



Network Video Recorder

User's Manual



Foreword

General

This user's manual (hereinafter referred to be "the Manual") introduces the installation, functions and operations of the Network Video Recorder (NVR) devices (hereinafter referred to be "the Device"). Read carefully before using the Device, and keep the manual safe for future reference.

Safety Instructions

The following signal words might appear in the manual.

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

Revision History

Version	Revision Content	Release Time
V2.3.5	- Added 26 models. - Updated people counting. - Updated EPTZ linkage. - Updated AcuPick. - Updated camera encoding. - Added camera audio and remote warning light.	November 2023
V2.3.4	- Added PPE detection. - Added some models.	August 2023

Version	Revision Content	Release Time
V2.3.3	- Added smart object detection. - Added smart sound detection. - Added AcuPick function. - Added EPTZ linkage. - Updated live view control bar. - Updated modifying channel name. - Updated playback. - Updated port settings. - Added registration ID.	June 2023
V2.3.2	Added 14 models.	April 2023
V2.3.1	Added 8 models.	February 2023
V2.3.0	- Added NVR608H-32-XI/NVR608H-64-XI/NVR608H-128-XI/NVR608RH-32-XI/NVR608RH-64-XI/NVR608RH-128-XI. - Added smart tracking and sub screen mirroring.	August 2022
V2.2.0	Added AI SSA and Quick Pick.	June 2022
V2.1.0	Updated cluster service.	April 2022
V2.0.0	- Added intelligent diagnosis. - Added report query. - Added resetting password through DMSS app. - Added LLDP. - Updated several figures of the local page.	March 2022
V1.4.0	Added NVR11HS-W-S2-CE and NVR11HS-W-S2-FCC.	January 2022
V1.3.0	- Added some models. - Updated the web login page. - Added privacy masking. - Added AI codec.	November 2021
V1.2.0	Added NVR44-4KS2/I, NVR44-16P-4KS2/I, NVR48-4KS2/I, and NVR48-16P-4KS2/I.	June 2021
V1.1.0	Combined AI and non-AI models and deleted discontinued models.	May 2021
V1.0.10	Added several models.	April 2021
V1.0.9	Added 6 models.	February 2021
V1.0.8	Added 5 models.	January 2021
V1.0.7	- Added 2 models. - Added "5.11.7 Cellular Network".	August 2020

Version	Revision Content	Release Time
V1.0.6	- Added picture search, picture search playback, disk health monitoring, and exporting and importing face database. - Updated AI search, human detection, configuration of face recognition, and display settings.	May 2020
V1.0.5	Added split tracking, main-sub tracking, analytics list, configuring video quality analytics, iSCSI, and cluster service.	May 2020
V1.0.4	- Added 16 models. - Added PoE status, switch, and display.	April 2020
V1.0.3	- New GUI baseline, replaces all pages. - Added AI functions.	July 2019
V1.0.2	Updated the description of rear panel.	May 2019
V1.0.1	- Added NVR 5216-16P-I and NVR5216-8P-I. Updated relevant info. - Updated icons on the rear panel. - Added video metadata function and non-motor vehicle detection function.	September 2018

Privacy Protection Notice

As the device user or data controller, you might collect the personal data of others such as their face, audio, fingerprints, and license plate number. You need to be in compliance with your local privacy protection laws and regulations to protect the legitimate rights and interests of other people by implementing measures which 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. If there is inconsistency between the manual and the actual product,
- We are not liable for any loss caused by the operations that do not comply with the manual.
- The manual would be updated according to the latest laws and regulations of related regions. For detailed information, see the paper manual, CD-ROM, QR code or our official website. If there is inconsistency between paper manual and the electronic version, the electronic version shall prevail.
- All the designs and software are subject to change without prior written notice. The product updates might cause some differences between the actual product and the manual. Please contact the customer service for the latest program and supplementary documentation.
- There still might be deviation in technical data, functions and operations description, or errors in print. If there is any doubt or dispute, please see our 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 the company names in the manual are the properties of their respective owners.

- Please visit our website, contact the supplier or customer service if there is any problem occurred when using the device.
- If there is any uncertainty or controversy, please see our final explanation.

Important Safeguards and Warnings

This section introduces content covering the proper handling of the Device, hazard prevention, and prevention of property damage. Read carefully before using the Device, and comply with the guidelines when using it.

Transportation Requirements



Transport the Device under allowed humidity and temperature conditions.

Storage Requirements



Store the Device under allowed humidity and temperature conditions.

Operation Requirements



- Do not place the Device in a place exposed to sunlight or near heat sources.
- Keep the Device away from dampness, dust, and soot.
- Install the Device on a stable surface to prevent it from falling.
- Do not drop or splash liquid onto the Device, and make sure that there is no object filled with liquid on the Device to prevent liquid from flowing into it.
- Put the Device in a well-ventilated place, and do not block its ventilation.
- Operate the Device within the rated range of power input and output.
- Do not disassemble the Device.
- Use the Device under allowed humidity and temperature conditions.

Installation Requirements



- Do not connect the power adapter to the device while the adapter is powered on.
- Strictly comply with the local electric safety code and standards. Make sure the ambient voltage is stable and meets the power supply requirements of the device.
- Do not expose the battery to environments with extremely low air pressure, or extremely high or low temperatures. Also, it is strictly prohibited to throw the battery into a fire or furnace, and to cut or put mechanical pressure on the battery. This is to avoid the risk of fire and explosion.
- Use the standard power adapter or cabinet power supply. We will assume no responsibility for any injuries or damages caused by the use of a nonstandard power adapter.



- Do not place the Device in a place exposed to sunlight or near heat sources.
- Keep the Device away from dampness, dust, and soot.
- Put the Device in a well-ventilated place, and do not block its ventilation.

- Install the Device on a stable surface to prevent it from falling.
- The power supply must conform to the requirements of ES1 in IEC 62368-1 standard and be no higher than PS2. Please note that the power supply requirements are subject to the device label.
- The device is a class I electrical appliance. Make sure that the power supply of the Device is connected to a power socket with protective earthing.
- Use power cords that conform to your local requirements, and are rated specifications.
- Before connecting the power supply, make sure the input voltage matches the power requirements of the Device.
- When installing the Device, make sure that the power plug and appliance coupler can be easily reached to cut off power.
- Install the Device near a power socket for emergency disconnect.
- It is prohibited for non-professionals and unauthorized personnel to open the Device casing.

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1 Introduction

1.1 Overview

The NVR is a high performance network video recorder. This product supports local live view, multiple-window display, recorded file local storage, remote control and mouse shortcut menu operation, and remote management and control function.

This product supports center storage, front-end storage and client-end storage. The monitor zone in the front-end can be set in anywhere. Working with other front-end devices such as IPC, NVS, this series product can establish a strong surveillance network through the CMS. In the network system, there is only one network cable from the monitor center to the monitor zone in the whole network. There is no audio/video cable from the monitor center to the monitor zone. The whole project is featured by simple connection, low-cost, low maintenance work.

This NVR can be widely used in areas such as public security, water conservancy, transportation and education.

1.2 Features

AI Functions



AI functions are available on select models and vary with models.

- Face detection. The system can detect the faces are on the video image.
- Face recognition. The system can compare the detected faces with the images in the face database in real time.
- Human body detection. The system activates alarm actions once human body is detected.
- People counting. The system can effectively count the number of people and flow direction.
- Heat map. The system can monitor the active objects in a specific area.
- Automatic number plate recognition (ANPR). The system can effectively monitor the passing vehicles.

Smart Playback



This function is available on select models.

- IVS playback. It can screen out and replay the records meeting the set rules.
- Face detection playback. It can screen out and replay the records with human faces.
- Face recognition playback. It can compare the face information in the video with the information in the database and replay the corresponding records.
- ANPR playback. It can screen out the record with a specific car plate number or all the records

with car plate numbers.

- Human body detection playback. It can screen out and replay the records with specific human bodies.
- Smart search. It includes smart functions such as searching by attribute and searching by image to enable users to get target records quickly.

Cloud Upgrade

For the NVR connected to the Internet, it supports application online upgrade.

Real-Time Surveillance

- VGA, HDMI port. Connect to monitor to realize real-time surveillance. Some series support TV/VGA/HDMI output at the same time.
- Shortcut menu for preview.
- Support multiple popular PTZ decoder control protocols. Support preset, tour and pattern.

Playback

- Support independent real-time recording for each channel. At the same time it supports functions such as smart search, forward play, network monitor, record search and download.
- Support various playback modes: slow play, fast play, backward play and frame-by-frame play.
- Support time title overlay so that you can view the event accurate occurred time.
- Support specified zone enlargement.

User Management

Users can be added to user groups for management. Each group has a set of permissions that can be individually edited.

Storage

- With corresponding settings (such as alarm settings and schedule settings), you can back up related audio/video data in the network video recorder.
- You can take records via the web and the record files are saved on the PC in which the client locates.

Alarm

- Respond to external alarm simultaneously (within 200 ms). Based on user's pre-defined relay settings, the system can process the alarm input correctly and sends user screen or voice prompts (supporting pre-recorded audio).
- Support settings of the central alarm server, so that the system can automatically notify users of the alarm information. Alarm input can be derived from various connected peripheral devices.
- Alert you of alarm information via email.

Network Surveillance

- Send audio/video data compressed by IPC or NVS to client-ends through the network, and then the data will be decompressed and displayed.
- Support max 128 connections at the same time.
- Transmit audio/video data by protocols such as HTTP, TCP, UDP, MULTICAST and RTP/RTCP.

- Transmit some alarm data or alarm info by SNMP.
- Support web access in WAN/LAN.

Window Split

Adopt video compression and digital processing to display several windows in one monitor. Support 1/4/8/9/16/25/36 window split in preview and 1/4/9/16 window split in playback.

Record

Support regular record, motion record, alarm record and smart record. Save the recorded files in the HDD, USB device, client-end PC or network storage server and you can search or playback the saved files at the local-end or via the Web/USB devices.

Backup

Support network backup and USB record backup. You can back up the record files in devices such as network storage server, peripheral USB 2.0 device and burner.

Network Management

- Supervise NVR configuration and control power via Ethernet.
- Support web management.

Peripheral Equipment Management

- Support peripheral device control and you can freely set the control protocol and connection port.
- Support transparent data transmission such as RS-232 and RS-485.

Auxiliary

- Support switch between NTSC and PAL.
- Support real-time display of system resources information and running status.
- Support log record.
- Local GUI output. Shortcut menu operation with the mouse.
- IR control function (for some series only). Shortcut menu operation with remote control.
- Support to play the video/audio files from remote IPC or NVS.

2 Front Panel and Rear Panel



The following front panel and rear panel figures are for reference only.

2.1 Front Panel

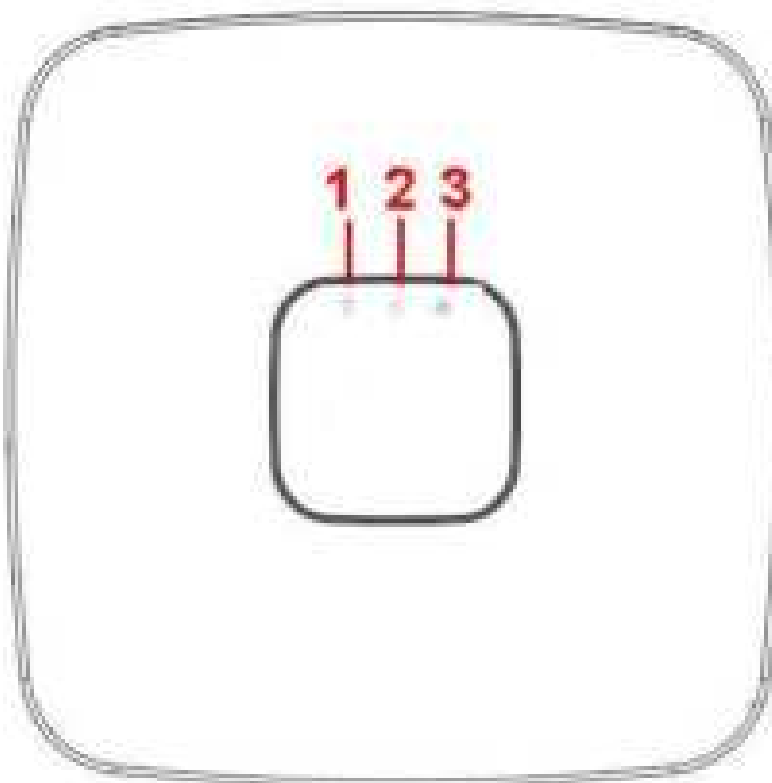
2.1.1 NVR41-4KS2/NVR41-P-4KS2/NVR41-8P-4KS2/NVR41-4KS2/L/NVR41-P-4KS2/L/NVR41-8P-4KS2/L/NVR21-4KS2/NVR21-P-4KS2/NVR21-8P-4KS2/NVR21-S3/NVR21-P-S3/NVR21-8P-S3/NVR21-4KS3/NVR21-P-4KS3/NVR21-8P-4KS3/NVR41-EI/NVR41-P-EI/NVR41-8P-EI/NVR41-4KS3/NVR41-P-4KS3/NVR41-8P-4KS3 Series



The figure is for reference only.

The NVR41-4KS2/NVR41-4KS2/L/NVR41-P-4KS2/NVR41-P-4KS2/L/NVR21-4KS2/NVR21-P-4KS2/NVR21-S3/NVR21-P-S3/NVR21-4KS3/NVR21-P-4KS3/NVR41-EI/NVR41-P-EI/NVR41-4KS3/NVR41-P-4KS3 front panel is shown as below.

Figure 2-1 Front panel



The NVR41-8P-4KS2/NVR41-8P-4KS2/L/NVR21-8P-4KS2/NVR21-8P-S3/NVR41-8P-EI/NVR41-8P-4KS3/NVR21-8P-4KS3 front panel is shown as below.

Figure 2-2 Front panel

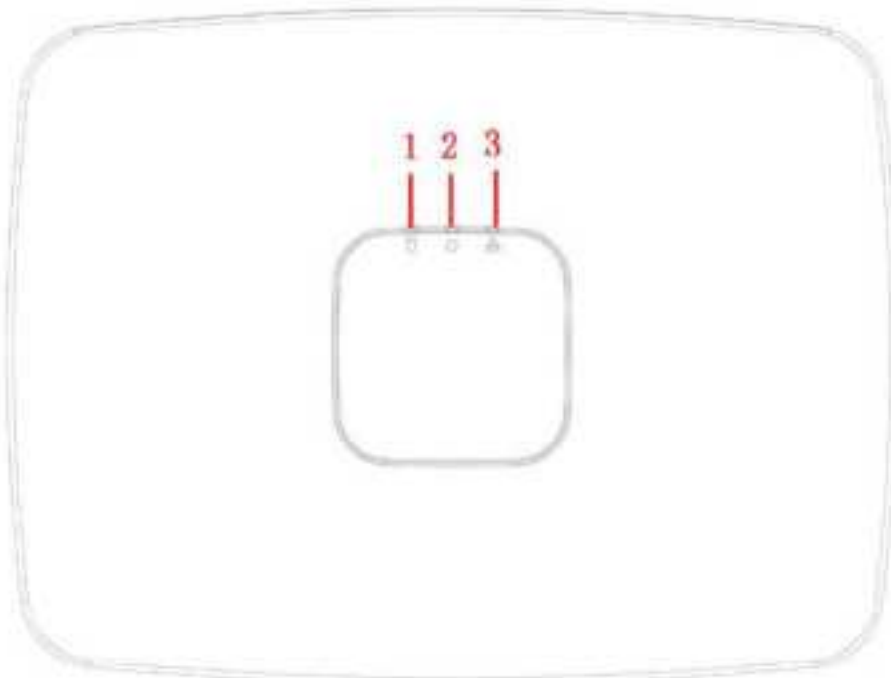


Table 2-1 Icons

No.	Name	Function
1	HDD status indicator light	The red light becomes on when HDD is abnormal.
2	Power indicator light	The red light becomes on when the power connection is normal.
3	Network status indicator light	The red light becomes on when the network connection is abnormal.

2.1.2 NVR11HS-S3H/NVR11HS-P-S3H/NVR11HS-8P-S3H/NVR41HS-4KS2/NVR41HS-P-4KS2/NVR41HS-8P-4KS2/NVR41HS-4KS2/L/NVR41HS-P-4KS2/L/NVR41HS-8P-4KS2/L/NVR21HS-4KS2/NVR21HS-P-4KS2/NVR21HS-8P-4KS2/NVR21HS-S3/NVR21HS-P-S3/NVR21HS-8P-S3/NVR21HS-4KS3/NVR21HS-P-4KS3/NVR21HS-8P-4KS3/NVR41HS-4KS3/NVR41HS-P-4KS3/NVR41HS-8P-4KS3

Series



The figure is for reference only.

Figure 2-3 Front panel

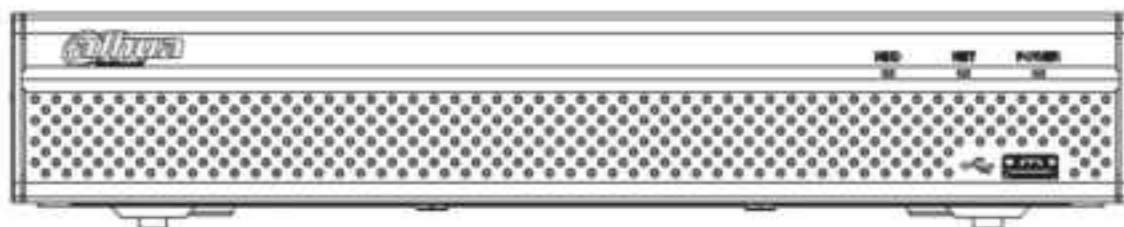


Table 2-2 Icons

Icon	Name	Function
HDD	HDD status indicator light	The blue light is on when the HDD is malfunction.
NET	Network status indicator light	The blue light is on when the network connection is abnormal.
POWER	Power status indicator light	The blue light is on when the power connection is OK.
	USB port	Connect to peripheral USB storage device, mouse and more.

2.1.3 NVR52-4KS2/NVR52-8P-4KS2/NVR52-16P-4KS2/NVR42-4KS2/NVR42-P-4KS2/NVR42-8P-4KS2/NVR42-16P-4KS2/NVR42-4KS2/L/NVR42-P-4KS2/L/NVR42-8P-4KS2/L/NVR42-16P-4KS2/L/NVR5224-24P-4KS2/NVR54-4KS2/NVR54-16P-4KS2/NVR44-4KS2/NVR44-16P-4KS2/NVR44-4KS2/L/NVR44-16P-4KS2/L/NVR5424-24P-4KS2/NVR58-4KS2/NVR58-16P-4KS2/NVR48-4KS2/NVR48-16P-4KS2/NVR48-4KS2/L/NVR48-16P-4KS2/L/NVR22-4KS2/NVR22-P-4KS2/NVR22-8P-4KS2/NVR22-4KS3/NVR22-P-4KS3/NVR22-8P-4KS3/NVR22-16P-4KS3/NVR52-8P-4KS2E/NVR52-16P-4KS2E/NVR54-16P-4KS2E/NVR58-16P-4KS2E/NVR42-4KS3/NVR42-P-4KS3/NVR42-8P-4KS3/NVR44-4KS3/NVR48-

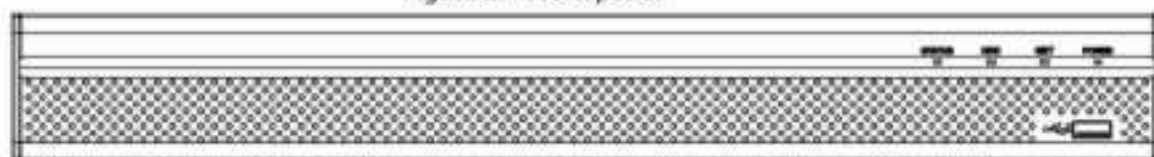
4KS3/NVR42-16P-4KS3-Series



The figures are for reference only.

The NVR52-4KS2/NVR52-8P-4KS2/NVR52-16P-4KS2/NVR42-4KS2/NVR42-P-4KS2/NVR42-8P-4KS2/NVR42-16P-4KS2/NVR42-4KS2/L/NVR42-P-4KS2/L/NVR42-8P-4KS2/L/NVR42-16P-4KS2/L/NVR5224-24P-4KS2/NVR22-4KS2/NVR22-P-4KS2/NVR22-8P-4KS2/NVR22-4KS3/NVR22-P-4KS3/NVR22-8P-4KS3/NVR22-16P-4KS3/NVR52-8P-4KS2E/NVR52-16P-4KS2E/NVR42-4KS3/NVR42-P-4KS3/NVR42-8P-4KS3/NVR42-16P-4KS3 series front panel is shown as below.

Figure 2-4 Front panel



The NVR54-4KS2/NVR54-16P-4KS2/NVR44-4KS2/NVR44-16P-4KS2/NVR44-4KS2/L/NVR44-16P-4KS2/L/NVR54-24P-4KS2/NVR54-16P-4KS2E/NVR44-4KS3 series front panel is shown as below.

Figure 2-5 Front panel



The NVR58-4KS2/NVR58-16P-4KS2/NVR48-4KS2/NVR48-16P-4KS2/NVR48-4KS2/L/NVR48-16P-4KS2/L/NVR58-16P-4KS2E/NVR48-4KS3 series front panel is shown as below

Figure 2-6 Front panel

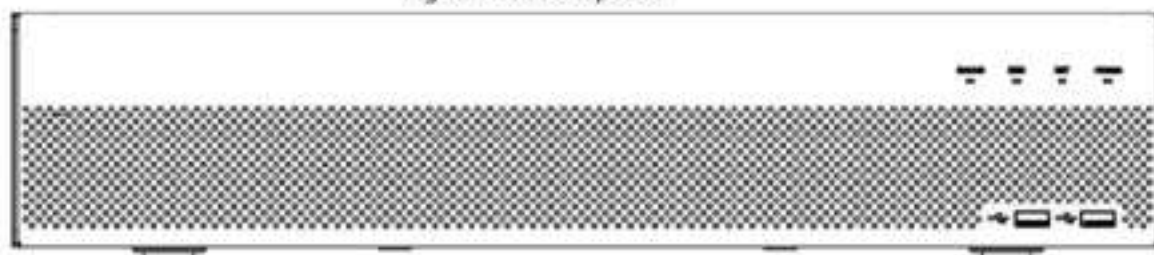


Table 2-3 Icons

Icon	Name	Function
STATUS	Status indicator light	The blue light is on when the Device is working properly.
HDD	HDD status indicator light	The blue light is on when the HDD malfunctions.
NET	Network status indicator light	The blue light is on when the network connection is abnormal.
POWER	Power status indicator light	The blue light is on when the power connection is normal.
	USB 2.0 port	Connect to peripheral USB 2.0 storage device, mouse, burner and more.

2.1.4 NVR21-W-4KS2 Series

The front panel is shown as below.



The figure is for reference only.

Figure 2-7 Front panel

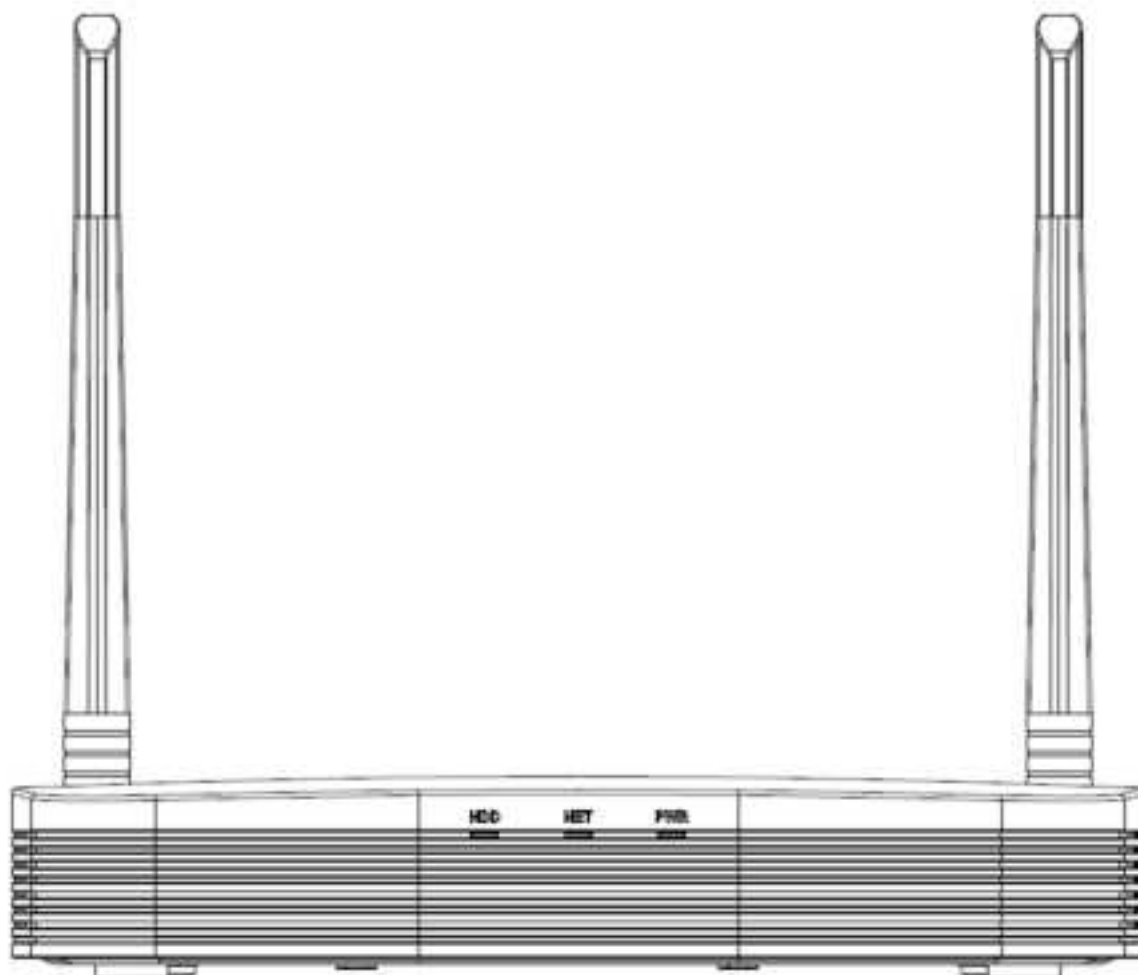


Table 2-4 Icons

Icon	Name	Function
HDD	HDD status indicator light	The blue light is on when the HDD malfunctions.
NET	Network status indicator light	The blue light is on when the network connection is abnormal.
PWR	Power status indicator light	The blue light is on when the power connection is normal.

2.1.5 NVR21HS-W-4KS2/NVR11HS-W-S2-CE/NVR11HS-W-S2-FCC Series

The front panel is shown as below.



The figure is for reference only.

Figure 2-8 Front panel

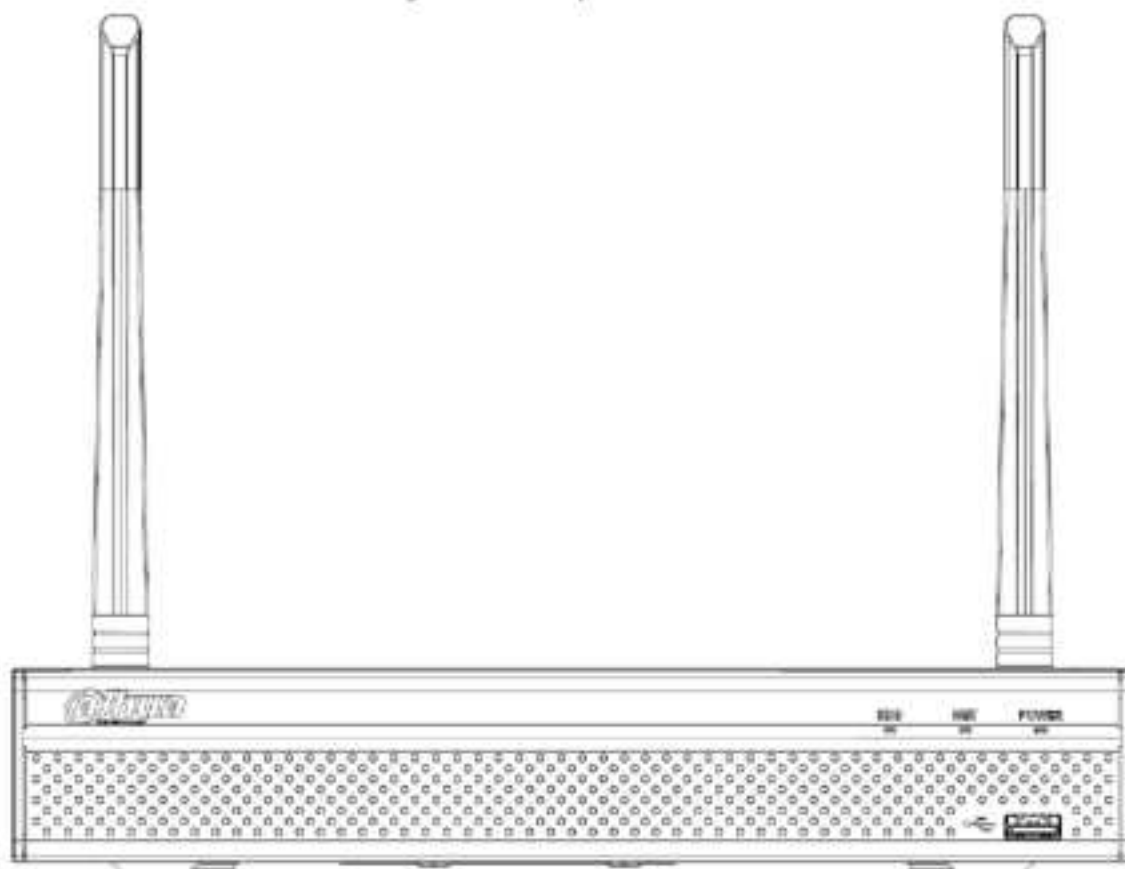


Table 2-5 Icons

Icon	Name	Function
HDD	HDD status indicator light	The blue light is on when the HDD is malfunction.
NET	Network status indicator light	The blue light is on when the network connection is abnormal.
POWER	Power status indicator light	The blue light is on when the power connection is normal.
	USB 2.0 port	Connect to peripheral USB storage device, mouse and more.

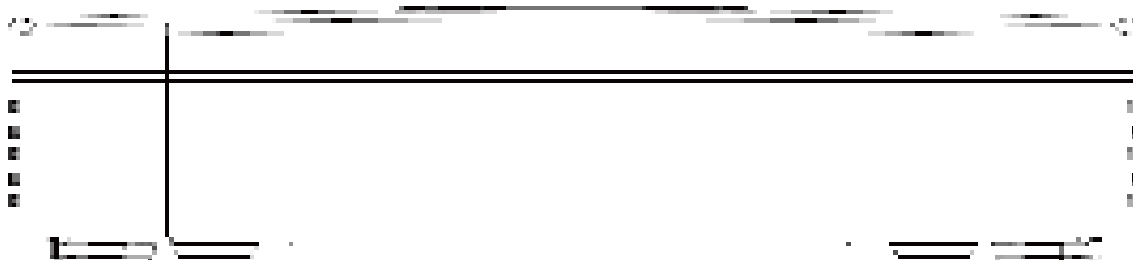
2.1.6 NVR21-I/NVR21-I2/NVR21-P-I/NVR21-P-I2/NVR21-8P-I/NVR21-8P-I2 Series



The figure is for reference only.

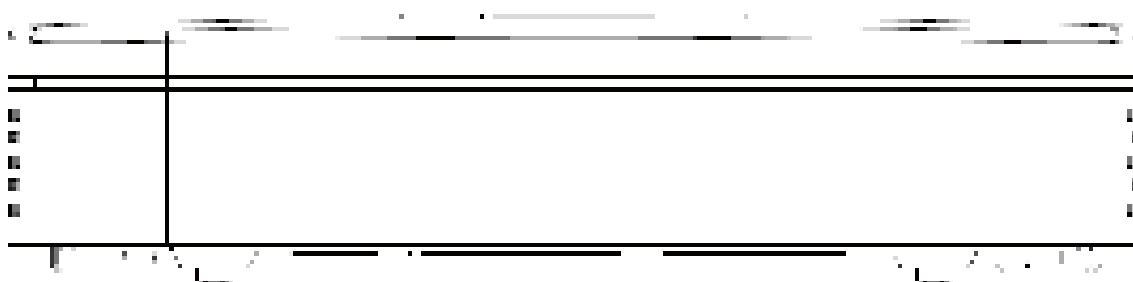
The NVR21-I/NVR21-I2 front panel is shown as below.

Figure 2-9 Front panel



The NVR21-P-I/NVR21-P-I2 front panel is shown as below.

Figure 2-10 Front panel



The NVR21-8P-I/NVR21-8P-I2 front panel is shown as below.

Figure 2-11 Front panel



2.1.7 NVR21HS-I/NVR21HS-I2/NVR21HS-P-I/NVR21HS-P-I2/NVR21HS-8P-I/NVR21HS-8P-I2/NVR44-4KS2-I/NVR44-16P-4KS2-I Series



The figure is for reference only.

The NVR21HS-I/NVR21HS-I2/NVR21HS-P-I/NVR21HS-P-I2/NVR21HS-8P-I/NVR21HS-8P-I2/NVR44-4KS2-I/NVR44-16P-4KS2-I front panel is shown as below.

