitted period. By default, it is active all the time.

- Define the period by drawing.
 - ◇ Define for a specified day of a week: On the timeline, click the half-hour blocks to select the active period.
 - ◇ Define for several days of a week: Click before each day, the icon switches to . On the timeline of any selected day, click the half-hour blocks to select the active periods, all the days with will take the same settings.
 - ◇ Define for all days of a week: Click **All**, all the switches to . On the timeline of any day, click the half-hour blocks to select the active periods, all the days will take the same settings.
- Define the period by editing. Take Sunday as an example.
 - 1) Click .

The **Period** interface will be displayed.



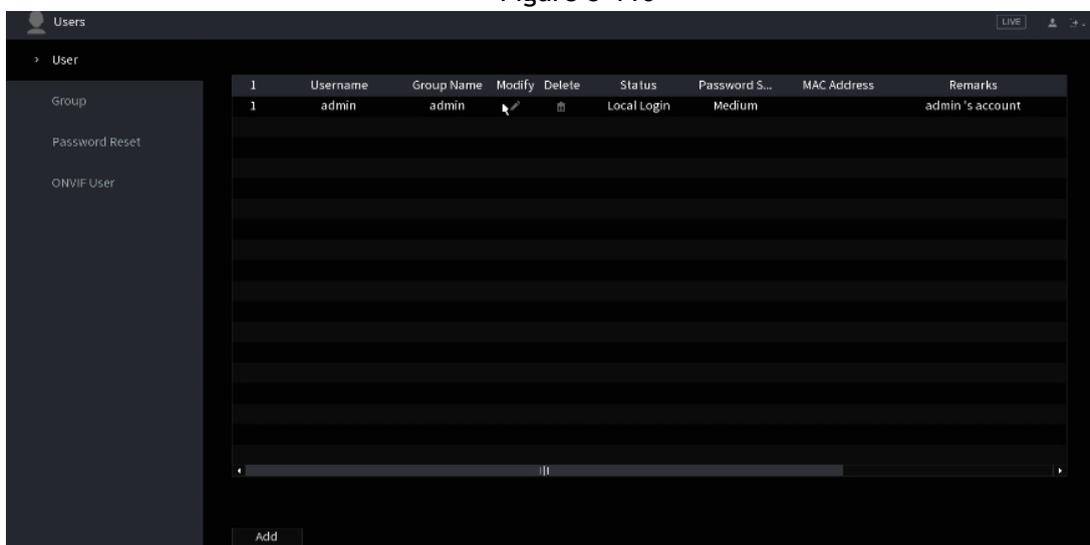
- 2) Enter the time frame for the period and select the check box to enable the settings.
 - ◇ There are six periods for you to set for each day.
 - ◇ Under **Copy**, select **All** to apply the settings to all the days of a week, or select specific day(s) that you want to apply the settings to.
- 3) Click **OK** to save the settings.
- 4) Step 3 Click **OK**.

5.16.1.2 Modify a User Account

Step 1 Select **Main Menu > Advanced Settings > System Operation > Account > User**.

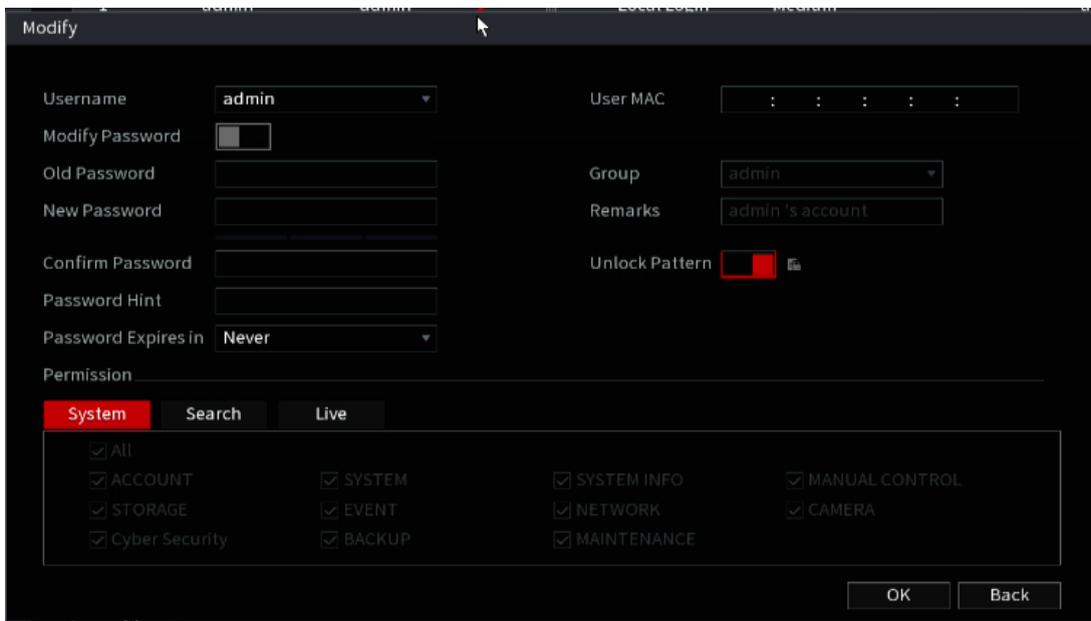
The **User** interface will be displayed.

Figure 5-110



Step 2 Click  for the user account that you want to modify.

The **Modify** interface will be displayed.



Step 3 Change the settings for password, user name, user group, user MAC, memo, period, and authority.



The new password can be set from 8 digits through 32 digits and contains at least two types from number, letter and special characters (excluding "", "", ";", ":" and "&").

For the admin account, you enable/disable the unlock pattern and modify the password hint.

- To use the unlock pattern, enable **Unlock Pattern**, click , draw a pattern in the **Unlock Pattern** interface, and then click **Save** to save the setting.
- Enter password hint text in **Password Hint** box.

Step 4 Click **OK** to complete the settings.

5.16.1.3 Deleting a User Account

Step 1 Select **Main Menu > Advanced Settings > System Operation > Account > User**.

The **User** interface will be displayed.

Step 2 Click  for the user account that you want to delete.

A **Message** will be displayed.

Step 3 Click **OK** to delete a user account.

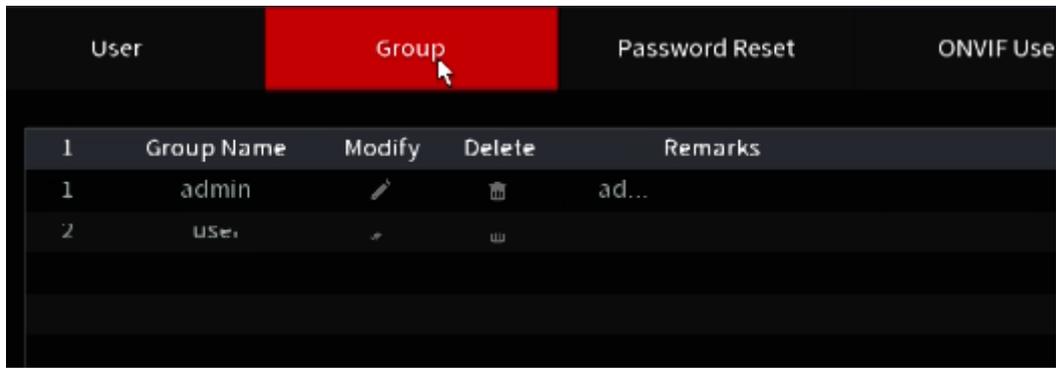
5.14.2 Configuring Group Account

5.16.2.1 Adding a Group

Step 4 Select **Main Menu > Advanced Settings > System Operation > Account > Group**.

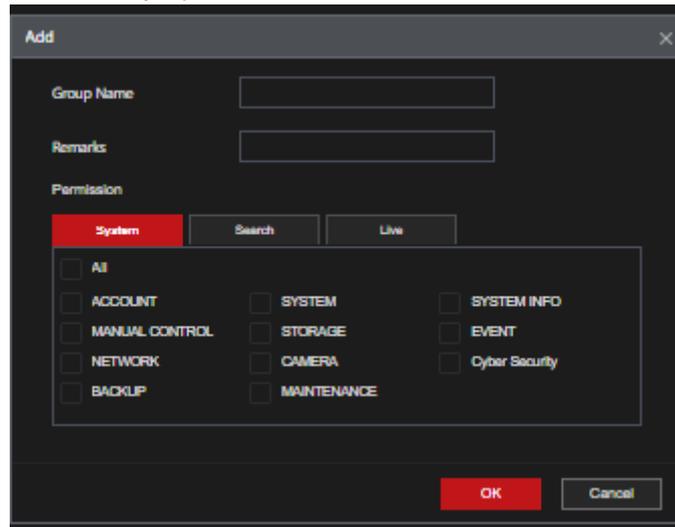
The **GROUP** interface will be displayed.

Figure 5-111



Step 5 Click **Add**.

The **Add** interface will be displayed.



Step 6 Configure the settings for the parameters of adding a group.

Parameter	Description
Group Name	Enter a name for the group.
Remarks	Optional. Enter a description of the account.
Permission	In the Permission area, select the check boxes in the System tab, Playback tab, and Monitor tab.

Step 7 Click **OK** to complete the settings.

5.16.2.2 Modifying a Group

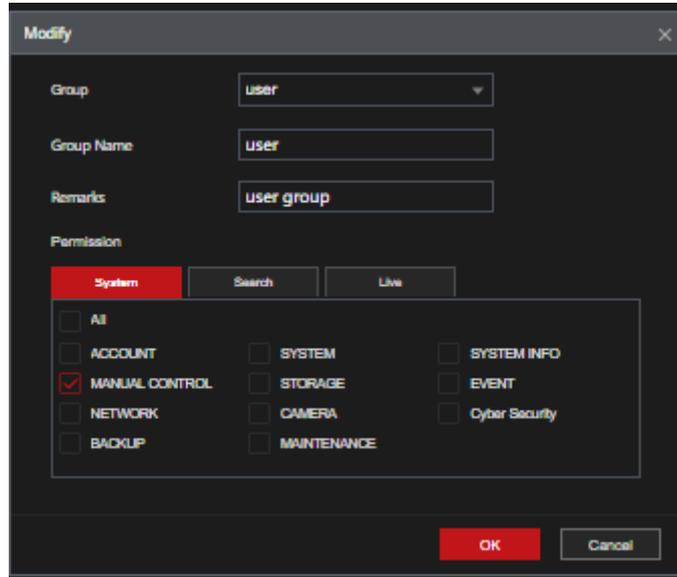
Step 1 Select **Main Menu > Advanced Settings > System Operation > Account > Group**.

The **Group** interface will be displayed.

Step 2 Click  for the group account that you want to modify.

Step 3 The **Modify** interface will be displayed.

Figure 5-112



Step 4 Change the settings for group name, memo, and authority. Step 5 Click **OK** to complete the settings.

5.16.2.3 Deleting a Group

Step 1 Select **Main Menu > Advanced Settings > System Operation > Account > Group**. The **Group** interface will be displayed.

Step 2 Click  for the user account that you want to delete. A **Message** will be displayed.

Step 3 Click **OK** to delete a group.

5.14.3 Configuring ONVIF Users

Creating an ONVIF account allows the Recorder to connect and interact with other ONVIF compliant third-party devices.



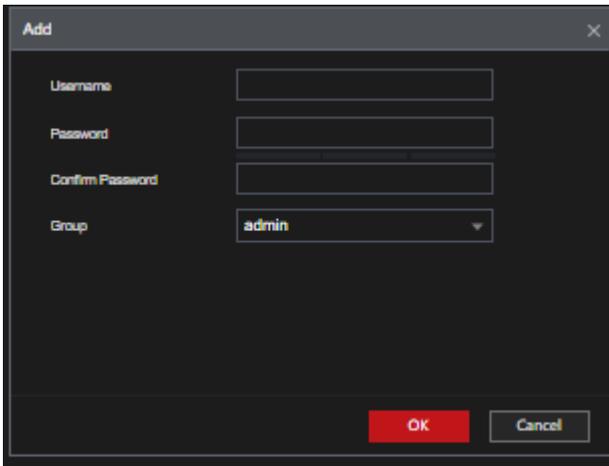
The ONVIF users admin account is created after the Device has been initialized.

Step 1 Select **Main Menu > Advanced Settings > System Operation > Account > ONVIF User**. The **ONVIF User** interface will be displayed.

Figure 5-114

User	Group	Password Reset	ONVIF User		
1	Username	Group Name	Modify	Delete	Password S...
1	admin	admin			Medium

Step 2 Click **Add**. The **Add** interface will be displayed.



Step 3 Enter a user name, password, and select the group that you want this account to belong to.

Step 4 Click **OK** to save the settings.

5.15 Audio Management

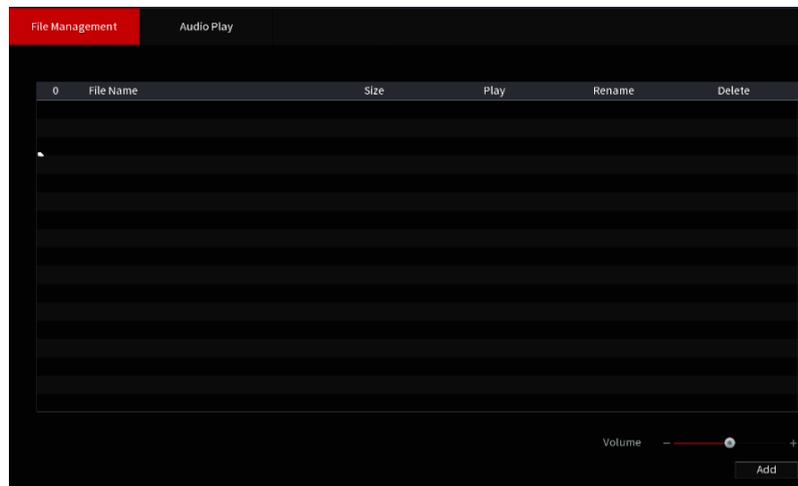
The Audio management function manages audio files and configures the playing schedule. When there is an alarm event, the audio file can be activated.

5.15.1 Configuring Audio Files

You can add audio files, listen to audio files, rename and delete audio files, and configure the audio volume.

Step 1 Select **Main Menu > Advanced Settings > System Operation > AUDIO > File Management**.

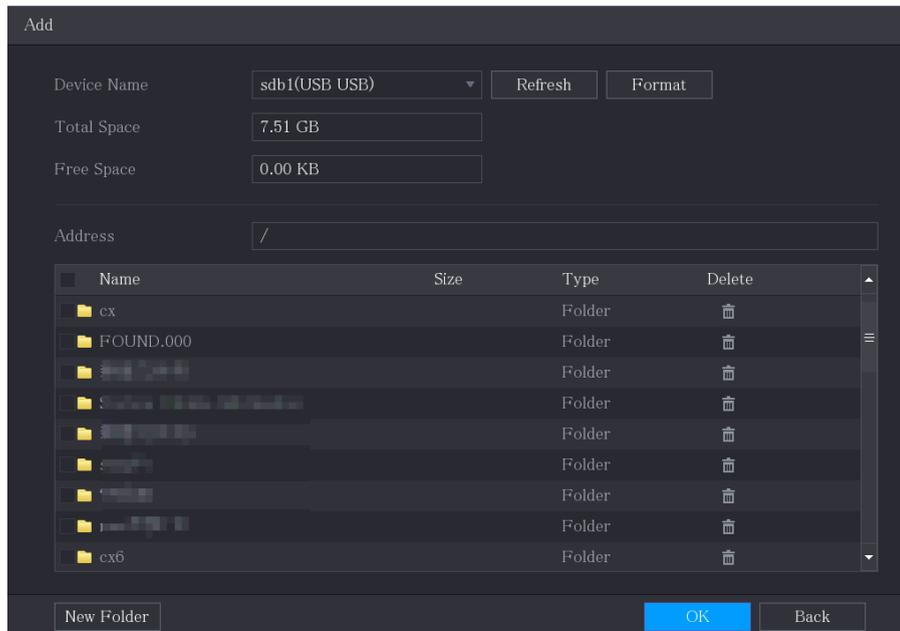
The **File Management** interface will be displayed.



Step 2 Click **Add**.

The **Add** interface will be displayed.

Figure 5-115



Step 3 Select the audio files that you want to import.

Step 4 Click **OK** to start importing audio files from the USB storage device.

If the importing is successful, the audio files will display in the **File Management** interface.

1	File Name	Size	Play	Rename	Delete
1	softmusic.mp3	2.14 MB			

The imported audio files are automatically saved into the HDD, so you do not need to connect to the USB storage device to get the file next time.

- Click to play the audio file.
- Click to rename the audio file.
- Click to delete the audio file.
- To decrease or increase the playing volume, move the slider to the left or to the right.

5.15.2 Configuring Playing Schedule for Audio Files

This section allows for the configuration of the settings to play the audio files during the defined time period.

Step 1 Select **Main Menu > Advanced Settings > System Operation > AUDIO > Audio Play**.

The **Audio Play** interface will be displayed.

Figure 5-116

	Period	File Name	Interval	Loop	Output Port
<input type="checkbox"/> Enable	00 : 00 — 24 : 00	None	60 min.	0	Mic
<input type="checkbox"/> Enable	00 : 00 — 24 : 00	None	60 min.	0	Mic
<input type="checkbox"/> Enable	00 : 00 — 24 : 00	None	60 min.	0	Mic
<input type="checkbox"/> Enable	00 : 00 — 24 : 00	None	60 min.	0	Mic
<input type="checkbox"/> Enable	00 : 00 — 24 : 00	None	60 min.	0	Mic
<input type="checkbox"/> Enable	00 : 00 — 24 : 00	None	60 min.	0	Mic

Step 2 Configure the settings for the schedule parameters.

Parameter	Description
Period	In the Period box, enter the time. Select the check box to enable the settings. You can configure up to six periods.
File Name	In the File Name list, select the audio file that you want to play for this configured period.
Interval	In the Interval box, enter the time in minutes for how often you want to repeat the playingthe audio.
Repeat	Configure how many times you want to repeat the playing in the defined period.
Output Port	Includes two options: MIC and Audio. It is MIC by default. The MIC function shares the same port with talkback function and the latter has the priority.



- The finish time for audio playing is decided by audio file size and the configured interval.
- Playing priority: Alarm event > Talkback > Trial listening > Audio file.

Step 3 Click **Apply** to complete the settings.

5.16 Storage Management

This section allows you to manage the storage resources (such as recorded files) and storage space.

5.16.1 Configuring Basic Settings

Step 1 Select **Main Menu > Advanced Settings > System Operation > Storage > Basic**.
The **Basic** interface will be displayed.

Figure 5-117

Disk Full	Overwrite
Create Video Files	Time Length 60 min.
Delete Expired Files	Never

Step 2 Configure the settings for the basic settings parameters.

Parameter	Description
Disk Full	Configure the settings for the action to take when all the read/write discs are full. <ul style="list-style-type: none"> • Select Stop to stop recording • Select Overwrite to overwrite the recorded video files. The oldest files will be deleted automatically.
Create Video Files	Configure each recorded video's time and file length.
Delete Expired Files	Configure whether to delete the old files and if yes, configure the amount days before files are deleted.

Step 3 Click **Apply** to complete the settings.

5.16.2 Configuring the Recording and Snapshot Schedule

The system will record and take a snapshot according to the configured schedule. See 5.7 (Configuring Recorded Video Schedule) and 5.8 (Configuring Snapshot Schedule) for more information.