Figure 2-12 Front panel

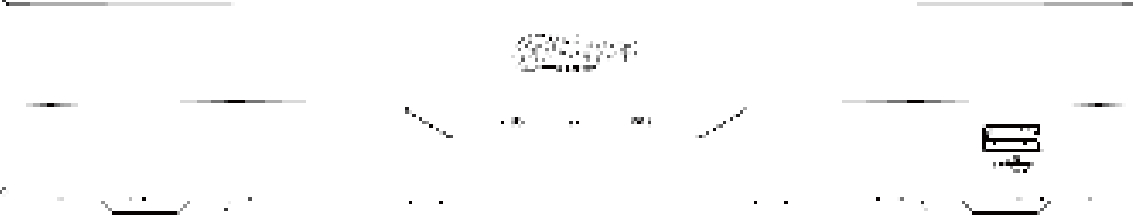


Table 2-6 Icons

Icon	Name	Function
HDD	HDD status indicator light	The blue light is on when the HDD malfunctions.
NET	Network status indicator light	The blue light is on when the network connection is abnormal.
PWR	Power status indicator light	The blue light is on when the power connection is OK.
	USB 2.0 port	Connect to peripheral USB 2.0 storage device, mouse, burner and more.
	USB port	Connects to the external devices such as keyboard, mouse, and USB storage device.
	IR indicator	Receives signals from the remote control.

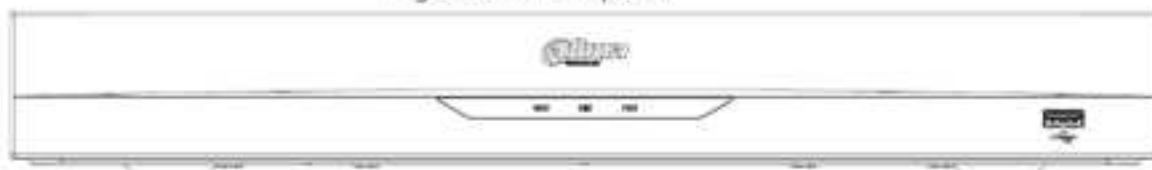
2.1.8 NVR22-I/NVR22-I2/NVR22-P-I/NVR22-P-I2/NVR22-8P-I/NVR22-8P-I2/NVR22-16P-I/NVR22-16P-I2/NVR52-EI/NVR52-8P-EI/NVR52-16P-EI/NVR41HS-EI/NVR42-EI/NVR41HS-P-EI/NVR42-P-EI/NVR41HS-8P-EI/NVR42-8P-EI/NVR42-16P-EI/NVR44-EI/NVR44-16P-EI/NVR52-XI/NVR52-8P-XI/NVR52-16P-XI/NVR54-XI/NVR58-XI



The figure is for reference only.

The NVR22-I/NVR22-I2 front panel is shown as below.

Figure 2-13 Front panel



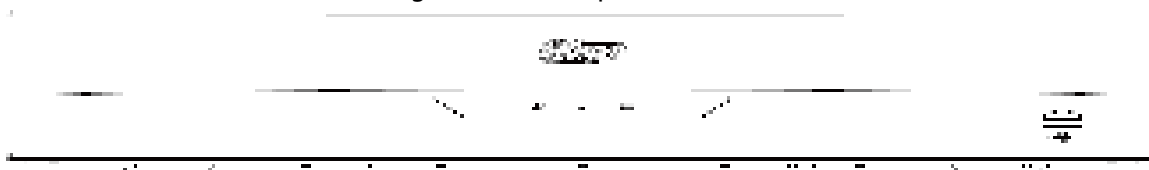
The NVR22-P-I/NVR22-P-I2 front panel is shown as below.

Figure 2-14 Front panel



The NVR22-8P-I/NVR22-8P-I2 front panel is shown as below.

Figure 2-15 Front panel



The NVR22-16P-I/NVR22-16P-I2 front panel is shown as below.

Figure 2-16 Front panel



The NVR52-EI/NVR52-8P-EI/NVR52-16P-EI/NVR54-EI/NVR54-16P-EI/NVR41HS-EI/NVR42-EI/NVR41HS-P-EI/NVR42-P-EI/NVR41HS-8P-EI/NVR42-8P-EI/NVR42-16P-EI/NVR44-EI/NVR44-16P-EI front panel is shown as below.

Figure 2-17 Front panel



The NVR52-XI/NVR52-8P-XI/NVR52-16P-XI front panel is shown as below.

Figure 2-18 Front panel



The NVR54-XI front panel is shown as below.

Figure 2-19 Front panel



The NVR58-XI front panel is shown as below.

Figure 2-20 Front panel



Table 2-7 Icons

Icon	Name	Function
HDD	HDD status indicator light	The blue light is on when the HDD malfunctions.
NET	Network status indicator light	The blue light is on when the network connection is abnormal.
PWR	Power status indicator light	The blue light is on when the power connection is OK.
	USB 2.0 port	Connect to peripheral USB 2.0 storage device, mouse, burner and more.
	USB port	Connects to the external devices such as keyboard, mouse, and USB storage device.
	IR indicator	Receives signals from the remote control.

2.1.9 NVR48-I/NVR58-I/NVR58-I/L Series

The section takes NVR4832-I/NVR5864-I/NVR5864-I/L/NVR5832-I/NVR5832-I/L series as examples.



The figure is for reference only.

Figure 2-21 Front panel



Table 2-8 Icons

No.	Port Name	Function
1	USB port	Connects to the external devices such as keyboard, mouse, and USB storage device.
2	IR indicator	Receives signals from the remote control.

2.1.10 NVR42-I/NVR44-I/NVR54-I/NVR54-I/L/NVR52-I/NVR52-I/L Series

The section uses NVR4208-8P-I/NVR4216-I/NVR4216-16P-I/NVR4416-16P-I/NVR4432-I/NVR5432-16P-I/NVR5432-16P-I/L/NVR5216-16P-I/NVR5216-16P-I/L/NVR5216-8P-I/NVR5216-8P-I/L series as examples.



The figure is for reference only.

Figure 2-22 Front panel



Table 2-9 Icons

No.	Port Name	Function
1	USB port	Connects to the external devices such as keyboard, mouse, and USB storage device.
2	IR indicator	Receives signals from the remote control.

2.1.11 NVR48-4KS2/I/NVR48-16P-4KS2/I/NVR54-EI/NVR54-16P-EI/NVR58-EI/NVR58-16P-EI/NVR48-EI/NVR48-16P-EI



The figures are for reference only.

The NVR48-4KS2/I/NVR48-16P-4KS2/I series front panel is shown as below.

Figure 2-23 Front panel



The NVR54-EI / NVR54-16P-EI front panel is shown as below.

Figure 2-24 Front panel



The NVR58-EI/NVR58-16P-EI/NVR48-EI/NVR48-16P-EI front panel is shown as below.

Figure 2-25 Front panel



Table 2-10 Icons

Icon	Name	Function
HDD	HDD status indicator light	The blue light is on when the HDD malfunctions.
NET	Network status indicator light	The blue light is on when the network connection is abnormal.
PWR	Power status indicator light	The blue light is on when the power connection is normal.
	USB 2.0 port	Connect to peripheral USB 2.0 storage device, mouse, burner and more.

2.1.12 NVR608-32-4KS2 Series



The following figures are for reference only.

The NVR608-32-4KS2 front panel is shown as below.

Figure 2-26 Front panel



Table 2-11 Icons description

Icon	Name	Function
STATUS	Status indicator light	The blue light is on when the device is working properly.
HDD	HDD status indicator light	The blue light is on when the HDD malfunctions.
NET	Network status indicator light	The blue light is on when the network connection is abnormal.
POWER	Power status indicator light	The blue light is on when the power connection is normal.

Icon	Name	Function
	USB 2.0 port	Connect to peripheral USB 2.0 storage device, mouse, burner and more.

2.1.13 NVR608-64-4KS2/NVR608-128-4KS2/NVR608H-XI/NVR608RH-XI Series

The NVR608-64-4KS2/NVR608-128-4KS2/NVR608H-32-XI/NVR608H-64-XI/NVR608H-128-XI/NVR608RH-32-XI/NVR608RH-64-XI/NVR608RH-128-XI front panel is shown as below.

Figure 2-27 Front panel

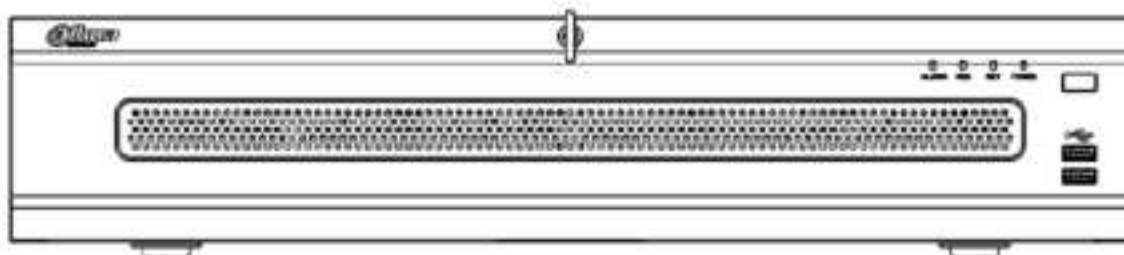


Table 2-12 Front panel description

Icon	Name
ALARM	Alarm indicator light
HDD	HDD status indicator light
NET	Network status indicator light
POWER	Power status indicator light
	USB 2.0 port
	Power on-off button

2.1.14 NVR616-4KS2/NVR616-XI/NVR50-EI Series



The following figures are for reference only.

For the product of LCD, the front panel of NVR616-4KS2/NVR616-XI series is shown as below.

Figure 2-28 Front panel

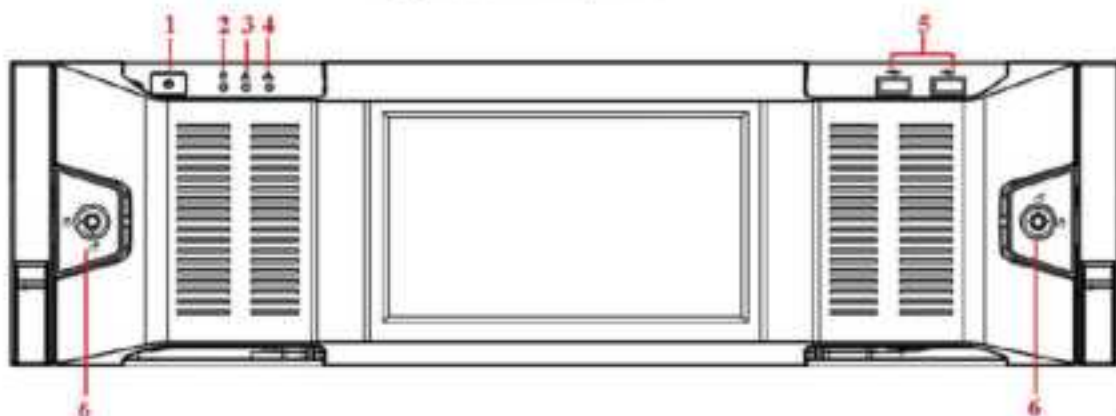


Table 2-13 Icons

No.	Name	Function
1	Power button	Press it once to turn on the device. Press it for a long time to turn off the device.  - We do not recommend you turn off the device in this way. - Press power button for a long time or pull out the power cable might result in device auto restart.
2	System HDD indicator light	The blue light becomes on after system booted up properly. In the system HDD, there are device important configuration file, factory default configuration file, and device initial boot up data.
3	Alarm indicator light	The alarm indicator light becomes on once an alarm occurred. It becomes on via the software detection. The indicator light becomes on when there is a local alarm.
4	Network indicator light	The blue network indicator light is on after you connected the device to the network.
5	USB port	—
6	Front panel lock	—

For general NVR616-4KS2/NVR616-XI/NVR50-EI series, the front panel is shown as below.

Figure 2-29 Front panel

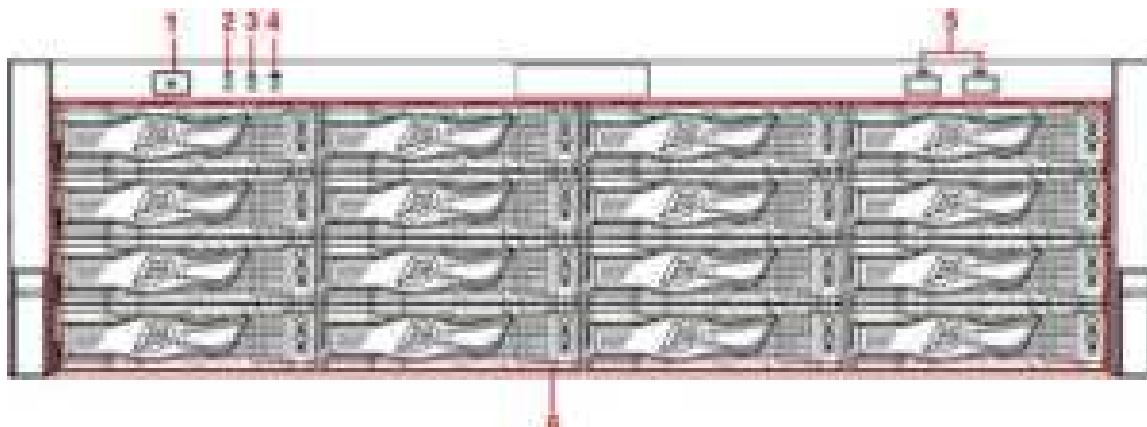


Table 2-14 Icons

No.	Name	Function
1	Power button	Press it once to turn on the device. Press it for a long time to turn off the device.  - We do not recommend you turn off the device in this way. - Press power button for a long time or pull out the power cable might result in device auto restart.
2	System HDD Indicator light	The blue light becomes on after system booted up properly. In the system HDD, there are device important configuration file, factory default configuration file, device initial boot up data.
3	Alarm indicator light	The alarm indicator light becomes on once an alarm occurred. It becomes on via the software detection. The indicator light becomes on when there is a local alarm.
4	Network indicator light	The blue network indicator light is on after you connected the device to the network.
5	USB port	—
6	16 HDD slot	—

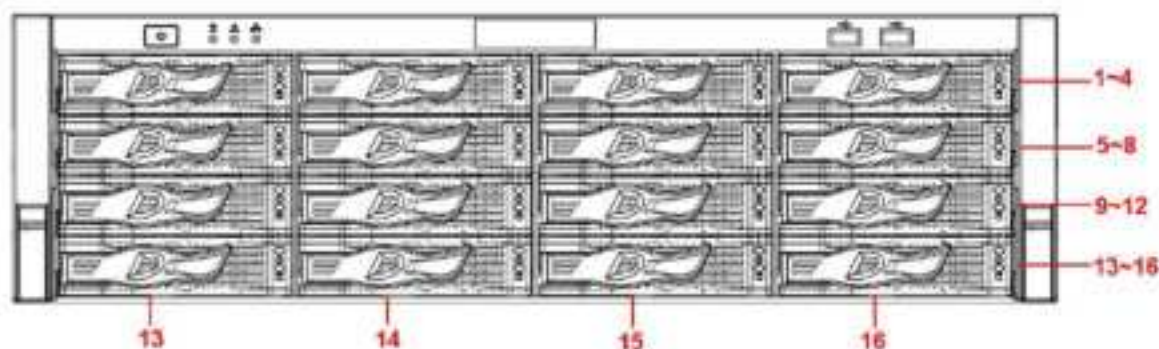
After you remove the front panel, you can see there are 16 HDDs. From the left to the right and from the top to the bottom, it ranges from 1-4, 5-8, 9-12, 13-16.

You can see there are two indicator lights on the HDD bracket.

- The power indicator light is at the top. The light is yellow after you connected the device to the power.
- The read-write indicator light is at the bottom. The blue light flashes when system is reading or writing the data. In addition to flashing blue light, read-write operation lights of some models of devices further include the following states. Please refer to the actual device.
 - Stead red: HDD failure (HDD error).
 - Flash red: HDD is in a RAID rebuild state.

- ◆ Red intermittent flashing twice: HDD is in a predicted fault state (including a HDD warning).
- ◆ Blue and red flashing alternately: HDD is in a positioned state.

Figure 2-30 Front panel



2.1.15 NVR624-XI Series



The following figures are for reference only.

The front panel of NVR624-XI series is shown as follows.

Figure 2-31 Front panel

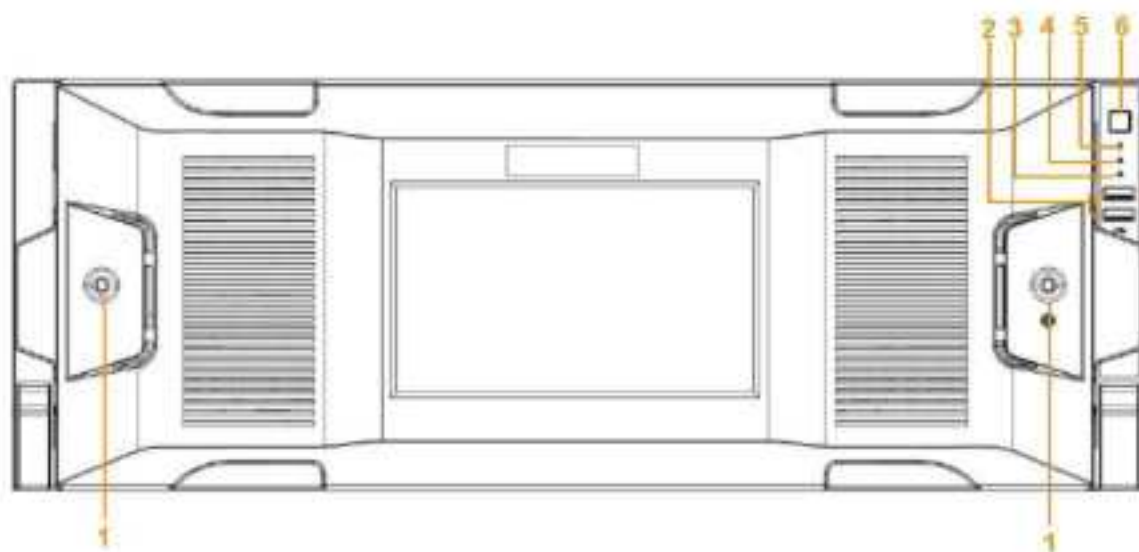


Table 2-15 Icons

No.	Name	Function
1	Front panel lock	—
2	USB port	—
3	Network indicator light	The blue network indicator light is on after you connected the device to the network.
4	Alarm indicator light	The alarm indicator light becomes on once an alarm occurred. It becomes on via the software detection. The indicator light becomes on when there is a local alarm.

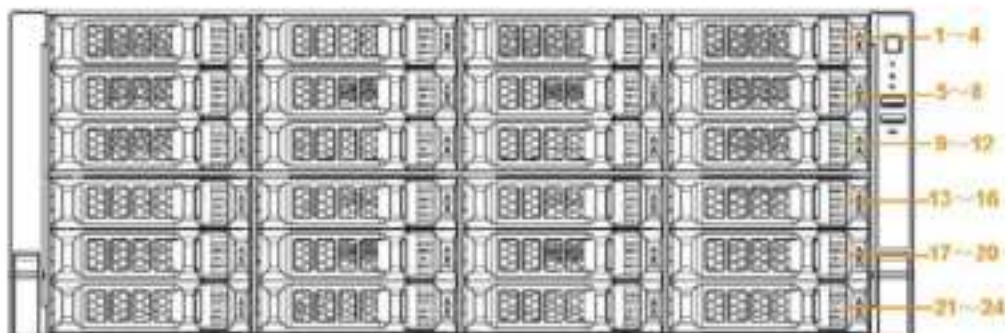
No.	Name	Function
5	System HDD indicator light	The blue light becomes on after system booted up properly. In the system HDD, there are device important configuration file, factory default configuration file, and device initial boot up data.
6	Power button	Press it once to turn on the device. Press it for a long time to turn off the device.  - We do not recommend you turn off the device in this way. - Press power button for a long time or pull out the power cable might result in device auto restart.

You can see there are 24 HDDs. From the left to the right and from the top to the bottom, it ranges from 1-4, 5-8, 9-12, 13-16, 17-20, 21-24.

You can see there are two indicator lights on the HDD bracket.

- The power indicator light is at the top. The light is yellow after you connected the device to the power.
- The read-write indicator light is at the bottom. The blue light flashes when system is reading or writing the data. In addition to flashing blue light, read-write operation lights of some models of devices further include the following states. Please refer to the actual device.
 - Stead red: HDD failure (HDD error).
 - Flash red: HDD is in a RAID rebuild state.
 - Red intermittent flashing twice: HDD is in a predicted fault state (including a HDD warning).
 - Blue and red flashing alternately: HDD is in a positioned state.

Figure 2-32 Front panel



2.2 Rear Panel

2.2.1 NVR21-4KS2/NVR21-P-4KS2/NVR21-8P-4KS2/NVR21-

Table 2-16 Ports

Port Name	Connection	Function
	Power input port	Power socket. - For NVR21-S2/21-4KS2/NVR21-4KS3/NVR41-EI/NVR41-4KS3, input 12 VDC/2 A. - For NVR21-P-S2/21-P-4KS2, input 48 VDC/1.25 A. - For NVR21-8P-S2/21-8P-4KS2, input 48 VDC/2 A. - For NVR21-4KS3, input 12 VDC/1.5 A. - For NVR21-P-4KS3, input 53 VDC/1.22 A. - For NVR21-8P-4KS3, input 53 VDC/1.81 A. - For NVR41-P-EI/NVR41-P-4KS3 series, input 53 VDC/1.22 A. - For NVR41-8P-EI/NVR41-8P-4KS3 series, input 53 VDC/1.81 A.
	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable. - NVR41-EI/NVR41-4KS3 series supports 10/100 Mbps or 10/100/1000 Mbps. - NVR41-P-EI/NVR41-P-4KS3 series supports 10/100 Mbps. - NVR41-8P-EI/NVR41-8P-4KS3 series supports 10/100/1000 Mbps.  The parameters might be different according to the models. Please refer to actual device for detailed information.
	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Port	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.

Port Name	Connection	Function
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.
	GND	Ground end.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.

2.2.2 NVR11HS-S3H/NVR11HS-P-S3H/NVR11HS-8P-S3H/NVR21HS-4KS2/NVR21HS-P-4KS2/NVR21HS-8P-4KS2/NVR41HS-4KS2/NVR41HS-P-4KS2/NVR41HS-8P-4KS2/NVR41HS-4KS2/L/NVR41HS-P-4KS2/L/NVR41HS-8P-4KS2/L/NVR21HS-S3/NVR21HS-P-S3/NVR21HS-8P-S3/NVR21HS-4KS3/NVR21HS-P-4KS3/NVR21HS-8P-4KS3/NVR41HS-EI/NVR41HS-P-EI/NVR41HS-8P-EI/NVR41HS-4KS3/NVR41HS-P-4KS3/NVR41HS-8P-4KS3 Series

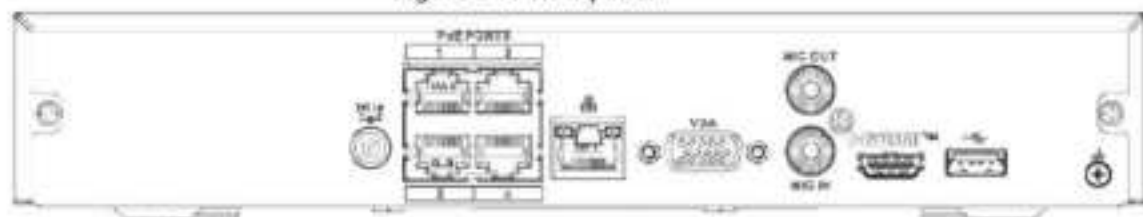
The NVR11HS-S3H/NVR21HS-4KS2/NVR41HS-4KS2/L/NVR21HS-S3/NVR21HS-4KS3/NVR41HS-EI/NVR41HS-4KS3 series rear panel is shown as below.

Figure 2-36 Rear panel



The NVR11HS-P-S3H/NVR21HS-P-4KS2/NVR41HS-P-4KS2/NVR41HS-P-4KS2/L/NVR21HS-P-S3/NVR21HS-P-4KS3/NVR41HS-P-EI/NVR41HS-P-4KS3 series rear panel is shown as below.

Figure 2-37 Rear panel



The NVR11HS-8P-S3H/NVR21HS-8P-4KS2/NVR41HS-8P-4KS2/NVR41HS-8P-4KS2/L/NVR21HS-8P-S3/NVR21HS-8P-4KS3/NVR41HS-8P-EI/NVR41HS-8P-4KS3 series rear panel is shown as below.

Figure 2-38 Rear panel

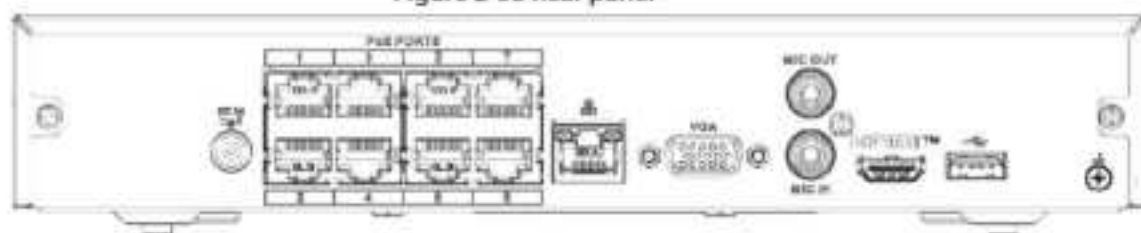


Table 2-17 Ports

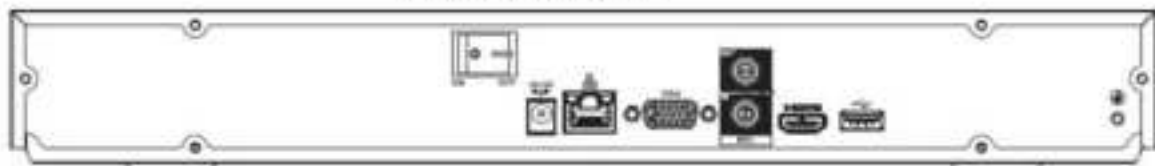
Port Name	Connection	Function
	Power input port	Power socket. - For NVR11HS-P-S3H/NVR21HS-4KS2/NVR41HS-4KS2/NVR41HS-EI/NVR41HS-4KS3 series, input 12 VDC/2 A. - For NVR11HS-P-S3H/NVR21HS-P-4KS2/NVR41HS-4KS2 series, input 48 VDC/1.25 A. - For NVR11HS-8P-4KS2/NVR21HS-8P-4KS2/NVR41HS-4KS2 series, input 48 VDC/2 A. - For NVR21HS-4KS3, input 12 VDC/1.5 A. - For NVR21HS-P-4KS3, input 53 VDC/1.22 A. - For NVR21HS-8P-4KS3, input 53 VDC/1.81 A. - For NVR41HS-P-EI/NVR41HS-P-4KS3 series, input 53 VDC/1.22 A. - For NVR41HS-8P-EI/NVR41HS-8P-4KS3 series, input 53 VDC/1.81 A.
	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable. - NVR41HS-EI/NVR41HS-4KS3 series supports 10/100 Mbps or 10/100/1000 Mbps. - NVR41HS-P-EI/NVR41HS-P-4KS3 series supports 10/100 Mbps. - NVR41HS-8P-EI/NVR41HS-8P-4KS3 series supports 10/100/1000 Mbps.  The parameters might be different according to the models. Please refer to actual device for detailed information.
	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.

Port Name	Connection	Function
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.
⏚	GND	Ground end.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.

2.2.3 NVR22-4KS2/NVR22-P-4KS2/NVR22-8P-4KS2//NVR22-4KS3/NVR22-P-4KS3/NVR22-8P-4KS3/NVR22-16P-4KS3 Series

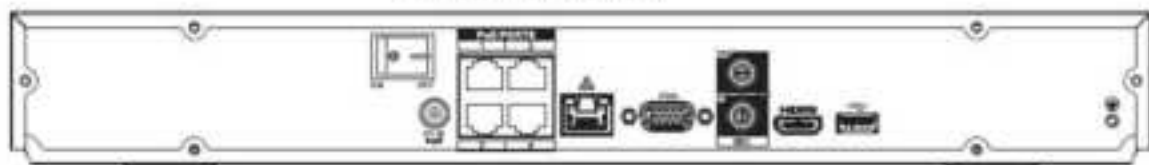
The NVR22-4KS2 series rear panel is shown as below.

Figure 2-39 Rear panel



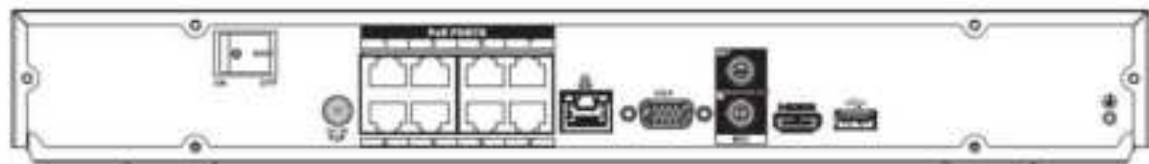
The NVR22-P-4KS2 series rear panel is shown as below.

Figure 2-40 Rear panel



The NVR22-8P-4KS2 series rear panel is shown as below.

Figure 2-41 Rear panel



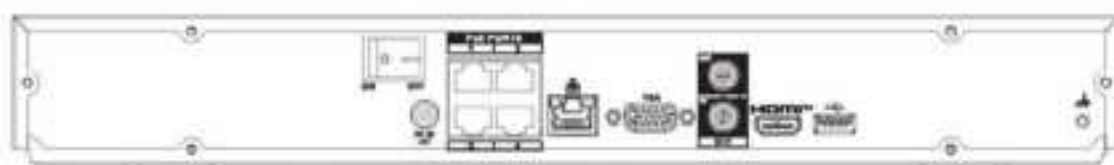
The NVR22-4KS3 series rear panel is shown as below.

Figure 2-42 Rear panel



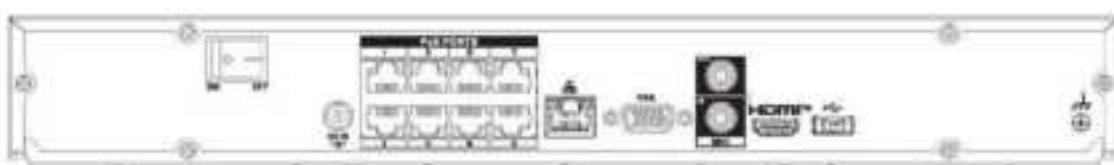
The NVR22-P-4KS3 series rear panel is shown as below.

Figure 2-43 Rear panel



The NVR22-8P-4KS3 series rear panel is shown as below.

Figure 2-44 Rear panel



The NVR22-16P-4KS3 series rear panel is shown as below.

Figure 2-45 Rear panel

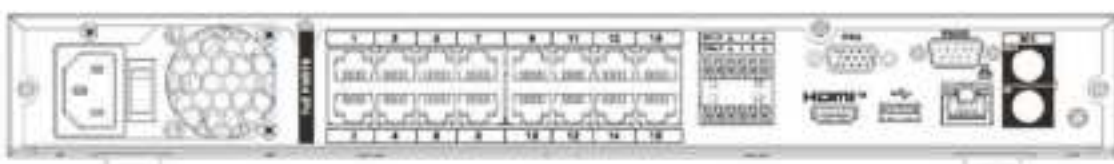


Table 2-18 Rear panel description

Port Name	Connection	Function
	Power input port	Power socket. - For NVR22-4KS2general series, input 12 VDC/4 A. - For NVR22-P-4KS2 series, input 48 VDC/1.5 A. - For NVR22-8P-4KS2 series, input 53 VDC 120 W. - For NVR22-P-4KS3, input 53 VDC/1.81 A. - For NVR22-8P-4KS3, input 54 VDC/2.22 A.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.

Port Name	Connection	Function
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.
⏏	GND	Ground end.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.

2.2.4 NVR52-4KS2/NVR52-8P-4KS2/NVR52-16P-4KS2/NVR52-24P-4KS2/NVR52-8P-4KS2E/NVR52-16P-4KS2E/NVR52-EI/NVR52-8P-EI/NVR52-16P-EI/NVR42-16P-EI/NVR52-XI/NVR52-8P-XI/NVR-52-16P-XI Series

The NVR52-4KS2 series rear panel is shown as below.

Figure 2-46 Rear panel



The NVR52-8P-4KS2 series rear panel is shown as below.

Figure 2-47 Rear panel



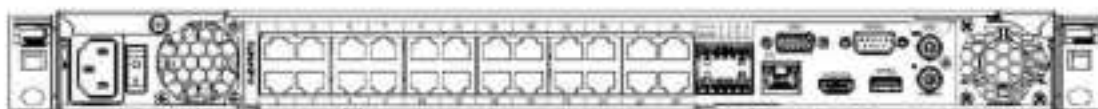
The NVR52-16P-4KS2/NVR42-16P-EI series rear panel is shown as below.

Figure 2-48 Rear panel



The NVR52-24P-4KS2 series rear panel is shown as below.

Figure 2-49 Rear panel



The NVR52-8P-4KS2E/52-16P-4KS2E series rear panel is shown as below.



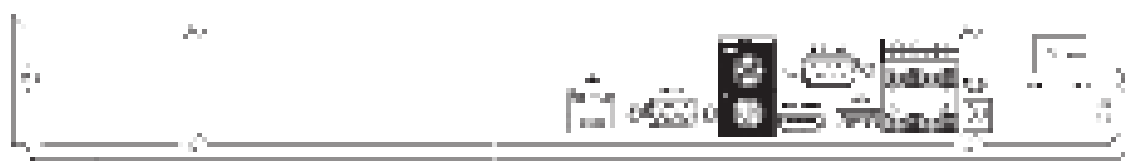
The following figure takes NVR52-16P-4KS2E series as an example. NVR52-8P-4KS2E has 8 PoE ports only.