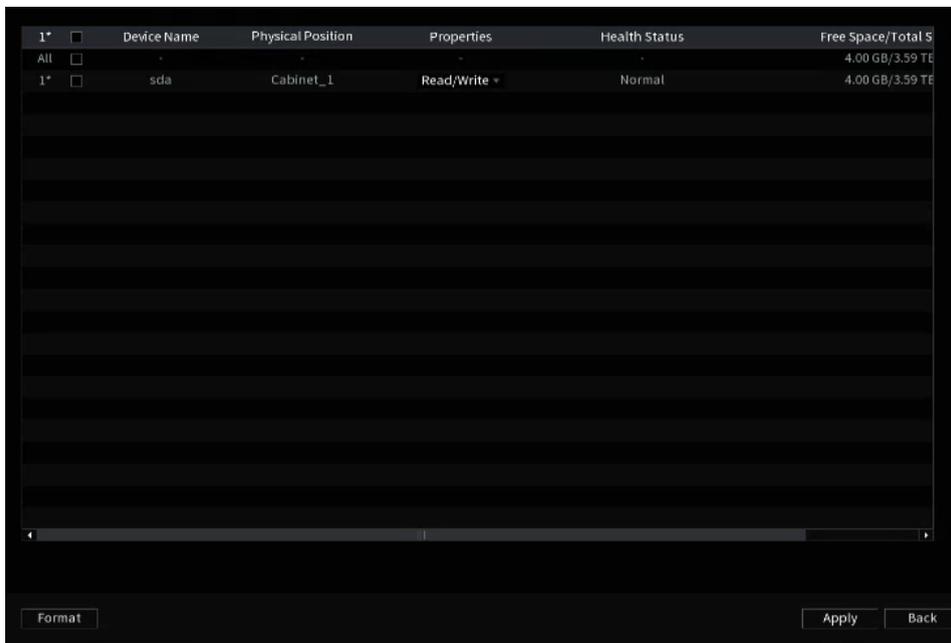
5.16.3 Configuring Disk Manager

You can view the HDD information, format HDD, and configure the HDD type through HDD manager.

Step 1 Select **Main Menu > Advanced Settings > Storage > Disk Manager**.

The **Disk Manager** interface will be displayed.

In the table, you can view the information of the current HDD, such as device name, HDD type, status, total space and free space, and serial number of the HDD port.



Step 2 Configuring the settings for the HDD manager.

- HDD type setting: In the **Properties** list, select **Read/Write**, **Read Only**, and then click **Apply** to save the settings.
- HDD format: Select the HDD that you want to format, click **Format**, and enable **Clear HDD database** in the prompt, click **OK** and enter the password of the admin user in the prompted dialog box, click **OK** and then follow the on-screen instructions to complete formatting.

Step 2 Select each HDD group, and click **Apply** to complete the settings.

Step 3 After configuring HDD group, click **Main Stream**, **Sub Stream** and **Snapshot** tabs respectively, to configure the saving of main stream, sub stream and snapshot information of different channels to different HDD groups.

Figure 5-120

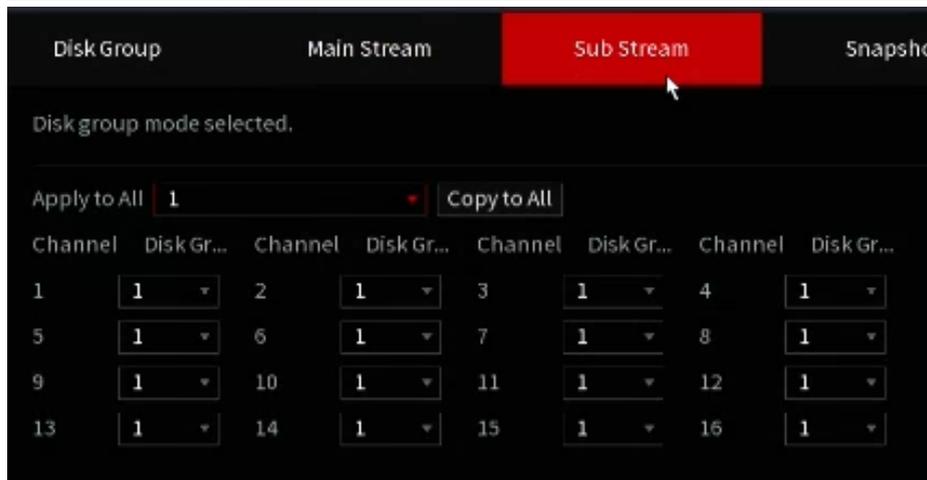
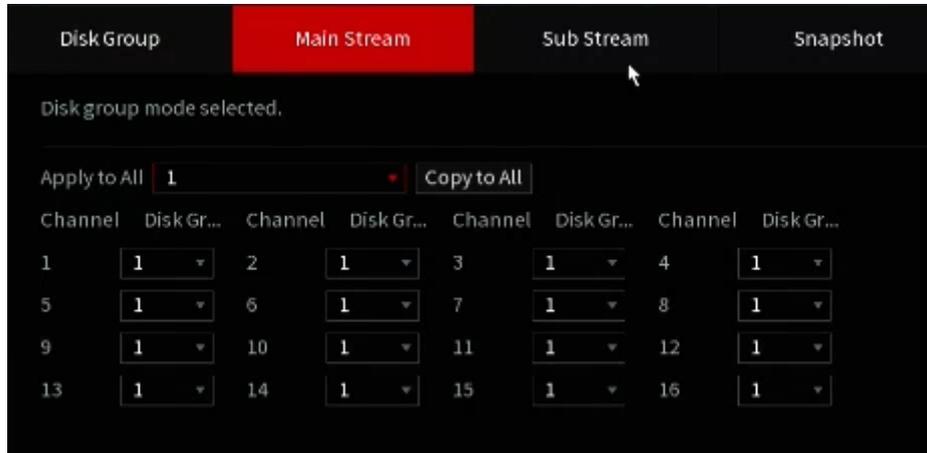
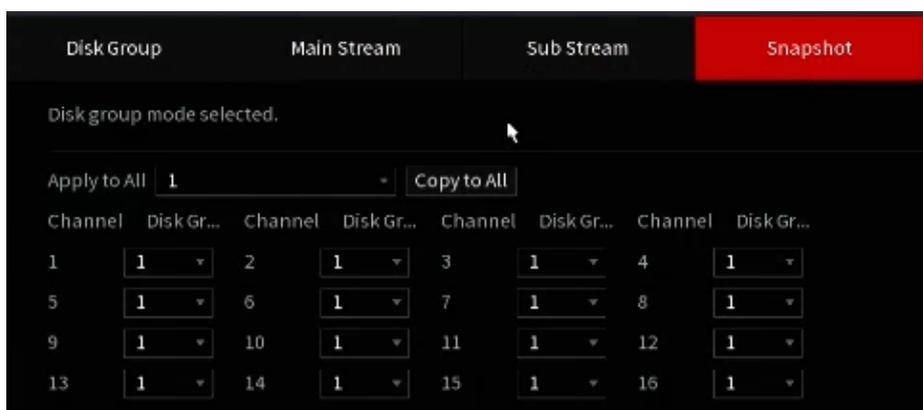


Figure 5-121



Step 4 Click **Apply** to complete the settings.

5.16.6 Configuring Disk Quota

By configuring quota, you can allocate fixed storage capacity to each channel, and distribute the storage space of each channel according to your requirements.



- If the interface displays "Current HDD Mode is HDD Group", click "Change to Quota Mode", and then configure quota.
- You can enable either HDD Group Mode or Quota Group. The system will prompt to reboot the each time the mode is switched.

Step 1 Select **Main Menu > Advanced Settings> Storage > Disk Quota**.
The **Disk Quota** interface will be displayed.

Figure 5-122

Version	<input type="radio"/> V1 <input checked="" type="radio"/> V2(Recommended)
Channel	1
Record Duration(Days)	0
Bit Rate(Kb/S)	4096
Reference Bit Rate	1024-20480Kb/S
Estimated Capacity of Recorded Video (GB)	0.00
Storage Capacity of Picture (GB)	0
Used Capacity of Recorded Video (GB)	0
Used Capacity of Picture (GB)	0
Total HDD Capacity (GB)	3680.08
Remaining Quota (GB)	3680.08

There are channels with no allocated quotas. Videos captured by these channels will be stored in disks with no allocated quotas.

Step 2 Select the channels you want to configure, and select quota from the drop-down list of corresponding HDD.

Step 3 Click **Apply** to complete the settings.

5.16.7 Configuring HDD Detecting Settings



Not all models support this function.

HDD detecting function detects the current status of HDD to display the HDD performance and replace any defective HDDs if detected.

5.18.7.1 Checking S.M.A.R.T Status

SMART(Self-Monitoring, Analysis, and Reporting Technology) is a monitoring system included in computer hard disk drives. This section allows you to check for the installed HDDs SMART status.

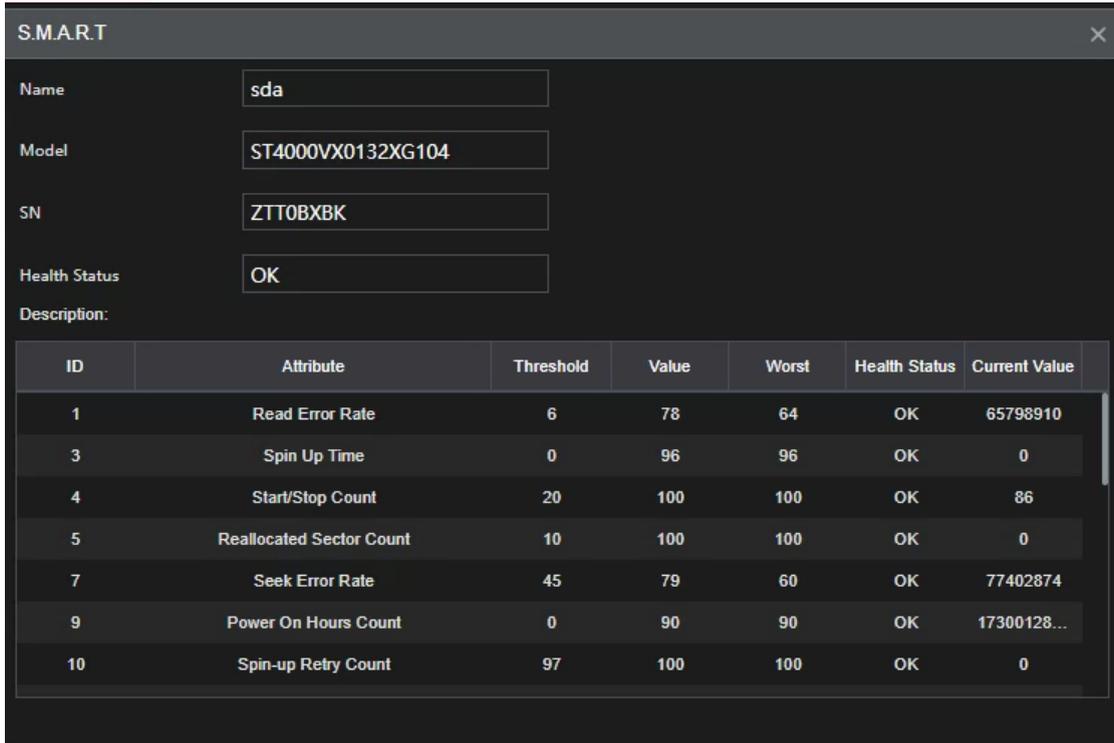
-

Step 1 Select **Main Menu > Advanced Settings> Info > System Info > Disk Tab**
The **Disk Info** interface will be displayed.

Step 2 Double click on the HDD you want to check.

Step 3 The S.M.A.R.T report will be displayed. You can replace the necessary HDDs depending on their health status.

Figure 5-123



The screenshot shows a window titled "S.M.A.R.T" with a close button in the top right corner. Below the title bar, there are four input fields: "Name" with the value "sda", "Model" with "ST4000VX0132XG104", "SN" with "ZTT0BXBK", and "Health Status" with "OK". Below these fields is a "Description:" label followed by a table with 7 columns: ID, Attribute, Threshold, Value, Worst, Health Status, and Current Value. The table contains 8 rows of data.

ID	Attribute	Threshold	Value	Worst	Health Status	Current Value
1	Read Error Rate	6	78	64	OK	65798910
3	Spin Up Time	0	96	96	OK	0
4	Start/Stop Count	20	100	100	OK	86
5	Reallocated Sector Count	10	100	100	OK	0
7	Seek Error Rate	45	79	60	OK	77402874
9	Power On Hours Count	0	90	90	OK	17300128...
10	Spin-up Retry Count	97	100	100	OK	0

5.16.8 Configuring Record Estimate

The record estimate function can calculate how long you can record video according to the HDD capacity and the required HDD capacity according to the recording period.

Step 1 Select **Main Menu > Advanced Settings > Storage > Rec Estimate**.

The **Rec Estimate** interface will be displayed.

Figure 5-125

<input type="checkbox"/>	Channel	Modify	Bit Rate(Kb/S)	Record Time	Resolution	Frame Rate(FPS)
<input checked="" type="checkbox"/>	1		512	24	1280x720(720P)	30
<input checked="" type="checkbox"/>	2		1536	24	2688x1520(2688x1520)	30
<input type="checkbox"/>	3		2048	24	720P	25
<input checked="" type="checkbox"/>	4		2048	24	2688x1520(2688x1520)	30
<input type="checkbox"/>	5		2048	24	720P	25
<input checked="" type="checkbox"/>	6		3072	24	2560x1440(4MP)	30
<input type="checkbox"/>	7		2048	24	720P	25
<input type="checkbox"/>	8		2048	24	720P	25
<input type="checkbox"/>	9		2048	24	720P	25
<input type="checkbox"/>	10		2048	24	720P	25
<input type="checkbox"/>	11		2048	24	720P	25
<input type="checkbox"/>	12		2048	24	720P	25
<input type="checkbox"/>	13		2048	24	720P	25
<input type="checkbox"/>	14		2048	24	720P	25
<input type="checkbox"/>	15		2048	24	720P	25
<input type="checkbox"/>	16		2048	24	720P	25

By Space By Time

Total Space TB = GB

Time Days

Note: The record estimate data is for reference only. Please be cautious when evaluating record period.

Step 2 Click .

The **Modify** dialog box will be displayed.

You can configure the resolution, frame rate, bit rate and record time for the selected channel.

Step 3 Click **OK** to save the settings.

Then the system will calculate the time period that can be used for storage according to the channels settings and HDD capacity.



Click **Copy to** to copy the settings to other channels.

Calculating Recording Time

Step 1: Click the **By Space** tab on the Rec Estimate interface.

The **By Space** interface will be displayed.



Step 2 Click **Select**.

The **Select Disk(s)** interface will be displayed.

Step 3 Select the check box of the HDD that you want to calculate.

In the **By Time** tab, in the **Time** box, the recording time will be displayed.

By Space By Time

Time 0 Days

Total Space 0 TB = 0 GB

Note: The record estimate data is for reference only. Please be cautious when evaluating record period.

Calculating HDD Capacity for Storage

Step 1 On the **Rec Estimate** interface, click the **By Time** tab. The **By Time** interface will be displayed.

By Space By Time

Time 0 Days

Total Space 0 TB = 0 GB

Note: The record estimate data is for reference only. Please be cautious when evaluating record period.

Step 2 In the **Time** box, enter the time period that you want to record. In the **Total Space** box, the required HDD capacity will be displayed.

By Space By Time

Time 2 Days

Total Space 0.707 TB = 707 GB

Note: The record estimate data is for reference only. Please be cautious when evaluating record period.

5.16.9 Configuring FTP Storage Settings

FTP (File Transfer Protocol) allows recorded videos and snapshots to be uploaded into a remote FTP server.

Preparation for Configuration

 You will need an FTP server software installed and configured on your PC prior to configuring the recorder settings. For the created FTP user, you need to set the write permission; otherwise, the uploads from the recorder may fail.

Configuration Steps

Step 1 Select **Main Menu > Advanced Settings > Storage > FTP**. The **FTP** interface will be displayed.

Enable FTP SFTP (Recommended)

Server Address Port (1 65535)

Username

Password Anonymous

Storage Path

FTP Schedule

Record

File Size M

Channel

Day Event General

Period 1

Period 2

Snapshot

Picture Upload interval sec.

Channel

Step 2 Configure the settings for the FTP settings parameters.

Parameter	Description
Enable	Enables the FTP upload function.
FTP type	<ul style="list-style-type: none"> FTP: Plaintext transmission. SFTP: Encrypted transmission (recommended)
Server Address	IP address of FTP server.
Port	<ul style="list-style-type: none"> FTP: The default is 21. SFTP: The default is 22.
Anonymous	Enter the user name and password to login the FTP server. Enable the anonymity function, and then you can login anonymously without entering the user name and password.
Username	
Password	
Storage Path	<p>Create folder on FTP server.</p> <ul style="list-style-type: none"> If you do not enter the name of remote directory, system automatically creates the folders according to the IP and time. If you enter the name of a remote directory, the system will create the folder with the entered name under the FTP root directory first, and then it automatically creates the folders according to the IP and time.
File Size	<p>Enter the length of the uploaded recorded video.</p> <ul style="list-style-type: none"> If the entered length is less than the recorded video length, only a section of the recorded video can be uploaded. If the entered length is more than the recorded video length, the whole recorded video can be uploaded. If the entered length is 0, the whole recorded video will be uploaded.

	Description
Picture Upload Interval (Sec.)	<ul style="list-style-type: none"> • If this interval is longer than snapshot interval, the system takes the recent snapshot to upload. For example, the interval is 5 seconds, and snapshot interval is 2 seconds per snapshot, the system uploads the recent snapshot every 5 seconds. • If this interval is shorter than snapshot interval, the system uploads the snapshot per the snapshot interval. For example, if the interval is 5 seconds, and snapshot interval is 10 seconds per snapshot, the system uploads the snapshot every 10 seconds. • To configure the snapshot interval, select Main Menu > CAMERA > Encode > Snapshot.
Channel	Select the channel that you want to apply the FTP settings to.
Day	Select the week day and set the time period that you want to upload the recorded files. You can set two periods for each week day.
Period 1, Period 2	
Record type	Select the record type (Alarm, Intel, MD, and General) that you want to upload. The selected record type will be uploaded during the configured time period.

Step 3 Click **Test**.

A prompt will appear to indicate success or failure. If failed, check the network connection or configurations.

Step 4 Click **Apply** to complete the settings.

5.17 Security Center

Some NVR models include network security options to strengthen NVR security and prevent unwanted operations.

5.17.1 Security Status

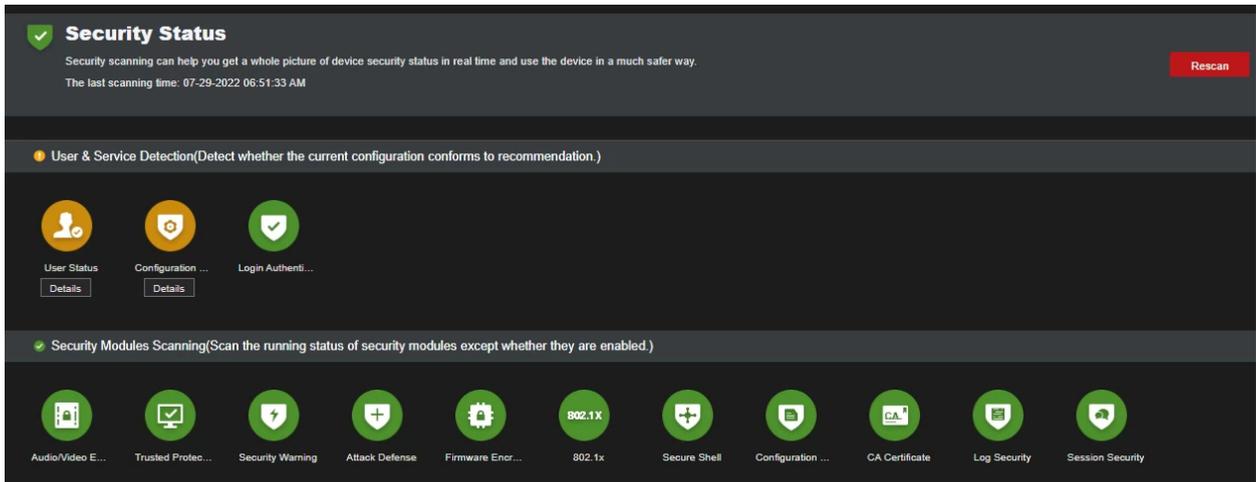
The Security scanning feature allows for an overview of the device security status. You can scan user, service and security module status for detailed information about the device's security status.

Detecting User and Service



The Green icon represents a healthy status of the scanned item, and orange icon represents a risk.

- **Login authentication:** When there's a risk in the login authentication, the icon will be in orange to warn risk. You can click **Details** to see the detailed risk description.
- **Configuration Security:** When there's a risk in the device configuration, the icon will be in orange to warn risk. You can click **Details** to see the detailed risk description.



Scanning Security Modules

This area shows the running status of security modules. For details about the security modules, move mouse pointer on the icon to see the on-screen instructions.

Scanning Security Status

You can click **Rescan** to scan security status.

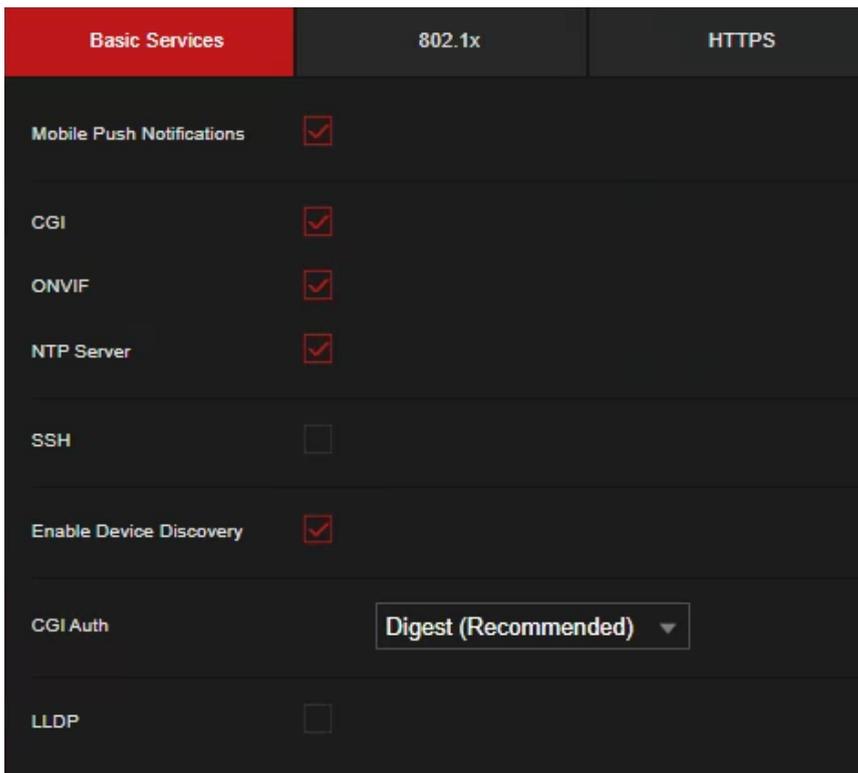
5.17.2 System Service

You can set DVR basic information such as basic services, 802.1x and HTTPS.

5.19.2.1 Basic Services

Step 1 Select **Main Menu > Advanced Settings> Network > System Service > Basic Services**.

The **Basic Services** interface will be displayed.



Step 2 Select **Basic Services** and configure parameters.

 Parameter	Description
Mobile Push Notifications	<p>After enabling this function, the alarm triggered by the NVR can be pushed to a mobile phone. This function is enabled by default.</p> <p> There may be safety risk if this service is enabled. Disable this function when it is not in use.</p>
CGI	<p>If this function is enabled, the remote devices can be added through the CGI protocol. This function is enabled by default.</p> <p> There may be safety risk if this service is enabled. Disable this function when it is not in use.</p>
ONVIF	<p>If this function is enabled, the remote devices can be added through the ONVIF protocol. This function is enabled by default.</p> <p> There may be safety risk if this service is enabled. Disable this function when it is not in use.</p>

There may be safety risk when **Mobile Push Notifications, CGI, ONVIF, SSH and NTP Server** is enabled.

Parameter	Description
NTP Server	After enabling this function, a NTP server can be used to synchronize the device. This function is enabled by default.
SSH	<p>After enabling this function, you can use SSH service. This function is disabled by default.</p> <p> There may be security risk if this service is enabled. Disable this function when it is not in use.</p>
Enable Device Discovery	After enabling this function, the device can be searched by other devices on the network.
Private Protocol Authentication Mode	<ul style="list-style-type: none"> • Security Mode (Recommended): Uses Digest access authentication when connecting to DVR. • Compatible Mode: Select this mode when the client does not support Digest access authentication.

Step 3 Click **Apply** to complete the settings.

5.19.2.2 802.1x

The device needs to pass 802.1x certification to enter the LAN.

Step 1 Select **Main Menu > Advanced Settings> Network > Cyber Security > System Service > 802.1x**.

The **802.1x** interface will be displayed.

Figure 5-126

Basic Services	802.1x	HTTPS
NIC Name	NIC1	
Enable	<input type="checkbox"/>	
Authentication Mode	PEAP	
CA Certificate	<input type="checkbox"/>	
Username	<input type="text"/>	
Password	<input type="password"/>	

Step 2 Select the Ethernet card you want to certify.

Step 3 Select **Enable** and configure parameters.

Step 4 Click **Apply** to complete the settings.

5.19.2.3 HTTPS

This section is for configuring 802.1x certification to enter a LAN requiring this authentication.

Step 1 Select **Main Menu > Advanced Settings> Network > Cyber Security > System Service > HTTPS**.

The HTTPS interface will be displayed.

Basic Services	802.1x	HTTPS
<input type="checkbox"/> Enable		
To enhance system security, the Web, ONVIF, RTSP, CGI service can be accessed to device via HTTPS.		
TLS Protocol Compatibility		
<input type="checkbox"/> Compatible with TLSv1.1 and earlier versions		
*Select a device certificate		Certificate Management
No.	Certificate Serial Number	Validity Period
1	3D852A96E60E77EB2478AC106550C629	06-27-2052 08:43:07 AM

Parameter	Description
NIC Name	Select a NIC (If the device has multiple network ports).
Authentication	<ul style="list-style-type: none"> PEAP: protected EAP protocol. TLS: Transport Layer Security. Provide privacy and data integrity between two communications application programs.

CA Certificate	Enable it and click Browse to import CA certificate from flash drive. For details about importing and creating a certificate, see 5.19.4.
Username	The username shall be authorized at server.
Password	Password of the corresponding username.

Step 2 Select **Enable** to enable HTTPS function.

Step 3 Click **Certificate Management** to create or import a HTTPS certificate from USB drive. For details about importing or creating a CA certificate, see 5.19.4.

Step 4 Select a HTTPS certificate.

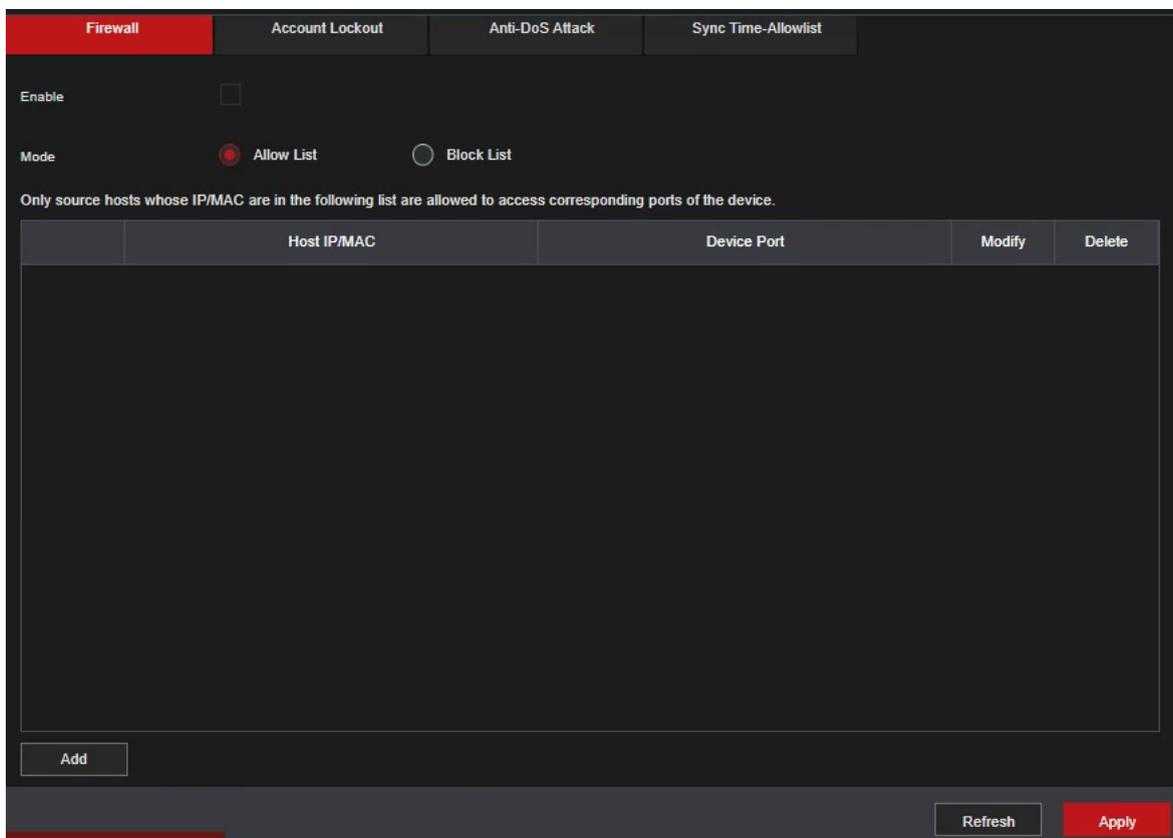
Step 5 Click **Apply** to complete the settings.

5.17.3 Attack Defense

5.19.3.1 Firewall

Step 1 Select **Main Menu > Advanced Settings > Network > Cyber Security > Attack Defense > Firewall**. The **Firewall** interface will be displayed.

Figure 5-127



Step 2 Select **Enable** to enable firewall.

Step 3 Configure the parameters.

Table 5-1 Firewall parameters

Parameter	Description
Mode	<p>Mode can be configured when Type is Network Access.</p> <ul style="list-style-type: none"> • If Allowlist is enabled, only devices IP/MAC hosts in the allowlist can access the recorder. • If Blocklist is enabled, IP/MAC hosts in the blocklist will not be able to access the recorder.
Add	If Type is Network Access, you can configure IP Address, IP Segment and MAC Address.
Type	Enter the desired IP address, IP segment and MAC address.
IP Address	<p>Enter IP Address, Start Port and End Port that is allowed or forbidden.</p> <p> When Type is IP Address, they can be configured. Start Port and End Port can be configured only in Network Access Type.</p>
Start Port	
End Port	
Start Address/ End Address	<p>Enter Start Address and End Address of IP Segment.</p> <p> When Type is IP Segment, they can be configured.</p>
MAC Address	<p>Enter MAC Address that is allowed or forbidden</p> <p> This can be configured only when Type is MAC Address.</p>

Step 4 Click **Apply** to complete the settings.

5.19.3.2 Account Lockout

Step 1 Select **Main Menu > Advanced Settings > Network > Cyber Security > Attack Defense > Account Lockout**.

The **Account Lockout** interface will be displayed.

Step 2 Set parameters. See the table below.

Table 5-8

Parameter	Description
Attempt(s)	Set the maximum number of allowable wrong password entries. The account will be locked after your entries exceed the maximum number. Value range: 5-30. Default value: 5.
Lock Time	Set how long the account is locked for. The Recorder can also be rebooted to clear the Lock time. Value range: 5-120 minutes. Default value: 5 minutes.

Step 3 Click **Apply** to complete the settings.

5.19.3.3 Anti-Dos Attack

You can enable **SYN Flood Attack Defense** and **ICMP Flood Attack Defense** to defend the device against Dos attack.

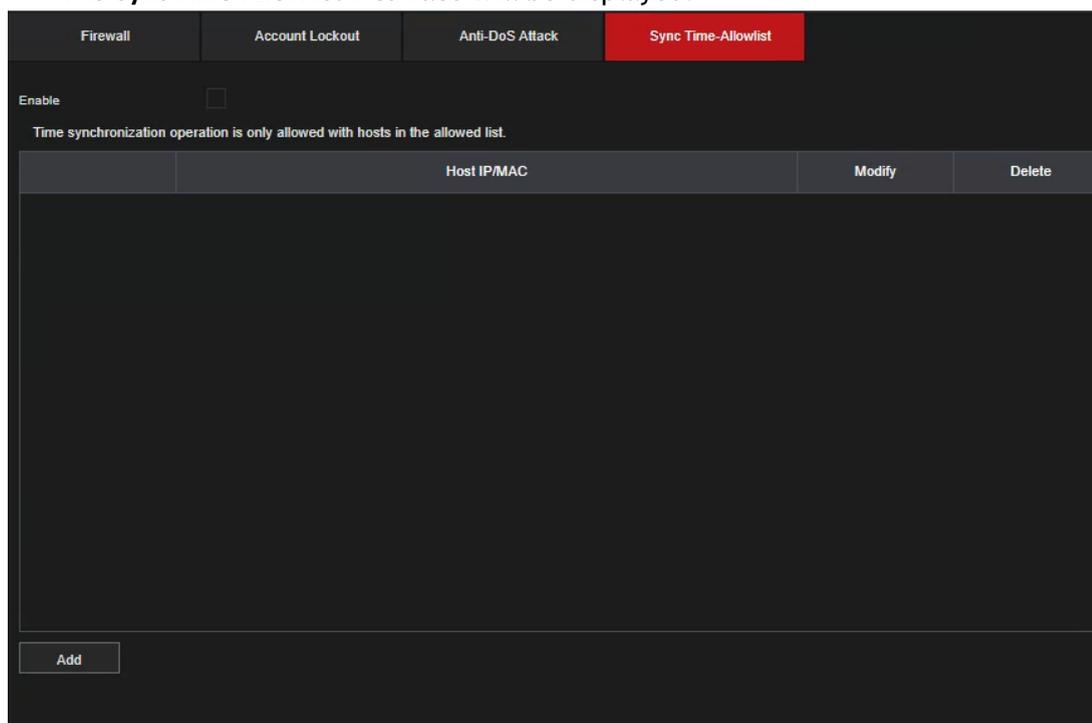
5.19.3.4 Sync Time-Allowlist



The synchronization is only allowed with hosts in the trusted list.

Step 1 Select **Main Menu > Advanced Settings > Network > Cyber Security > Attack Defense > Sync Time-Allowlist**.

The **Sync Time-Allowlist** interface will be displayed.



Step 2 Select **Enable** to enable **Sync Time-Allowlist** function.

Step 3 Configure the parameters.

Step 4 Click **Apply** to complete the settings.

5.17.4 CA Certificate

This section allows you to create or import device certificate and install trusted CA Certificates.

5.19.4.1 Device Certificate

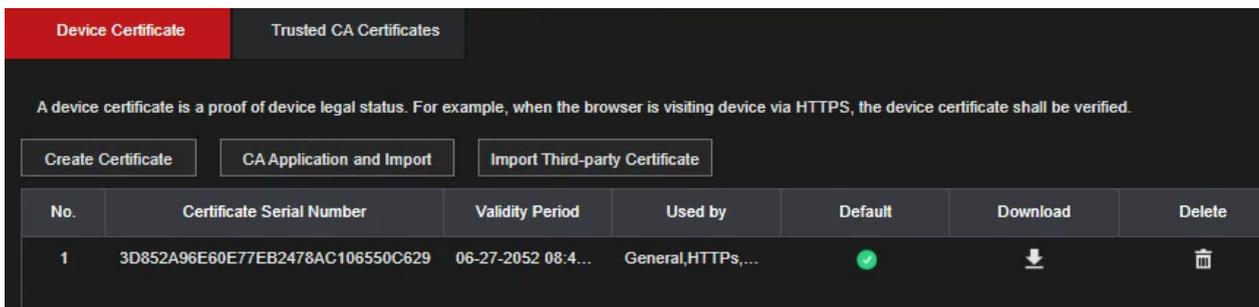
Create Certificate

Parameter	Description
Add	You can add trusted hosts for time synchronization.
Type	Select IP address or IP segment for hosts to be added.
IP Address	Input the IP address of a trusted host.  This can only be configured when Type is IP Address.
Start Address	Input the start IP address of trusted hosts.  This can only be configured when Type is IP Segment.
End Address	Input the end IP address of trusted hosts.  This can only be configured when Type is IP Segment.

1. Select **Main Menu > SECURITY > CA Certificate > Device Certificate**.

The **Device Certificate** interface will be displayed.

- Click  to download the certificate to a local storage device.
-  Click  to delete the certificate. The deleted certificate cannot be recovered.



No.	Certificate Serial Number	Validity Period	Used by	Default	Download	Delete
1	3D852A98E60E77EB2478AC106550C629	06-27-2052 08:4...	General,HTTPS,...			

2. Configure parameters.

Parameter	Description
County	This parameter is user defined.
State	This parameter is user defined.
City Name	This parameter is user defined.
Valid Period	Input a valid period for the certificate.
Organization	This parameter is user defined.

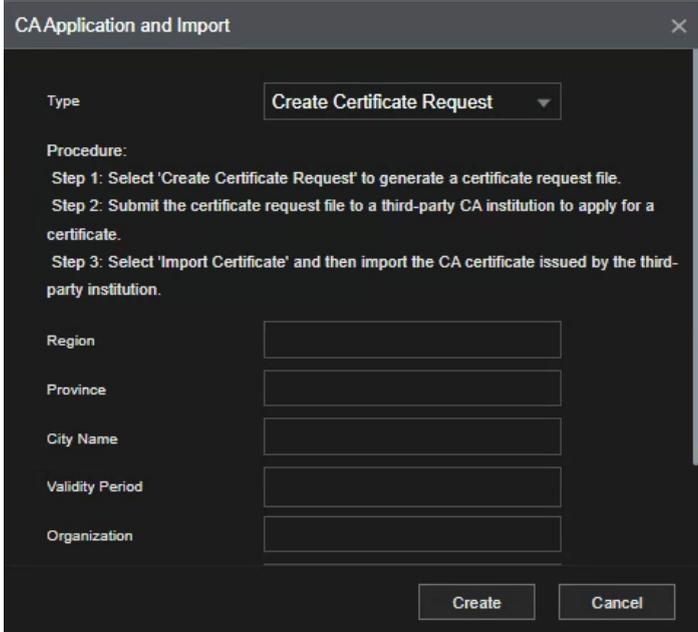
Organization Unit	This parameter is user defined.
Domain Name	Input the IP address of the certificate.

3. Click **Create**.

CA Application and Import

Follow the on-screen instructions to finish CA application and import.

 Insert a USB flash drive before operating.



CA Application and Import

Type: **Create Certificate Request**

Procedure:

Step 1: Select 'Create Certificate Request' to generate a certificate request file.

Step 2: Submit the certificate request file to a third-party CA institution to apply for a certificate.

Step 3: Select 'Import Certificate' and then import the CA certificate issued by the third-party institution.

Region:

Province:

City Name:

Validity Period:

Organization:

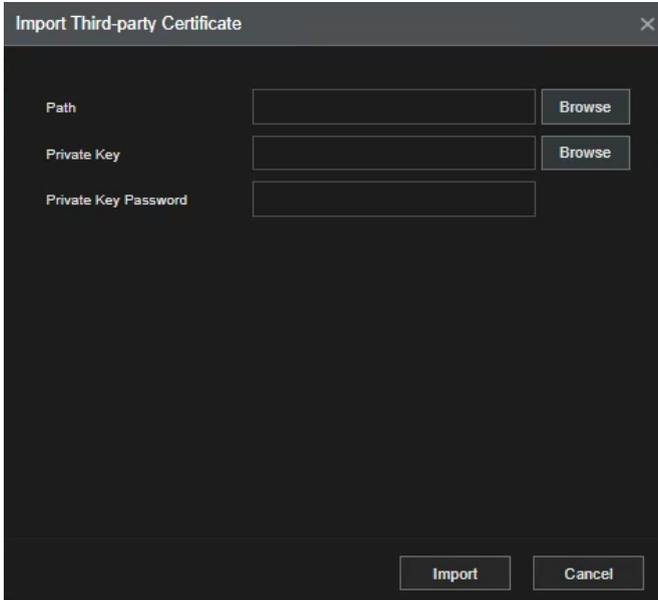
Create **Cancel**

Import Third-Party Certificate

Insert the USB flash drive with third-party certificate before importing.