Figure 2-50 Rear panel



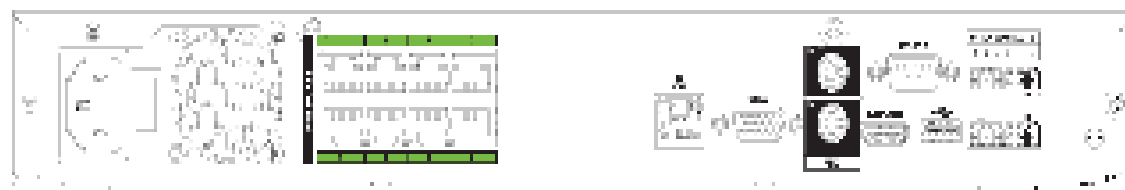
The NVR52-EI series rear panel is shown as below.

Figure 2-51 Rear panel



The NVR52-8P-EI series rear panel is shown as below.

Figure 2-52 Rear panel



The NVR52-16P-EI series rear panel is shown as below.

Figure 2-53 Rear panel



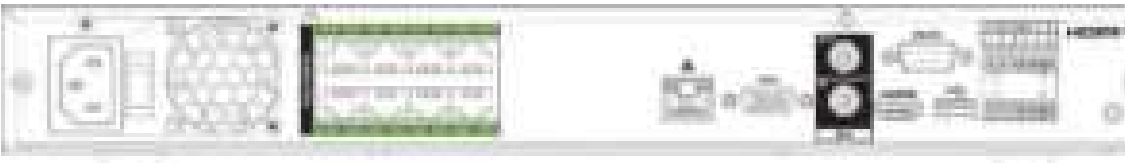
The NVR52-XI series rear panel is shown as below.

Figure 2-54 Rear panel



The NVR52-8P-XI series rear panel is shown as below.

Figure 2-55 Rear panel



The NVR52-16P-XI series rear panel is shown as below.

Figure 2-56 Rear panel



Table 2-19 Ports

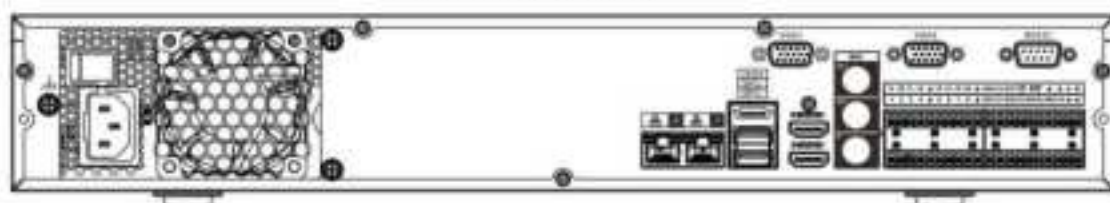
Icon	Port Name	Function
	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
	USB port	Connect to mouse, USB storage device, USB burner and more.
RS-232	RS-232 debug COM	It is for general COM debug to configure IP address or transfer transparent COM data.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.
1-8	Alarm input port 1-8	- There are two groups. The first group is from port 1 to port 4; the second group is from port 5 to port 8. They are to receive the signal from the external alarm source. There are two types; NO (normal open)/NC (normal close). - When your alarm input device is using external power, please make sure the device and the NVR have the same ground.
	GND	Alarm input ground port.
NO1-NO3	Alarm output port 1-3	3 groups of alarm output ports. (Group 1: port NO1-C1; Group 2: port NO2-C2; Group 3: port NO3-C3). Output alarm signal to the alarm device. Please make sure there is power to the external alarm device. - NO: Normal open alarm output port. - C: Alarm output public end.
C1-C3		

Icon	Port Name	Function
A	RS-485 communication port	RS485_A port. It is the cable A. You can connect to the control devices such as speed dome PTZ.
B		RS485_B. It is the cable B. You can connect to the control devices such as speed dome PTZ.
	Power input port	Input 12 VDC/4 A.
Power switch	—	Power on/off button.
PoE PORTS	—	Built-in Switch. Support PoE or ePoE function. - For ePoE series product, port 1 to port 8 are the ePoE ports. ePoE port supports 300 meters@100 Mbps, 800 meters@10 Mbps. Port 9 to port 16 are general PoE ports. - The 8 PoE series product supports total 130 W. - The 16 PoE series product supports total 130 W.

2.2.5 NVR54-4KS2/NVR58-4KS2/NVR54-16P-4KS2/NVR58-16P-4KS2/NVR54-24P-4KS2/NVR58-16P-4KS2E Series

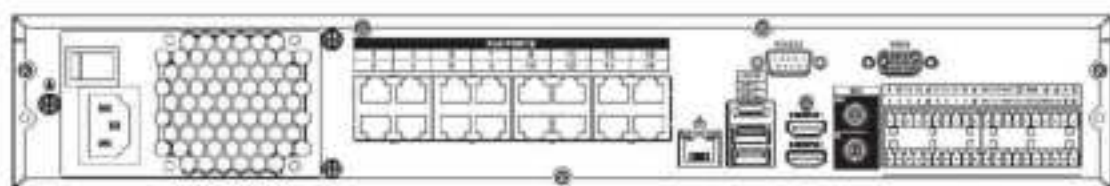
The NVR54-4KS2/NVR58-4KS2 series rear panel is shown as below.

Figure 2-57 Rear panel



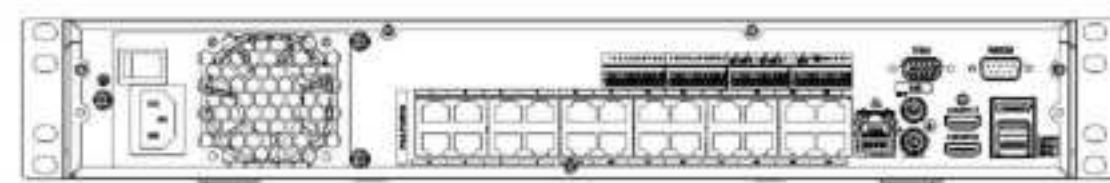
The NVR54-16P-4KS2/NVR58-16P-4KS2 series rear panel is shown as below.

Figure 2-58 Rear panel



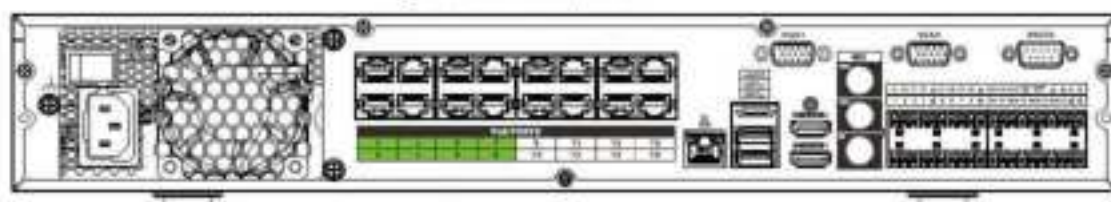
The NVR54-24P-4KS2 series rear panel is shown as below.

Figure 2-59 Rear panel



The NVR54-16P-4KS2E series rear panel is shown as below.

Figure 2-60 Rear panel



The NVR58-16P-4KS2E series rear panel is shown as below.

Figure 2-61 Rear panel

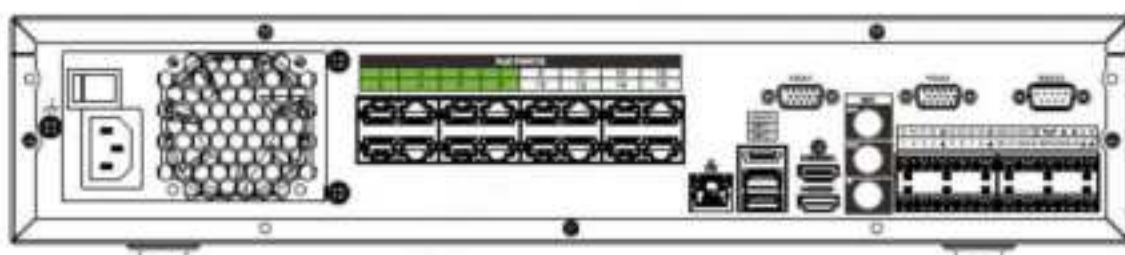
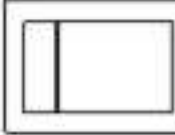
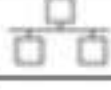


Table 2-20 Rear panel description

Name		Function
	Power switch	Power on-off button.
	Power input port	Input 100–240 VAC.
	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable.
eSATA	eSATA port	External SATA port. It can connect to the device of the SATA port. Please jump the HDD when there is peripheral connected HDD.
	USB port	USB port. Connect to mouse, USB storage device, USB burner and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4b.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.

Name		Function
1-16	Alarm input port 1-16	- There are four groups. The first group is from port 1 to port 4, the second group is from port 5 to port 8, the third group is from 9 to 12, and the fourth group is from 13 to 16. They are to receive the signal from the external alarm source. There are two types; NO (normal open)/NC (normal close). - When your alarm input device is using external power, please make sure the device and the NVR have the same ground.
	Ground	Alarm input ground end.
NO1-NO5	Alarm output port 1-5	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). Output alarm signal to the alarm device. Please make sure there is power to the external alarm device. - NO: Normal open alarm output port. - C: Alarm output public end. - NC: Normal close alarm output port.
C1-C5		
NC5		
A	RS-485 communication port	RS485_A port. It is the cable A. You can connect to the control devices such as speed dome PTZ.
B		RS485_B. It is the cable B. You can connect to the control devices such as speed dome PTZ.
CTRL (CTRL 12 V)	—	Controller 12 V power output. It is to control the on-off alarm relay output. It can be used to control the device alarm output. At the same time, it can also be used as the power input source of some devices such as the alarm detector.
P (+12 V)	—	+12 V power output port. It can provide the power to some peripheral devices such as the camera or the alarm device. Please note the supplying power shall be below 1 A.
RS-232	RS-232 debug COM	It is for general COM debug to configure IP address or transfer transparent COM data.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
PoE PORTS	—	Built-in Switch. Support PoE or ePoE function. For ePoE series product, port 1 to port 8 are the ePoE ports. ePoE port supports 300 meters@100 Mbps, 800 meters@10 Mbps. Port 9 to port 16 are general PoE ports. The 16 PoE series supports total 150 W.

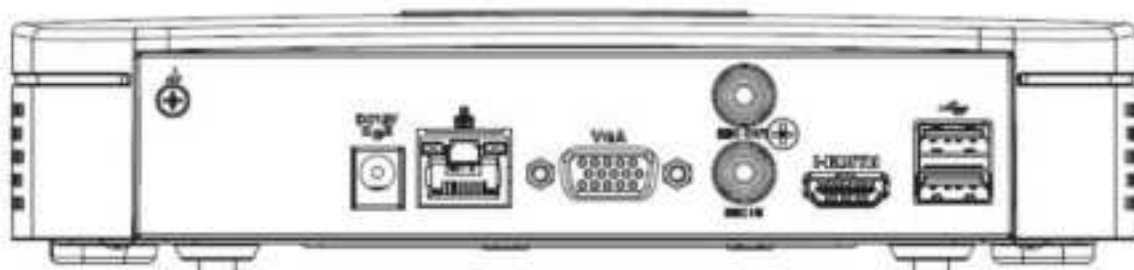

The two ports serve as another group of alarm output ports.

2.2.6 NVR41-4KS2/NVR41-P-4KS2/NVR41-8P-4KS2/NVR41-

4KS2/L/NVR41-P-4KS2/L/NVR41-8P-4KS2/L/NVR21-S3/NVR21-P-S3/NVR21-8P-S3 Series

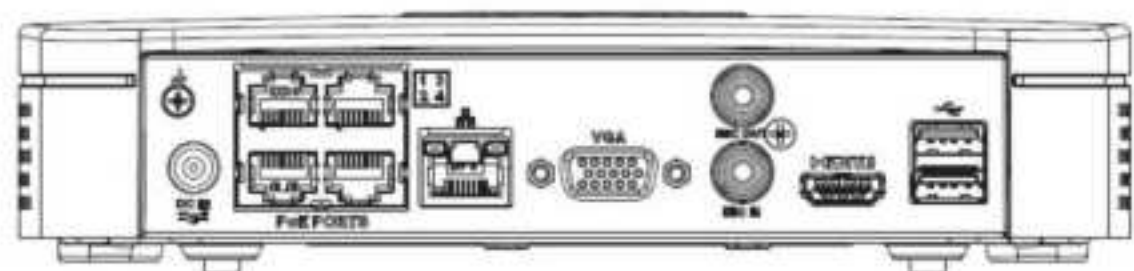
The NVR41-4KS2/NVR41-4KS2/L/NVR21-S3 series rear panel is shown as below.

Figure 2-62 Rear panel



The NVR41-P-4KS2/NVR41-P-4KS2/L series rear panel is shown as below.

Figure 2-63 Rear panel



The NVR41-8P-4KS2/NVR41-8P-4KS2/L series rear panel is shown as below.

Figure 2-64

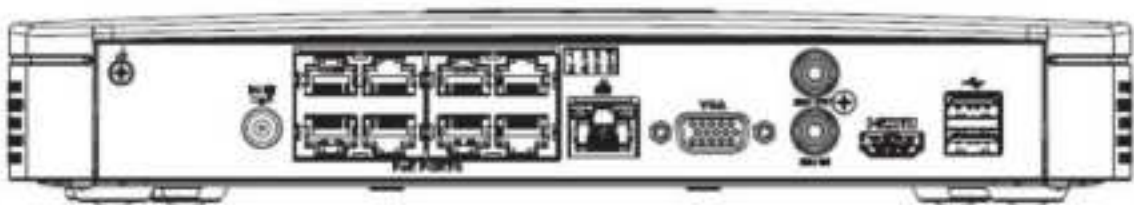


Table 2-21 Ports

Port Name	Connection	Function
	USB port	USB port. Connect to mouse, USB storage device, USB burner and more.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.

Port Name	Connection	Function
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
	GND	Ground end.
	Power input port	Power socket. - For NVR41-4KS2: 12 VDC/2 A power. - For NVR41-P-4KS2: 48 VDC/72 W power. - For NVR41-8P-4KS2: 48 VDC/96 W power.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.

2.2.7 NVR42-4KS2/NVR42-P-4KS2/NVR42-8P-4KS2/NVR42-16P-4KS2/NVR42-4KS2/L/NVR42-P-4KS2/L/NVR42-8P-4KS2/L/NVR42-16P-4KS2/L/NVR42-EI/NVR42-P-EI/NVR42-8P-EI/NVR42-4KS3/NVR42-P-4KS3/NVR42-8P-4KS3/NVR42-16P-4KS3 Series

The NVR42-4KS2/NVR42-4KS2/L/NVR42-EI/NVR42-4KS3 series rear panel is shown as below.

Figure 2-65 Rear panel



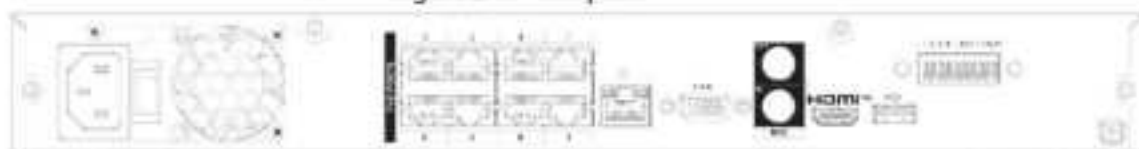
The NVR42-P-4KS2/NVR42-P-4KS2/L/NVR42-P-EI/NVR42-P-4KS3 series rear panel is shown as below.

Figure 2-66 Rear panel



The NVR42-8P-4KS2/NVR42-8P-4KS2/L/NVR42-8P-EI/NVR42-8P-4KS3 series rear panel is shown as below.

Figure 2-67 Rear panel



The NVR42-16P-4KS2/NVR42-16P-4KS2/L/NVR42-16P-4KS3 series rear panel is shown as below.

Figure 2-68 Rear panel

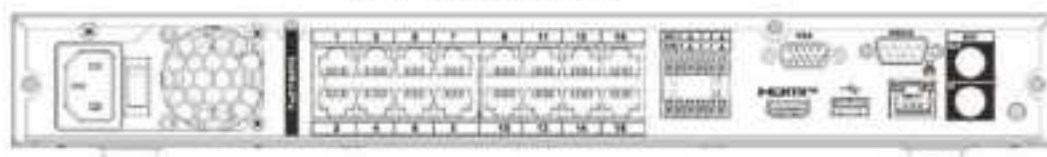
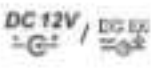


Table 2-22 Rear panel description

Name		Function
	Power switch	Power on/off button.
		
	Power input port	Power socket. - For NVR42-4KS2/NVR42-EI/NVR42-4KS3 series, input 12 VDC/4 A. - For NVR42-P-4KS2 series, input 48 VDC/96 W. - For NVR42-P-EI/NVR42-P-4KS3 series, input 53 VDC/1.81 A.
		Input 90–264-12 VAC 5 A/52 V 2.5 A-190 W. For NVR42-8P-4KS2/NVR42-16P-4KS2/NVR42-8P-EI/NVR42-8P-4KS3/NVR42-16P-4KS3 series product only.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.
1–4	Alarm input port 1–4	- There are two types; NO (normal open)/NC (normal close). - When your alarm input device is using external power, please make sure the device and the NVR have the same ground.
	GND	Alarm input ground port.
N1, N2	Alarm output port	

Name		Function
C1, C2	1-2	2 groups of alarm output ports. (Group 1: port NO1-C1, Group 2: port NO2-C2). Output alarm signal to the alarm device. Please make sure there is power to the external alarm device. - NO: Normal open alarm output port. - C: Alarm output public end.
A	RS-485 communication port	RS485_A port. It is the cable A. You can connect to the control devices such as speed dome PTZ.
B		RS485_B. It is the cable B. You can connect to the control devices such as speed dome PTZ.
	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable.
	USB port	USB port. Connect to mouse, USB storage device, USB burner and more.
RS-232	RS-232 debug COM	It is for general COM debug to configure IP address or transfer transparent COM data.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
PoE PORTS	/	Built-in Switch. Support PoE. For PoE series product, you can use this port to provide power to the network camera.

2.2.8 NVR44-4KS2/NVR44-16P-4KS2/NVR44-4KS2/L/NVR44-16P-4KS2/L/NVR44-4KS2/I/NVR44-16P-4KS2/I/NVR48-EI/NVR44-EI/NVR48-16P-EI/NVR44-16P-EI/NVR44-4KS3/NVR48-4KS3 Series

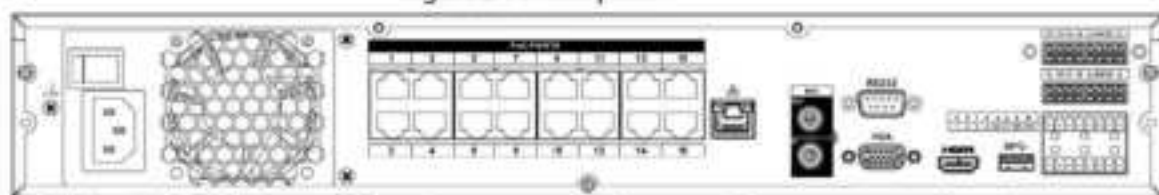
The NVR44-4KS2/NVR44-4KS2/L/NVR44-4KS2/I/NVR48-EI/NVR44-EI/NVR44-4KS3/NVR48-4KS3 series rear panel is shown as below.

Figure 2-69 Rear panel



The NVR44-16P-4KS2/NVR44-16P-4KS2/L/NVR44-16P-4KS2/I series rear panel is shown as below.

Figure 2-70 Rear panel



The NVR48-16P-EI/NVR44-16P-EI series rear panel is shown as below.

Figure 2-71 Rear panel



Table 2-23 Ports

Name		Function
Power switch	—	Power on-off button.
Power input port	—	90~264-12 VAC 12.5 A/-53 V 2.83 A.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.
VIDEO OUT	Video output port	CVBS output.
1-16	Alarm input port 1-16	- There are four groups. The first group is from port 1 to port 4, the second group is from port 5 to port 8, the third group is from 9 to 12, and the fourth group is from 13 to 16. They are to receive the signal from the external alarm source. There are two types; NO (normal open)/NC (normal close). - When your alarm input device is using external power, please make sure the device and the NVR have the same ground.
⏏	Video output port	CVBS output.
NO1-NO3	Alarm output	

Name		Function
C1-C3	port 1-3	3 groups of alarm output ports. (Group 1: port NO1-C1; Group 2: port NO2-C2; Group 3: port NO3-C3). Output alarm signal to the alarm device. Please make sure there is power to the external alarm device. - NO: Normal open alarm output port. - C: Alarm output public end.
A	RS-485 communication port	RS485_A port. It is the cable A. You can connect to the control devices such as speed dome PTZ.
B		RS485_B. It is the cable B. You can connect to the control devices such as speed dome PTZ.
CTRL (CTRL 12 V)	—	Controller 12 V power output. It is to control the on-off alarm relay output. It can be used to control the device alarm output. At the same time, it can also be used as the power input source of some devices such as the alarm detector.
P (+12 V)	—	+12 V power output port. It can provide the power to some peripheral devices such as the camera or the alarm device. Please note the supplying power shall be below 1 A.
	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable.
eSATA	eSATA port	External SATA port. It can connect to the device of the SATA port. Please jump the HDD when there is peripheral connected HDD.
	USB 2.0 port	USB 2.0 port. Connect to mouse, USB storage device, USB burner and more.
RS-232	RS-232 debug COM	It is for general COM debug to configure IP address or transfer transparent COM data.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.3.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
PoE PORTS	PoE port	Built-in Switch. Support PoE. For PoE series product, you can use this port to provide power to the network camera.



The two ports serve as another group of alarm output ports.

2.2.9 NVR48-4KS2/NVR48-16P-4KS2/NVR48-4KS2/L/NVR48-16P-4KS2/L/NVR48-4KS2/I/NVR48-16P-4KS2/I Series

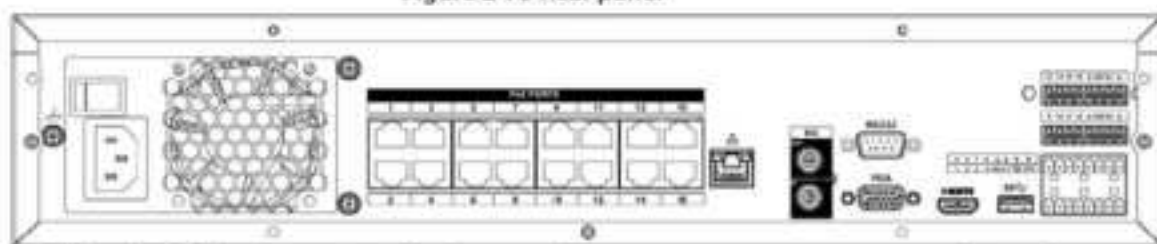
The NVR48-4KS2/NVR48-4KS2/L/NVR48-4KS2/I series rear panel is shown as below.

Figure 2-72 Rear panel



The NVR48-16P-4KS2/NVR48-16P-4KS2/L/NVR48-16P-4KS2/I series rear panel is shown as below.

Figure 2-73 Rear panel



The NVR48-16P-EI series rear panel is shown as below.

Figure 2-74 Rear panel



Table 2-24 Ports

Name		Function
Power switch	—	Power on-off button.
Power input port	—	90~264-12 VAC 12.5 A/-53 V 2.83 A.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.
VIDEO OUT	Video output port	CVBS output.

Name		Function
1-16	Alarm input port 1-16	- There are four groups. The first group is from port 1 to port 4, the second group is from port 5 to port 8, the third group is from 9 to 12, and the fourth group is from 13 to 16. They are to receive the signal from the external alarm source. There are two types; NO (normal open)/NC (normal close). - When your alarm input device is using external power, please make sure the device and the NVR have the same ground.
	GND	Alarm input ground port.
NO1-NO3	Alarm output port 1-3	3 groups of alarm output ports. (Group 1: port NO1-C1; Group 2: port NO2-C2; Group 3: port NO3-C3). Output alarm signal to the alarm device. Please make sure there is power to the external alarm device. - NO: Normal open alarm output port. - C: Alarm output public end.
C1-C3		
A	RS-485 communication port	RS485_A port. It is the cable A. You can connect to the control devices such as speed dome PTZ.
B		RS485_B. It is the cable B. You can connect to the control devices such as speed dome PTZ.
CTRL (CTRL 12 V)	—	Controller 12 V power output. It is to control the on-off alarm relay output. It can be used to control the device alarm output. At the same time, it can also be used as the power input source of some devices such as the alarm detector.
P (+12 V)	—	+12 V power output port. It can provide the power to some peripheral devices such as the camera or the alarm device. Please note the supplying power shall be below 1 A.
 The two ports serve as another group of alarm output ports.		
	Network port	One 10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable.
eSATA	eSATA port	External SATA port. It can connect to the device of the SATA port. Please jump the HDD when there is peripheral connected HDD.
	USB port	USB port. Connect to mouse, USB storage device, USB burner and more.
RS-232	RS-232 debug COM	It is for general COM debug to configure IP address or transfer transparent COM data.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.

Name		Function
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
PoE PORTS	PoE port	Built-in Switch. Support PoE. For PoE series product, you can use this port to provide power to the network camera.

2.2.10 NVR21-W-4KS2 Series

Figure 2-75 Rear panel

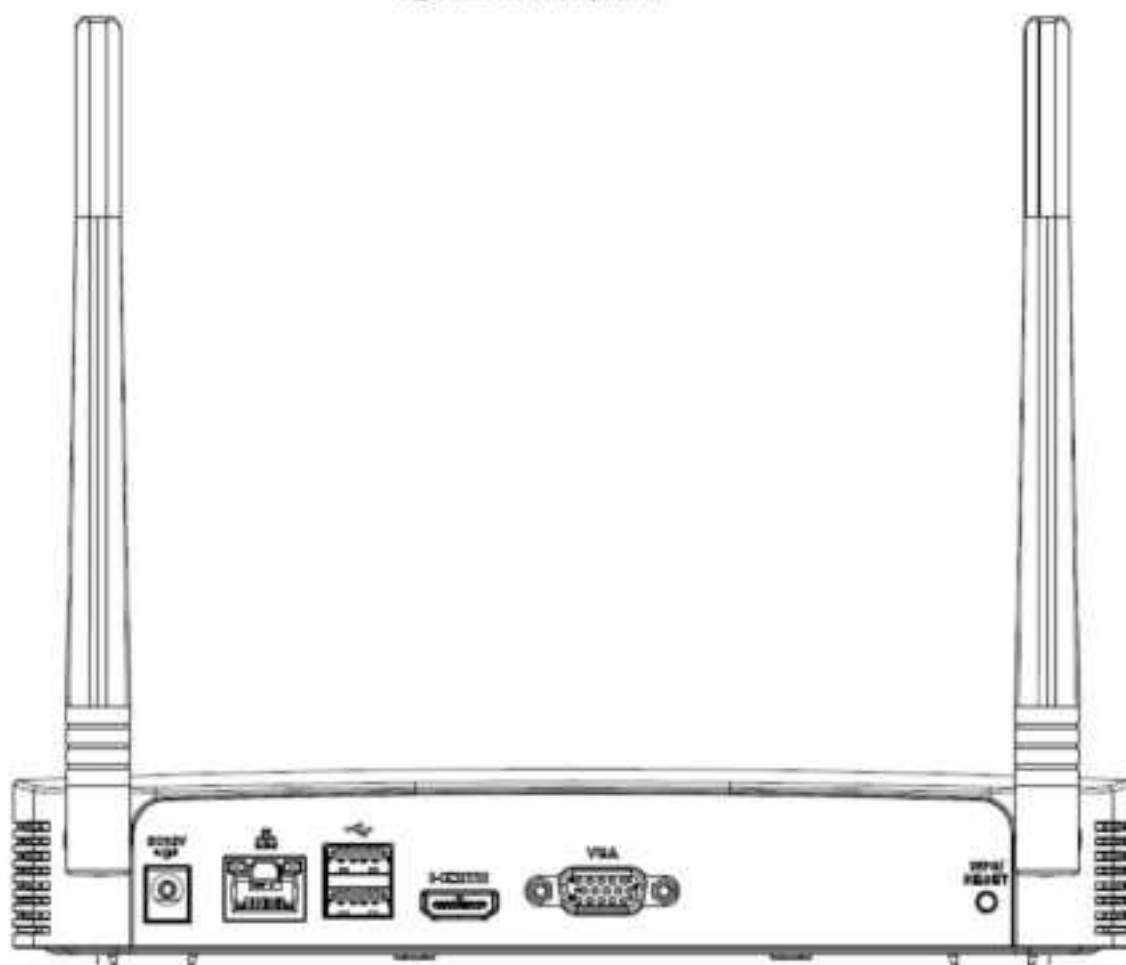


Table 2-25 Ports

Port Name	Connection	Function
	USB 2.0 port	USB 2.0 port. Connect to mouse, USB storage device, USB burner and more.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.

Port Name	Connection	Function
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
DC 12V +GND	Power input port	Input 12 VDC/2 A.
WPS/RESET	Reset/WPS function	Device Wi-Fi reset and WPS function button: - Hold down this button for 5 seconds and above to restore Wi-Fi AP to defaults. - Press this button for less than 2 seconds, and then press the WPS button of Wi-Fi IPC, the device and Wi-Fi IPC can be connected.

2.2.11 NVR21HS-W-4KS2

Figure 2-76 Rear panel

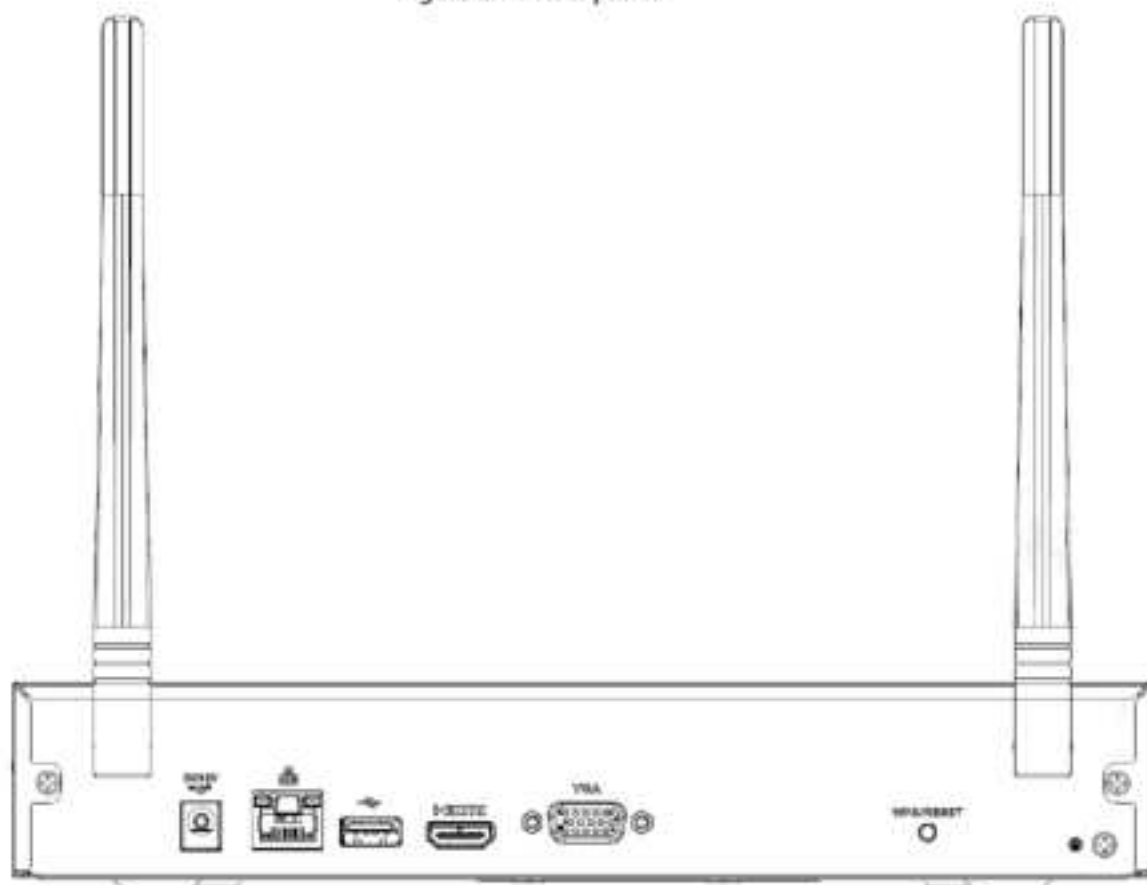


Table 2-26 Ports

Icon	Name	Function
	Power input socket	Power socket. Input 12 VDC/2 A.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
	USB 2.0 port	USB 2.0 port. Connect to mouse, USB storage device, and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
	GND	Ground end.
WPS/RESET	Reset/WPS function	Device Wi-Fi reset and WPS function button: - Hold down this button for 5 seconds and above to restore Wi-Fi AP to defaults. - Press this button for less than 2 seconds, and then press the WPS button of Wi-Fi IPC, the device and Wi-Fi IPC can be connected.

2.2.12 NVR21-I/NVR21-I2 Series



The figure is for reference only.