1. Select **Import Third-party Certificate**.

Figure 5-128



Import Third-party Certificate

Path: **Browse**

Private Key: **Browse**

Private Key Password:

Import **Cancel**

2. Configure Parameters.

Table 5-2 Importing third-party certificate

Parameter	Description
Path	Click Browse to find the third-party certificate path on the USB drive.
Private Key	Click Browse to find the third-party certificate private key on the USB drive.
Private Key Password	Input the password of encrypted private key. If the private key is not encrypted, you do not need to set this parameter.

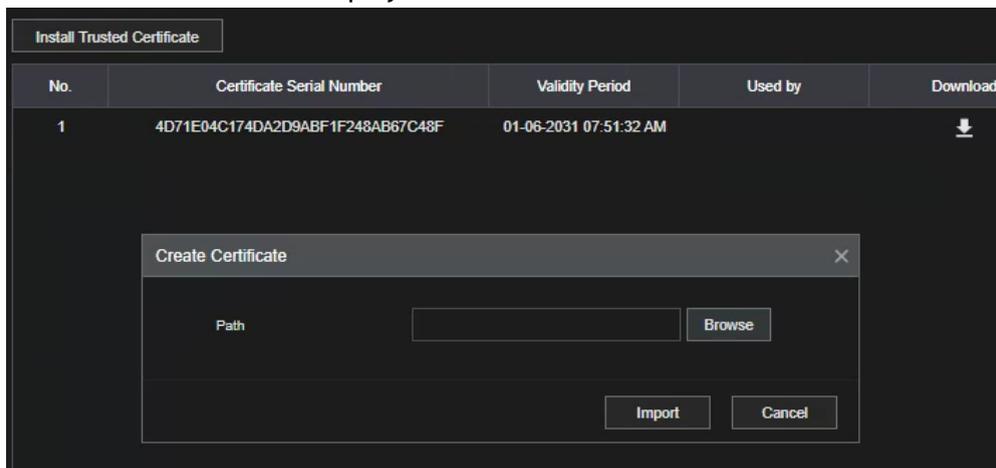
3. Click **Create**.

5.19.4.2 Trusted CA Certificate

Step 1 Main Menu > Advanced Settings > Network > Cyber Security > CA Certificate > Trusted CA Certificate.

Step 2 Click **Install Trusted Certificate**.

The **Create Certificate** will be displayed.



Step 3 Click **Browse** to select the certificate that you want to install.

Step 4 Click **Import**.

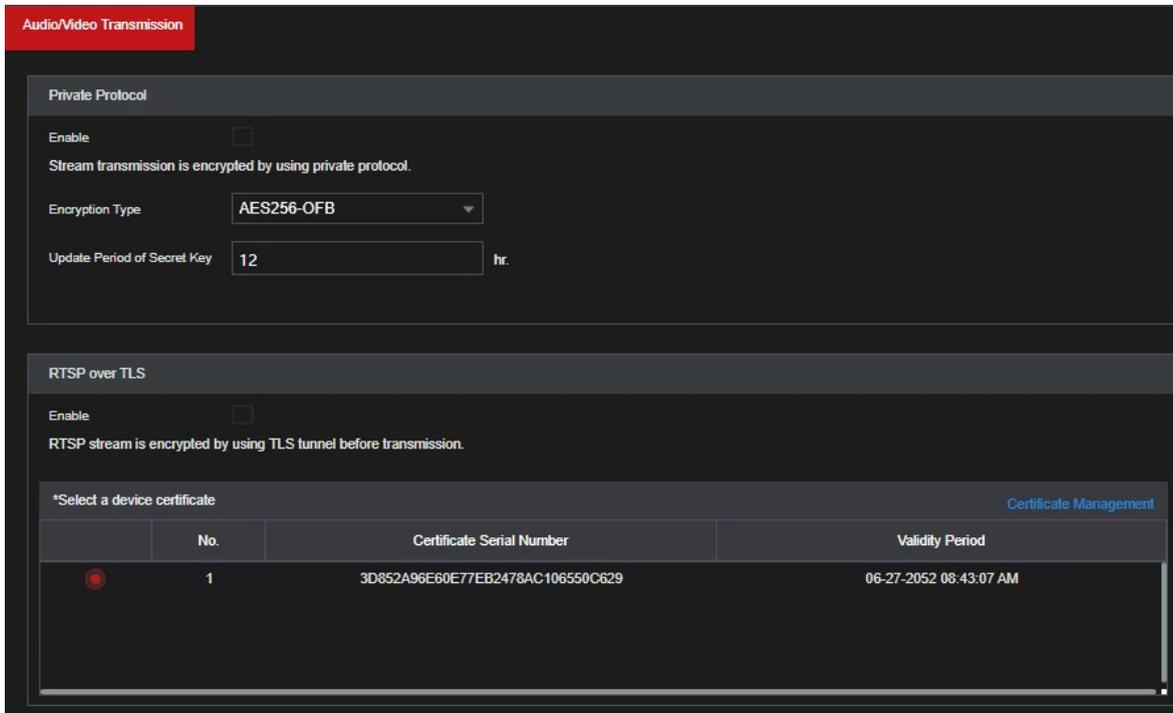
5.17.5 Audio/Video Encryption

This section covers the HDVR configuration of the audio and video encryption during data transmission.

Step 1 Select **Main Menu > Advanced Settings > Network > Cyber Security > A/V Encryption > Audio/Video Transmission**.

The **Audio/Video Transmission** interface will be displayed.

Figure 5-129



Step 2 Configure parameters.

Area	Parameter	Description
Private Protocol	Enable	Enables stream frame encryption by using private protocol. There may be security vulnerability if this service is disabled.
	Encryption Type	It is recommended to use the default setting.
	Update Period of Secret Key	Secret key update period. Value range: 0-720 hours. 0 means never update the secret key. The default value is 12.
RTSP over TLS	Enable	Enables RTSP stream encryption by using TLS. There may be data breach if this service is disabled. We recommend that you enable this function.
	Select a device certificate	Select a device certificate for RTSP over TLS.
	Certificate Management	For details about certificate management, see 5.19.4.1.

Step 3 Click **Apply** to complete the settings.

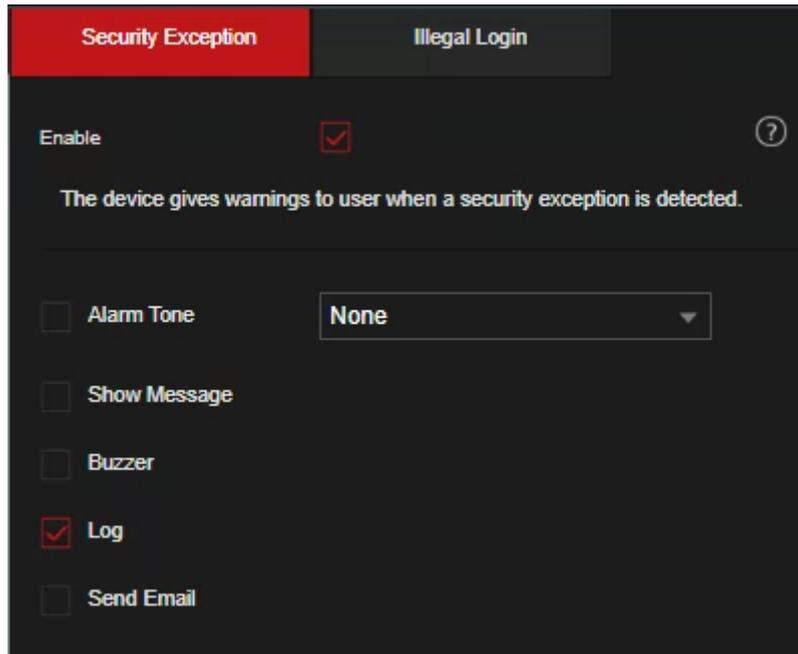
5.17.6 Security Warning

5.19.6.1 Security Exception

Step 1 Select **Main Menu > Advanced Settings > Network > Cyber Security > Security Warning > Security**

Exception.

The **Security Abnormality** interface will be displayed.



Step 2 Select **Enable** and configure parameters.

Parameter	Description
Alarm-out Port	Triggers the alarm device (such as lights, sirens, etc.) is connected to the alarm output port. When an event occurs, the NVR device transmits the alarm information to the alarm device.
Post-Alarm	When the alarm ends, the alarm extended for a period of time. The time range is from 0 seconds to 300 seconds.
Show Message	Check box to enable a pop-up message in your local host PC.
Buzzer	Select the check box to activate the buzzer when an alarm occurs.
Alarm Tone	Check the box and then select the corresponding audio file from the dropdown list. System plays the audio file when the alarm occurs.  See 5.17 to add audio file first.

Parameter	Description
Log	Select the check box, the NVR device records the alarm information in the log when an alarm occurs.
Send Email	Select the check box. When an alarm occurs, the NVR device sends an email to the set receivers.  To use this function, make sure the email function is enabled in Main Menu > Advanced Settings > Network > Email.

O?	<p>Security Event monitoring explanation. It indicates the type of attacks that can trigger security exception.</p> <ul style="list-style-type: none"> • Unauthorized executable program trying to run • Web URL brute-force attack • Session connection overload • Session ID brute-force attack
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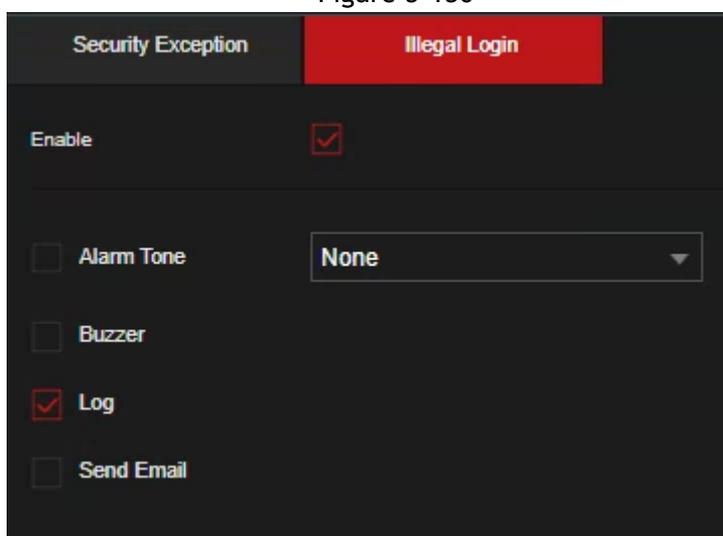
Step 3 Click **Apply** to complete the settings.

5.19.6.2 Illegal Login

Step 1 Select **Main Menu > Advanced Settings > Network > Cyber Security > Security Warning > Illegal Login**.

The **Illegal Login** interface will be displayed.

Figure 5-130



Step 2 Select **Enable** and configure parameters.

Parameter	Description
Alarm-out Port	The alarm device (such as lights, sirens) is connected to the alarm output port. When an alarm occurs, the NVR device transmits the alarm information to the alarm device.
Post-Alarm	When the alarm ends, the alarm extended for a period of time. The time range is from 0 seconds through 300 seconds.
Buzzer	Select the check box to activate the buzzer when an alarm occurs.
Alarm Tone	System will play an audio file when the alarm occurs. Check the box and then select the corresponding audio file from the dropdown list. See 5.17 to add audio file first.
Log	Select the check box, the NVR device records the alarm information in the log when an alarm occurs.
Send Email	Select the check box. When an alarm occurs, the NVR device sends an email to the set mailbox to notify the user. To use this function, make sure the email function is enabled in Main Menu > Advanced Settings > Network > Email .

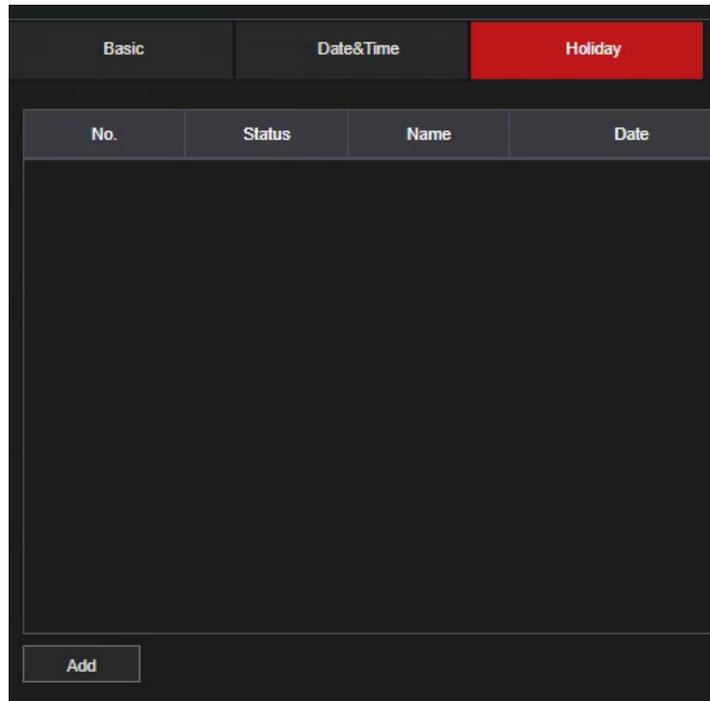
5.18 Configuring System Settings

5.18.1 Configuring General System Settings

This section allows for the configuration of the device's basic settings, time settings, and holiday settings. To configure the holiday settings, do the following:

Step 1 Select **Main Menu > Advanced Settings > SYSTEM > General > Holiday**.

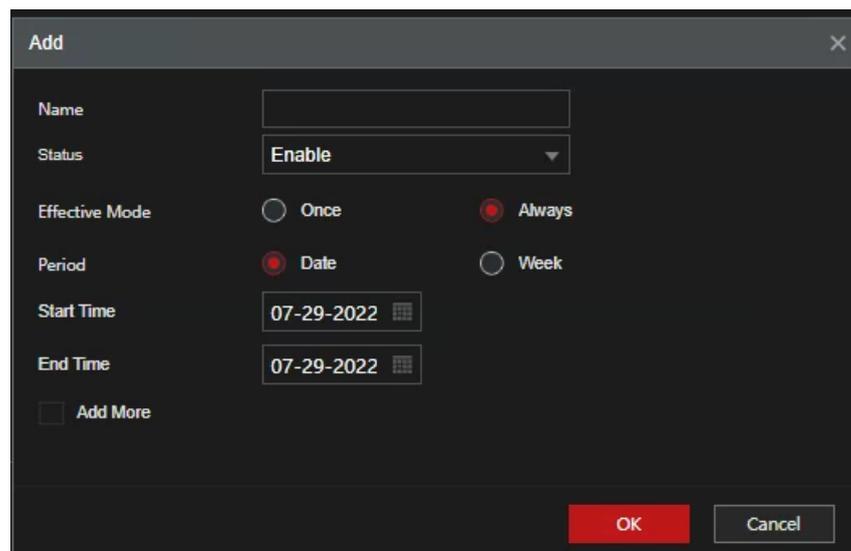
The **Holiday** interface will be displayed.



Step 2 Click **Add**.

The **Add** interface will be displayed.

Figure 5-131



Step 3 Configure the holiday name, repeat mode, time range according to your actual situation.

Step 4 Click **Add**.

The added holiday information will be displayed.



Enable the **Add More** function, so you can continue adding holiday information.

5.18.2 Configuring RS-232 Settings

This section allows for configuration of serial port function, Baud rate and other parameters.



Only some series products support this RS-232.

Select **Main Menu > Advanced Settings > SYSTEM > General > RS232**.

The **RS232** interface will be displayed.



Parameter	Description
Function	Select serial port control protocol. <ul style="list-style-type: none">• Console: Upgrade the program and debug with the console and mini terminal software.• Keyboard: Control this Device with special keyboard.• Adapter: Connect with PC directly for transparent transmission of data.• Protocol COM: Configure the function to protocol COM, in order to overlay card number.• PTZ Matrix: Connect matrix control. It is Console by default.
Baud Rate	Select Baud rate, which is 115200 by default.
Data Bits	It ranges from 5 to 8, which is 8 by default.
Stop Bits	It includes 1 and 2.
Parity	It includes none, odd, even, mark and null. It is none by default.

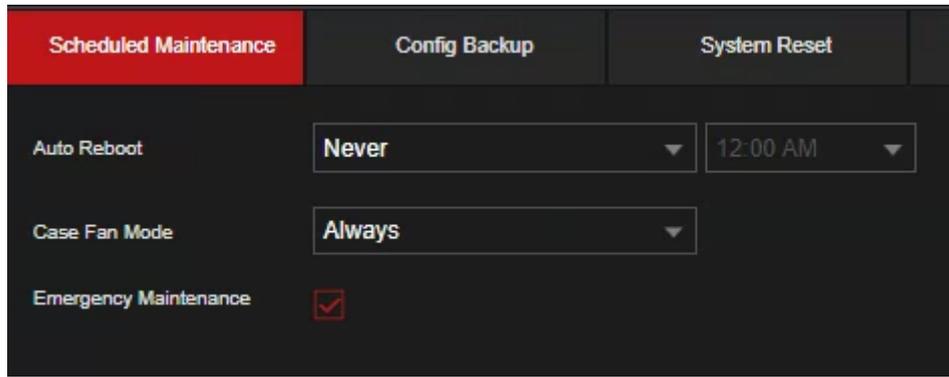
5.18.3 Configuring System Maintenance Settings

When the Device has been running for a long time, you can configure the auto reboot when the Device is not working. You can also configure the case fan mode to reduce noise and extend the service life.

Step 5 Select **Main Menu > Advanced Settings > System Operation > Maintenance > Scheduled Maintenance**.

The **Maintenance** interface will be displayed.

Figure 5-132



Step 6 Configure the settings for the system maintenance parameters.

Parameter	Description
Auto Reboot	In the Auto Reboot list, select the reboot time.
Case Fan Mode	In the Case Fan Mode list, you can select Always or Auto . If you select Auto , the case fan will stop or start according to the external conditions such as the Device temperature.  Not all models support this function.

Step 7 Click **Apply** to complete the settings.

5.18.4 Exporting and Importing System Settings

You can export or import the Device system settings if there are several Devices that require the same setup.

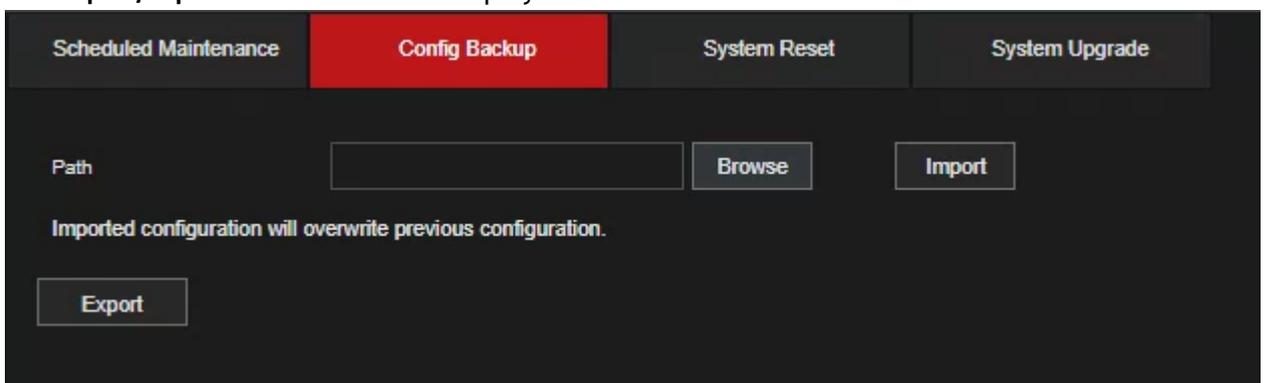


- The **IMP/EXP** interface cannot be opened if the backup operation is ongoing on the other interfaces.
- When you open the **IMP/EXP** interface, the system refreshes the devices and sets the current directory as the first root directory.
- Click **Format** to format the USB storage device.

Exporting System Settings

Step 1 Select **Main Menu > Advanced Settings > System Operation > Maintenance > Config Backup**.

The **Import/Export** interface will be displayed.