Figure 2-77 Rear panel

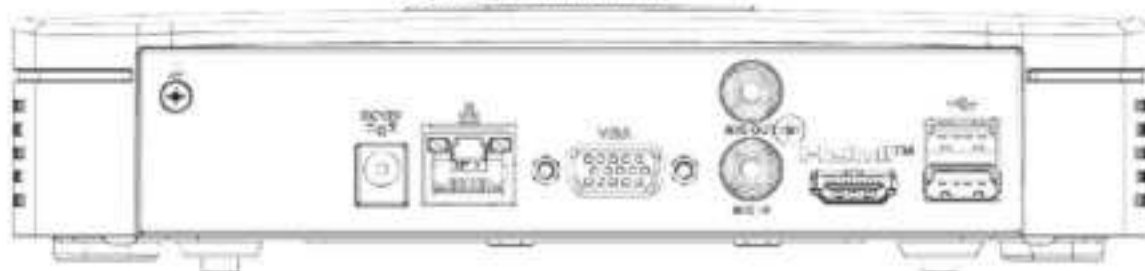


Table 2-27 Ports

Port Name	Connection	Function
	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.

Port Name	Connection	Function
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
	Power input port	Power socket.
	GND	Ground end.

2.2.13 NVR22-I/NVR22-I2 Series



The figures are for reference only.

Figure 2-78 Rear panel

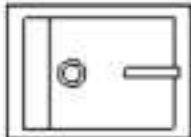


Figure 2-79 Rear panel



Table 2-28 Ports

Port Name	Connection	Function
	GND	Ground end.
	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.

Port Name	Connection	Function
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.
1-4	Alarm input port 1-4	• There are two types; NO (normal open)/NC (normal close). • When your alarm input device is using external power, please make sure the device and the NVR have the same ground.
	GND	Alarm input ground port.
N1, N2	Alarm output port 1-2	• 2 groups of alarm output ports. (Group 1: port NO1-C1, Group 2: port NO2-C2). Output alarm signal to the alarm device. Please make sure there is power to the external alarm device. • NO: Normal open alarm output port. • C: Alarm output public end.
C1, C2		
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
DC 12V 	Power input port	Power socket.
	Power switch	Power on/off button.

2.2.14 NVR21-P-I/NVR21-P-I2 Series



The figure is for reference only.

Figure 2-80 Rear panel

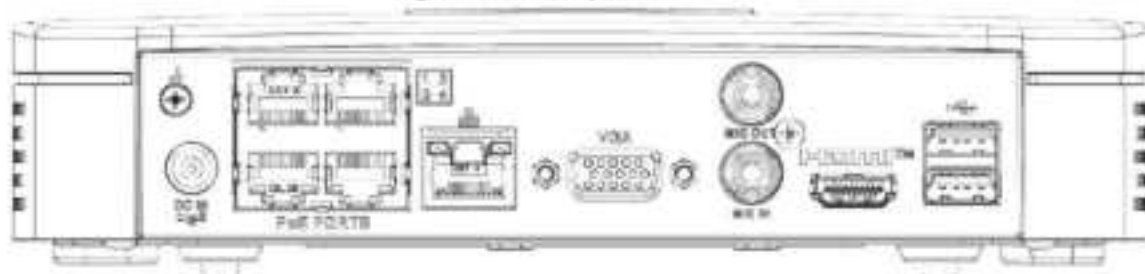


Table 2-29 Ports

Port Name	Connection	Function
	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.
	Power input port	Power socket.
	GND	Ground end.

2.2.15 NVR22-P-I/NVR22-P-I2 Series

The rear panel is shown as below.



The figure is for reference only.

Figure 2-81 Rear panel

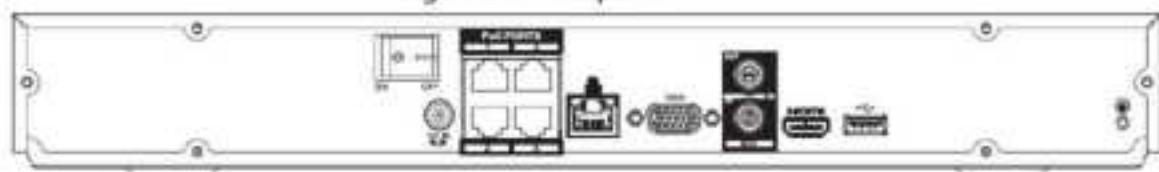
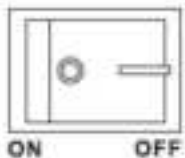


Figure 2-82 Rear panel



Table 2-30 Ports

Port Name	Connection	Function
③	GND	Ground end.
	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
1-4	—	—
	—	—
N1, N2	—	—
C1, C2	—	—
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.

Port Name	Connection	Function
	Power input port	Power socket.
	Power switch	Power on/off button.

2.2.16 NVR21-8P-I/NVR21-8P-I2 Series



The figure is for reference only.

Figure 2-83 Rear panel

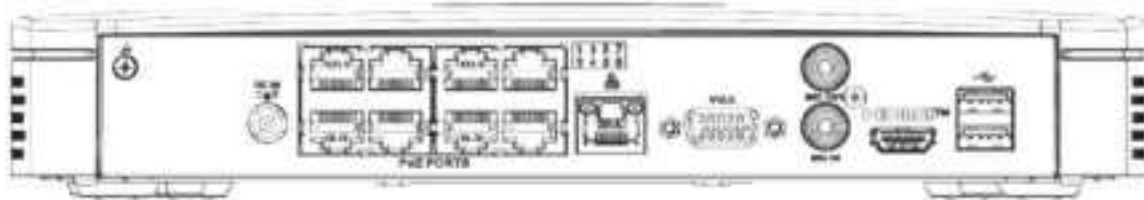


Table 2-31 Ports

Port Name	Connection	Function
	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.

Port Name	Connection	Function
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.
	Power input port	Power socket.
	GND	Ground end.

2.2.17 NVR22-8P-I/NVR22-8P-I2 Series



The figure is for reference only.

Figure 2-84 Rear panel

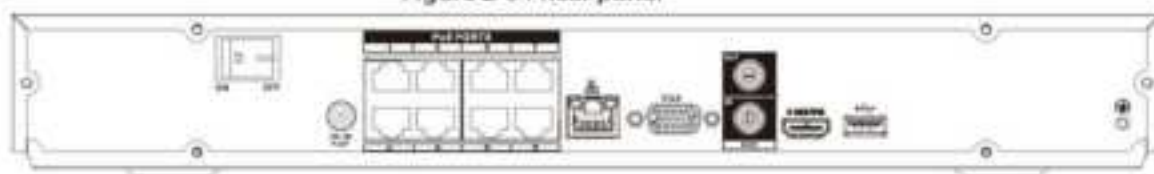


Figure 2-85 Rear panel

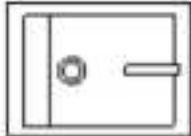


Figure 2-86 Rear panel



Table 2-32 Ports

Port Name	Connection	Function
	GND	Ground end.
	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.

Port Name	Connection	Function
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.
1-4	Alarm input port 1-4	• There are two types; NO (normal open)/NC (normal close). • When your alarm input device is using external power, please make sure the device and the NVR have the same ground.
	GND	Alarm input ground port.
N1, N2	Alarm output port 1-2	• 2 groups of alarm output ports. (Group 1: port NO1-C1, Group 2: port NO2-C2).Output alarm signal to the alarm device. Please make sure there is power to the external alarm device. • NO: Normal open alarm output port. • C: Alarm output public end.
C1, C2		
Power input port	—	90~264-12 VAC 12.5 A/-53 V 2.83 A
	Power input port	Power socket.
	Power switch	Power on/off button.

2.2.18 NVR22-16P-I/NVR22-8P-I2 Series



The figure is for reference only.

Figure 2-87 Rear panel



Table 2-33 Ports

Port Name	Connection	Function
⊕	GND	Ground end.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.
RS-232	RS-232 debug COM	It is for general COM debug to configure IP address or transfer transparent COM data.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
	USB port	USB port. Connect to mouse, USB storage device and more.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
NO1	Alarm output port	1 group of alarm output ports (port NO1-C1). Output alarm signal to the alarm device. Please make sure there is power to the external alarm device. - NO: Normal open alarm output port. - C: Alarm output public end.
C1		
CTRL	—	Controllable power supply output. Control the output of the on-off button alarm relay. It controls the alarm device with the presence or absence of voltage. It can also be used as power input for some alarm devices such as alarm detectors.

Port Name	Connection	Function	
P	—	Power output port. It can provide power to some peripheral devices such as camera and alarm device. Make sure the power supply of peripheral device shall be below 1 A.	The two ports serve as another group of alarm output ports.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.	
	Power switch	Power on/off button.	
	Power input port	Power socket.	

2.2.19 NVR21HS-I/NVR21HS-I2 Series



The figure is for reference only.

Figure 2-88 Rear panel

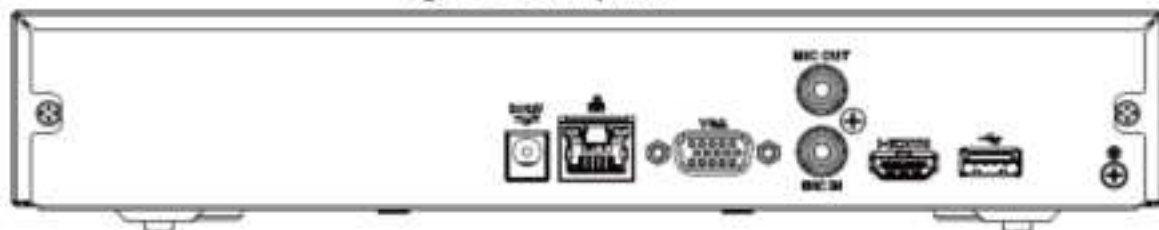


Table 2-34 Rear panel description

Port Name	Connection	Function
	GND	Ground end.
	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.

Port Name	Connection	Function
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.
	Power input port	Power socket.

2.2.20 NVR21HS-P-I/NVR21HS-P-I2 Series



The figure is for reference only.

Figure 2-89 Rear panel

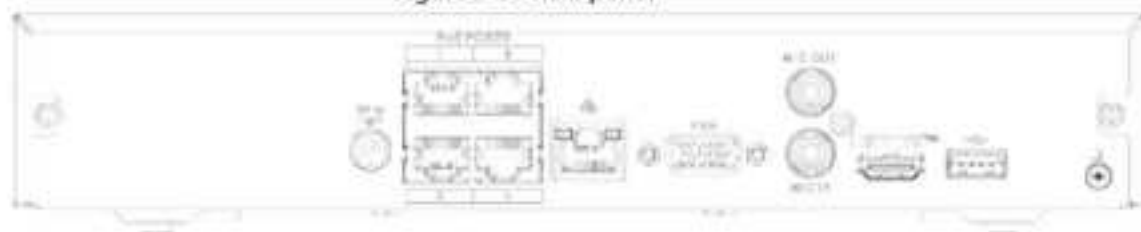


Table 2-35 Ports

Port Name	Connection	Function
	Power input port	Power socket.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.

Port Name	Connection	Function
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.
⊕	GND	Ground end.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.

2.2.21 NVR21HS-8P-I/NVR21HS-8P-I2 Series



The figure is for reference only.

Figure 2-90 Rear panel

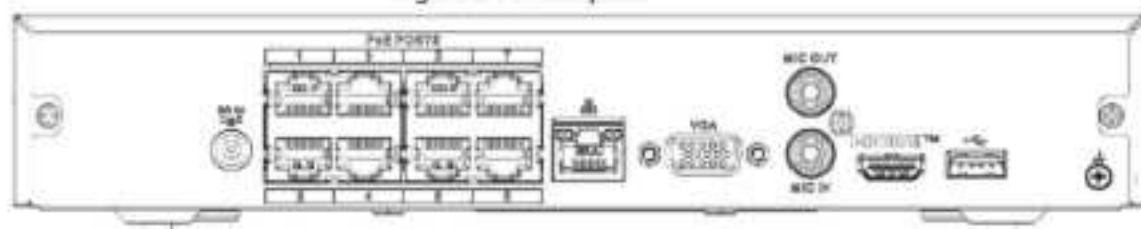


Table 2-36 Ports

Port Name	Connection	Function
⊕	GND	Ground end.
USB	USB port	USB port. Connect to mouse, USB storage device and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.

Port Name	Connection	Function
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
PoE PORTS	PoE port	Built-in switch. Support PoE function. For PoE series product, you can use this port to provide power to the network camera.
	Power input port	Power socket.

2.2.22 NVR4208-8P-I Series



These figures are for reference only.

Figure 2-91 Rear panel

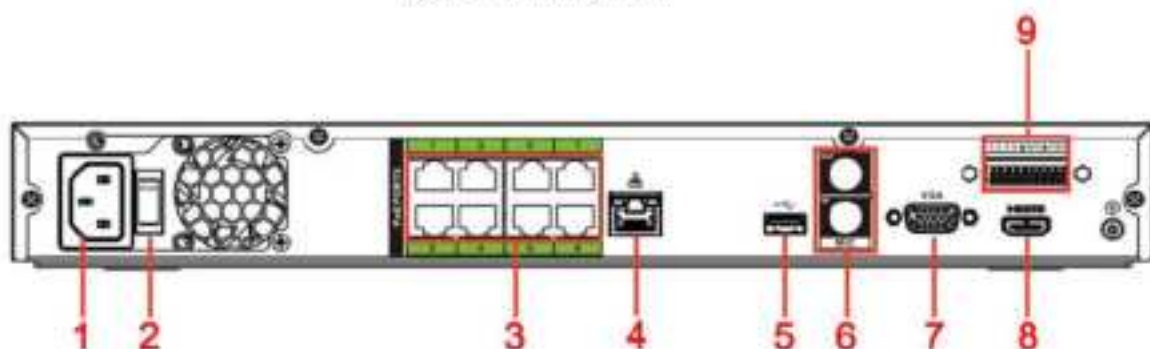


Table 2-37 Ports

No.	Port Name	Function
1	Power input port	Input power of 100-240 V and 50-60 Hz.
2	Power button	Turns on/off the NVR.
3	PoE port	Built-in switch. It can provide power for IPC. 8 PoE ports: 1-8 are ePoE ports (support 300m @ 100M, 800m @ 10M). The device supports 48 V, 100 W total power output under 55 °C, and 48 V, 130 W total power output under 45 °C.
4	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable.
5	USB port	USB 3.0 port. Connect to devices such as mouse, USB storage device and USB burner.
6	MIC IN	Bidirectional talk input port. It is to receive analog audio signal from devices such as microphone, sound pickup.

No.	Port Name	Function
	MIC OUT	Audio output port. It is to output analog audio signal to devices such as sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.
7	VGA port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
8	HDMI port	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel audio data to displays with HDMI port.
9	Alarm input port (1-4)	• They receive signals from external alarm source. Alarm input includes two types; NO (normal open) and NC (normal close). • When your alarm input device is using external power, make sure the device and the NVR have the same GND.
		GND. Alarm input ground port.
	NO C	One NO activation output group. (On-off button).
	CTRL	Controllable power supply output. Control the output of the on-off button alarm relay. It controls the alarm device with the presence or absence of voltage. It can also be used as power input for some alarm devices such as alarm detectors.
	P	Power output port. It can provide power to some peripheral devices such as camera and alarm device. Make sure the power supply of peripheral device shall be below 1 A.
		 The two ports serve as another group of alarm output ports.

2.2.23 NVR4216-I Series



The figure is for reference only.

Figure 2-92 Rear panel



Table 2-38 Ports

No.	Port Name	Function
1	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable.
2	MIC OUT	Audio output port. It is to output analog audio signal to devices such as sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.
3	Alarm input port (1-4)	• They receive signals from external alarm source. Alarm input includes two types; NO (normal open) and NC (normal close). • When your alarm input device is using external power, make sure the device and the NVR have the same GND.
		GND. Alarm input ground port.
	NO C	One NO activation output group. (On-off button).
	CTRL	Controllable power supply output. Control the output of the on-off button alarm relay. It controls the alarm device with the presence or absence of voltage. It can also be used as power input for some alarm devices such as alarm detectors.
	P	Power output port. It can provide power to some peripheral devices such as camera and alarm device. Make sure the power supply of peripheral device shall be below 1 A.
 The two ports serve as another group of alarm output ports.		
4	Power button	Turns on/off the NVR.
5		GND.
6	USB port	USB 3.0 port. Connect to devices such as mouse, USB storage device and USB burner.
7	MIC IN	Bidirectional talk input port. It is to receive analog audio signal from devices such as microphone, sound pickup.
8	VGA port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
9	HDMI port	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel audio data to displays with HDMI port.
10	Power input port	Input power of 100-240 V and 50-60 Hz.

2.2.24 NVR58-I/NVR58-I/L/NVR48-I Series



- The figure takes NVR58-I/NVR58-I/L/NVR48-I series as examples.
- The figure is for reference only.

Figure 2-93 Rear panel

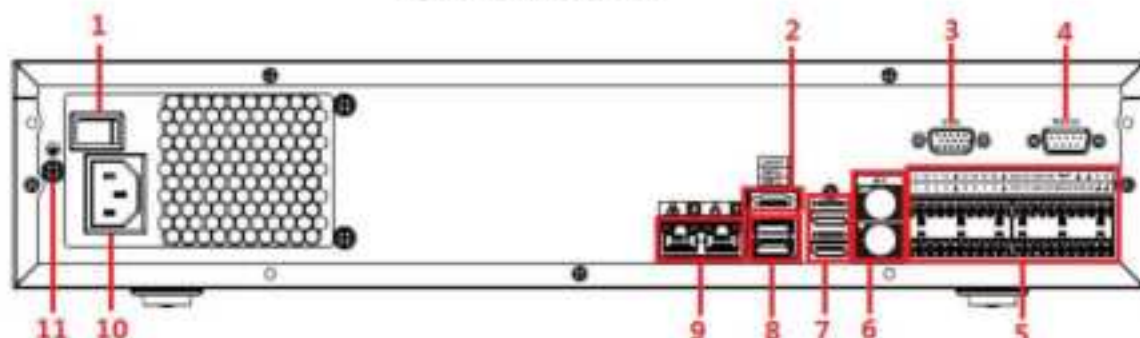


Figure 2-94 Rear panel

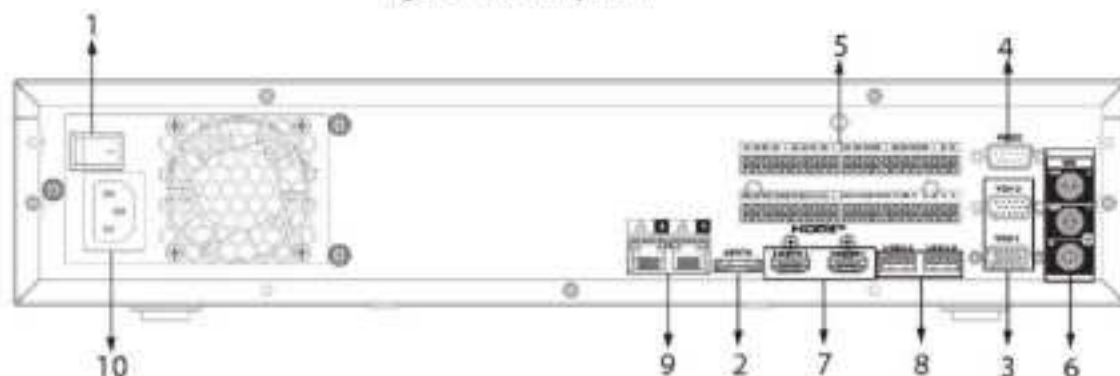


Table 2-39 Ports

No.	Port Name	Function
1	Power button	Turns on/off the NVR.
2	eSATA port	External SATA port. It can connect device with SATA port. You need to jump the HDD when there is peripherally connected HDD.
3	VGA port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
4	RS-232 port	It is for general COM debugging to configure IP address and transfer transparent COM data.
5	Alarm input port (1-16)	• There are four groups: 1-4, 5-8, 9-12 and 13-16. They receive signals from external alarm source. Alarm input includes two types; NO (normal open) and NC (normal close). • When your alarm input device is using external power, make sure the device and the NVR have the same GND.

No.	Port Name	Function
	Alarm output port (NO1-NO5, C1-C5, NC5)	- Five groups of alarm output ports (Group 1: NO1-C1, Group 2: NO2-C2, Group 3: NO3-C3, Group 4: NO4-C4, Group 5: NO5, C5, NC5). Output alarm signal to the external alarm device. Make sure power supply is available for the external alarm device. - NO: Normal open alarm output port. - C: Alarm output public end. - NC: Normal close alarm output port.
		GND. Alarm input ground port.
	RS-485 port (A, B)	- RS485_A port. Control cable A of the 485 device. It connects external devices such as speed dome and PTZ. - RS485_B port. Control cable B of the 485 device. It connects external devices such as speed dome and PTZ.
	CTRL	Controllable 12 V power output. It is to control the on-off alarm relay output. It can be used to control the device alarm output. At the same time, it can also be used as the power input source of some devices such as alarm detector.
		+12 V power output port. It can provide power to some peripheral devices such as camera and alarm device. Make sure the power supply of peripheral device shall be below 1 A.
6	MIC IN	Bidirectional talk input port. It is to receive analog audio signal from devices such as microphone, sound pickup.
	MIC OUT	Audio output port. It is to output analog audio signal to devices such as sound box. - Bidirectional talk output. - Audio output on 1-window video monitor. - Audio output on 1-window video playback.
7	HDMI port	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel audio data to displays with HDMI port. The two HDMI ports support 2-channel high definition HDMI output of different sources.
8	USB port	USB 3.0 port. Connect to devices such as mouse, USB storage device and USB burner.



The two ports serve as another group of alarm output ports.

No.	Port Name	Function
9	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable.
10	Power input port	Input power of 100-240 V and 50-60 Hz.
11		GND.

2.2.25 NVR54-I/NVR54-I/L/NVR44-I Series



- The following figure takes NVR5432-16P-I and NVR5432-16P-I/L series as examples.
- The figure is for reference only.

Figure 2-95 Rear panel

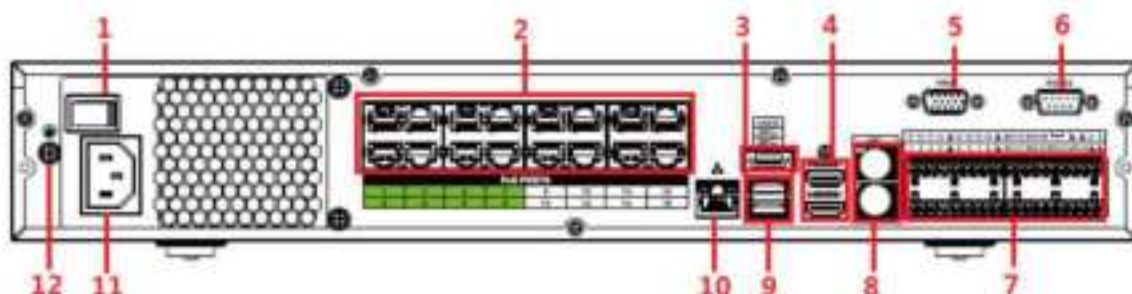
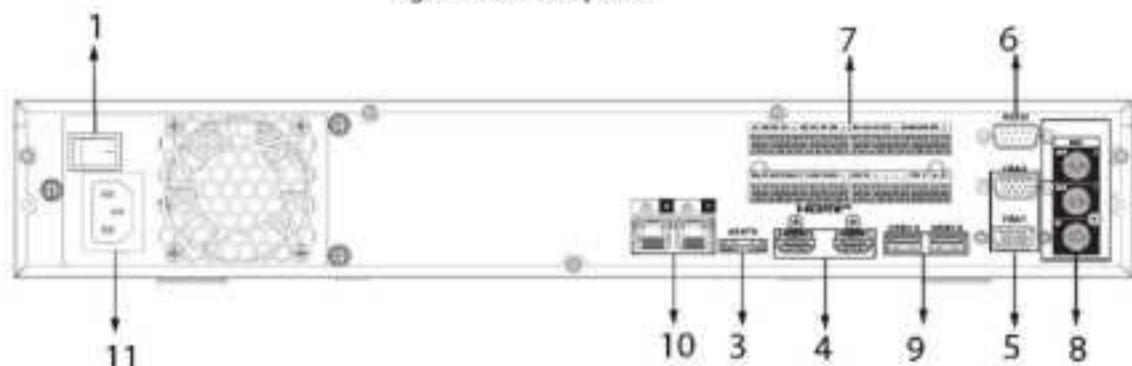


Figure 2-96 Rear panel



No.	Port Name	Function
1	Power button	Turns on/off the NVR.
2	PoE port	Built-in switch. It can provide power for IPC. 16 PoE ports: 1-8 are ePoE ports (support 300m @ 100M, 800m @ 10M), 9-16 are regular PoE ports. - Device with 16 PoEs supports 150 W total power.
3	eSATA port	External SATA port. It can connect device with SATA port. You need to jump the HDD when there is peripherally connected HDD.

No.	Port Name	Function
4	HDMI port	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel audio data to displays with HDMI port. The two HDMI ports support 2-channel high definition HDMI output of different sources.
5	VGA port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
6	RS-232 port	It is for general COM debugging to configure IP address and transfer transparent COM data.
7	Alarm input port (1-16)	- There are four groups: 1-4, 5-8, 9-12 and 13-16. They receive signals from external alarm source. Alarm input includes two types; NO (normal open) and NC (normal close). - When your alarm input device is using external power, make sure the device and the NVR have the same GND.
	Alarm output port (NO1-NO5, C1-C5, NC5)	- Five groups of alarm output ports (Group 1: NO1-C1, Group 2: NO2-C2, Group 3: NO3-C3, Group 4: NO4-C4, Group 5: NO5, C5, NC5). Output alarm signal to the external alarm device. Make sure power supply is available for the external alarm device. - NO: Normal open alarm output port. - C: Alarm output public end. - NC: Normal close alarm output port.
		GND. Alarm input ground port.
	RS-485 port (A, B)	- RS485_A port. Control cable A of the 485 device. It connects external devices such as speed dome and PTZ. - RS485_B port. Control cable B of the 485 device. It connects external devices such as speed dome and PTZ.
	CTRL	Controllable 12 V power output. It is to control the on-off alarm relay output. It can be used to control the device alarm output. At the same time, it can also be used as the power input source of some devices such as alarm detector.

No.	Port Name	Function	
		+12 V power output port. It can provide power to some peripheral devices such as camera and alarm device. Make sure the power supply of peripheral device shall be below 1 A.	 The two ports serve as another group of alarm output ports.
8	MIC IN	Bidirectional talk input port. It is to receive analog audio signal from devices such as microphone, sound pickup.	
	MIC OUT	Audio output port. It is to output analog audio signal to devices such as sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.	
9	USB port	USB 3.0 port. Connect to devices such as mouse, USB storage device and USB burner.	
10	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable.	
11	Power input port	Input power of 100-240 V and 50-60 Hz.	
12		GND.	

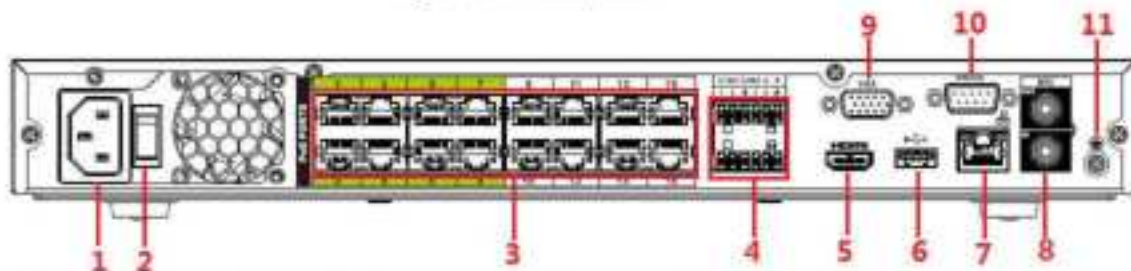
2.2.26 NVR52-16P-I/NVR52-16P-I/L/NVR52-8P-I/NVR52-8P-I/L/NVR42-16P-I Series



These figures are for reference only.

The NVR52-16P-I/NVR52-16P-I/L series rear panel is shown as below.

Figure 2-97 Rear panel



The NVR52-8P-I/NVR52-8P-I/L series rear panel is shown as below.

Figure 2-98 Rear panel



The NVR4216-16P-I series rear panel is shown as below.

Figure 2-99 Rear panel

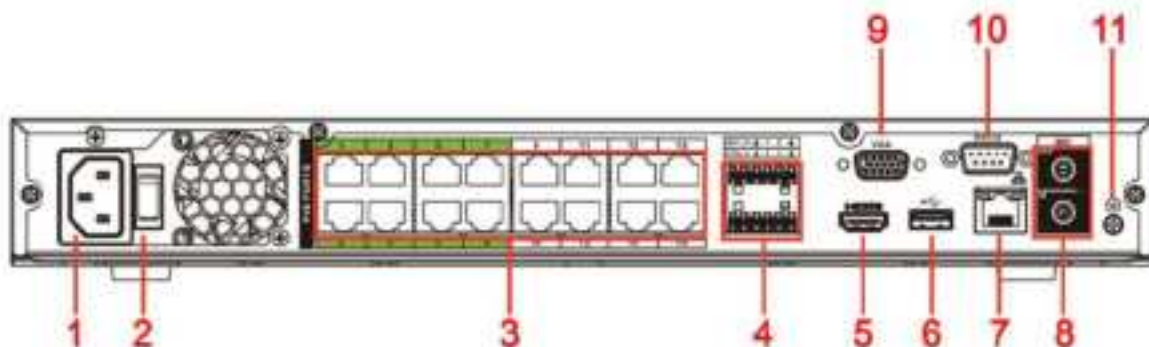


Table 2-40 Rear panel description

No.	Port Name	Function
1	Power input port	Input power of 100-240 V and 50-60 Hz.
2	Power button	Turns on/off the NVR.
3	PoE port	Built-in switch. It can provide power for IPC. 16 PoE ports: 1-8 are ePoE ports (support 300m @ 100M, 800m @ 10M). 9-16 are regular PoE ports. The device supports 150 W total power. 8 PoE ports: 1-8 are ePoE ports (support 300m @ 100M, 800m @ 10M). The device supports 48 V, 120 W total power.
4	Alarm input/output of NVR52-16P-I/NVR52-16P-I/L and NVR52-8P-I/NVR52-8P-I/L	Alarm input port (1-4) - They receive signals from external alarm source. Alarm input includes two types; NO (normal open) and NC (normal close). - When your alarm input device is using external power, make sure the device and the NVR have the same GND.

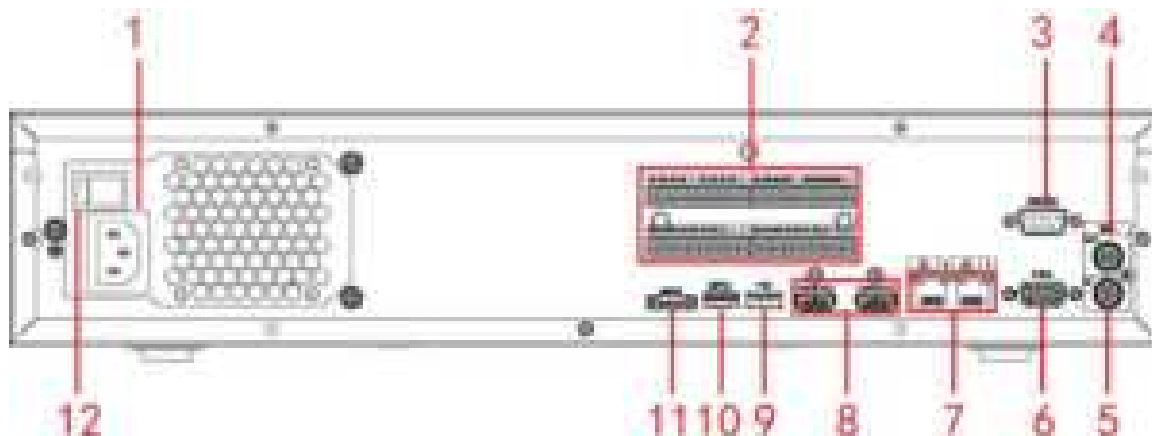
No.	Port Name	Function	
		Alarm output port (NO1-NO2, C1-C2)	- Two groups of alarm output ports (Group 1: NO1-C1, Group 2: NO2-C2). Output alarm signal to the external alarm device. Make sure power supply is available for the external alarm device. - NO: Normal open alarm output port. - C: Alarm output public end.
			GND. Alarm input ground port.
		RS-485 port (A, B)	- RS485_A port. Control cable A of the 485 device. It connects external devices such as speed dome and PTZ. - RS485_B port. Control cable B of the 485 device. It connects external devices such as speed dome and PTZ.
	Alarm input/output of NVR4216-16P-I	Alarm input port (1-4)	- They receive signals from external alarm source. Alarm input includes two types; NO (normal open) and NC (normal close). - When your alarm input device is using external power, make sure the device and the NVR have the same GND.
		Alarm output port (NO1, C1)	- One group of alarm output ports (Group 1: NO1-C1). Output alarm signal to the external alarm device. Make sure power supply is available for the external alarm device. - NO: Normal open alarm output port. - C: Alarm output public end.
			GND. Alarm input ground port.
		CTRL	Controllable 12 V power output. It is to control the on-off alarm relay output. It can be used to control the device alarm output. At the same time, it can also be used as the power input source of some devices such as alarm detector.