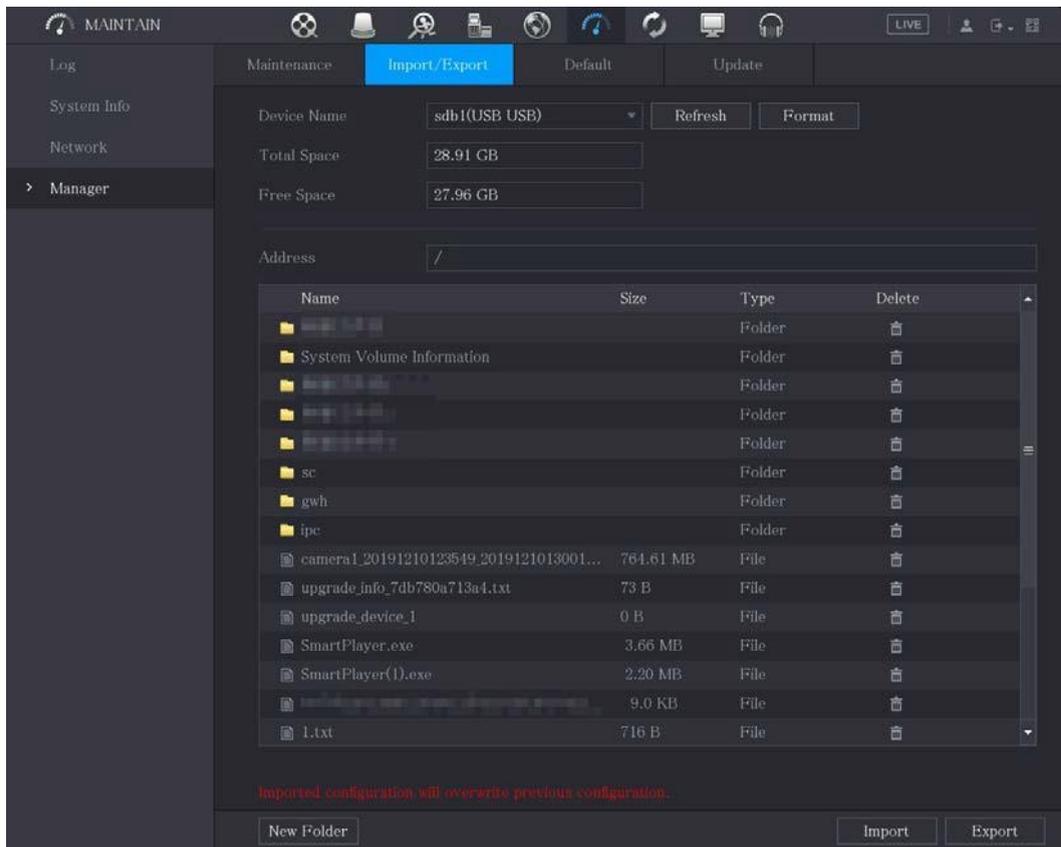


Step 2 Insert a USB storage device into one of the USB ports on the Device.

Step 3 Click **Refresh** to refresh the interface.

The connected USB storage device will be displayed.

Figure 5-133



Step 4 Click **Export**.

There is a folder under the name style of "Config_[YYYYMMDDhhmmss]". Double-click this folder to view the backup files.

Importing System Settings

Step 1 Insert a USB storage device containing the exported configuration files from another Device) into one of the USB ports on the Device.

Step 2 Select **Main Menu > SYSTEM > Import/Export**.

The **Import/Export** interface will be displayed.

Step 3 Click **Refresh** to refresh the interface.

The connected USB storage device will be displayed.

Step 4 Click on the configuration folder (under the name style of "Config_[YYYYMMDDhhmmss]") that you want to import.

Step 5 Click **Import**.

The Device will reboot after the imported is succeeded.

5.18.5 Restoring Default Settings

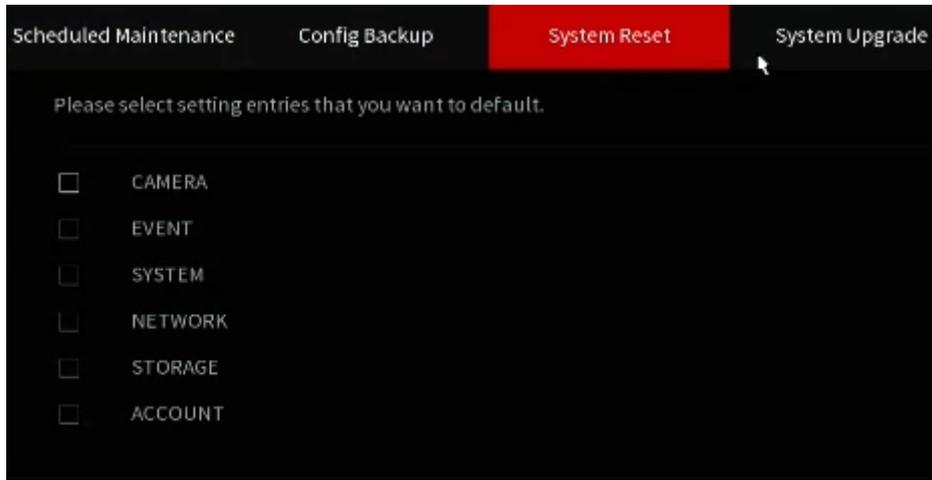


This can only be configured by the admin account.

You can select the settings that you want to restore to the factory default.

Step 1 Select **Main Menu > Advanced Settings > System Operation > Maintenance > Default**.

The **Default** interface will be displayed.



Step 2 Restore the settings.

- Click **Default** to restore all parameters to default settings except parameters such as network, user management.
- Click **Factory Default**, select **OK** and then enter the password of admin user in the prompted dialog box to completely recover device parameters to factory default.

5.18.6 Updating the Device

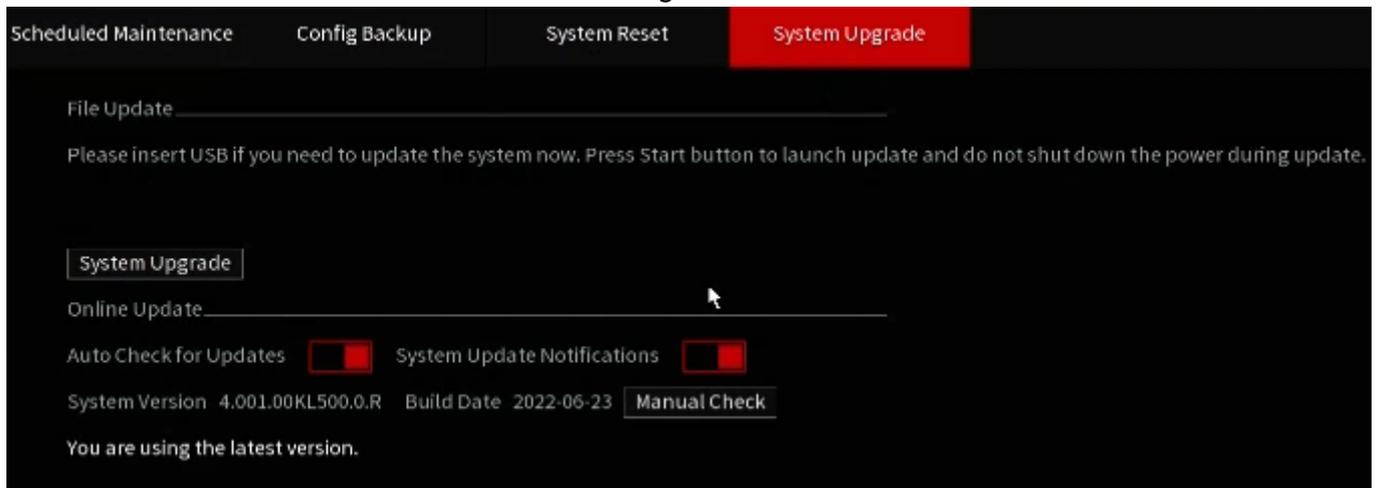
5.20.6.1 Updating File

Step 1 Insert a USB storage device containing the upgrade files into the USB port of the Device.

Step 2 Select **Main Menu > Advanced Settings > System Operation > Maintenance > Update**.

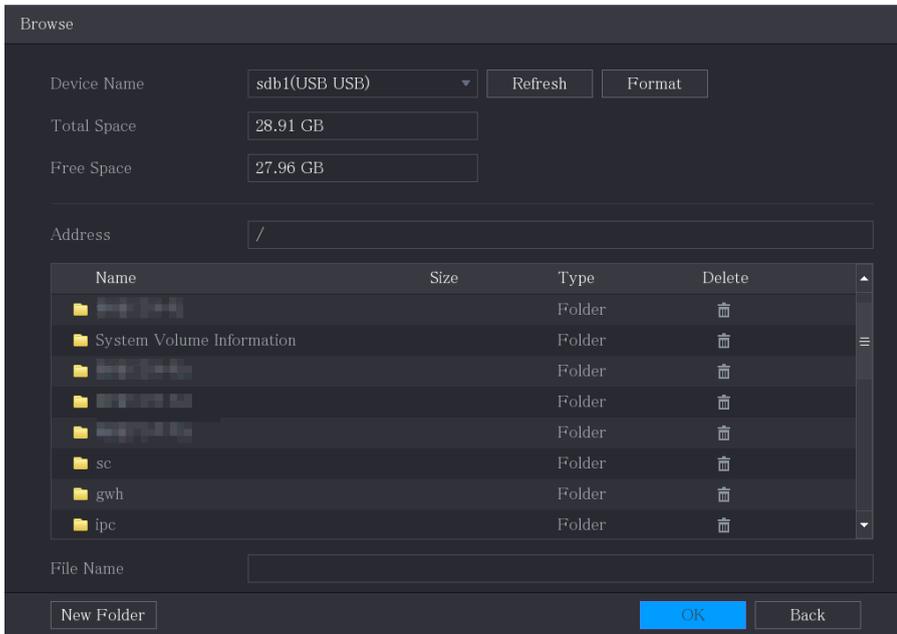
The **Update** interface will be displayed.

Figure 5-134



Step 3 Click **Upgrade**.

The **Upgrade** interface will be displayed.



Step 4 Click the file that you want to upgrade.

The selected file will be displayed in the **Address** box.

Step 5 Click **OK**.

5.20.6.2 Performing Online Upgrade

When the Device is connected to Internet, you can use online upgrade function to upgrade the system.

Before using this function, you need to check whether there is any new version by auto check or manual check.

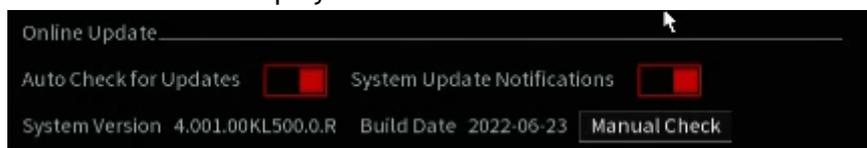
- Auto check: The Device checks if there is any new version available at intervals.
- Manual check: Perform a real-time check whether there is any new version available.



Ensure the correct power supply and network connection during upgrading; otherwise, the upgrading may be failed.

Step 1 Select **Main Menu > Advanced Settings > System Operation > Maintenance > Update**.

The **Update** interface will be displayed.



Step 2 Check whether there is any new version available.

- Auto check: Enable Auto-check for updates.
- Manual check: Click **Manual Check**.

The system starts checking the new versions. After checking is completed, the check result will be displayed.

- If the "It is the latest version" text will be displayed, you do not need to upgrade.
- If the text indicating there is a new version, go step 3.

Step 3 Click **Upgrade now**.

5.20.6.3 Uboot Upgrading



- Under the root directory in the USB storage device, there must be "u-boot.bin.img" file and "update.img" file saved, and the USB storage device must be in FAT32 format.
- Make sure the USB storage device is inserted; otherwise the upgrading cannot be performed.

You can upgrade the device by storing the upgrade files into a USB, inserting the USB into the Recorder and then booting up. When starting the Device, the system automatically checks whether there is a USB storage device connected and if there is any upgrade files stored. If an upgrade file is detected and the check result of the upgrade file is correct, the system will upgrade automatically. The Uboot upgrade can avoid the situation that you have to upgrade through +TFTP when the Device is halted.

5.19 Viewing Information

You can view the information such as log information, HDD information, and version details.

5.19.1 Viewing Version Details

You can view the version details such as device model, system version, and build date.

Select **Main Menu > Info > System Info > Version**, the **Version** interface will be displayed.

Version	Disk	BPS
Device Model		
Record Channel	16	
Hardware Version	V1.0	
System Version	V4.001.00KL500.0.R	
Build Date	06 23 2022	
Web Version	V3.2.7.6866569	
SN	AZ78F9F	
ONVIF Server Version	21.06(V3.1.0.1224882)	
ONVIF Client Version	V2.4.1	
Security Baseline Version	V2.2	

5.19.2 Viewing Log Information

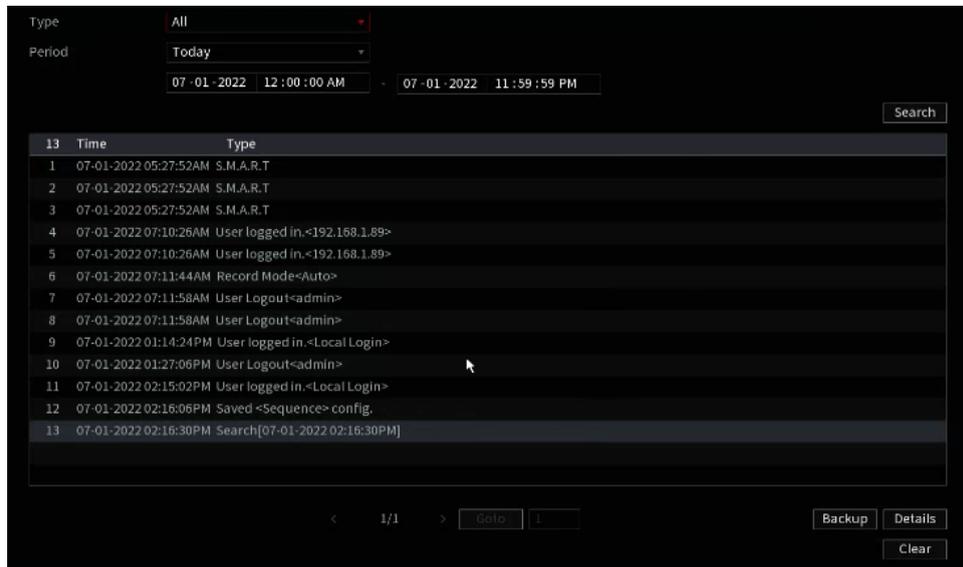
You can view and search the log information.



- The system can save up to 10,000 logs.
- If there is an HDD installed and has been formatted, the system can save up to 500,000 logs.
- If there is HDD installed, the logs about system operations are saved in the memory of the Device and other types of logs are saved into the HDD. If there is no HDD installed, the other types of logs are also saved in the memory of the Device.
- When formatting the HDD, the logs will not be lost. However, if you take out the HDD from the Device, the logs may be lost.

Step 1 Select **Main Menu > Info > Log**.

The **Log** interface will be displayed.



Step 2 In the **Type** list, select the log type that you want to view (**System, Config, Storage, Record, Account, Clear Log, Playback, and Connection**) or select **All** to view all logs.

Step 3 In the **Start Time** box and **End Time** box, enter the time period to search, and then click **Search**.

The search results will be displayed.

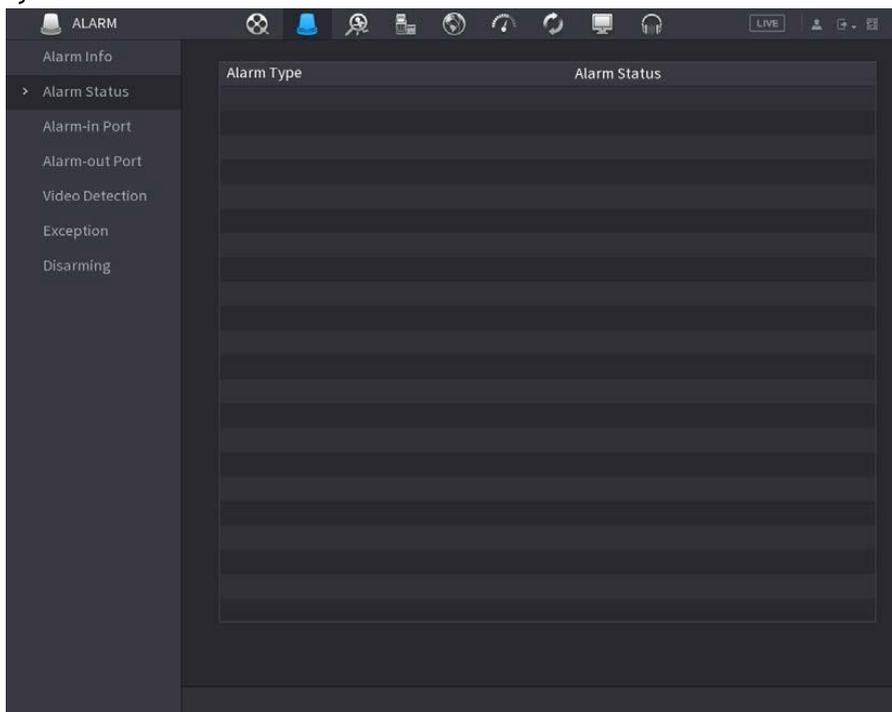


- Click **Details** or double-click the log that you want to view, the **Detailed Information** interface will be displayed. Click **Next** or **Previous** to view more log information.
- Click **Backup** to back up the logs into the USB storage device.
- Click **Clear** to remove all logs.

5.19.3 Viewing Alarm Status Information

You can view the event information of the Device and channel.

Select **Main Menu > Advanced Settings > Alert Center > Alarm > Alarm Status**, the **Alarm Status** interface will be displayed.



5.19.4 Viewing Network Information

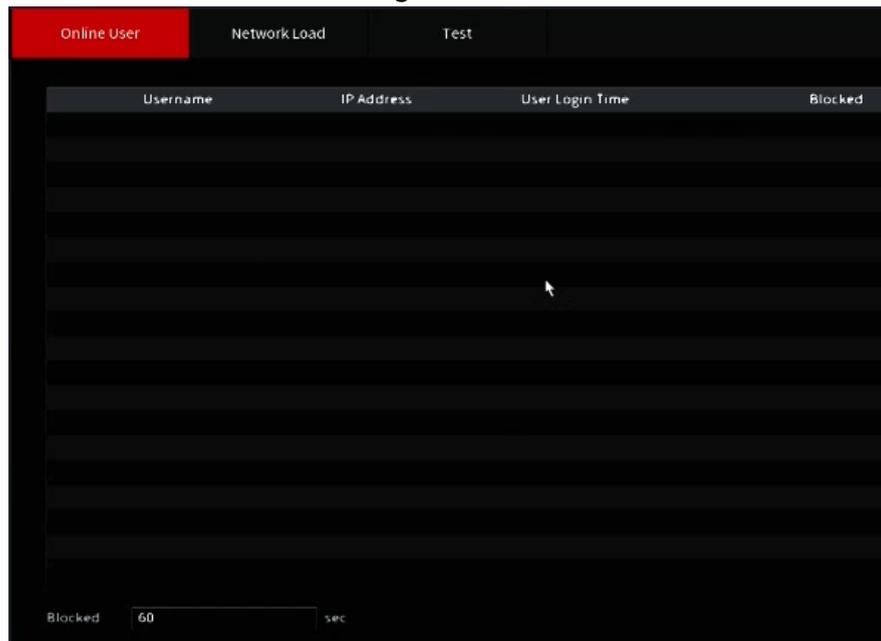
This section allows you to view the online users, network data transmission details, and test network. For details about testing network, see "5.15.2.1 Testing the Network."

5.21.4.1 Viewing Online Users

You can view the online user information and block any user for a period of time.

Select **Main Menu > Info > Network > Online User**, the **Online User** interface will be displayed.

Figure 5-135



To block an online user, click  and then enter the time that you want to block this user. The maximum value you can set is 65535.

The system detects every 5 seconds to check whether there is any user added or deleted, and update the user list timely.