No.	Port Name	Function		
		P	+12 V power output port. It can provide power to some peripheral devices such as camera and alarm device. Make sure the power supply of peripheral device shall be below 1 A.	 The two ports serve as another group of alarm output ports.
5	HDMI port	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel audio data to displays with HDMI port.		
6	USB port	USB 3.0 port. Connect to devices such as mouse, USB storage device and USB burner.		
7	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable.		
8	MIC IN	Bidirectional talk input port. It is to receive analog audio signal from devices such as microphone, sound pickup.		
	MIC OUT	Audio output port. It is to output analog audio signal to devices such as sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.		
9	VGA port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.		
10	RS-232 port	It is for general COM debugging to configure IP address and transfer transparent COM data.		
11		GND.		

2.2.27 NVR608-4KS2/NVR608H-XI/NVR608RH-XI Series

The NVR608-32-4KS2 series rear panel is shown as below.

Figure 2-100 Rear panel (1)



The NVR608-64-4KS2/NVR608-128-4KS2/NVR608H-32-XI/NVR608H-64-XI/NVR608H-128-XI series rear panel is shown as below.

Figure 2-101 Rear panel (2)

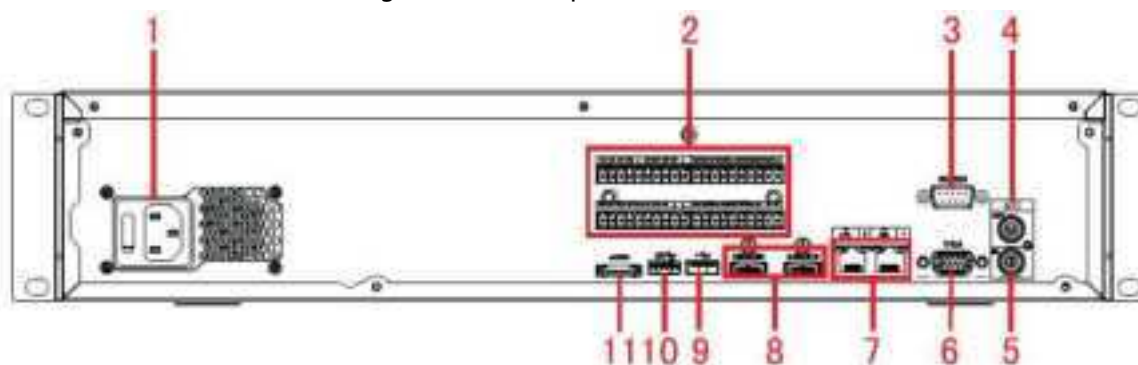
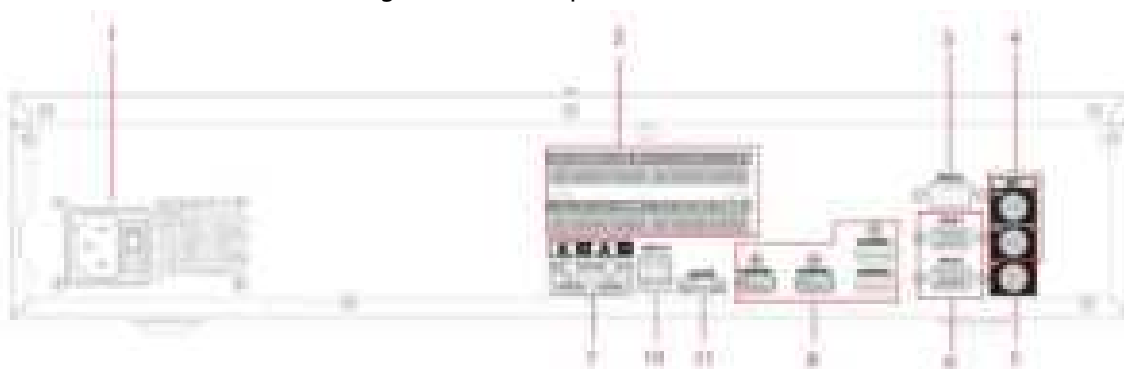


Figure 2-102 Rear panel (3)



The NVR608RH-32-XI/NVR608RH-64-XI/NVR608RH-128-XI front panel is shown as below.

Figure 2-103 Rear panel (4)

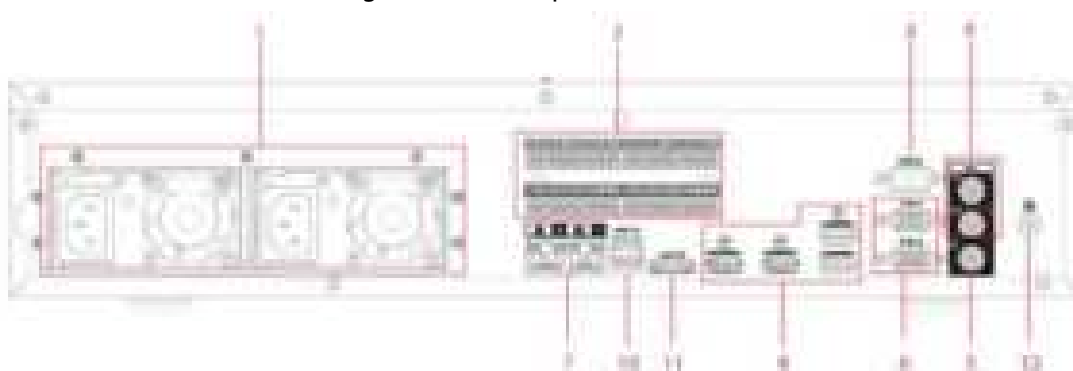


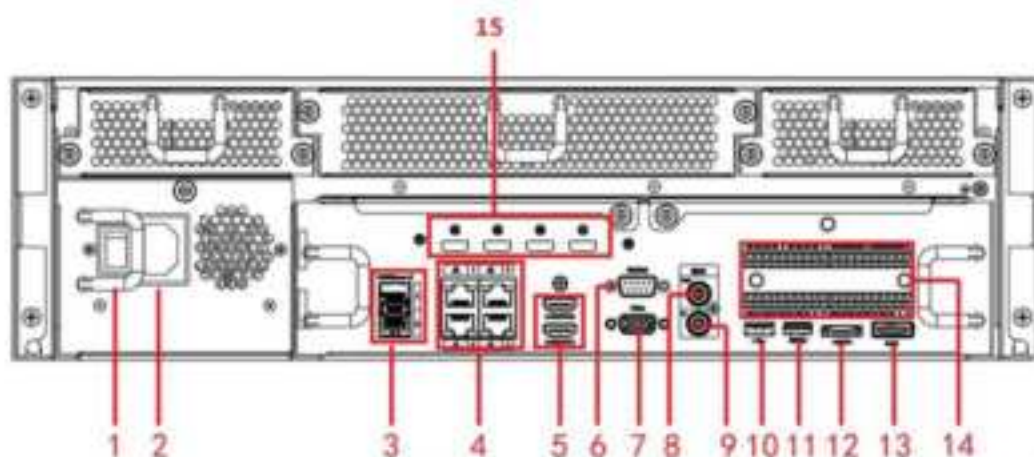
Table 2-41 Ports description

No.	Function	No.	Function
1	Power socket.	2	Alarm input/alarm output/RS-485 port
3	RS-232 port	4	Audio output
5	Audio input	6	VGA port
7	Network port	8	HDMI port
9	- NVR608-4K: USB 2.0 port - NVR608-4KS2: USB 3.0 port	10	USB 3.0 port
11	eSATA port	12	Ground

2.2.28 NVR616-4KS2/NVR616-XI Series

The general series rear panel of NVR616-4KS2 series is shown as below.

Figure 2-104 Rear panel



The redundant power series rear panel of NVR616-4KS2 series is shown as below.

Figure 2-105 Rear panel

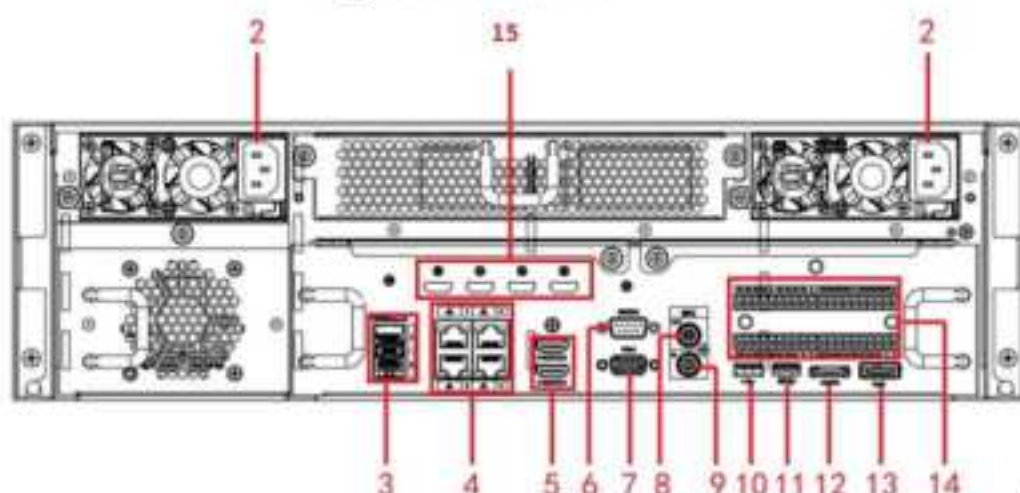
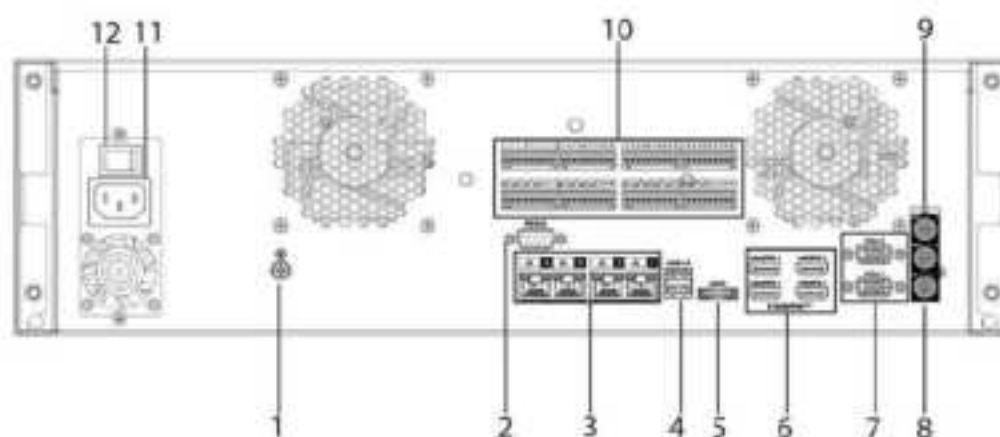


Table 2-42 Ports

No.	Name	No.	Name
1	Power on-off button	2	Power socket
3	1000M fiber port	4	Network port
5	HDMI port	6	RS-232 port
7	Video VGA output	8	Audio output
9	Audio input	10	USB 3.0 port
11	USB 3.0 port	12	eSATA port
13	SAS extension port	14	Alarm input/output/RS-485 port
15	HDMI port  High-definition decoding card is not installed in standard hardware configuration, you can purchase as needed.	—	—

The general series rear panel of NVR616-XI series is shown as below.

Figure 2-106 Rear panel



The redundant power series rear panel of NVR616-XI series is shown as below.

Figure 2-107 Rear panel

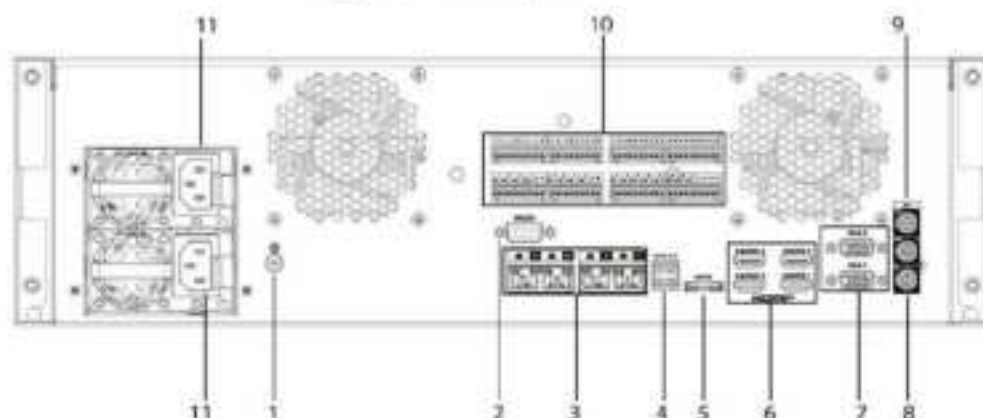


Table 2-43 Ports

No.	Name	No.	Name
1	Ground	2	RS-232 Port
3	Network Port	4	USB Port
5	eSATA Port	6	HDMI Port  High-definition decoding card is not installed in standard hardware configuration, you can purchase as needed.
7	VGA Port	8	AUDIO IN, RCA Connector
9	AUDIO OUT, RCA Connector	10	Alarm In/Out
11	Power Input	12	Power Switch

2.2.29 NVR624-XI Series

The redundant power series rear panel of NVR624-XI series is shown as below.

Figure 2-108 Rear panel

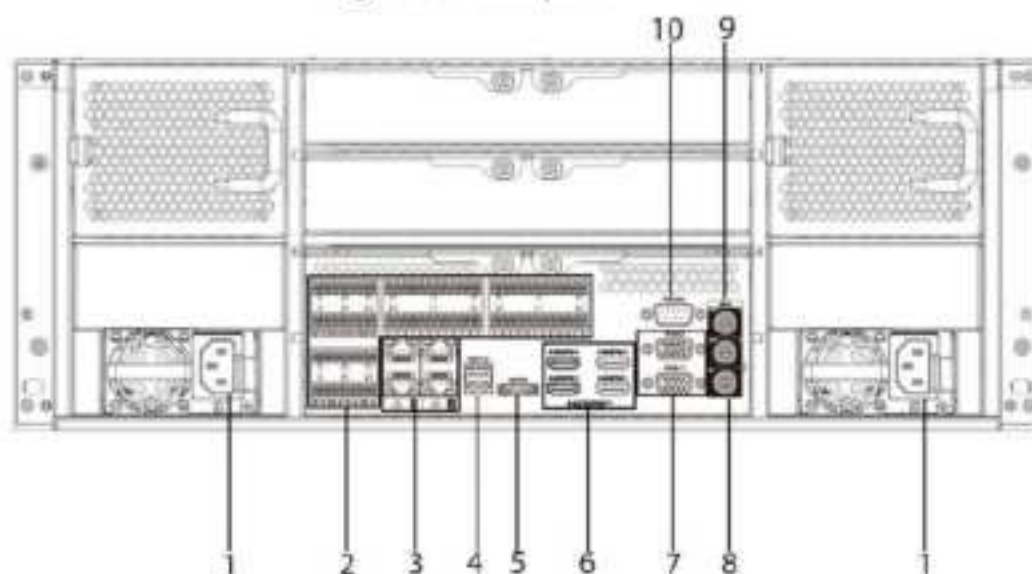


Table 2-44 Ports

No.	Name	No.	Name
1	Power Input	2	Alarm In/Out
3	Network Port	4	USB Port
5	eSATA Port	6	HDMI Port  High-definition decoding card is not installed in standard hardware configuration, you can purchase as needed.
7	VGA Port	8	AUDIO IN, RCA Connector
9	AUDIO OUT, RCA Connector	10	RS-232 Port

2.2.30 NVR11HS-W-S2-CE/NVR11HS-W-S2-FCC Series

Figure 2-109 Rear panel

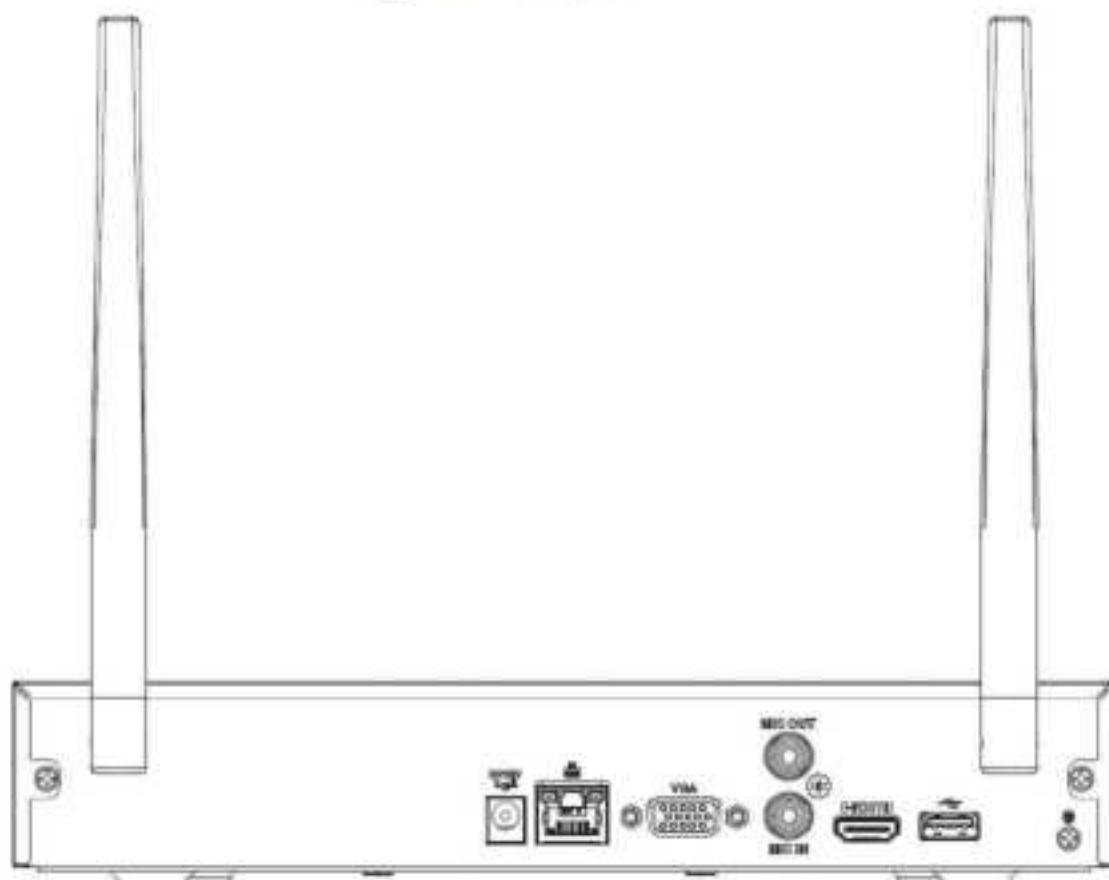


Table 2-45 Ports

Icon	Name	Function
	USB 2.0 port	USB 2.0 port. Connect to mouse, USB storage device, USB burner and more.
	Network port	10/100 Mbps self-adaptive Ethernet port. Connect to the network cable.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4.
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
	Power input port	Input 12 VDC/2 A.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.

Icon	Name	Function
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.
⊕	GND	Ground end.

2.2.31 NVR54-EI/NVR54-16P-EI/NVR58-EI/NVR58-16P-EI/NVR54-XI/NVR-58-XI Series

The NVR54-EI series rear panel is shown as below.

Figure 2-110 Rear panel



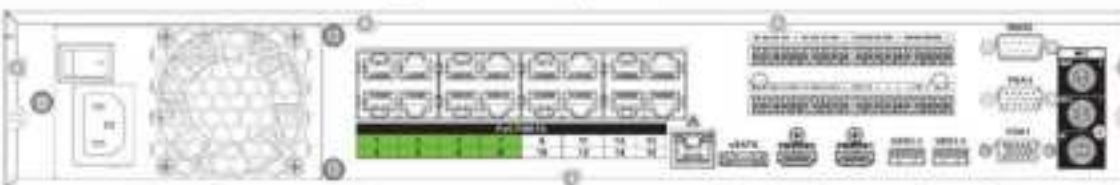
The NVR58-EI series rear panel is shown as below.

Figure 2-111 Rear panel



The NVR54-16P-EI series rear panel is shown as below.

Figure 2-112 Rear panel



The NVR58-16P-EI series rear panel is shown as below.

Figure 2-113 Rear panel



The NVR54-XI series rear panel is shown as below.

Figure 2-114 Rear panel



The NVR58-XI series rear panel is shown as below.

Figure 2-115 Rear panel



Table 2-46 Rear panel description

Icon	Name	Function
	Power switch	Power on-off button
	Power input port	Input 100–240 VAC.
	Network port	10/100/1000 Mbps self-adaptive Ethernet port. Connect to the network cable.
eSATA	eSATA port	External SATA port. It can connect to the device of the SATA port. Please jump the HDD when there is peripheral connected HDD.
USB 3.0	USB port	USB port. Connect to mouse, USB storage device, USB burner and more.
HDMI	High Definition Media Page	High definition audio and video signal output port. It transmits uncompressed high definition video and multiple-channel data to the HDMI port of the display device. HDMI version is 1.4b.
MIC IN	Audio input port	Bidirectional talk input port. It is to receive the analog audio signal output from the devices such as microphone, pickup.

Icon	Name	Function
MIC OUT	Audio output port	Audio output port. It is to output the analog audio signal to the devices such as the sound box. • Bidirectional talk output. • Audio output on 1-window video monitor. • Audio output on 1-window video playback.
1-16	Alarm input port 1-16	• There are four groups. The first group is from port 1 to port 4, the second group is from port 5 to port 8, the third group is from 9 to 12, and the fourth group is from 13 to 16. They are to receive the signal from the external alarm source. There are two types; NO (normal open)/NC (normal close). • When your alarm input device is using external power, please make sure the device and the NVR have the same ground.
	Ground	Alarm input ground end.
NO1-NO5	Alarm output port 1-5	• 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). Output alarm signal to the alarm device. Please make sure there is power to the external alarm device. • NO: Normal open alarm output port. • C: Alarm output public end. • NC: Normal close alarm output port.
C1-C5		
NC5		
A	RS-485 communication port	RS485_A port. It is the cable A. You can connect to the control devices such as speed dome PTZ.
B		RS485_B. It is the cable B. You can connect to the control devices such as speed dome PTZ.
CTRL (CTRL 12 V)	—	Controller 12 V power output. It is to control the on-off alarm relay output. It can be used to control the device alarm output. At the same time, it can also be used as the power input source of some devices such as the alarm detector.
P (+12 V)	—	+12 V power output port. It can provide the power to some peripheral devices such as the camera or the alarm device. Please note the supplying power shall be below 1 A.
RS-232	RS-232 debug COM	It is for general COM debug to configure IP address or transfer transparent COM data.



The two ports serve as another group of alarm output ports.

Icon	Name	Function
VGA	VGA video output port	VGA video output port. Output analog video signal. It can connect to the monitor to view analog video.
PoE PORTS	—	Built-in Switch. Support PoE or ePoE function. For ePoE series product, port 1 to port 8 are the ePoE ports. ePoE port supports 300 meters@100Mbps, 800 meters@10Mbps. Port 9 to port 16 are general PoE ports. The 16 PoE series supports total 150W.

2.2.32 NVR50-EI Series

The NVR50-EI series rear panel is shown as below.

Figure 2-116 Rear panel

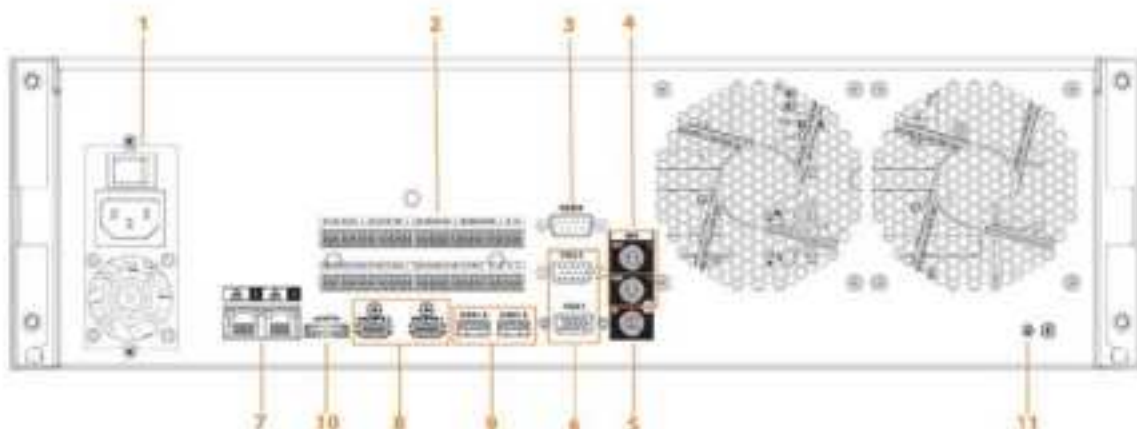


Table 2-47 Ports description

No.	Function	No.	Function
1	Power socket.	2	Alarm input/alarm output/RS-485 port
3	RS-232 port	4	Audio output
5	Audio input	6	VGA port
7	Network port	8	HDMI port
9	USB 3.0 port	10	eSATA port
12	Ground	—	—

2.3 Alarm Connection

2.3.1 Alarm Port

The alarm port is shown as below. The following figure is for reference only.

Figure 2-117 Alarm port

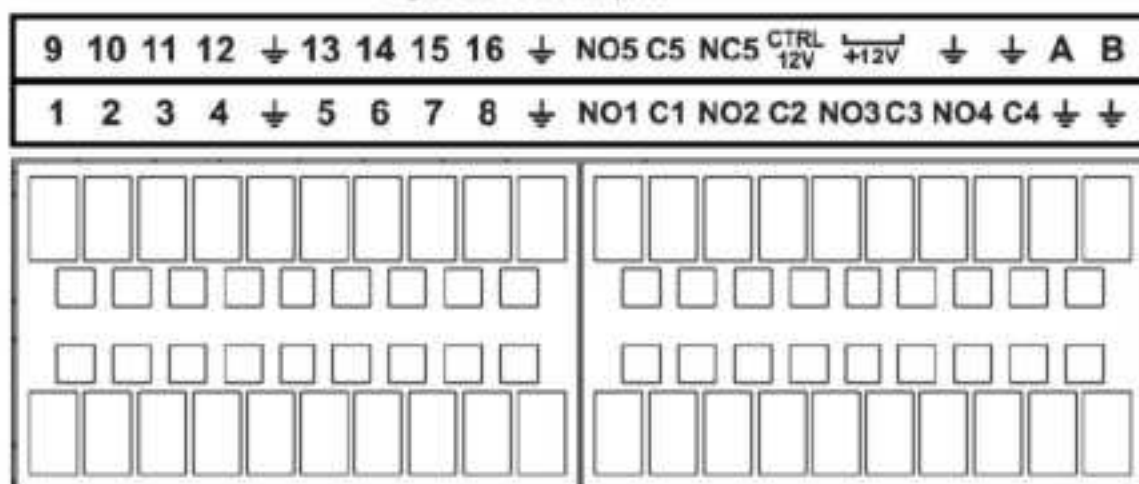


Table 2-48 Alarm port description

Icon	Function
1-16	ALARM1-ALARM16. The alarm becomes activated in the low level.
NO1 C1, NO2 C2, NO3 C3, NO4 C4	Four NO activation output groups. (On-off button).
NO5 C5 NC5	One NO/NC activation output group. (On-off button).
CTRL (CTRL 12 V)	Control power output. Disable power output when alarm is canceled. Current is 500 mA.
P (+12 V)	Rated current output. Current is 500 mA.
⏏	GND.
A/B	485 communication port. They are used to control devices such as PTZ. Please parallel connect 120 TΩ between A/B cables if there are too many PTZ decoders.



- Different models support different alarm input ports. Please see the specifications sheet for detailed information.
- Slight difference might be found on the alarm port layout.

2.3.2 Alarm Input Port

Connect the positive end (+) of the alarm input device to the alarm input port (ALARM IN 1-16) of the NVR. Connect the negative end (-) of the alarm input device to the ground end (⏏) of the NVR.

Figure 2-118 Alarm input port (1)

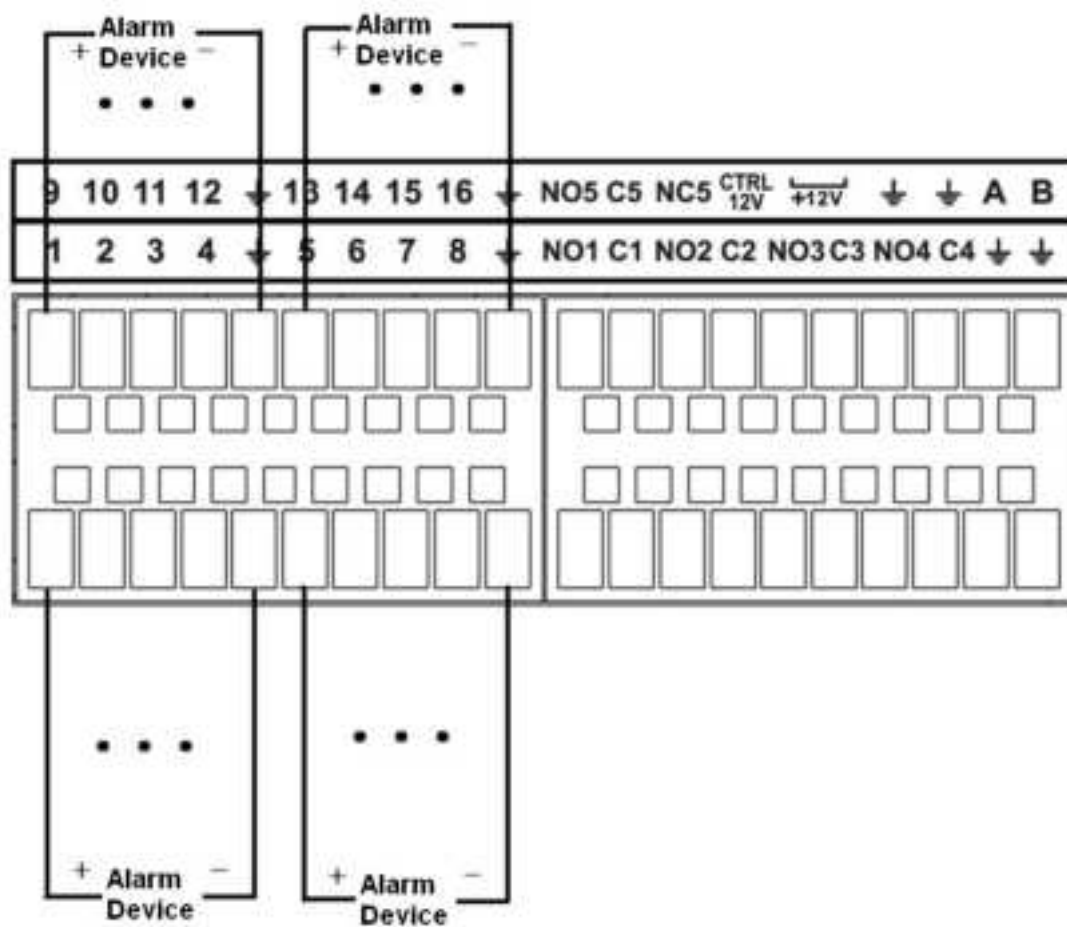
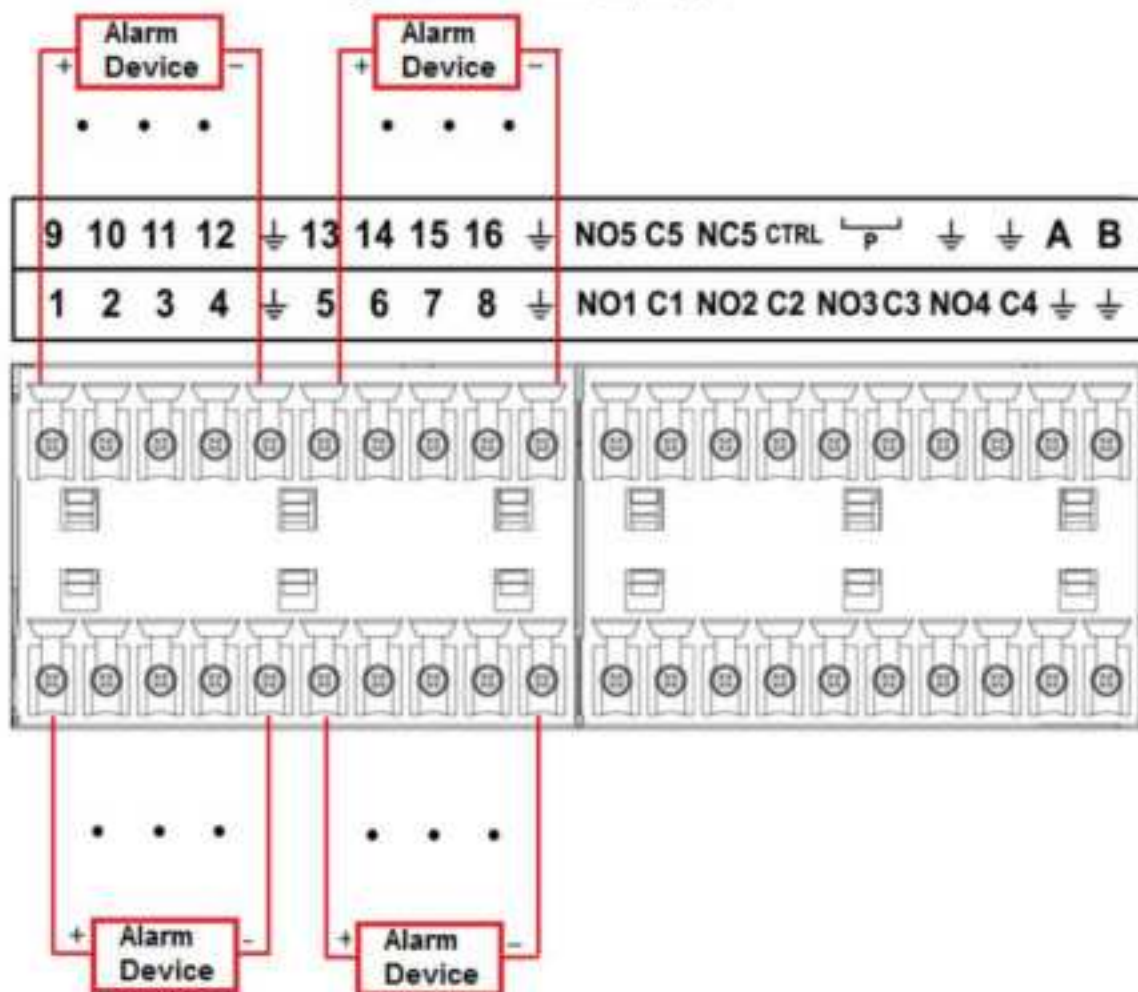


Figure 2-119 Alarm input port (2)



- There are two alarm input types: NO/NC.
- When connect the ground port of the alarm device to the NVR, you can use any of the GND ports (⏏).
- Connect the NC port of the alarm device to the alarm input port (ALARM) of the NVR.
- When there is peripheral power supplying for the alarm device, please make sure it is earthed with the NVR.