5.21.4.2 Viewing the Network Load

This section allows for live monitoring of the Network load (the data flow which measures the transmission capability). You can also view the information such as data receiving speed and sending speed.

Step 1 Select **Main Menu > Info > Network > Network Load**.

The **Network Load** interface will be displayed.

Figure 5-136



Step 2 Click the LAN name that you want to view, for example, LAN1.

The system displays the information of data sending speed and receiving speed.

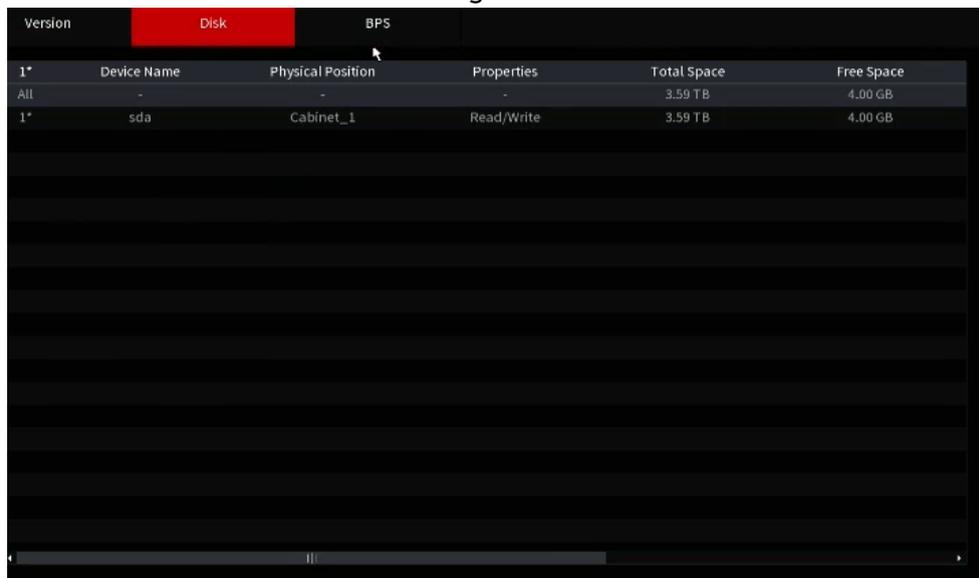


- The default display is LAN1 load.
- Only one LAN load can be displayed at one time.

5.19.5 Viewing HDD Information

You can view the HDD quantity, HDD type, total space, free space, status, and S.M.A.R.T information. Select **Main Menu > MAINTAIN > System Info > Disk**, the **Disk** interface will be displayed.

Figure 5-137



Parameter	Description
No.	Indicates the number of the currently connected HDD. The asterisk (*) indicates the current working HDD.
Device Name	Indicates name of HDD.
Physical Position	Indicates installation position of HDD.
Type	Indicates HDD type.
Total Space	Indicates the total capacity of HDD.

Free Space	Indicates the usable capacity of HDD.
Health Status	Indicates the health status of HDD.
Status	Indicates the status of the HDD to show if it is working normally.
S.M.A.R.T	View the S.M.A.R.T reports from HDD detecting.

5.19.6 Viewing Data Stream Information

This section allows you to monitor the real-time data stream rate and resolution of each channel. Select **Main Menu > MAINTAIN > System Info > BPS**, the **BPS** interface will be displayed.

Figure 5-139

Version	Disk	BPS	
Channel	Kb/S	Resolution	Wave
1	274	1280*720	
2	1821	2688*1520	
3	0		
4	1652	2688*1520	
5	0		
6	2925	2560*1440	
7	0	--	
8	0	--	
9	0	--	
10	0	--	
11	0	--	
12	0	--	
13	0	--	
14	0	--	
15	0	--	
16	0	--	

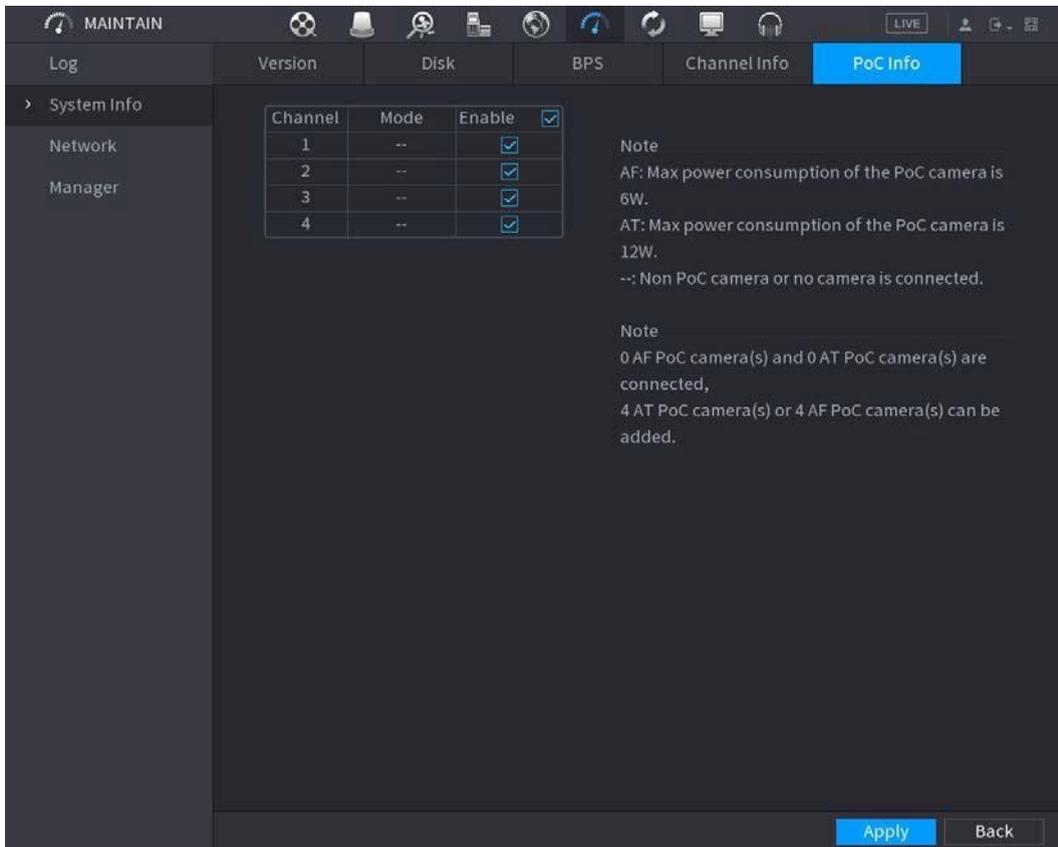
5.19.7 Viewing PoC Information



Not all models support this function.

You can view the information about PoC camera, such as quantity, mode, and power consumption. Select **Main Menu > MAINTAIN > System Info > PoC INFO**, the **PoC INFO** interface will be displayed.

Figure 5-140



Parameter	Description
AF	The maximum power of PoC camera is 6 W.
AT	The maximum power of PoC camera is 12 W.
--	Non PoC camera or no camera is connected.

5.20 Logout the Device

The logout menu will be located in the top right of the Main Menu interface or Web interface after you have entered the Main Menu, click on the  icon. You can select one of the three options below.

- **Logout:** the current account that is logged in will be logged out of the device.
- **Reboot:** the Device will be rebooted.
- **Shutdown:** the Device will be turned off.

6 Web Operations



- The interfaces in the Manual are used for introducing the operations and only for reference. The actual interface may differ depending on the model purchased. If there is inconsistency between the Manual and the actual product, the actual product shall govern.
- The Manual is a general document for introducing the product, so there may be some functions described for the Device in the Manual not apply to the model you purchased.
- Besides Web, you can use our Smart ICRSS to login the device. For detailed information, please refer to Smart ICRSS user's manual.

6.1 Connecting to Network



- The Recorder is set to DHCP by default. If it is not plugged into a network without a DHCP pool, the IP will be 192.168.1.199.
- The Device supports HTML5 browsers such as Safari, Edge, Firefox, Google Chrome.

Step 1 Check to make sure the Device is connected to a network.

Step 2 Configure the IP address, subnet mask and gateway for the PC and the Device if necessary.

Step 3 On your PC, check the network connection of the Device by using a command prompt and "ping ***.***.***.***".

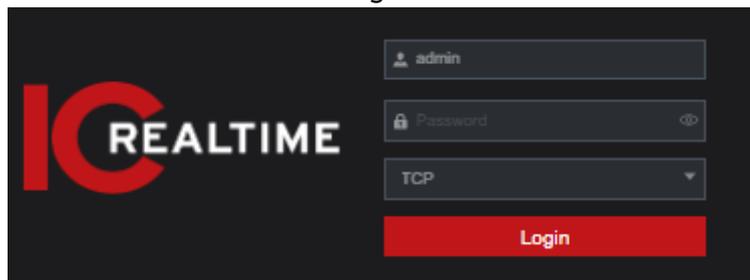
Usually the return value of TTL is 255.

6.2 Logging in the Web

Step 1 Open the IE browser, enter the IP address of the Device, and then press Enter.

The Login dialog box will be displayed.

Figure 6-1



Step 2 Enter the user name and password.



- The default administrator account is **admin**. The password is the one that was configured during initial settings. To security your account, it is recommended to keep the password properly and change it regularly.
- Click  to display the password.

Step 3 Click **Login**.

6.3 Introducing Web Main Menu

After you have logged in to the Web UI, the main menu will be displayed. The menu here is identical to the local interface. For detailed operations, you can refer to "5-3 Main Menu."

1. DVR does not boot up properly.

There are following possibilities:

- Input power is incorrect or insufficient.
- Power connection is incorrect or insufficient.
- Power switch button is damaged.
- Program upgrade is incorrect.
- HDD malfunction or something wrong with HDD jumper configuration.
- Seagate DB35.1, DB35.2, SV35 or Maxtor 17-g hard drives are known to have compatibility issues with the HDVRs. Please upgrade to the latest version firmware or swap hard drive models to solve this problem.
- Main board is damaged.

2. DVR frequently shuts down or stops running.

There are following possibilities:

- Input voltage is unstable or it is too low.
- HDD malfunction or something wrong with jumper configuration.
- Button power is not enough.
- Front video signal is not stable.
- Working environment is too harsh, too much dust.
- Hardware malfunction.

3. Hard disk cannot be detected.

There are following possibilities:

- HDD is bad.
- HDD jumper is damaged.
- HDD cable connection is loose or disconnected.
- Main board SATA port is broken.

4. There is no video output whether it is one-channel, multiple-channel or all-channel output.

There are following possibilities:

- Firmware/ OS is incompatible. Please upgrade to the latest version.
- Brightness is 0. Please restore factory default setup.
- There is no video input signal or it is too weak.
- Check privacy mask setup or your screen saver.
- DVR hardware malfunction or error.

5. Real-time video color is distorted.

There are following possibilities:

- When using BNC output, NTSC and PAL setup is incorrect. The real-time video turns black and white.
- DVR and monitor are incompatible.
- Degraded signal Video transmission is too long.
- DVR color or brightness (image settings) is incorrect.

6. Cannot search local records.

There are following possibilities:

- HDD jumper is damaged.
- HDD is broken.
- Upgraded program is not compatible.
- The recorded file has been overwritten.
- Record function is disabled.

7. Video is distorted when searching local records.

There are following possibilities:

- Video quality setup is too low quality.
- Program read error, bit data is too small. There is mosaic in the full screen. Please restart the DVR to solve this problem.
- HDD data jumper error.
- HDD malfunction.
- DVR hardware malfunctions.

8. No audio under monitor state.

There are following possibilities:

- Audio is not enabled/ no audio in hardware.
- It is not a power acoustics.
- Audio cable is damaged.
- DVR hardware malfunctions.

9. There is audio under monitor state but no audio under playback state.

There are following possibilities:

- Setup is incorrect. Please enable audio function.
- Corresponding channel has no video input. Playback is not continuous when the screen is blue.

10. System time is incorrect.

There are following possibilities:

- Setup is incorrect.
- Battery contact is incorrect or voltage is too low.
- Crystal oscillator is broken.

11. Cannot control PTZ on DVR.

There are following possibilities:

- Front panel PTZ error.
- PTZ decoder setup, connection or installation is incorrect.
- Cable connection is incorrect.
- PTZ setup is incorrect.
- PTZ decoder and DVR protocol is incompatible.
- PTZ decoder and DVR address is incompatible.
- When there are several decoders, please add 120 Ohm between the PTZ decoder A/B cables furthest end to delete the reverberation or impedance matching. Otherwise the PTZ control is not stable.
- The cable distance is too far.

12. Motion detection function does not work.

There are following possibilities:

- Period setup is incorrect.
- Motion detection zone setup is incorrect.
- Sensitivity is too low.
- For some versions, there is hardware limit.

13. Cannot log in client-end or web.

There are following possibilities:

- For Windows 98 or Windows ME user, please update your system to Windows 10. Or you can install client-end software of lower version. Please note right now, our DVR is not compatible with Windows VISTA control.
- ActiveX control has been disabled.
- No dx8.1 or higher. Please upgrade display card driver.

- Network connection error.
- Network setup error.
- Password or user name is invalid.
- Client-end is not compatible with DVR program.

14. There is only mosaic no video when preview or playback video file remotely.

There are following possibilities:

- Network fluency is not good.
- Client-end resources are limit.
- There is multiple-cast group setup in DVR. This mode can result in mosaic. Usually we do not recommend this mode.
- There is privacy mask or channel protection setup.
- Current user has no right to monitor.
- DVR local video output quality is not good.

15. Network connection is not stable.

There are following possibilities:

- Network is not stable.
- IP address conflict.
- MAC address conflict.
- PC or DVR network card is not good.

16. Burn error /USB back error.

There are following possibilities:

- Burner and DVR are in the same data cable.
- System uses too much CPU resources. Please stop record first and then begin backup.
- Data amount exceeds backup device capacity. It might result in burner error.
- Backup device is not compatible.
- Backup device is damaged.

17. Keyboard cannot control DVR

There are following possibilities:

- DVR serial port setup is incorrect.
- Address is incorrect.
- When there are several switchers, power supply is not enough.
- Transmission distance is too far.

18. Alarm signal cannot be disarmed.

There are following possibilities:

- Alarm setup is incorrect.
- Alarm output has been open manually.
- Input device error or connection is incorrect.
- Some program versions might have this problem. Please upgrade your system.

19. Alarm function is null.

There are following possibilities:

- Alarm setup is incorrect.
- Alarm cable connection is incorrect.
- Alarm input signal is incorrect.
- There are two loops connect to one alarm device.

20. Remote control does not work.

There are following possibilities:

- Remote control address is incorrect.

- Distance is too far or control angle is too small.
- Remote control battery power is low.
- Remote control is damaged or DVR front panel is damaged.

21. Record storage period is not enough.

There are following possibilities:

- Camera quality is too low. Lens is dirty. Camera is installed against the light. Camera aperture setup is incorrect.
- HDD capacity is not enough.
- HDD is damaged.

22. Cannot playback the downloaded file.

There are following possibilities:

- There is no media player.
- No DXB8.1 or higher graphic acceleration software.
- There is no DivX503Bundle.exe control when you play the file transformed to AVI via media player.
- No DivX503Bundle.exe or ffdshow-2004 1012 .exe in Windows XP OS.

23. Forgot local menu operation password or network password

Please contact your local service engineer or our sales person for help. We can guide you to solve this problem.

24. When I login via HTTPS, a dialogue says the certificate for this website is for other address.

Please create server certificate again.

25. When I login via HTTPS, a dialogue says the certificate is not trusted.

Please download root certificate again.

26. When I login via HTTPS, a dialogue says the certificate has expired or is not valid yet.

Please make sure your PC time is the same as the device time.

27. I connect the general analog camera to the device, there is no video output.

There are following possibilities:

- Check camera power supplying, data cable connection and other items.
- This series device does not support the analog camera of all brands. Please make sure the device supports general standard definition analog camera.

28. I connect the standard definition analog camera or the coaxial camera to the device, there is no video output.

There are following possibilities:

- Check camera power supply, or camera data cable connection.
- For the product supports analog standard definition camera/HD camera, you need to go to the **Main Menu > Advanced Settings > Camera Configuration > CHANNEL TYPE** to select corresponding channel type and then restart the DVR.

29. I cannot connect an IP channel.

There are following possibilities:

- Check if the camera is online or not.
- Check whether the IP channel setup is right or not (such as IP address, user name, password, connection protocol, and port number).
- The camera has set the allowlist (Only the specified devices can connect to the camera).

30. IP channel is only showing single view, but not on multiple-window view.

There are following possibilities:

- Check if the sub stream of the camera has been enabled or not.
- Check the sub stream type of the camera is H.264 or not. Mjpeg may not show on the local display depending on the HDVR model.
- Check the device supports the camera sub stream resolution (such as 960H, D1, and HD1).

31. After I connected to the IP channel, the multiple-window output is OK, but there is no one-window output.

There are following possibilities:

- Check there is video from the IP channel or not. Please go to the **Main Menu > INFO > BPS** to view bit stream real-time information.
- Check the main stream of the camera has been enabled or not.
- Check the main stream type of the camera is H.264 or not.
- Check the device supports camera main stream resolution or not (such as 960H, D1, and HD1).
- Check camera network transmission has reached the threshold or not. Please check the online user of the camera.

32. After I connected to the IP channel, there is no video output in the one-window or the multiple-window mode.

But I can see there is bit stream.

There are following possibilities:

- Check the main stream/sub stream type of the camera is H.264 or not.
- Check the device supports camera main stream/sub stream resolution or not (such as 1080P, 720P, 960H, D1, and HD1).
- Check the camera setup. Please make sure It supports the products of other manufacturers.

33. DDNS registration failed or cannot access the device domain name.

There are following possibilities:

- Check the device is connected to the WAN. Please check the device has got the IP address if the PPPoE can dial. If there is a router, please check the router to make sure the device IP is online.
- Check the corresponding protocol of the DDNS is enabled. Check the DDNS function is OK or not.
- Check DNS setup is right or not. Default Google DNS server is 8.8.8.8, 8.8.5.5. You can use different DNS provided by your ISP.

34. I cannot use the P2P function on my cell phone or the WEB.

There are following possibilities:

- Check the device P2P function is enabled or not. (Main menu->Setting->Network->P2P)
- Check the device is in the WAN or not.
- Check cell phone P2P login mode is right or not.
- It is the specified device P2P login port or not when you are using P2P client.
- Check user name or password is right or not.
- Check P2P SN is right or not. You can use the cell phone to scan the QR code on the device P2P interface (**Main Menu > Basic Settings > Network > P2P**), or you can use the version information of the WEB to confirm. (For some previous series products, the device SN is the main board SN, it might result in error.)

35. I connect the standard definition camera to the device, there is no video output.

There are following possibilities:

- Check the DVR supports standard definition signal or not. Only some series product supports analog standard definition signal, coaxial signal input.
- Check channel type is right or not. For the product supports analog standard definition camera/HD camera, you need to go to the **Main Menu > Advanced Settings > Camera Configuration > CHANNEL TYPE** to select corresponding channel type (such as analog) and then restart the DVR. In this way, the DVR can recognize the analog standard definition.
- Check camera power supplying, or camera data cable connection.

36. I cannot connect to the IP camera.

There are following possibilities:

- Check DVR supports IP channel or not. Only some series products support A/D switch function, it can switch analog channel to the IP channel to connect to the IP camera. From **Main Menu > Advanced Settings > Camera Configuration > CHANNEL TYPE**, select the last channel to switch to the IP channel. Some series product products support IP channel extension, it supports N+N mode.

- Check the IPC and the DVR is connected or not. Please go to the **Main Menu > Advanced Settings > Camera Configuration > REGISTRATION** to search to view the IP camera is online or not. Or you can go to the **Main Menu > INFO > NETWORK > Network Test**, you can input IP camera IP address and then click the Test button to check you can connect to the IP camera or not.
- Check IP channel setup is right or not (such as IP address, manufacturer, port, user name, password, and remote channel number).

Daily Maintenance

- Please use the brush to clean the board, socket connector and the chassis regularly.
- The device shall be soundly earthed in case there is audio/video disturbance. Keep the device away from the static voltage or induced voltage.
- Please unplug the power cable before you remove the audio/video signal cable, RS-232 or RS-485 cable.
- Do not connect the TV to the local video output port (VOUT). It might result in video output circuit.
- Always shut down the device properly. Please use the shutdown function in the menu, or you can press the power button in the front panel for at least three seconds to shut down the device. Otherwise it might result in HDD malfunction.
- Please make sure the device is away from the direct sunlight or other heating sources. Please keep the sound ventilation.
- Please check and maintain the device regularly.

Appendix 1 Glossary

The abbreviations in this glossary are related to the Manual.

Abbreviations	Full term
BNC	Bayonet Nut Connector
CBR	Constant Bit Rate
CIF	Common Intermediate Format
DDNS	Dynamic Domain Name Service
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
DST	Daylight Saving Time
DVR	Digital Video Recorder
FTP	File Transfer Protocol
HDD	Hard Disk Drive
HDMI	High Definition Multimedia Interface
HTTP	Hyper Text Transfer Protocol
IoT	Internet of Things
IP	Internet Protocol
IVS	Intelligent Video System
LAN	Local Area Network
MAC	Media Access Control
MTU	Maximum Transmission Unit
NTP	Network Time Protocol
NTSC	National Television Standards Committee
ONVIF	Open Network Video Interface Forum
PAL	Phase Alteration Line

PAT	Port Address Translation
POS	Point of Sale
PPPoE	Point-to-Point Protocol over Ethernet
PSS	Professional Surveillance Software
PTZ	Pan Tilt Zoom
RCA	Radio Corporation of American
RTSP	Real Time Streaming Protocol
S.M.A.R.T	Self-Monitoring-Analysis and Reporting Technology
SATA	Serial Advanced Technology Attachment
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Management Protocol
TCP	Transmission Control Protocol
TFTP	Trivial File Transfer Protocol
UDP	User Datagram Protocol
UPnP	Universal Plug and Play
VBR	Variable Bit Rate
VGA	Video Graphics Array
WAN	Wide Area Network

Appendix 2 HDD Capacity Calculation

Calculate total capacity needed by each DVR according to video recording (video recording type and video file storage time).

Step 1 According to Formula (1) to calculate storage capacity q_i that is the capacity of each

channel needed for each hour, unit MB.

Formula (1):
$$q_i = d_i \div 8 \times 3600 \div 1024$$

In the formula: d_i means the bit rate, unit Kbit/s

Step 2 After video time requirement is confirmed, according to Formula (2) to calculate the storage capacity m_i , which is storage of each channel needed unit MB.

Formula (2):
$$m_i = q_i \times h_i \times D_i$$

In the formula:

- h_i means the recording time for each day (hour)

- D_i means number of days for which the video shall be kept

Step 3 According to Formula (3) to calculate total capacity (accumulation) q_T that is needed for

all channels in the DVR during **scheduled video recording**.

Formula (3):
$$q_T = \sum_{i=1}^c m_i$$

In the formula: c means total number of channels in one DVR q_T that is needed for all

Step 4 According to Formula (4) to calculate total capacity (accumulation)

channels in DVR during **alarm video recording (including motion detection)**.

Formula (4):

$$q_T = \sum_{i=1}^i m_i \times a\%$$

i=1

In the formula: *a%* means alarm occurrence rate

You can refer to the following table for the file size in one hour per channel. (All the data listed below are for reference only.)

Bit Stream Size (max)	File Size	Bit Stream Size (max)	File Size
1280Kbps	562MB	1536Kbps	675MB
1792Kbps	787MB	2048Kbps	900MB

Appendix 3 Compatible Backup Devices

Appendix 3.1 Compatible USB list

Manufacturer	Model	Capacity
Sandisk	Cruzer Micro	512MB
Sandisk	Cruzer Micro	1GB
Sandisk	Cruzer Micro	2GB
Sandisk	Cruzer Freedom	256MB
Sandisk	Cruzer Freedom	512MB
Sandisk	Cruzer Freedom	1GB
Sandisk	Cruzer Freedom	2GB
Kingston	DataTraveler II	1GB
Kingston	DataTraveler II	2GB
Kingston	DataTraveler	1GB
Kingston	DataTraveler	2GB
Maxell	USB Flash Stick	128MB
Maxell	USB Flash Stick	256MB
Maxell	USB Flash Stick	512MB
Maxell	USB Flash Stick	1GB
Maxell	USB Flash Stick	2GB
Kingax	Super Stick	128MB
Kingax	Super Stick	256MB
Kingax	Super Stick	512MB
Kingax	Super Stick	1GB
Kingax	Super Stick	2GB
Netac	U210	128MB
Netac	U210	256MB
Netac	U210	512MB
Netac	U210	1GB
Netac	U210	2GB
Netac	U208	4GB
Teclast	Ti Cool	128MB

Teclast	Ti Cool	256MB
Teclast	Ti Cool	512MB
Teclast	Ti Cool	1GB
Sandisk	Cruzer Micro	2GB
Sandisk	Cruzer Micro	8GB
Sandisk	Ti Cool	2GB
Sandisk	Hongjiao	4GB
Lexar	Lexar	256MB

Manufacturer	Model	Capacity
Kingston	Data Traveler	1GB
Kingston	Data Traveler	16GB
Kingston	Data Traveler	32GB
Aigo	L8315	16GB
Sandisk	250	16GB
Kingston	Data Traveler Locker+	32GB
Netac	U228	8GB

Appendix 3.2 Compatible SD Card list

Manufacturer	Standard	Capacity	Card type
Transcend	SDHC6	16GB	Big
Kingston	SDHC4	4GB	Big
Kingston	SD	2GB	Big
Kingston	SD	1GB	Big
Sandisk	SDHC2	8GB	Small
Sandisk	SD	1GB	Small

Appendix 3.3 Compatible Portable HDD list

Manufacturer	Model	Capacity
YDStar	YDstar HDD box	40GB
Netac	Netac	80GB
lomega	lomega RPHD-CG" RNAJ50U287	250GB
WD Elements	WCAVY1205901	1.5TB
Newsmy	Liangjian	320GB
WD Elements	WDBAAR5000ABK-00	500GB
WD Elements	WDBAAU0015HBK-00	1.5TB
Seagate	FreeAgent Go(ST905003F)	500GB
Aigo	H8169	500GB

Appendix 3.4 Compatible USB DVD List

Manufacturer	Model
Samsung	SE-S084
BenQ	LD2000-2K4

Appendix 3.5 Compatible SATA DVD List

Manufacturer	Model
LG	GH22NS30
Samsung	TS-H653 Ver.A
Samsung	TS-H653 Ver.F
Samsung	SH-224BB/CHXH
SONY	DRU-V200S
SONY	DRU-845S
SONY	AW-G170S
Pioneer	DVR-217CH

Appendix 3.6 Compatible SATA HDD List

 NOTE		Bit Stream Size (max)	File Size	Manufacturer	Series	Model	Capacity	Port Mode
Bit Stream Size (max)	File Size	Bit Stream Size (max)	File Size					
96Kbps	42MB	128Kbps	56MB	Seagate	Video 3.5	ST1000VM002	1TB	SATA
160Kbps	70MB	192Kbps	84MB	Seagate	Video 3.5	ST2000VM003	2TB	SATA
224Kbps	98MB	256Kbps	112MB	Seagate	Video 3.5	ST3000VM002	3TB	SATA
320Kbps	140MB	384Kbps	168MB	Seagate	Video 3.5	ST4000VM000	4TB	SATA
448Kbps	196MB	512Kbps	225MB	Seagate	SV35	ST1000VX000	1TB	SATA
640Kbps	281MB	768Kbps	337MB	Seagate	SV35	ST2000VX000	2TB	SATA
896Kbps	393MB	1024Kbps	450MB	Seagate	SV35	ST3000VX000	3TB	SATA
				Seagate	SV35 (Support HDD data recovery offered by Seagate)	ST1000VX002	1TB	SATA
				Seagate	SV35 (Support HDD data recovery offered by Seagate)	ST2000VX004	2TB	SATA

Seagate	SV35 (Support HDD data recovery offered by Seagate)	ST3000VX004	3TB	SATA
Seagate	SkyHawk HDD	ST1000VX001	1TB	SATA
Seagate	SkyHawk HDD	ST1000VX005	1TB	SATA
Seagate	SkyHawk HDD	ST2000VX003	2TB	SATA
Seagate	SkyHawk HDD	ST2000VX008	2TB	SATA
Seagate	SkyHawk HDD	ST3000VX006	3TB	SATA
Seagate	SkyHawk HDD	ST3000VX010	3TB	SATA
Seagate	SkyHawk HDD	ST4000VX000	4TB	SATA
Seagate	SkyHawk HDD	ST4000VX007	4TB	SATA
Seagate	SkyHawk HDD	ST5000VX0001	5TB	SATA
Seagate	SkyHawk HDD	ST6000VX0001	6TB	SATA
Seagate	SkyHawk HDD	ST6000VX0023	6TB	SATA
Seagate	SkyHawk HDD	ST6000VX0003	6TB	SATA

Please upgrade the DVR firmware to latest version to ensure the accuracy of the table below. Here we recommend HDD of 500GB to 4TB capacity.

Manufacturer	Series	Model	Capacity	Port Mode
Seagate	SkyHawk HDD	ST8000VX0002	8TB	SATA
Seagate	SkyHawk HDD	ST8000VX0022	8TB	SATA
Seagate	SkyHawk HDD	ST100000VX0004	10TB	SATA
Seagate	SkyHawk HDD (Support HDD data recovery offered by Seagate)	ST1000VX003	1TB	SATA
Seagate	(Support HDD data recovery offered by Seagate)	ST2000VX005	2TB	SATA
Seagate	(Support HDD data recovery offered by Seagate)	ST3000VX005	3TB	SATA
Seagate	(Support HDD data recovery offered by Seagate)	ST4000VX002	4TB	SATA
Seagate	(Support HDD data recovery offered by Seagate)	ST5000VX0011	5TB	SATA
Seagate	(Support HDD data recovery offered by Seagate)	ST6000VX0011	6TB	SATA

Seagate	(Support HDD data recovery offered by Seagate)	ST8000VX0012	8TB	SATA
WD	WD Green	WD10EURX (EOL)	1TB	SATA
WD	WD Green	WD20EURX (EOL)	2TB	SATA
WD	WD Green	WD30EURX (EOL)	3TB	SATA
WD	WD Green	WD40EURX (EOL)	4TB	SATA
WD	WD Purple	WD10PURX	1TB	SATA
WD	WD Purple	WD20PURX	2TB	SATA
WD	WD Purple	WD30PURX	3TB	SATA
WD	WD Purple	WD40PURX	4TB	SATA
WD	WD Purple	WD50PURX	5TB	SATA
WD	WD Purple	WD60PURX	6TB	SATA
WD	WD Purple	WD80PUZX	8TB	SATA
WD	WD Purple	WD10PURZ	1TB	SATA
WD	WD Purple	WD20PURZ	2TB	SATA
WD	WD Purple	WD30PURZ	3TB	SATA
WD	WD Purple	WD40PURZ	4TB	SATA
WD	WD Purple	WD50PURZ	5TB	SATA
WD	WD Purple	WD60PURZ	6TB	SATA
WD	WD Purple	WD80PURZ	8TB	SATA
WD	WD Purple	WD4NPURX	4TB	SATA
WD	WD Purple	WD6NPURX	6TB	SATA
TOSHIBA	Mars	DT01ABA100V	1TB	SATA

Manufacturer	Series	Model	Capacity	Port Mode
TOSHIBA	Mars	DT01ABA200V	2TB	SATA
TOSHIBA	Mars	DT01ABA300V	3TB	SATA
TOSHIBA	Sonance	MD03ACA200V	2TB	SATA
TOSHIBA	Sonance	MD03ACA300V	3TB	SATA
TOSHIBA	Sonance	MD03ACA400V	4TB	SATA
TOSHIBA	Sonance	MD04ABA400V	4TB	SATA
TOSHIBA	Sonance	MD04ABA500V	5TB	SATA
Seagate	Constellation ES series (SATA interface)	ST1000NM0033	1TB	SATA
Seagate	Constellation ES series (SATA interface)	ST2000NM0033	2TB	SATA
Seagate	Constellation ES series (SATA interface)	ST3000NM0033	3TB	SATA
Seagate	Constellation ES series (SATA interface)	ST4000NM0033	4TB	SATA
Seagate	Constellation ES series (SATA interface)	ST1000NM0055	1TB	SATA
Seagate	Constellation ES series (SATA interface)	ST2000NM0055	2TB	SATA

Seagate	Constellation ES series (SATA interface)	ST3000NM0005	3TB	SATA
Seagate	Constellation ES series (SATA interface)	ST4000NM0035	4TB	SATA
Seagate	Constellation ES series (SATA interface)	ST6000NM0115	6TB	SATA
Seagate	Constellation ES series (SATA interface)	ST8000NM0055	8TB	SATA
Seagate	Constellation ES series (SATA interface)	ST10000NM0016	10TB	SATA
Seagate	Constellation ES series (SATA interface)	ST4000NM0024	4TB	SATA
Seagate	Constellation ES series (SATA interface)	ST6000NM0024	6TB	SATA
Seagate	Constellation ES series (SAS interface)	ST1000NM0023	1TB	SATA
Seagate	Constellation ES series (SAS interface)	ST2000NM0023	2TB	SATA
Seagate	Constellation ES series (SAS interface)	ST3000NM0023	3TB	SATA
Seagate	Constellation ES series (SAS interface)	ST4000NM0023	4TB	SATA
Seagate	Constellation ES series (SAS interface)	ST6000NM0014	6TB	SATA
Seagate	Constellation ES series (SAS interface)	ST1000NM0045	1TB	SATA

Manufacturer	Series	Model	Capacity	Port Mode
Seagate	Constellation ES series (SAS interface)	ST2000NM0045	2TB	SATA
Seagate	Constellation ES series (SAS interface)	ST3000NM0025	3TB	SATA
Seagate	Constellation ES series (SAS interface)	ST4000NM0025	4TB	SATA
Seagate	Constellation ES series (SAS interface)	ST6000NM0095	6TB	SATA
Seagate	Constellation ES series (SAS interface)	ST6000NM0034	6TB	SATA
Seagate	Constellation ES series (SAS interface)	ST8000NM0075	8TB	SATA
WD	WD RE series (SATA interface)	WD1003FBYZ	1TB	SATA
WD	WD RE series (SATA interface)	WD1004FBYZ (replace WD1003FBYZ)	1TB	SATA

WD	WD RE series (SATA interface)	WD2000FYYZ	2TB	SATA
WD	WD RE series (SATA interface)	WD2004FBYZ (replace WD2000FYYZ)	2TB	SATA
WD	WD RE series (SATA interface)	WD3000FYYZ	3TB	SATA
WD	WD RE series (SATA interface)	WD4000FYYZ	4TB	SATA
WD	WD (SATA interface)	WD2000F9YZ	2TB	SATA
WD	WD (SATA interface)	WD3000F9YZ	3TB	SATA
WD	WD (SATA interface)	WD4000F9YZ	4TB	SATA
WD	WD (SATA interface)	WD4002FYYZ	4TB	SATA
WD	WD (SATA interface)	WD6001FSYZ	6TB	SATA
WD	WD (SATA interface)	WD6002FRYZ	6TB	SATA
WD	WD (SATA interface)	WD8002FRYZ	8TB	SATA
HITACHI	Ultrastar series (SATA interface)	HUS724030ALA640	3TB	SATA
HITACHI	Ultrastar series (SATA interface)	HUS726060ALE610	6TB	SATA
HITACHI	Ultrastar series (SATA interface)	HUH728060ALE600	6TB	SATA
HITACHI	Ultrastar series (SATA interface)	HUH728080ALE600	8TB	SATA
HITACHI	Ultrastar series (SAS interface)	HUS726020AL5210	2TB	SATA
HITACHI	Ultrastar series (SAS interface)	HUS726040AL5210	4TB	SATA
HITACHI	Ultrastar series (SAS interface)	HUS726060AL5210	6TB	SATA

Manufacturer	Series	Model	Capacity	Port Mode
Seagate	Pipeline HD Mini	ST320VT000	320GB	SATA
Seagate	Pipeline HD Mini	ST500VT000	500GB	SATA
Seagate	Pipeline HD Mini	ST2000LM003 (EOL)	2TB	SATA
TOSHIBA	2.5-inch PC series	MQ01ABD050V	500GB	SATA
TOSHIBA	2.5-inch PC series	MQ01ABD100V	1TB	SATA
SAMSUNG	HN-M101MBB	HN-M101MBB (EOL)	1TB	SATA
Seagate	2.5-inch enterprise series	ST1000NX0313	1TB	SATA
Seagate	2.5-inch enterprise series	ST2000NX0253	2TB	SATA

Appendix 4 Compatible CD/DVD Burner List

 Manufacturer	Model	Port Type	Type
Sony	DRX-S50U	USB	DVD-RW
Sony	DRX-S70U	USB	DVD-RW
Sony	AW-G170S	SATA	DVD-RW
Samsung	TS-H653A	SATA	DVD-RW
Panasonic	SW-9588-C	SATA	DVD-RW
Sony	DRX-S50U	USB	DVD-RW
BenQ	5232WI	USB	DVD-RW

Please upgrade the DVR firmware to latest version to ensure the accuracy of the table below. And you can use the USB cable with the model recommended to set USB burner.

Appendix 5 Compatible Displayer List

Please refer to the following table form compatible displayer list.

Brand	Model	Dimension (Unit: inch)
BENQ (LCD)	ET-0007-TA	19-inch (wide screen)
DELL (LCD)	E178FPc	17-inch
BENQ (LCD)	Q7T4	17-inch
BENQ (LCD)	Q7T3	17-inch
HFNOVO (LCD)	LXB-L17C	17-inch
SANGSUNG (LCD)	225BW	22-inch (wide screen)
HFNOVO (CRT)	LXB-FD17069HB	17-inch
HFNOVO (CRT)	LXB-HF769A	17-inch
HFNOVO(CRT)	LX-GJ556D	17-inch
Samsung (LCD)	2494HS	24-inch
Samsung (LCD)	P2350	23-inch
Samsung (LCD)	P2250	22-inch
Samsung (LCD)	P2370G	23-inch
Samsung (LCD)	2043	20-inch
Samsung (LCD)	2243EW	22-inch
Samsung (LCD)	SMT-1922P	19-inch
Samsung (LCD)	T190	19-inch
Samsung (LCD)	T240	24-inch
LG (LCD)	W1942SP	19-inch
LG (LCD)	W2243S	22-inch
LG (LCD)	W2343T	23-inch
BENQ (LCD)	G900HD	18.5-inch
BENQ (LCD)	G2220HD	22-inch
PHILIPS (LCD)	230E	23-inch
PHILIPS (LCD)	220CW9	23-inch
PHILIPS (LCD)	220BW9	24-inch

PHILIPS (LCD)	220EW9	25-inch
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Appendix 6 Compatible Switcher

Brand	Model	network working mode
D-LinK	DES-1016D	10/100M self-adaptive
D-LinK	DES-1008D	10/100M self-adaptive
Ruijie	RG-S1926S	Five network modes: <ul style="list-style-type: none"> • AUTO • HALF-10M • FULL-10M • HALF-100M • FULL-100M
H3C	H3C-S1024	10/100M self-adaptive
TP-LINK	TL-SF1016	10/100M self-adaptive
TP-LINK	TL-SF1008+	10/100M self-adaptive

Appendix 7 Earthing

Appendix 7.1 What Is the Surge

Surge is a short current or voltage change during a very short time. In the circuit, it lasts for microsecond. In a 220V circuit, the 5KV or 10KV voltage change during a very short time (about microseconds) can be called a surge. The surge comes from two ways: external surge and internal surge.

- The external surge: The external surge mainly comes from the thunder lightning. Or it comes from the voltage change during the on/off operation in the electric power cable.
- The internal surge: The research finds 88% of the surge from the low voltage comes from the internal of the building such as the air conditioning, elevator, electric welding, air compressor, water pump, power button, duplicating machine and other device of inductive load.