2.3.3 Alarm Output Port

- There is peripheral power supplying for the external alarm device.
- In case overload might result in NVR damage, please see the following relay specifications for detailed information.
- A/B cable of the RS-485 is for the A/B cable connection of the speed PTZ.

2.3.4 Alarm Relay Specifications

Table 2-49 Alarm relay specifications

Model: JRC-27F		
Material of the touch	Silver	
Rating (Resistance Load)	Rated switch capacity	30 VDC 2 A, 125 VAC 1 A
	Maximum switch power	125 VAC, 160 W
	Maximum switch voltage	250 VAC, 220 VDC
	Maximum switch current	1 A
Insulation	Between touches with same polarity	1000 VAC 1 minute
	Between touches with different polarity	1000 VAC 1 minute
	Between touch and winding	1000 VAC 1 minute
Surge voltage	Between touches with same polarity	1500 V (10×160 μs)
Length of open time	3 ms max	
Length of close time	3 ms max	
Longevity	Mechanical	50 × 10 ⁶ MIN (3 Hz)
	Electrical	200 × 10 ³ MIN (0.5 Hz)
Temperature	-40 °C to +70 °C	

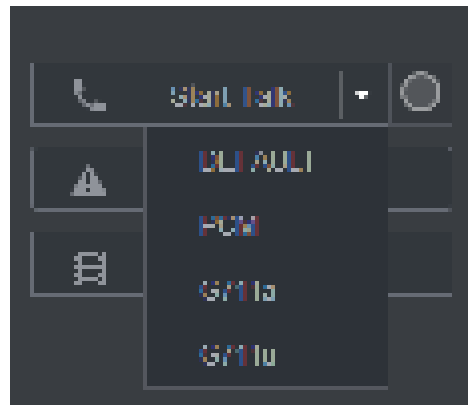
2.4 Two-way Talk

2.4.1 Device-end to PC-end

Procedure

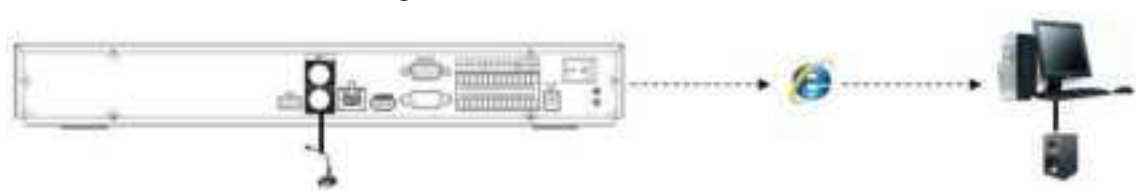
- Step 1 Connect the speaker or the pickup to the first audio input port on the device rear panel.
- Step 2 Connect the earphone or the sound box to the audio output port in the PC.
- Step 3 Log in to the web and then enable the corresponding channel real-time monitor.
- Step 4 Enable two-way talk.

Figure 2-120 Enable two-way talk



Step 5 At the device end, speak by the speaker or the pickup, and then you can get the audio from the earphone or sound box at the PC end.

Figure 2-121 Device to PC



2.4.2 PC-end to the Device-end

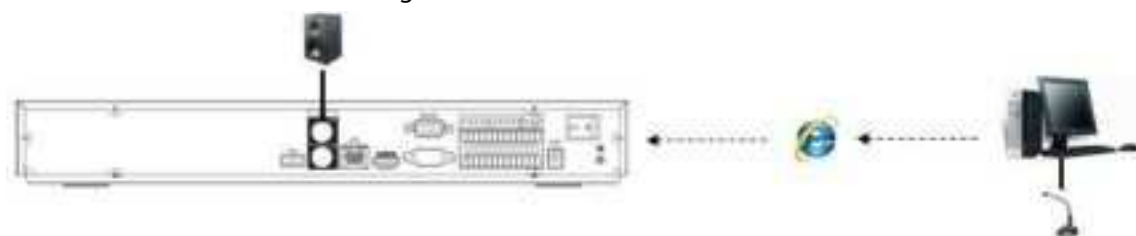
Device Connection

1. Connect the speaker or the pickup to the audio output port in the PC.
2. Connect the earphone or the sound box to the first audio input port in the device rear panel.
3. Log in to the web and then enable the corresponding channel real-time monitor.
4. Enable bidirectional talk. See Figure 2-120.

Listening Operation

At the PC-end, speak by the speaker or the pickup, and then you can get the audio from the earphone or sound box at the device-end.

Figure 2-122 PC to device



3 Device Installation

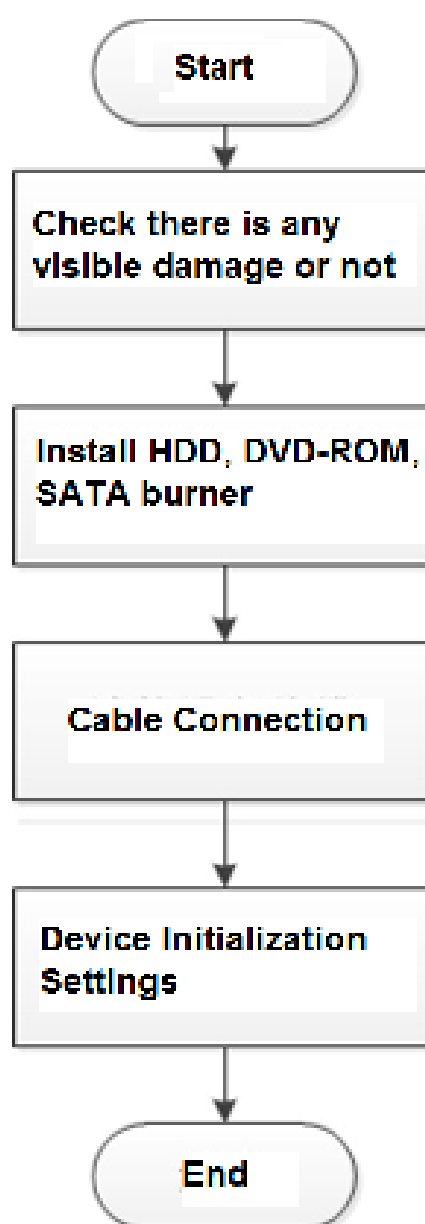


All the installation and operations here should conform to your local electric safety rules.

3.1 Device Installation Diagram

Please see the following diagram to install the NVR.

Figure 3-1 Installation flowchart



3.2 Checking Unpacked NVR

When you receive the NVR, check against the following checklist. If any of the items are missing or damaged, contact the local retailer or after-sales service immediately.

Table 3-1 Checklist

Sequence	Item	Description
1	Overall packaging	Appearance
		Package
		Accessories
2	The Device	Appearance
		Model
		Label

3.3 HDD Installation

For the first time installation, make sure whether the HDD has been installed or not. We recommend to use HDD of enterprise level or surveillance level. It is not recommended to use PC HDD.



- Shut off the power before you replace the HDD.
- Use the dedicated SATA HDD for monitoring recommended by the HDD manufacturer.
- You can see the Appendix for HDD space information and recommended HDD brand.

3.3.1 NVR41-4KS2/NVR41-P-4KS2/NVR41-8P-4KS2/NVR41-4KS2/L/NVR41-P-4KS2/L/NVR41-8P-4KS2/L/NVR21-4KS2/NVR21-P-4KS2/NVR21-8P-4KS2/NVR21-W-4KS2/NVR21-I/NVR21-I2/NVR21-P-I/NVR21-P-I2/NVR21-8P-I/NVR21-8P-I2/NVR21-S3/NVR21-P-

S3/NVR21-8P-S3/NVR41-EI/NVR41-P-EI/NVR41-8P-EI

Background Information

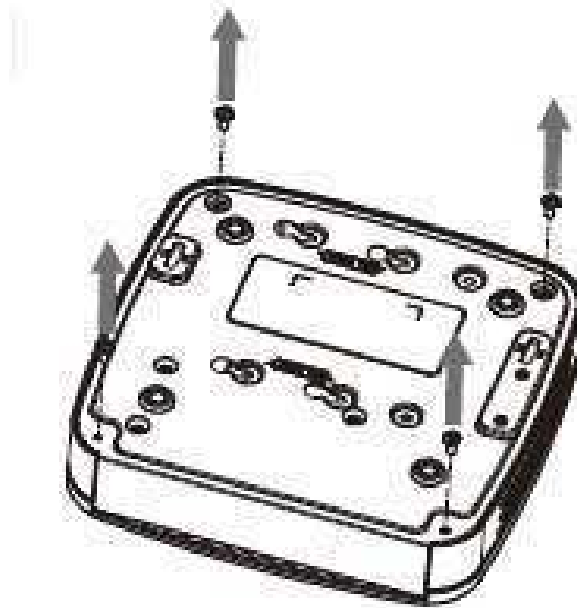


Connect cable and then secure the HDD on the NVR if it is not convenient to connect the HDD data cable and power cable at first.

Procedure

Step 1 Loosen the screws of the bottom of the chassis.

Figure 3-2 Loosen screws



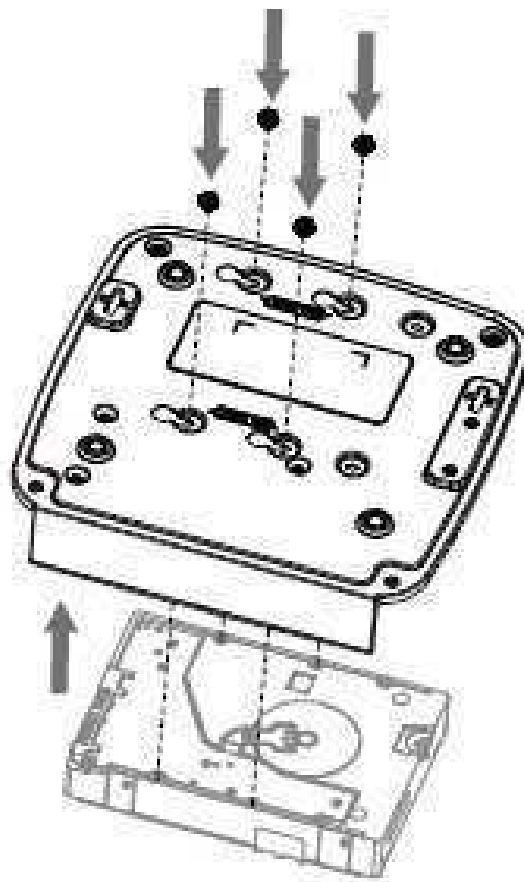
Step 2 Place the HDD in accordance with the four holes in the bottom.

Figure 3-3 Align HDD



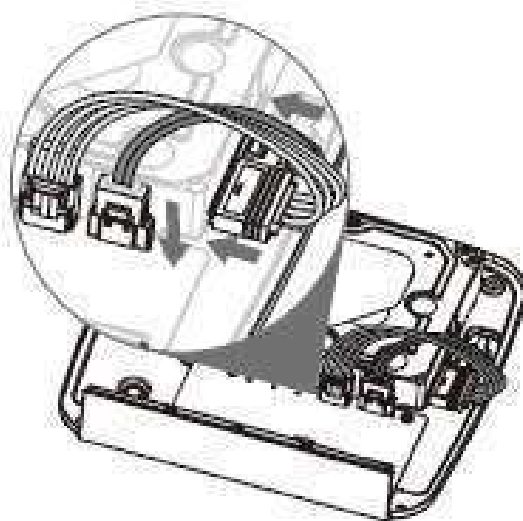
Step 3 Turn the device upside down and then secure the screws firmly.

Figure 3-4 Secure screws



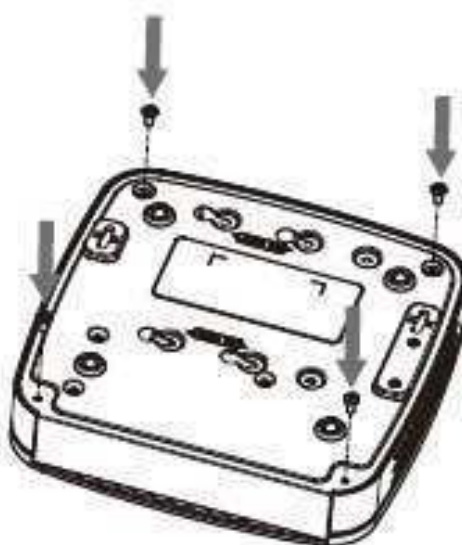
Step 4 Connect the HDD cable and power cable to the HDD and the mainboard respectively.

Figure 3-5 Connect cables



Step 5 Put the cover back and then fix the screws of the rear panel. The installation is complete.

Figure 3-6 Put back the cover

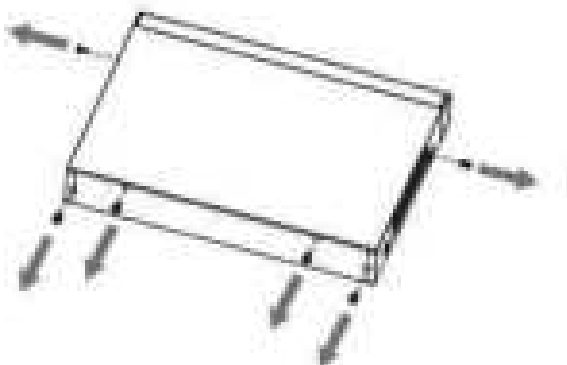


3.3.2 NVR41HS-4KS2/NVR41HS-P-4KS2/NVR41HS-8P-4KS2/NVR41HS-4KS2/L/NVR41HS-P-4KS2/L/NVR41HS-8P-4KS2/L/NVR21HS-4KS2/NVR21HS-P-4KS2/NVR21HS-8P-4KS2/NVR21HS-W-4KS2/NVR11HS-S3H/NVR11HS-P-S3H/NVR11HS-8P-S3H/NVR21HS-I/NVR21HS-I2/NVR21HS-P-I/NVR21HS-P-I2/NVR21HS-8P-I/NVR21HS-8P-I2/NVR21HS-S3/NVR21HS-P-S3/NVR21HS-8P-S3/NVR11HS-W-S2-CE/NVR11HS-W-S2-FCC/NVR41HS-EI/NVR41HS-P-EI/NVR41HS-8P-EI2

Procedure

Step 1 Loosen the screws of the upper cover and side panel.

Figure 3-7 Loosen screws



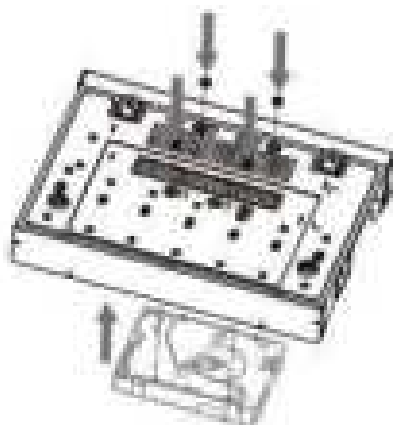
Step 2 Remove the cover in the direction of the arrow as shown in the figure below.

Figure 3-8 Remove cover



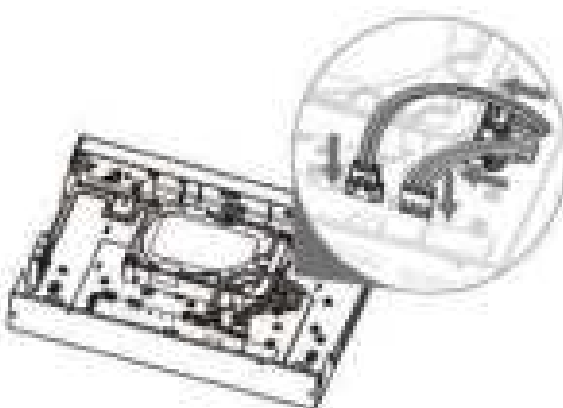
Step 3 Turn over the device, and align the HDD to the four holes of bottom panel, and then fix the HDD with screws.

Figure 3-9 Align HDD



Step 4 Connect HDD to the device using data cable and power cable.

Figure 3-10 Connect cables



Step 5 Put the cover in accordance with the clip and then fix the screws on the rear panel and side panel.

Figure 3-11 Put cover back



3.3.3 NVR22-8P-S2/NVR42-4KS2/NVR42-P-4KS2/NVR42-8P-4KS2/NVR42-16P-4KS2/NVR42-4KS2/L/NVR42-P-4KS2/L/NVR42-8P-4KS2/L/NVR42-16P-4KS2/L/NVR52-4KS2/NVR52-8P-4KS2/NVR52-16P-4KS2/ NVR52-24P-4KS2/NVR22-4KS2/NVR22-P-4KS2/NVR22-8P-4KS2/NVR52-8P-4KS2E/NVR22-I/NVR22-I2/NVR22-P-I/NVR22-P-I2/NVR22-8P-I/NVR22-8P-I2/NVR22-16P-I/NVR22-16P-I2/NVR42-I/NVR42-8P-I/NVR42-16P-I/NVR52-16P-I/NVR52-16P-I/L/NVR52-8P-I/NVR52-8P-I/L/NVR42-EI/NVR42-P-EI/NVR42-8P-EI/NVR42-16P-EI

Background Information

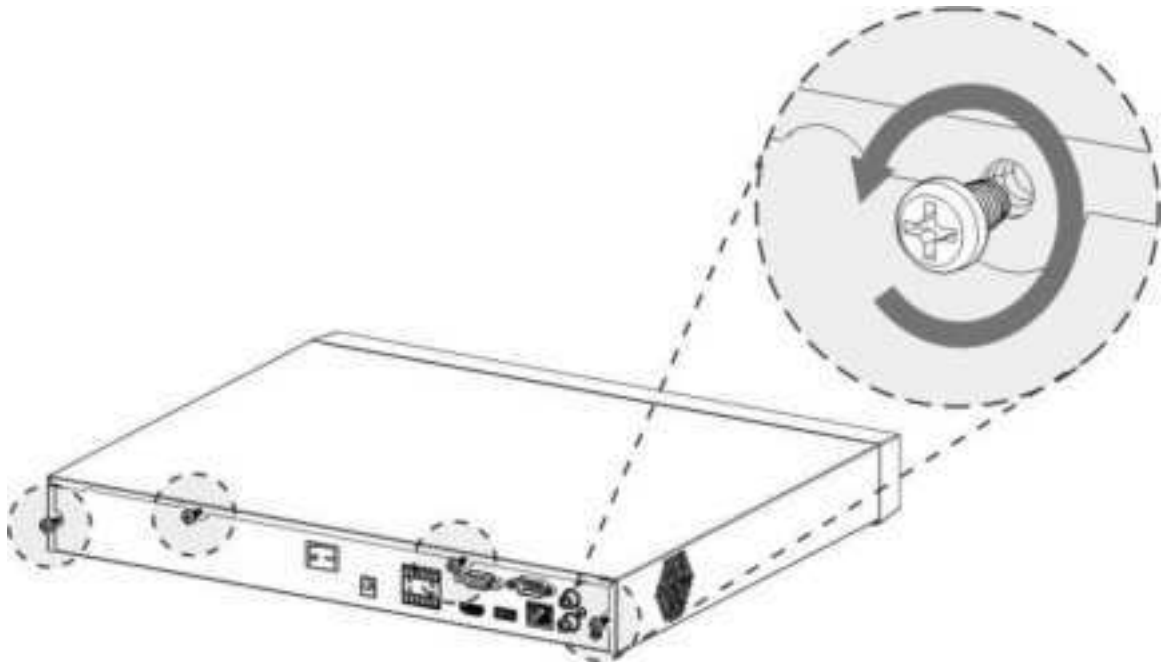


Different models have different numbers of HDDs.

Procedure

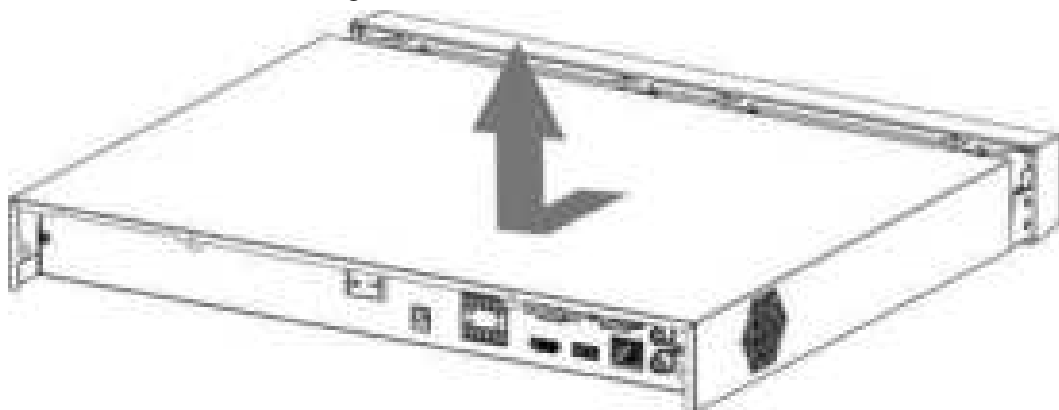
Step 1 Remove the four fixing screws on the rear panel.

Figure 3-12 Remove screws



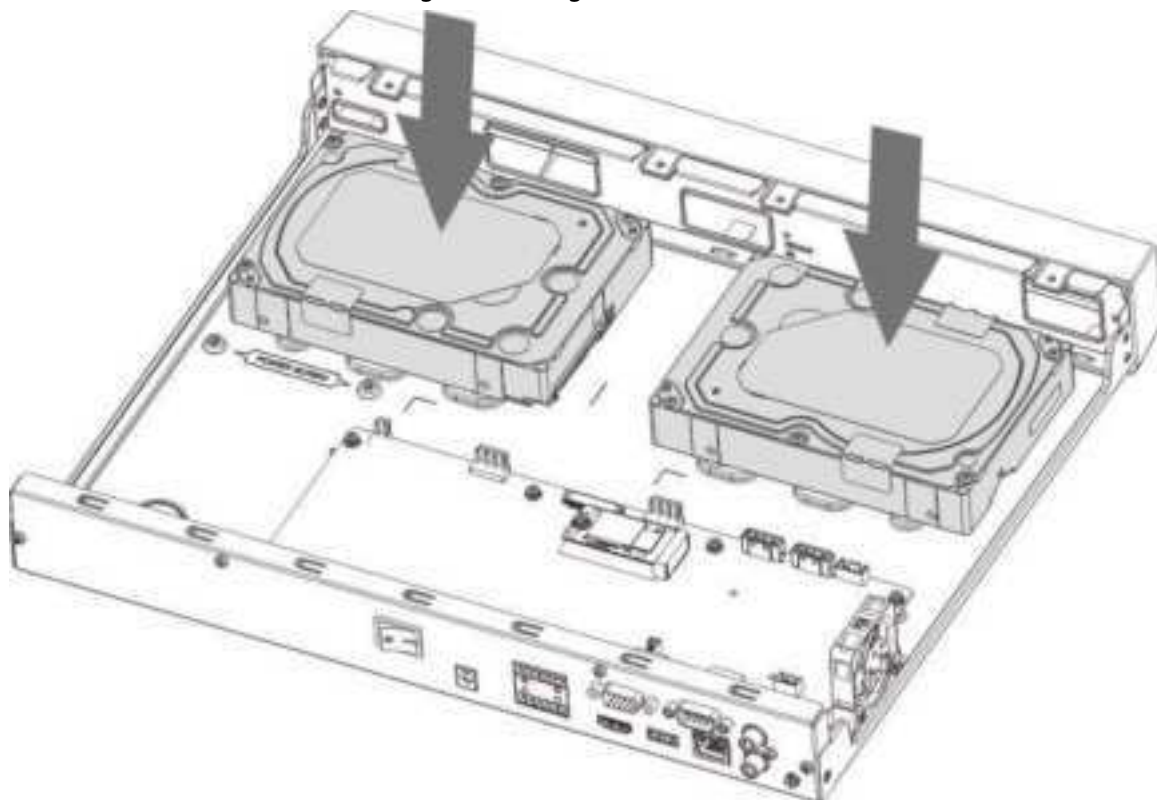
Step 2 Remove the case cover along the direction shown in the following arrow.

Figure 3-13 Remove cover



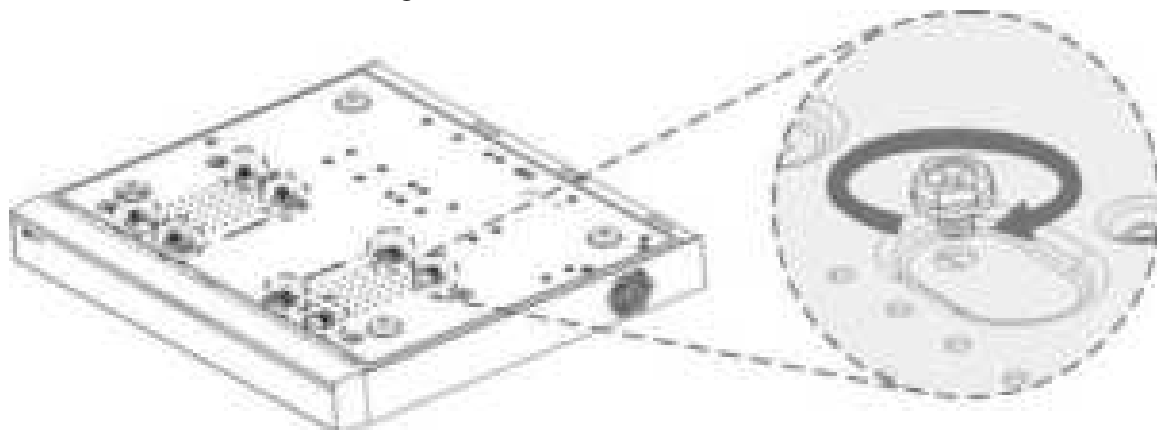
Step 3 Match the four holes on the baseboard to place the HDD.

Figure 3-14 Align HDD



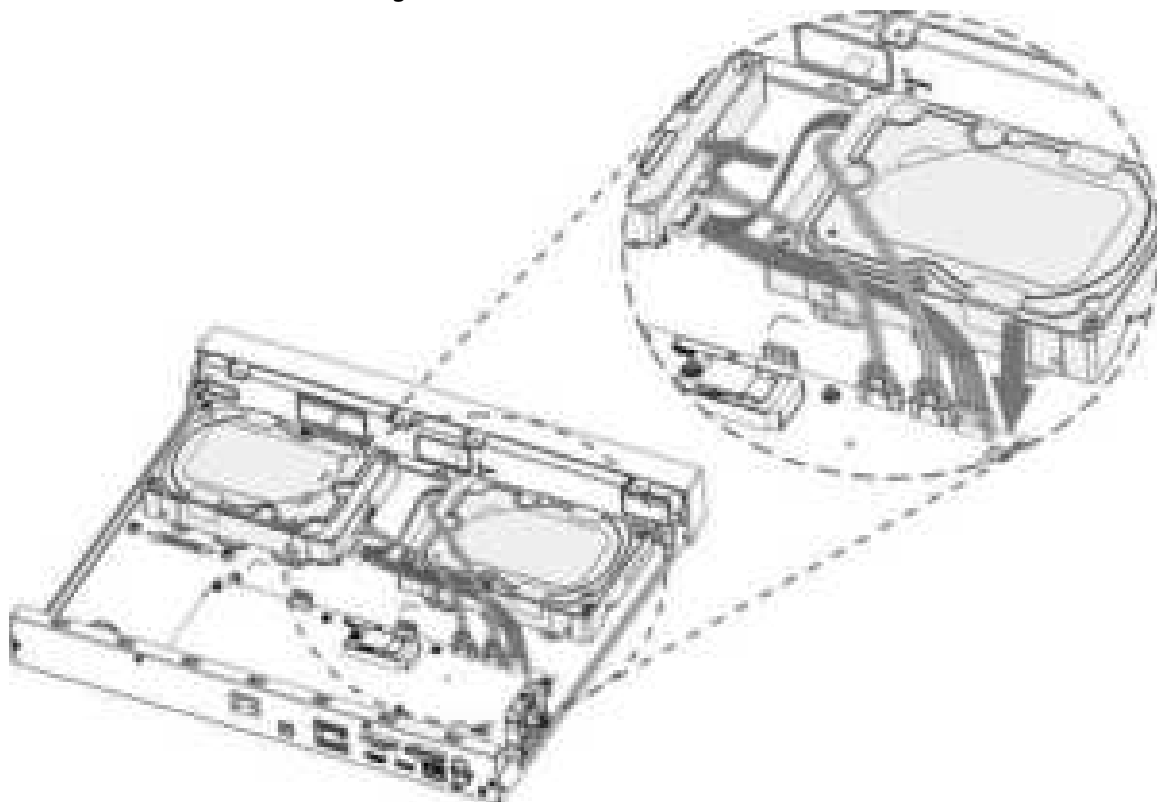
Step 4 Turn the device upside down, match the screws with the holes on the HDD and then fasten them. The HDD is fixed to the baseboard.

Figure 3-15 Fasten screws



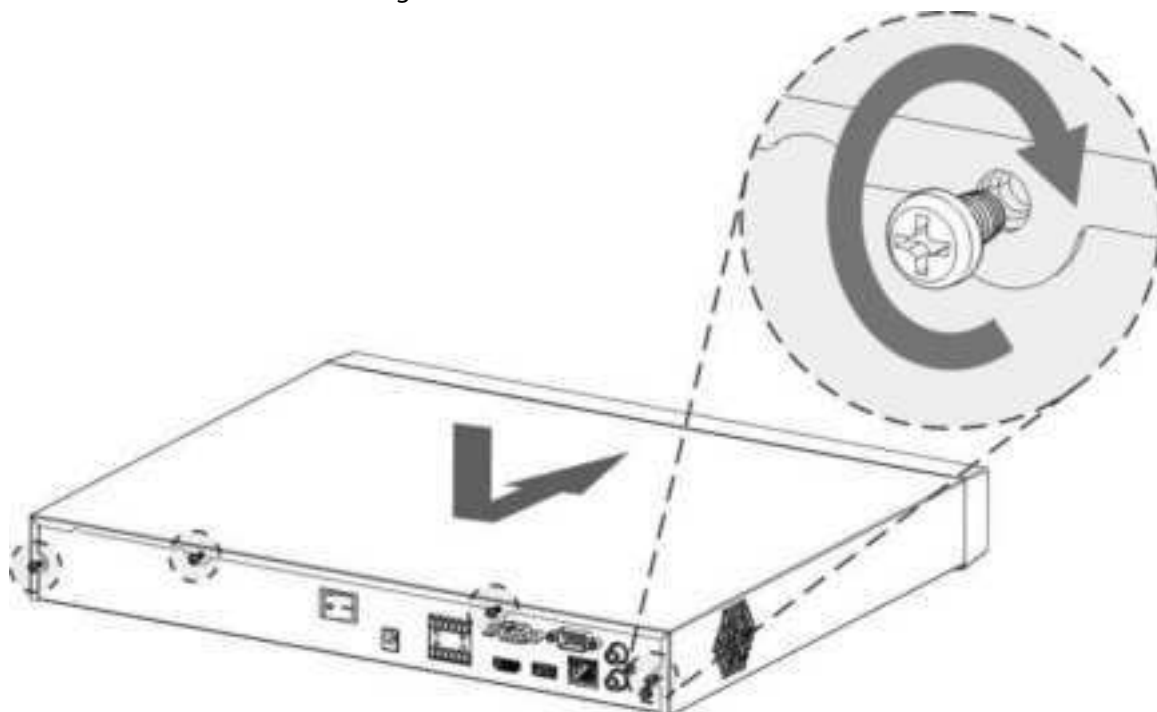
Step 5 Connect the HDD data cable and power cable to the device.

Figure 3-16 Connect cables



Step 6 Put back the cover and fasten the four screws on the rear panel to complete the installation.

Figure 3-17 Put back cover



3.3.4 NVR54-4KS2/NVR54-16P-4KS2/NVR44-4KS2/NVR44-16P-4KS2/NVR44-4KS2/L/NVR44-16P-4KS2/L/NVR54-24P-4KS2/NVR54-

16P-4KS2E/NVR58-I/NVR58-I/L/NVR54-I/NVR54-I/L/NVR52-I/NVR52-I/L/NVR42-I/NVR42-8P-I/NVR44-I/NVR48-I/NVR608-32-4KS2/NVR44-4KS2/I/NVR44-16P-4KS2/I/NVR48-4KS2/I/NVR48-16P-4KS2/I/NVR48-EI/NVR48-16P-EI/NVR44-EI/NVR44-16P-EI

Background Information

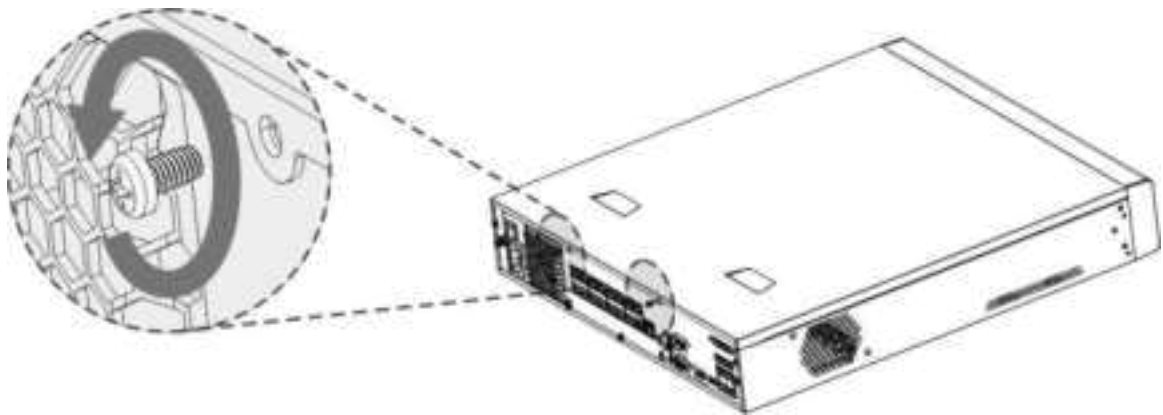


Different models have different number of HDDs.

Procedure

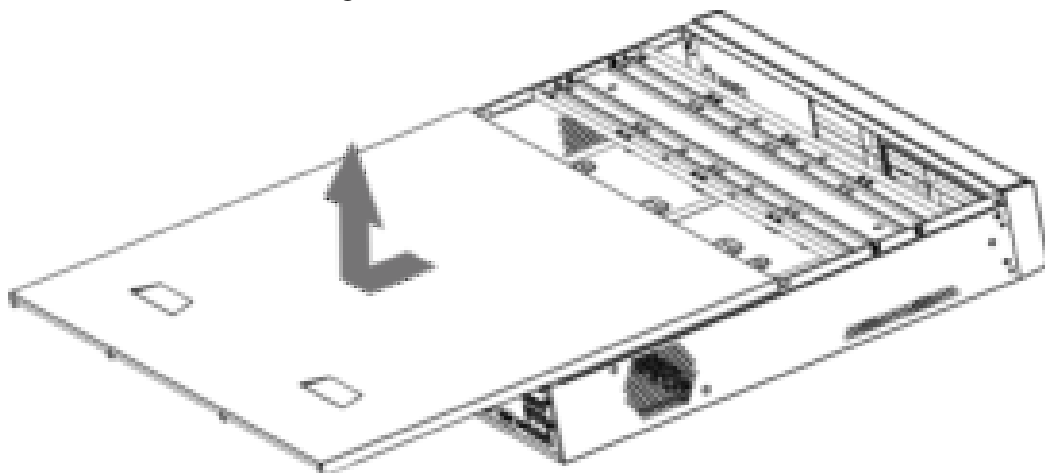
Step 1 Remove the fixing screws on the rear panel of the device.

Figure 3-18 Remove screws



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

Figure 3-19 Remove cover



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

- 1.5U device has one HDD bracket. For the way to remove the bracket, see Figure 3-20
- 2U device has two HDD brackets. For the way to remove the brackets, see Figure 3-21.

Figure 3-20 Remove screws (1.5U)

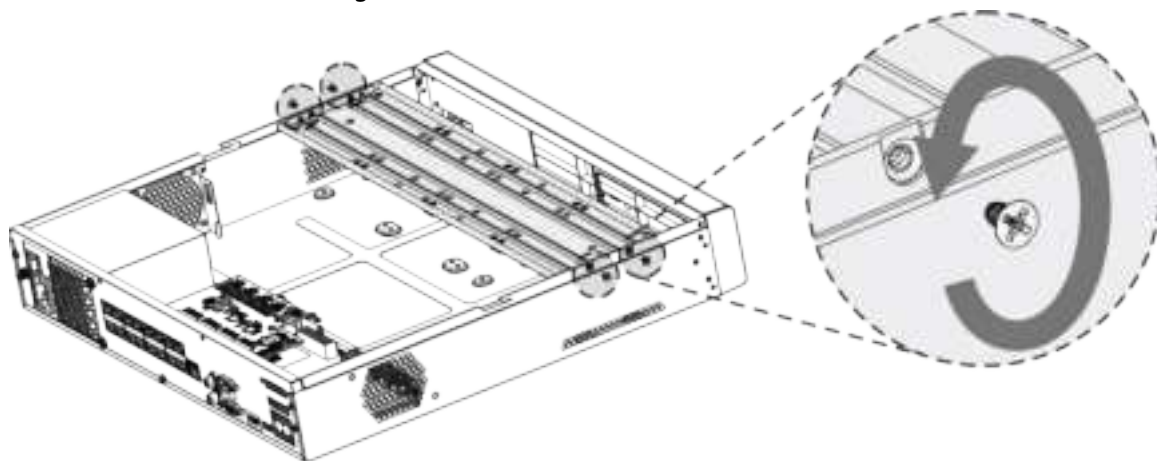
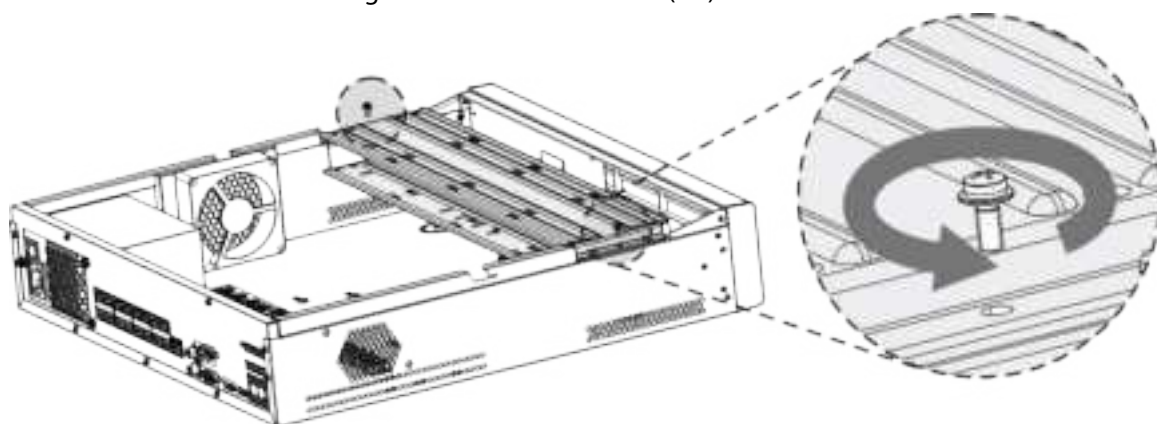
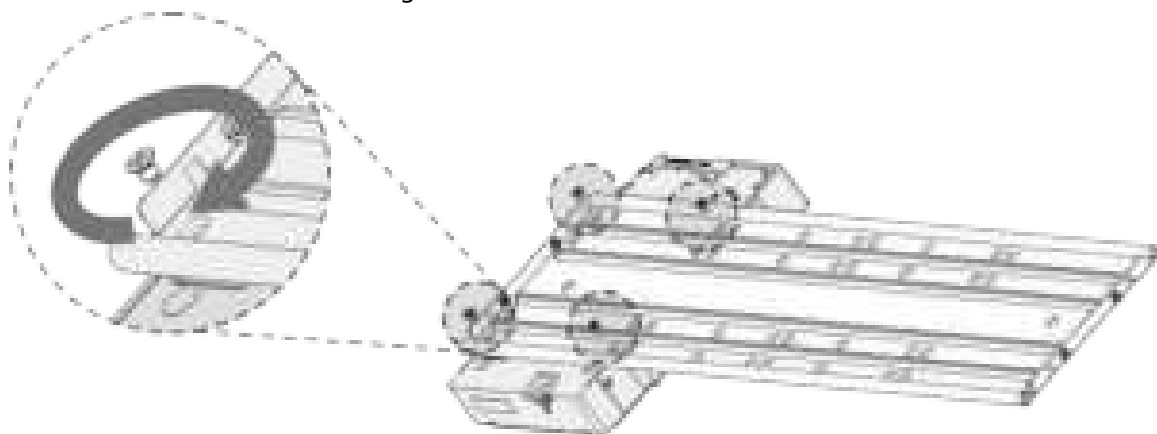


Figure 3-21 Remove screws (2U)



- 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 3-22 Fasten screws



- Step 5** see Step 4 to install other HDDs.

Figure 3-23 Install more HDDs

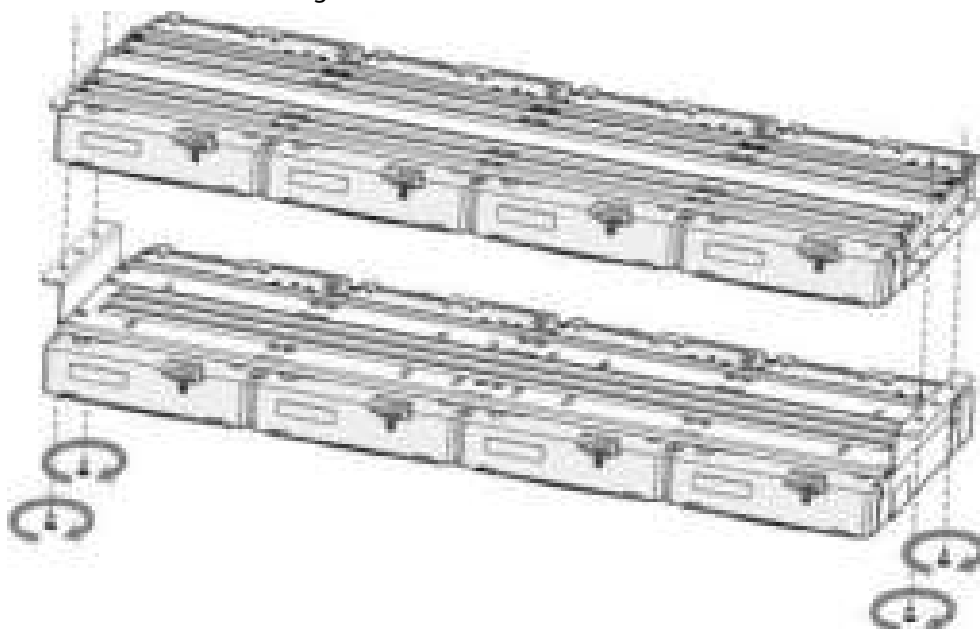


Step 6 Lock the two HDD brackets.



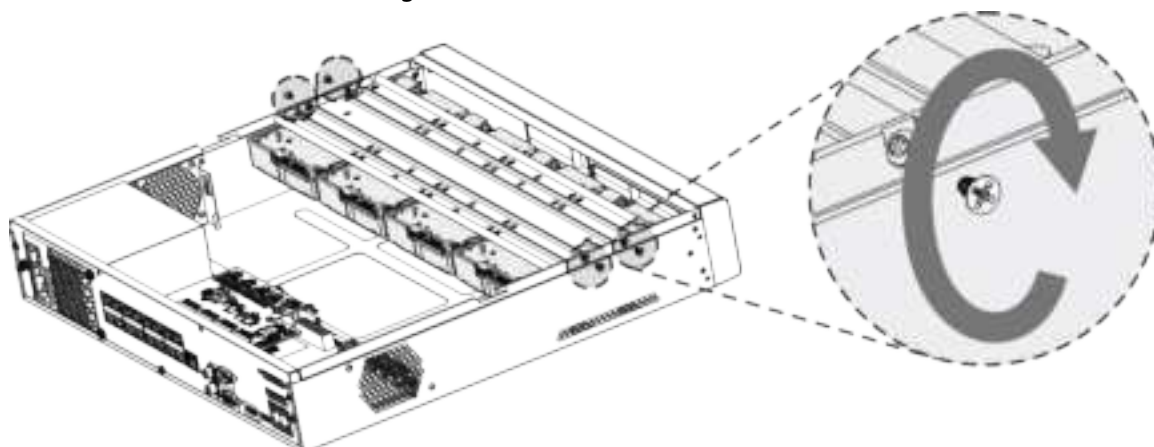
This step is required for 2U devices only.

Figure 3-24 Lock brackets



Step 7 Place the bracket to the device and then fasten the screws on the sides of the bracket.

Figure 3-25 Fasten screws

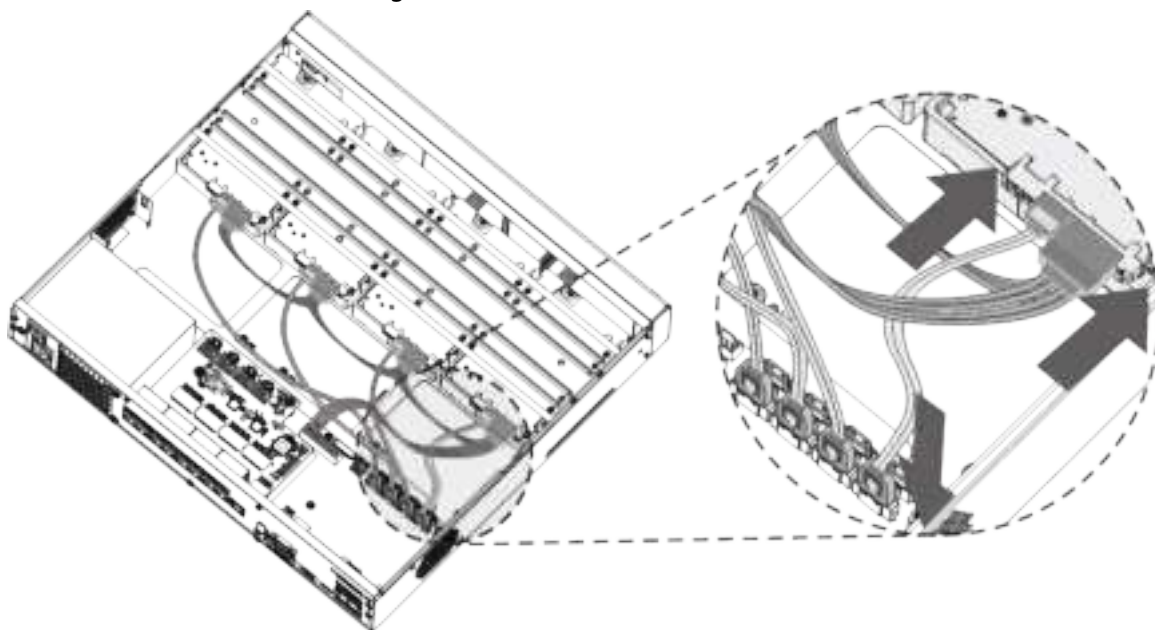


Step 8 Connect the HDD data cable and power cable to the device.



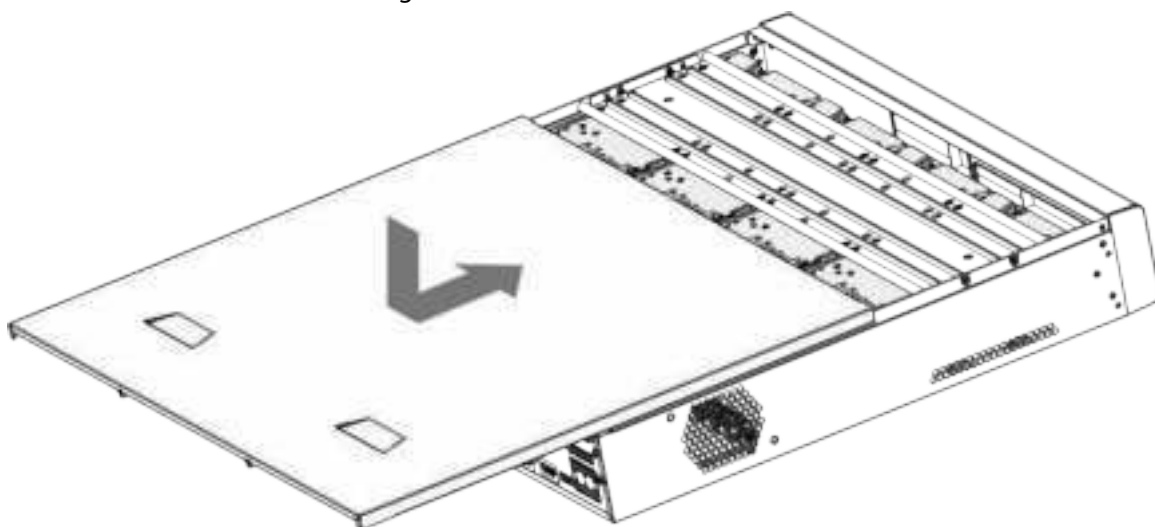
The following figure is for reference only.

Figure 3-26 Connect cables



Step 9 Put back the cover and fasten the screws on the rear panel to complete the installation.

Figure 3-27 Fasten screws

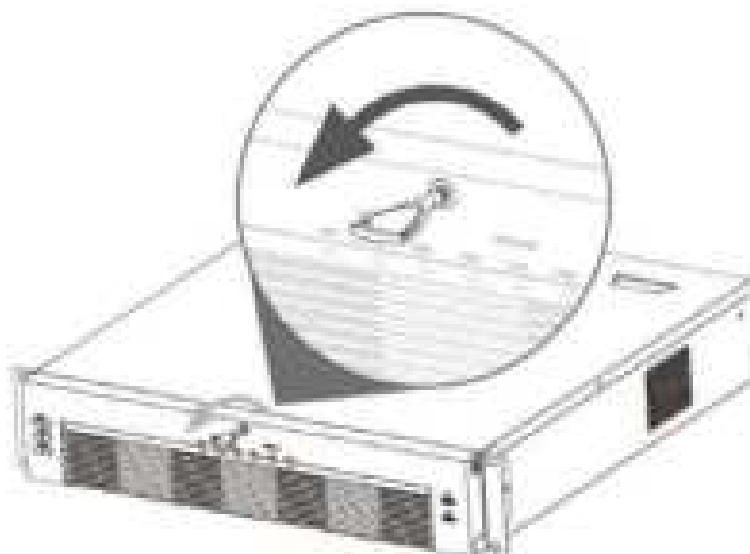


3.3.5 NVR608-64-4KS2/NVR608-128-4KS2/NVR608H-32-XI/NVR608H-64-XI/NVR608H-128-XI Series

Procedure

Step 1 Unlock the lock on the front panel.

Figure 3-28 Unlock front panel



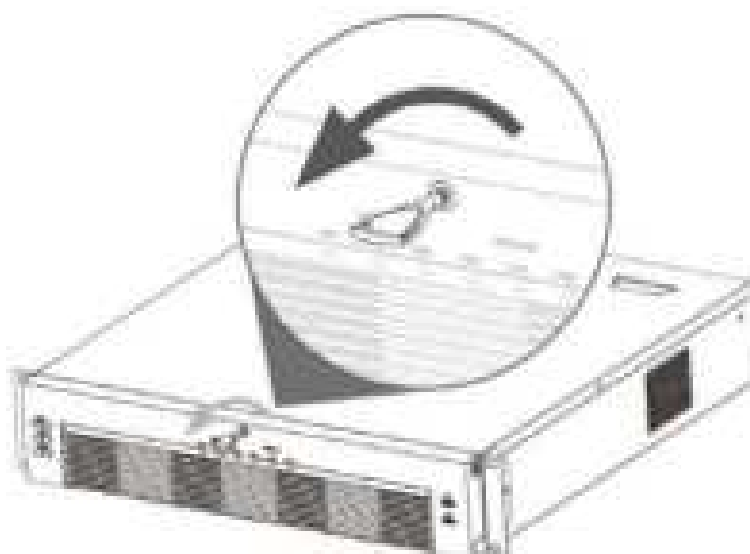
Step 2 Press the button on the 2 sides to open the front panel.

Figure 3-29 Open front panel



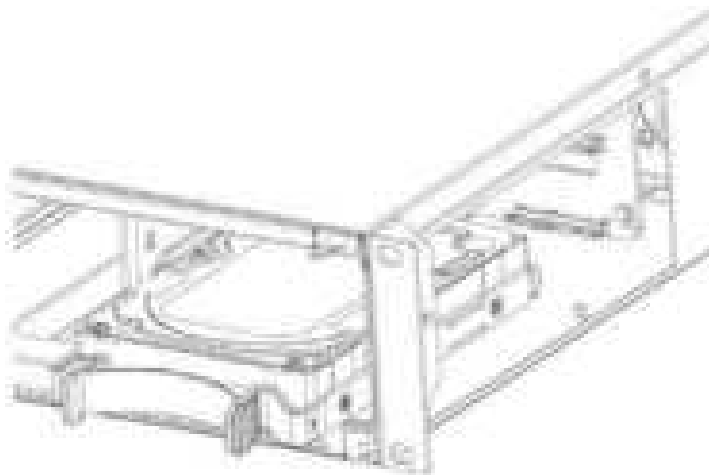
Step 3 Match the 4 screw holes on the HDD with the 4 holes on the bracket and then fasten the screws.

Figure 3-30 Fasten HDD



Step 4 Push the HDD box into the device.

Figure 3-31 Unlock front panel



Step 5 Close the front panel and then tighten the lock on the front panel.

Figure 3-32 Lock front panel



3.3.6 NVR616-4KS2 Series

Background Information

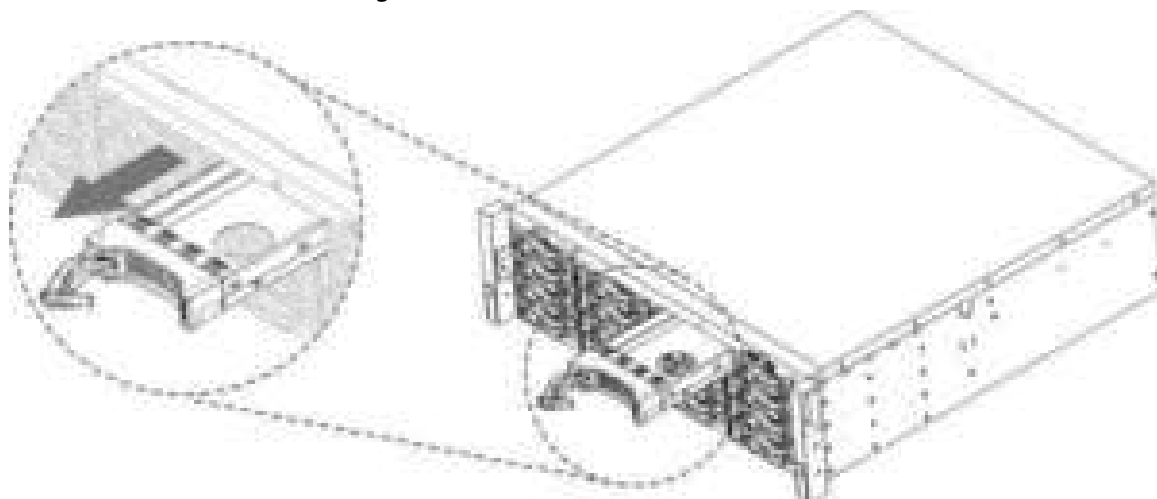


The following figures are for reference only.

Procedure

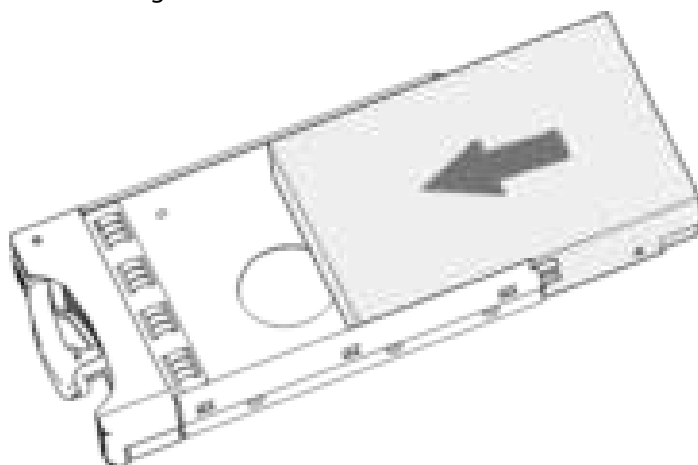
Step 1 Press the red button on the HDD box, open the handle and then pull out the HDD box.

Figure 3-33 Take out HDD box



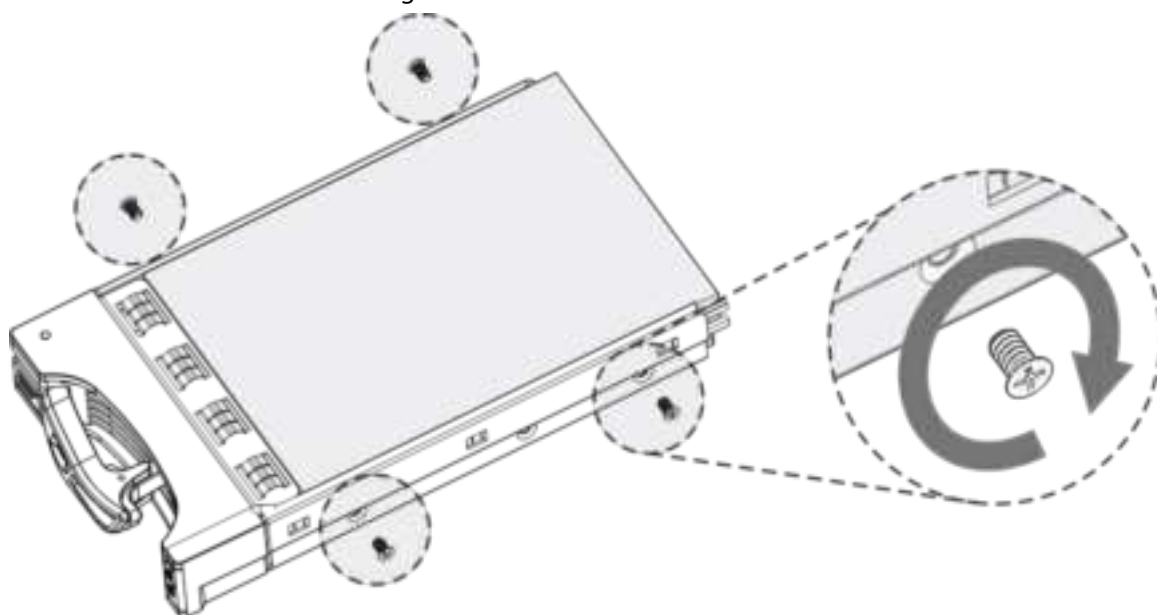
Step 2 Put the HDD into the HDD box along the direction shown in the following arrow.

Figure 3-34 Put HDD into box



Step 3 Fasten the screws on the sides of the HDD box.

Figure 3-35 Fasten screws

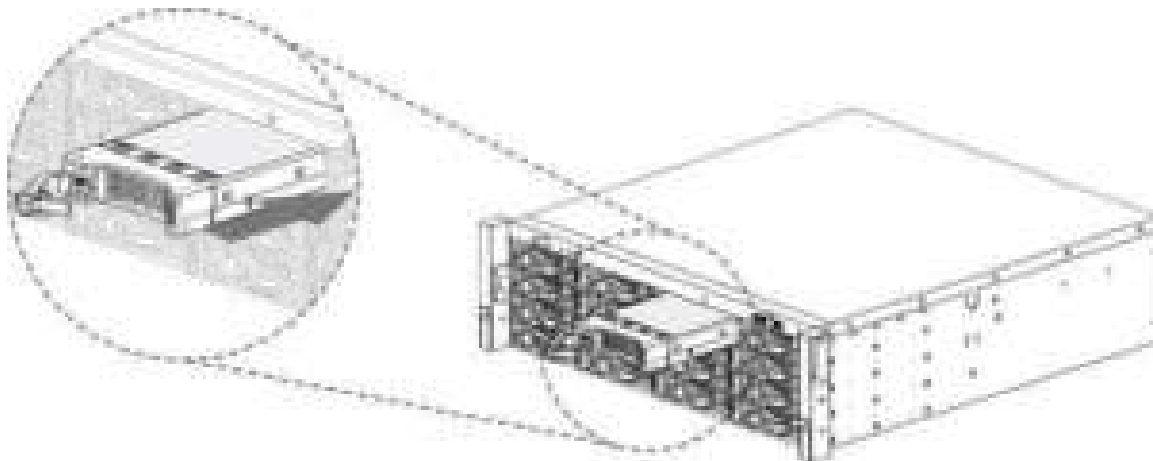


Step 4 Insert the HDD box into the HDD slot, press it to the bottom, and then close the box handle.



If you have not pushed the HDD box to the bottom, do not close the handle to avoid any damage to the HDD slot

Figure 3-36 Close the handle



3.4 CD-ROM Installation

Procedure

Step 1 Open the top cover and then remove the HDD bracket.

Figure 3-37 Open the top cover



Step 2 Take off the bottom of the HDD bracket and CD-ROM bracket.

Figure 3-38 Take out HDD bracket

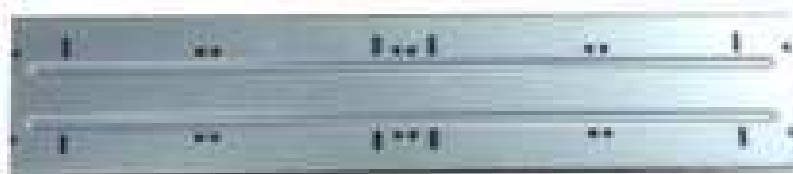


Figure 3-39 Take out CD-ROM bracket



Step 3 Fix the CD-ROM bracket at the HDD bracket.

Figure 3-40 Fix bracket



Step 4 Install a pair of the CD-ROM bracket. Please make sure that the reverse side is secure too.

Figure 3-41 Install bracket

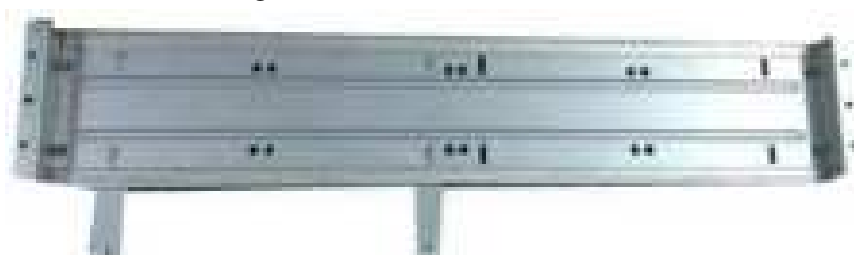


Figure 3-42 Install bracket (reverse side)



Step 5 Install SATA burner. Line up the SATA burner to the hole positions.

Figure 3-43 Install SATA burner



Step 6 Use screw driver to fix the screws.

Figure 3-44 Fasten screws



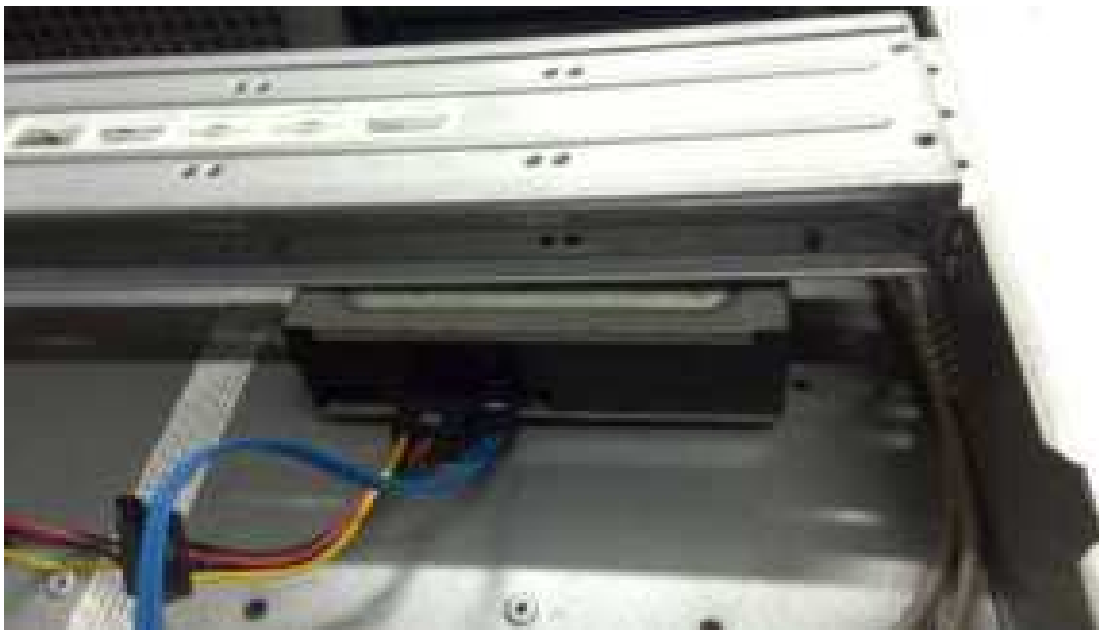
Step 7 Put the bracket back. Please adjust the CD-ROM to the proper position so that the button of the front panel is directly facing the pop-up button of the CD-ROM.