The lightning surge is far above the load level the PC or the micro devices can support. In most cases, the surge can result in electric device chip damage, PC error code, accelerating the part aging, data loss and etc. Even when a small 20 horsepower inductive engine boots up or stops, the surge can reach 3000V to 5000V, which can adversely affect the electronic devices that use the same distribution box.

To protect the device, you need to evaluate its environment, the lightning affection degree objectively. Because surge has close relationship with the voltage amplitude, frequency, network structure, device voltage-resistance, protection level, ground and etc. The thunder proof work shall be a systematic project, emphasizing the all-round protection (including building, transmission cable, device, ground and etc.). There shall be comprehensive management and the measures shall be scientific, reliable, practical and economic. Considering the high voltage during the inductive thundering, the International Electrotechnical Commission (IEC) standard on the energy absorbing step by step theory and magnitude classification in the protection zone, you need to prepare multiple precaution levels.

You can use the lightning rod, lightning strap or the lightning net to reduce the damage to the building, personal injury or the property.

The lightning protection device can be divided into three types:

- **Power lightning arrester:** There are 220V single-phase lightning arrester and 380V three-phase lightning arrester (mainly in parallel connection, sometimes use series connection) You can parallel connect the power lightning arrester in the electric cable to reduce the short-time voltage change and release the surge current. From the BUS to the device, there are usually three levels so that system can reduce the voltage and release the current step by step to remove the thunderstorm energy and guarantee the device safety. You can select the replaceable module type, the terminal connection type and portable socket according to your requirement.
- **Signal lightning arrester:** This device is mainly used in the PC network, communication system. The connection type is serial connection. Once you connected the signal lightning arrester with the signal port, it can cut the channel of the thunderstorm to the device, and on the other hand, it can discharge the current to the ground to guarantee the device proper work. The signal lightning arrester has many specifications, and widely used in many devices such as telephone, network, analog communication, digital communication, cable TV and satellite antenna. For all the input ports, especially those from the outdoor, you need to install the signal lightning arrester.
- **Antenna feed cable lightning arrester:** It is suitable for antenna system of the transmitter or the device system to receive the wireless signal. It uses the serial connection too.

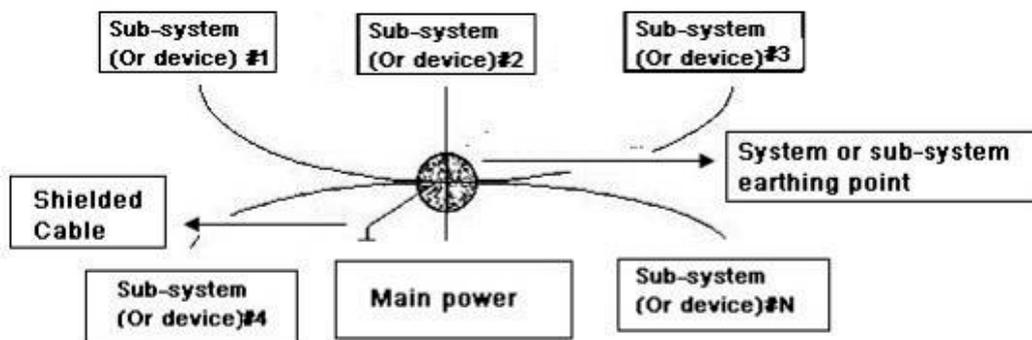
Please note, when you select the lightning arrester, please pay attention to the port type and the earthing reliability. In some important environment, you need to use special shielded cable. Do not parallel connect the thunder proof ground cable with the ground cable of the lightning rod. Please make sure they are far enough and grounded respectively.

Appendix 7.2 The Earthing Modes

We all know the earthing is the most complicated technology in the electromagnetism compatibility design since there is no systematic theory or module. The earthing has many modes, but the selection depends on the system structure and performance.

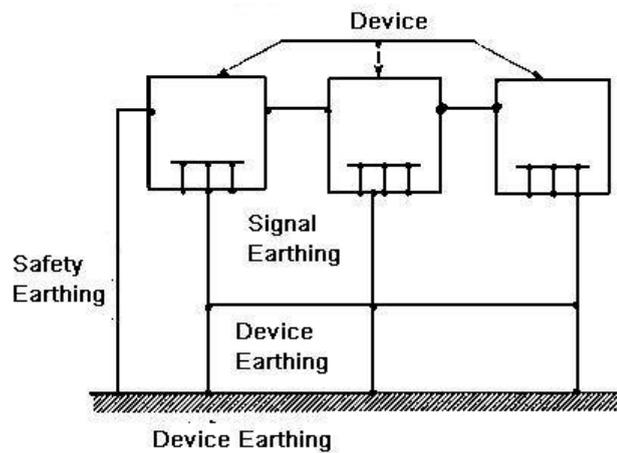
The following are some successfully experience from our past work.

- **One-point ground:** In the following figure you can see there is a one-point ground. This connection provides common point to allow signal to be transmitted in many circuits. If there is no common point, the error signal transmission occurred. In the one-point ground mode, each circuit is just grounded only and they are connected at the same point. Since there is only one common point, there is no circuit and so, there is no interference.

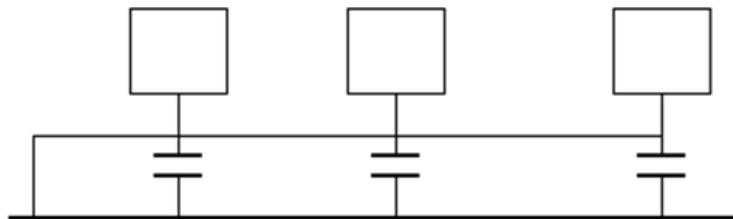


- **Multiple-point ground:** In the following figure, you can see the internal circuit uses the chassis as the common point. While at the same time, all devices chassis use the earthing as the common point. In this connection, the ground structure can provide the lower ground resistance because when there are multiple-point grounds; each ground cable is as short as possible. And the parallel

cable connection can reduce the total conductance of the ground conductor. In the high-frequency circuit, you need to use the multiple-point ground mode and each cable needs to connect to the ground. The length shall be less than the 1/20 of the signal wavelength.



- **Mixed ground:** The mixed ground consists of the feature of the one-point ground and multiple-point ground. For example, the power in the system needs to use the one-point ground mode while the radio frequency signal requires the multiple-point ground. So, you can use the following figure to earth. For the direct current (DC), the capacitance is open circuit and the circuit is one-point ground. For the radio frequency signal, the capacitance is conductive and the circuit adopts multiple-point ground.



When connecting devices of huge size (the device physical dimension and connection cable is big comparing with the wave path of existed interference), then there is possibility of interference when the current goes through the chassis and cable. In this situation, the interference circuit path usually lies in the system ground circuit.

When considering the earthing, you need to think about two aspects: One is the system compatibility, and the other is the external interference coupling into the earth circuit, which results in system error. For the external interference is not regular, it is not easy to resolve.

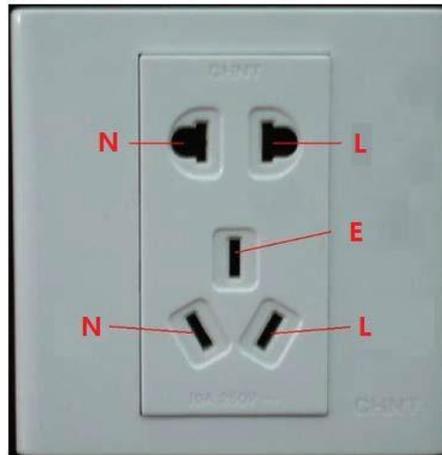
Appendix 7.3 Thunder Proof Ground Method in the Monitor System

- The monitor system shall have sound thunder proof earthing to guarantee personnel safety and device safety.
- The monitor system working ground resistance shall be less than 1Ω .
- The thunder proof ground shall adopt the special ground cable from the monitor control room to the ground object. The ground cable adopts copper insulation cable or wire and its ground section shall be more than 20mm^2 .
- The ground cable of the monitor system cannot short circuit or mixed connected with the strong alternative current cable.
- For all the ground cables from the control room to the monitor system or ground cable of other monitor devices, please use the copper resistance soft cable and its section shall be more than 4mm^2 .
- The monitor system usually can adopt the one-point ground.

- Please connect the ground end of 3-pin socket in the monitor system to the ground port of the system (protection ground cable)

Appendix 7.4 The Shortcut Way to Check the Electric System by Digital Multimeter

For 220V AC socket, from the top to the bottom, E (ground cable), N (neutral cable), L (live cable). Please refer to the following figure.



There is a shortcut way to check whether these three cables connection are standard or not (not the accurate check).



In the following operations, the multimeter range shall be at 750V.

For E (earth cable)

Turn the digital multimeter to 750V AC, use your one hand to hold the metal end, and then the other hand inserts the pen to the E port of the socket. See the following figure. If the multimeter shows 0, then you can see current earth cable connection is standard. If the value is more than 10, then you can know there is inductive current and the earth cable connection is not proper.



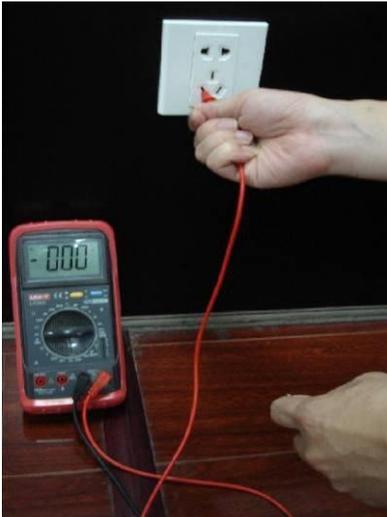
For L (live cable)

Turn the digital multimeter to 750V AC, use your one hand to hold the metal end, and then the other hand inserts the pen to the L port of the socket. See the following figure. If the multimeter shows 125, then you can see current live cable connection is standard. If the value is less than 60, then you can know current live cable connection is not proper or it is not the live cable at all.



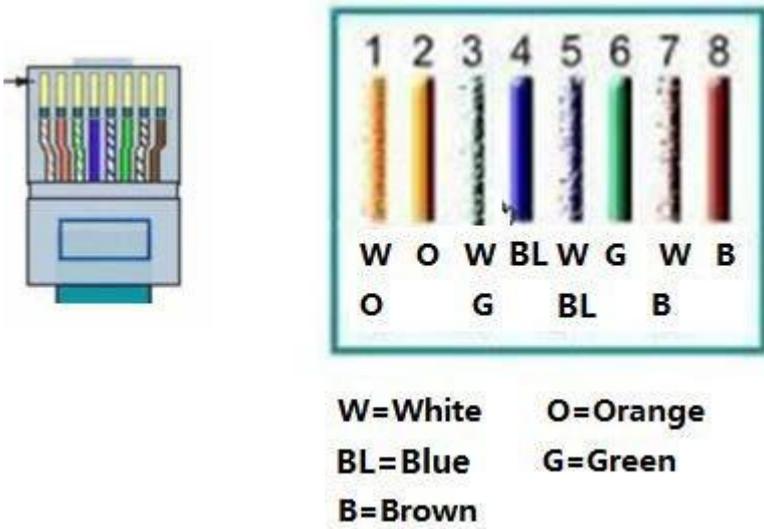
For N (Neutral cable)

Turn the digital multimeter to 750V AC, use your one hand to hold the metal end, and then the other hand inserts the pen to the N port of the socket. See the following figure. If the multimeter shows 0, then you can see current N cable connection is standard. If the value is more than 10, then you can see there is inductive current and the neutral cable connection is not proper. If the value is 120, then you can know that you have misconnected the neutral cable to the live cable.

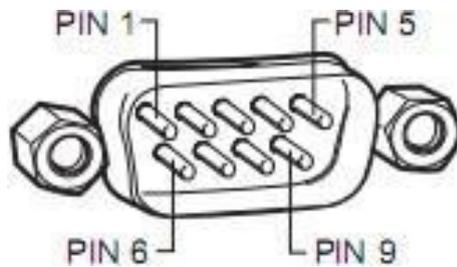


Appendix 8 RJ45-RS-232 Connection Cable Definition

Here we are going to make standard RS-232 port and standard RJ45 (T568B). Please refer to the following figure for RJ45 cable definition.

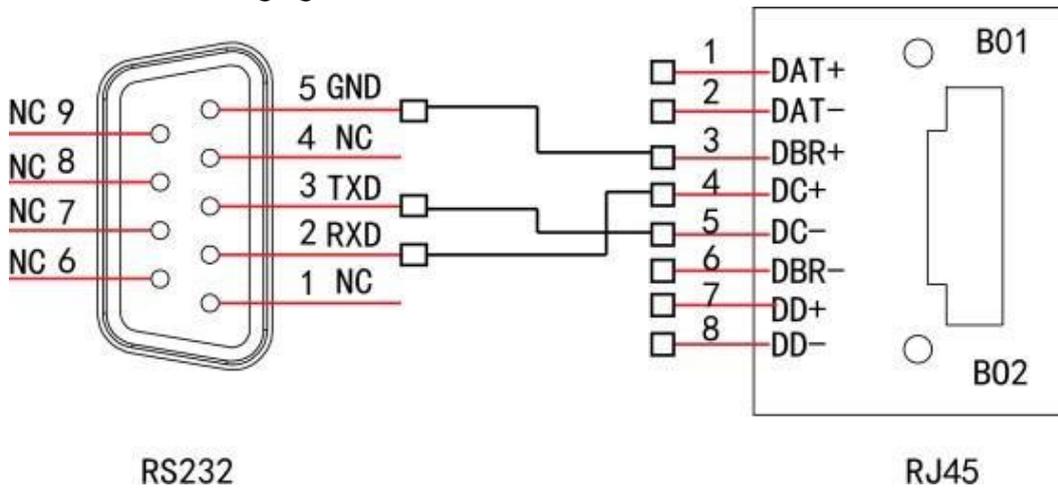


Please refer to the following figure for RS-232 pin definition.



Cross Connection

Please refer to the following figure for connection information.

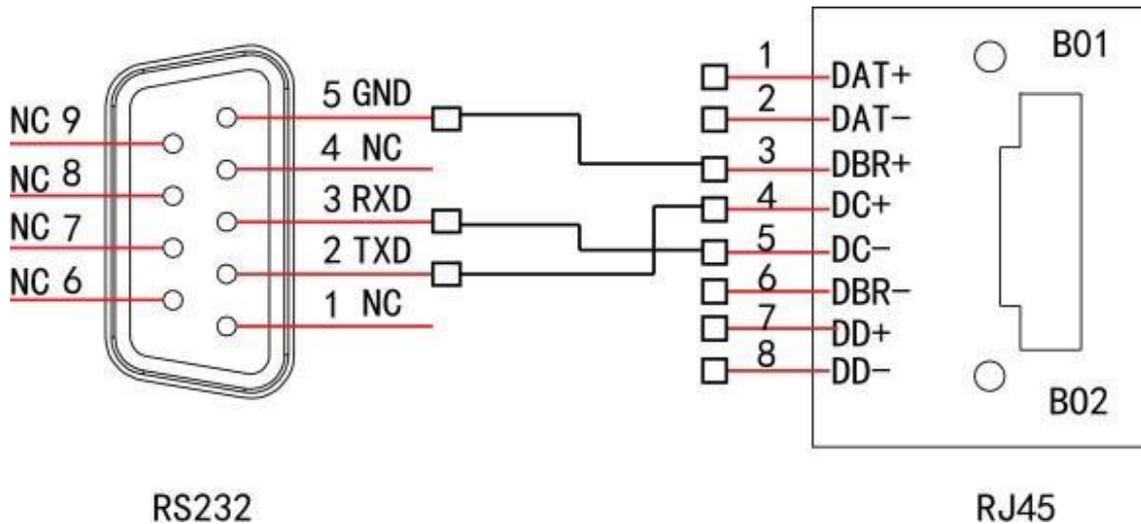


Please refer to the following table for detailed crossover cable connection information.

RJ45 (T568B)	RJ45 (Network cable)	RS-232	Signal Description
4	Blue	2	RXD
5	White and blue	3	TXD
3	White and green	5	GND

Straight Connection

Please refer to the following figure for straight cable connection information.



Please refer to the following table for straight connection information.

RJ45 (T568B)	RJ45 (Network cable)	RS-232	Signal Description
4	Blue	3	RXD
5	White and blue	2	TXD
3	White and green	5	GND

Appendix 9 Cybersecurity Recommendations

Cybersecurity is more than just a buzzword: it's something that pertains to every device that is connected to the internet. IP video surveillance is not immune to cyber risks, but taking basic steps toward protecting and strengthening networks and networked appliances will make them less susceptible to attacks. Below are some tips and recommendations on how to create a more secured security system.

Mandatory actions to be taken for basic device network security:

1. Use Strong Passwords

Please refer to the following suggestions to set passwords:

- The length should not be less than 8 characters;
- Include at least two types of characters; character types include upper and lower case letters, numbers and symbols;
- Do not contain the account name or the account name in reverse order;
- Do not use continuous characters, such as 123, abc, etc.;
- Do not use overlapped characters, such as 111, aaa, etc.;

2. Update Firmware and Client Software in Time

- According to the standard procedure in Tech-industry, we recommend to keep your device (such as NVR, DVR, IP camera, etc.) firmware up-to-date to ensure the system is equipped with the latest security patches and fixes. When the device is connected to the public network, it is recommended to enable the “auto-check for updates” function to obtain timely information of firmware updates released by the manufacturer.
- We suggest that you download and use the latest version of client software.

"Nice to have" recommendations to improve your device network security:

1. Physical Protection

We suggest that you perform physical protection to device, especially storage devices. For example, place the device in a special computer room and cabinet, and implement well-done access control permission and key management to prevent unauthorized personnel from carrying out physical contacts such as damaging hardware, unauthorized connection of removable device (such as USB flash disk, serial port), etc.

2. Change Passwords Regularly

We suggest that you change passwords regularly to reduce the risk of being guessed or cracked.

3. Set and Update Passwords Reset Information Timely

The device supports password reset function. Please set up related information for password reset in time, including the end user’s mailbox and password protection questions. If the information changes, please modify it in time. When setting password protection questions, it is suggested not to use those that can be easily guessed.

4. Enable Account Lock

The account lock feature is enabled by default, and we recommend you to keep it on to guarantee the account security. If an attacker attempts to log in with the wrong password several times, the corresponding account and the source IP address will be locked.

5. Change Default HTTP and Other Service Ports

We suggest you to change default HTTP and other service ports into any set of numbers between 1024-65535, reducing the risk of outsiders being able to guess which ports you are using.

6. Enable HTTPS

We suggest you to enable HTTPS, so that you visit Web service through a secure communication channel.

7. MAC Address Binding

We recommend you to bind the IP and MAC address of the gateway to the device, thus reducing the risk of ARP spoofing.

8. Assign Accounts and Privileges Reasonably

According to business and management requirements, reasonably add users and assign a minimum set of permissions to them.

9. Disable Unnecessary Services and Choose Secure Modes

If not needed, it is recommended to turn off some services such as SNMP, SMTP, UPnP, etc., to reduce risks.

If necessary, it is highly recommended that you use safe modes, including but not limited to the following services:

- SNMP: Choose SNMP v3, and set up strong encryption passwords and authentication passwords.
- SMTP: Choose TLS to access mailbox server.
- FTP: Choose SFTP, and set up strong passwords.
- AP hotspot: Choose WPA2-PSK encryption mode, and set up strong passwords.

10. Audio and Video Encrypted Transmission

If your audio and video data contents are very important or sensitive, we recommend that you use encrypted transmission function, to reduce the risk of audio and video data being stolen during

transmission.

Reminder: encrypted transmission will cause some loss in transmission efficiency.

11. Secure Auditing

- Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.
- Check device log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.

12. Network Log

Due to the limited storage capacity of the device, the stored log is limited. If you need to save the log for a long time, it is recommended that you enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

13. Construct a Safe Network Environment

In order to better ensure the safety of device and reduce potential cyber risks, we recommend:

- Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.
- The network should be partitioned and isolated according to the actual network needs. If there are no communication requirements between two sub networks, it is suggested to use VLAN, network GAP and other technologies to partition the network, so as to achieve the network isolation effect.
- Establish the 802.1x access authentication system to reduce the risk of unauthorized access to private networks.
- Enable IP/MAC address filtering function to limit the range of hosts allowed to access the device.