Figure 3-45 Put bracket back



Step 8 Connect the SATA cable and power wire.

Figure 3-46 Connect cables



Step 9 Secure the HDD bracket and put the top cover back.

Figure 3-47 Put cover back



3.5 Connection Sample

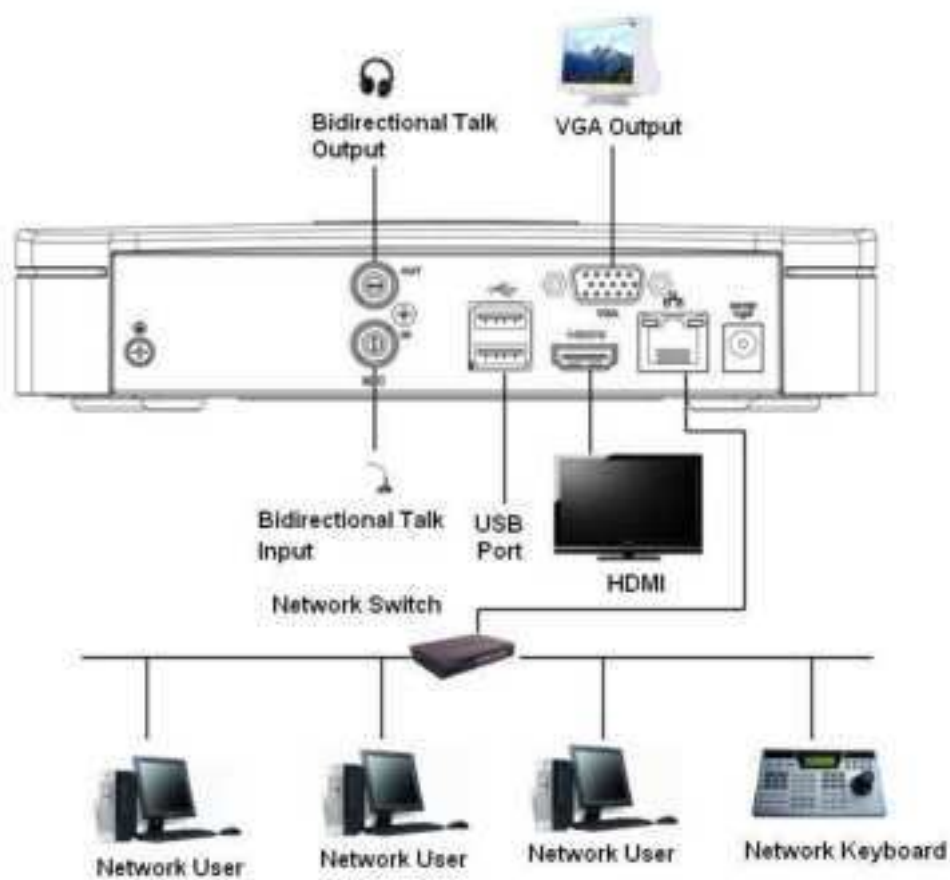


The following figures are for reference only and might differ from the actual product.

3.5.1 NVR41-4KS2/NVR41-P-4KS2/NVR41-8P-4KS2/NVR41-4KS2/L/NVR41-P-4KS2/L/NVR41-8P-4KS2/L/NVR21-4KS2/NVR21-P-4KS2/NVR21-8P-4KS2/NVR21-I/NVR21-I2/NVR21-P-I/NVR21-P-I2/NVR21-8P-I/NVR21-8P-I2/NVR21-S3/NVR21-P-S3/NVR21-8P-

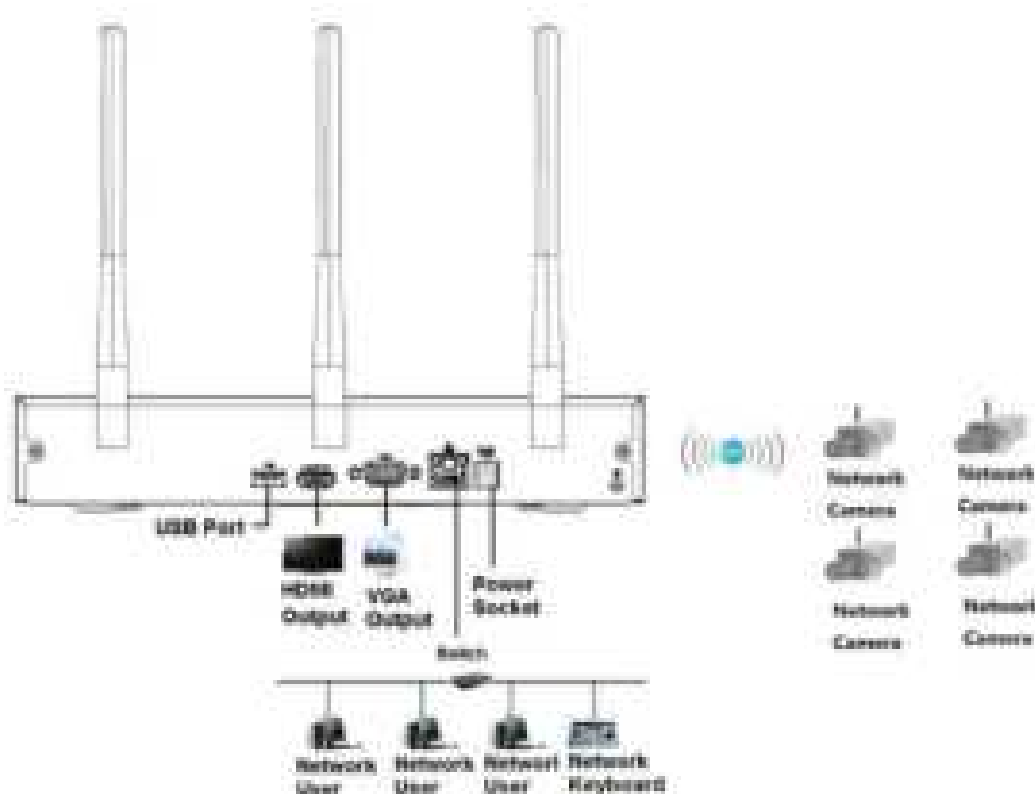
S3/NVR41-EI/NVR41-P-EI/NVR41-8P-EI

Figure 3-48 Typical connection



3.5.2 NVR21-W-4KS2/NVR21HS-W-4KS22

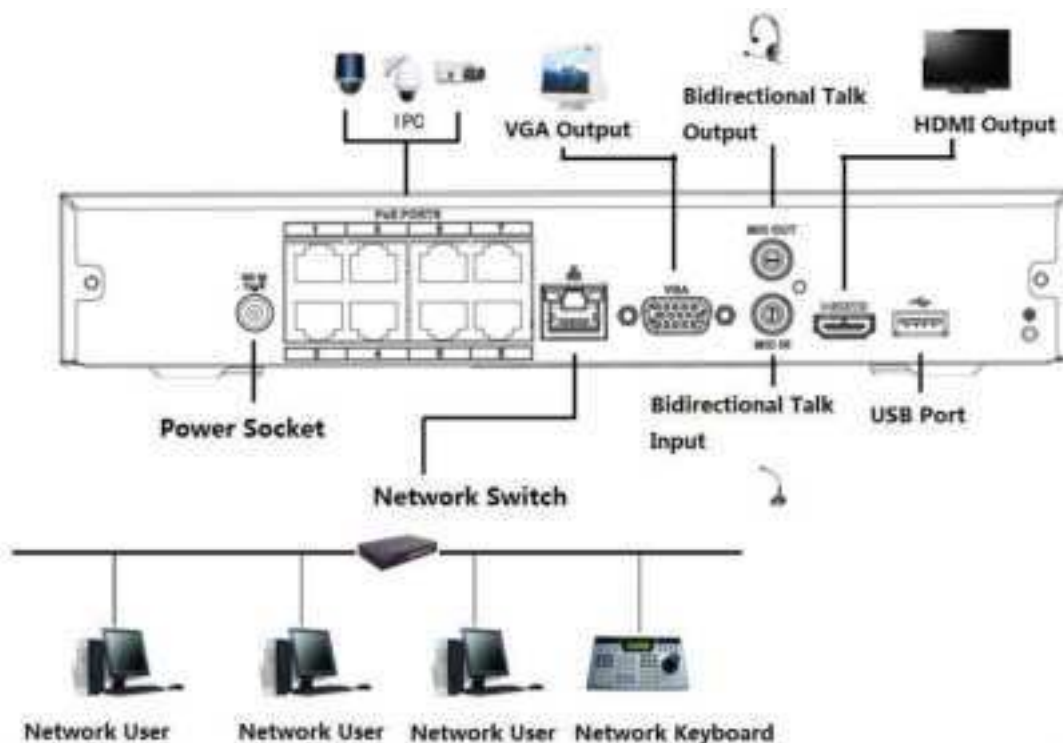
Figure 3-49 Typical connection



3.5.3 NVR11HS-S3H/NVR11HS-P-S3H/NVR11HS-8P-S3H/NVR41HS-4KS2/NVR41HS-P-4KS2/NVR41HS-8P-4KS2/NVR41HS-4KS2/L/NVR41HS-P-4KS2/L/NVR41HS-8P-4KS2/L/NVR21HS-4KS2/NVR21HS-P-4KS2/NVR21HS-8P-4KS2/NVR21HS-I/NVR21HS-I2/NVR21HS-P-I/NVR21HS-P-I2/NVR21HS-8P-I/NVR21HS-8P-I2/NVR21HS-S3/NVR21HS-P-S3/NVR21HS-8P-S3/NVR41HS-

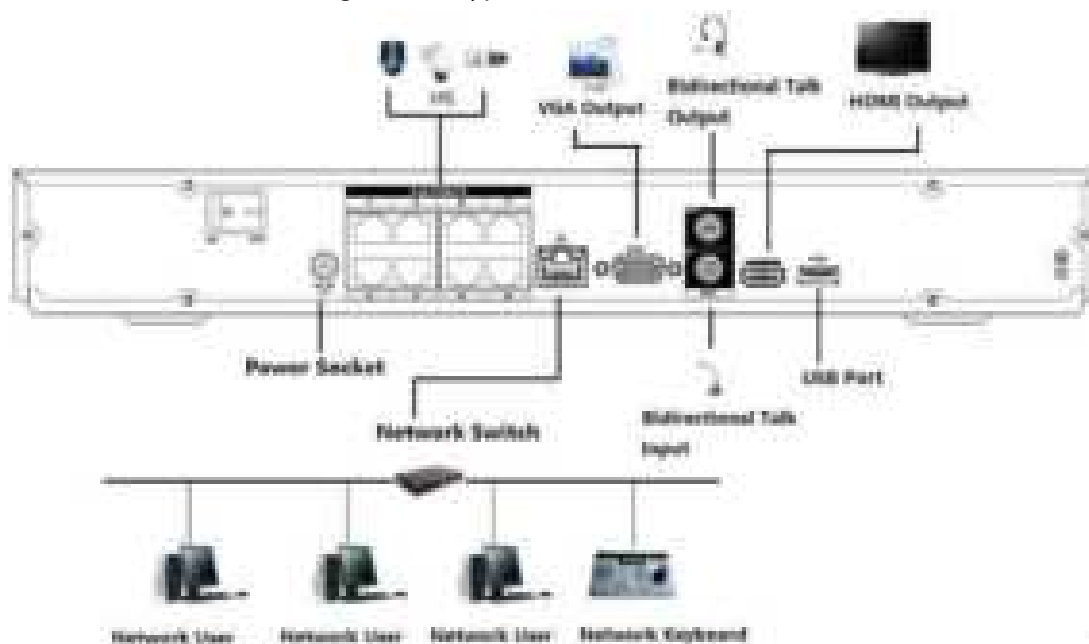
EI/NVR41HS-P-EI/NVR41HS-8P-EI

Figure 3-50 Typical connection



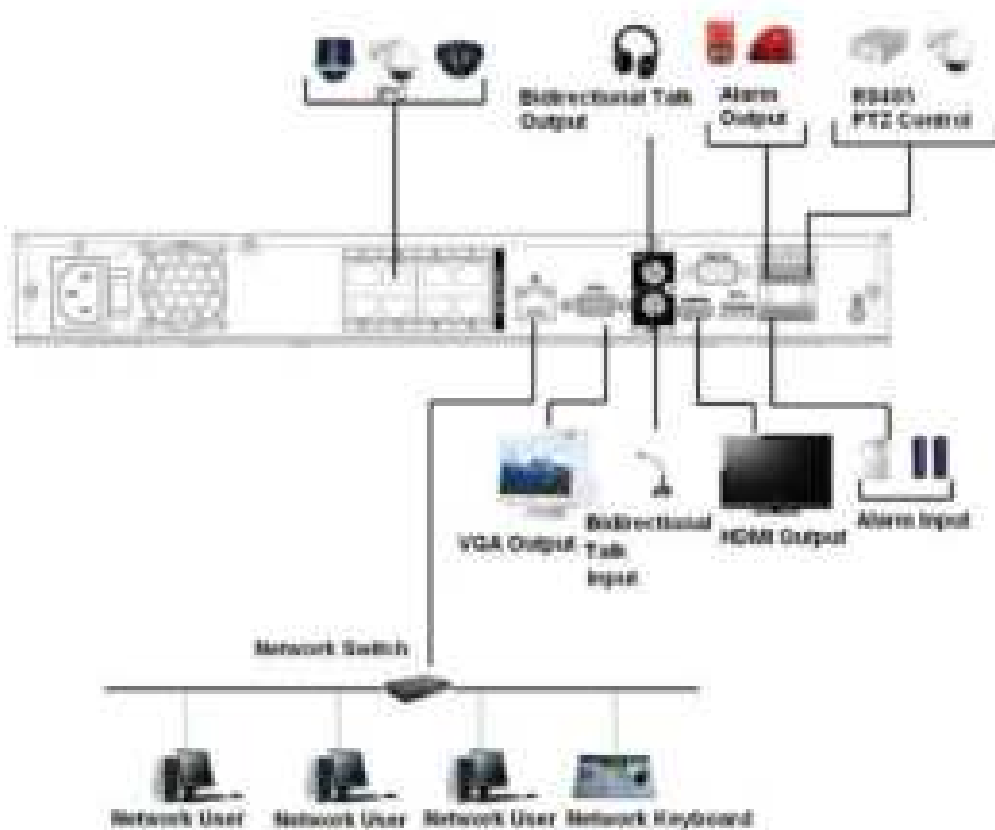
3.5.4 NVR22-4KS2/NVR22-P-4KS2/NVR22-8P-4KS2/NVR22-I/NVR22-I2/NVR22-P-I/NVR22-P-I2/NVR22-8P-I/NVR22-8P-I2/NVR22-16P-I/NVR22-16P-I2 Series

Figure 3-51 Typical connection



3.5.5 NVR52-4KS2/NVR52-8P-4KS2/NVR52-16P-4KS2/NVR52-24P-4KS2/NVR52-8P-4KS2E/NVR52-16P-4KS2E Series

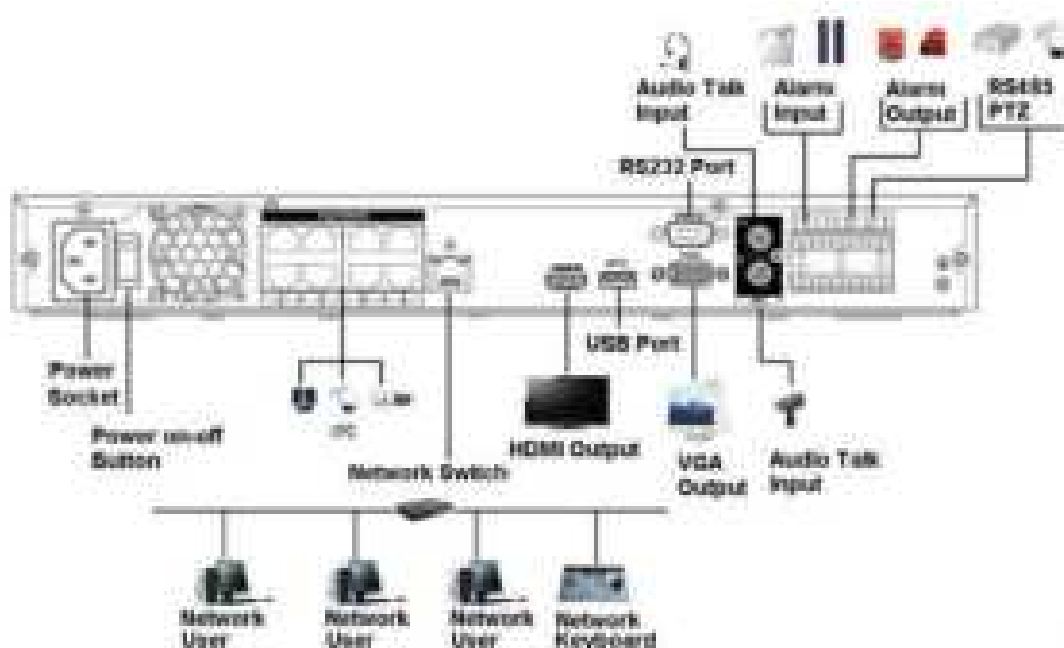
Figure 3-52 Typical connection



3.5.6 NVR42-4KS2/NVR42-P-4KS2/NVR42-8P-4KS2/NVR42-16P-4KS2/NVR42-4KS2/L/NVR42-P-4KS2/L/NVR42-8P-4KS2/L/NVR42-

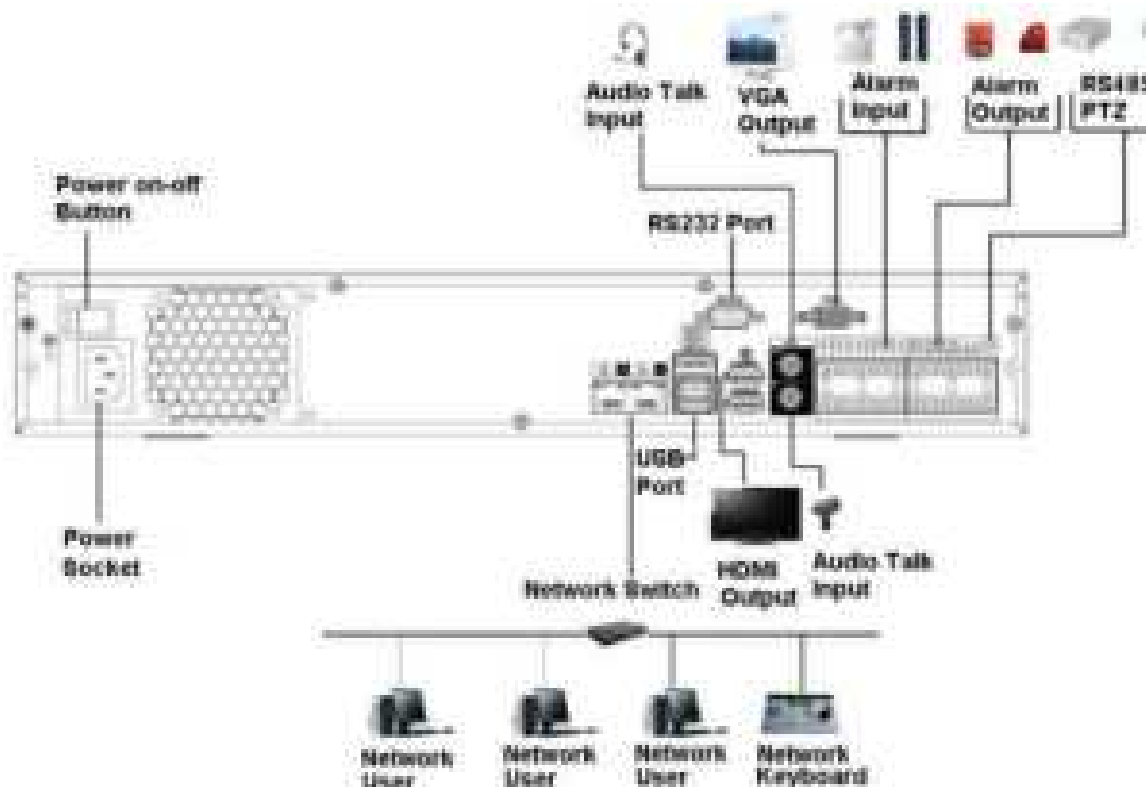
16P-4KS2/L/NVR42-EI/NVR42-P-EI/NVR42-8P-EI/NVR42-16P-EI

Figure 3-53 Typical connection



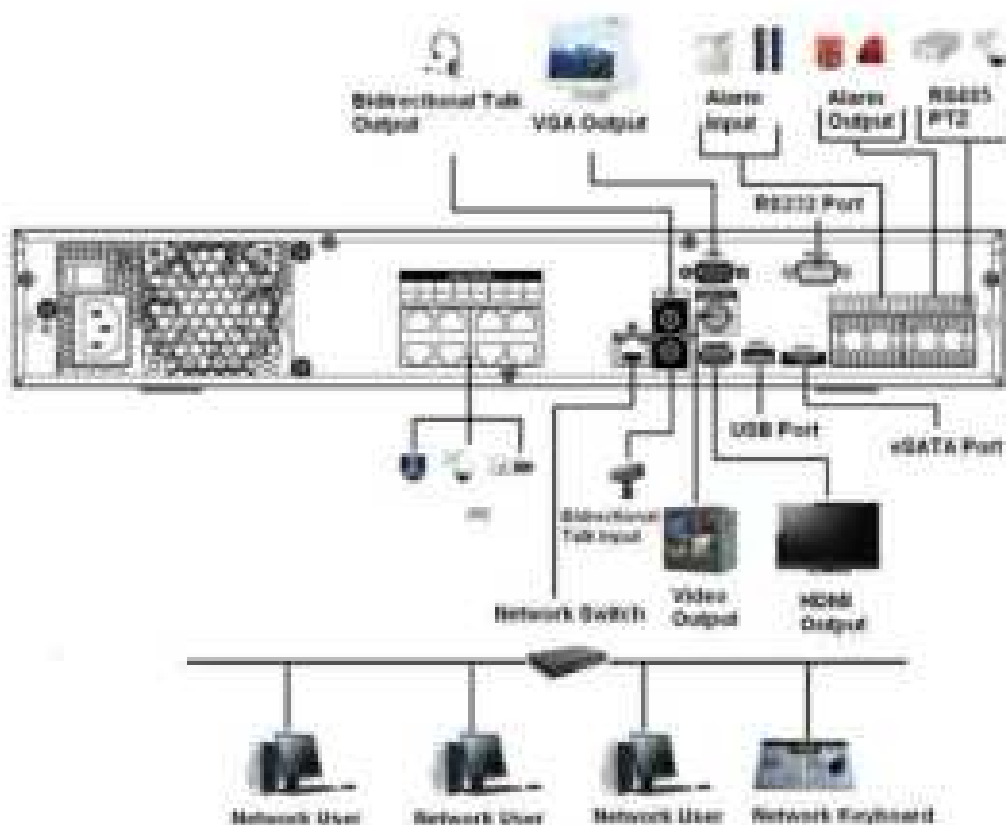
3.5.7 NVR54-4KS2/NVR54-16P-4KS2/NVR58-4KS2/NVR58-16P-4KS2/NVR54-24P-4KS2/NVR54-16P-4KS2E/NVR58-16P-4KS2E Series

Figure 3-54 Typical connection



3.5.8 NVR44-4KS2/NVR44-16P-4KS2/NVR44-4KS2/L/NVR44-16P-4KS2/L/NVR44-4KS2/I/NVR44-16P-4KS2/I/NVR44-EI/NVR44-16P-EI Series

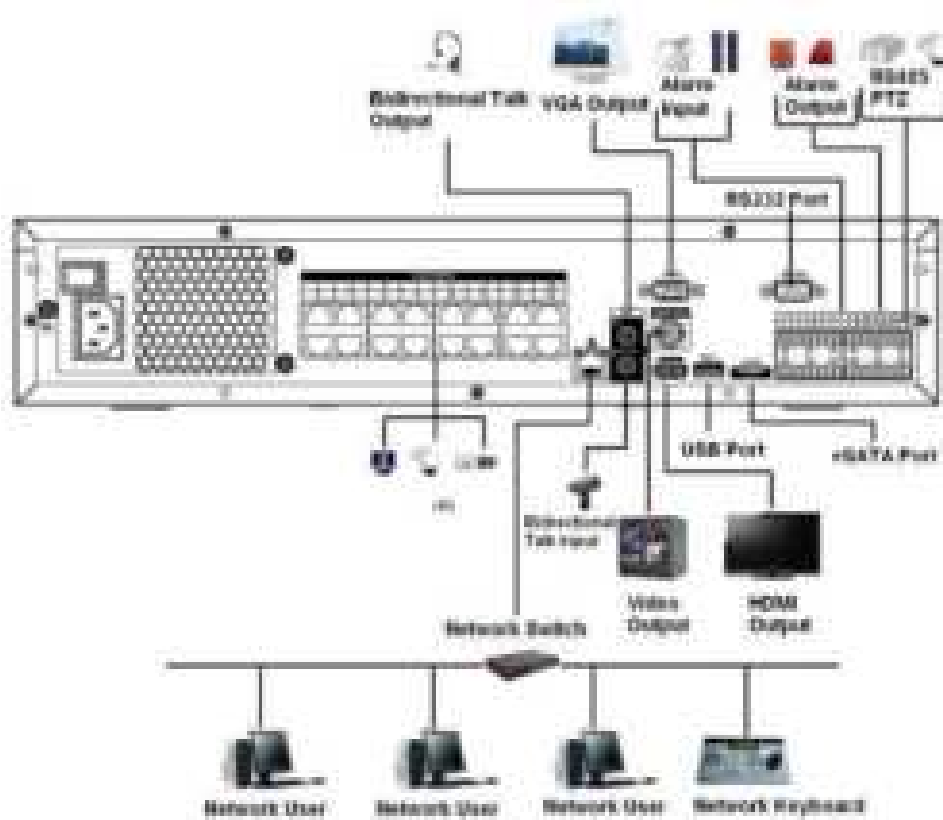
Figure 3-55 Typical connection



3.5.9 NVR48-4KS2/NVR48-16P-4KS2/NVR48-4KS2/L/NVR48-16P-4KS2/L/NVR48-4KS2/I/NVR48-16P-4KS2/I/NVR48-EI/NVR48-16P-EI Series

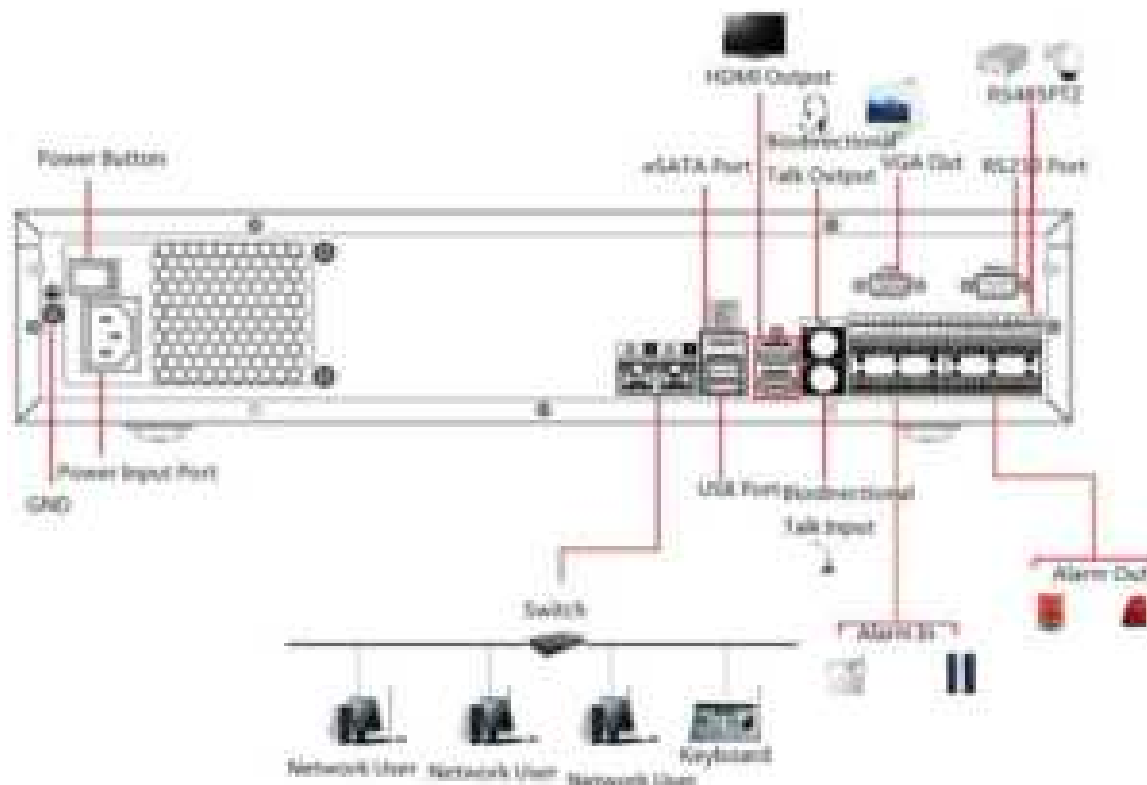
Series

Figure 3-56 Typical connection



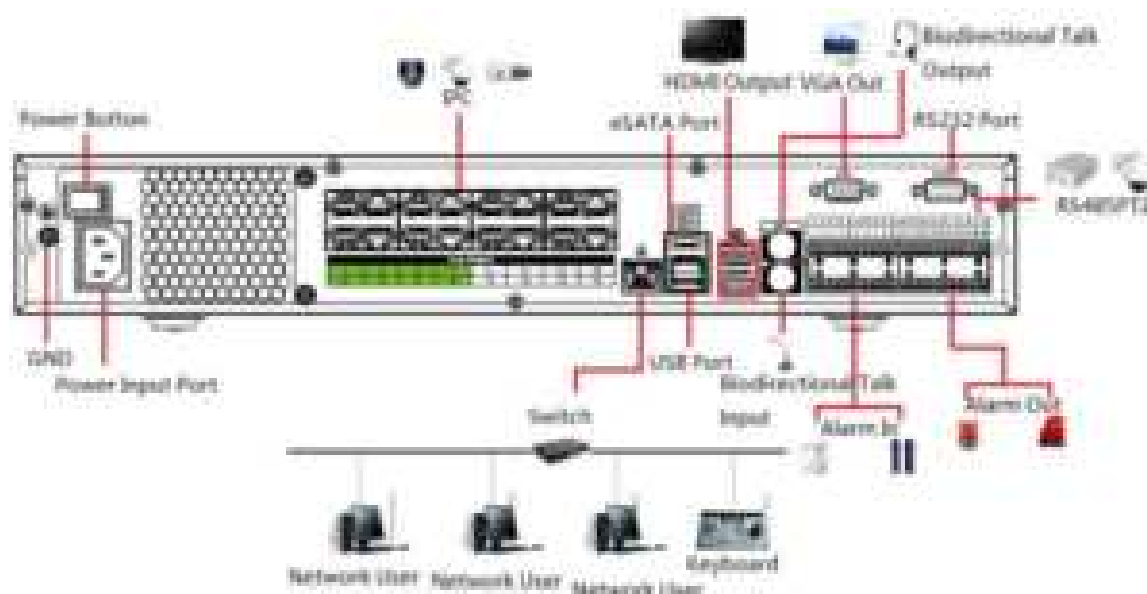
3.5.10 NVR58-I/NVR58-I/L/NVR48-I Series

Figure 3-57 Typical connection



3.5.11 NVR54-I/NVR54-I/L/NVR44-I

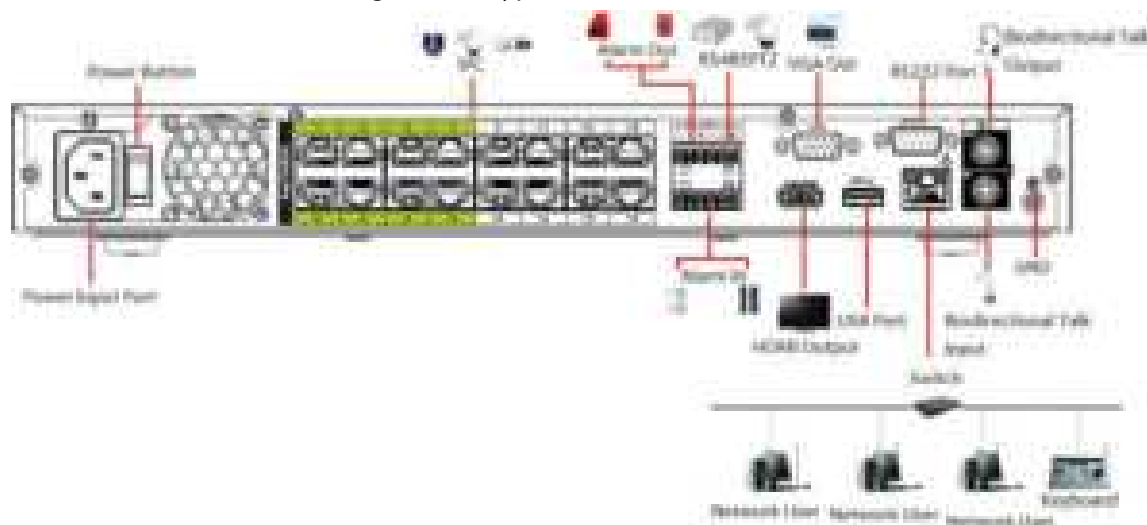
Figure 3-58 Typical connection



3.5.12 NVR52-16P-I/NVR52-16P-I/L/NVR52-8P-I/NVR52-8P-

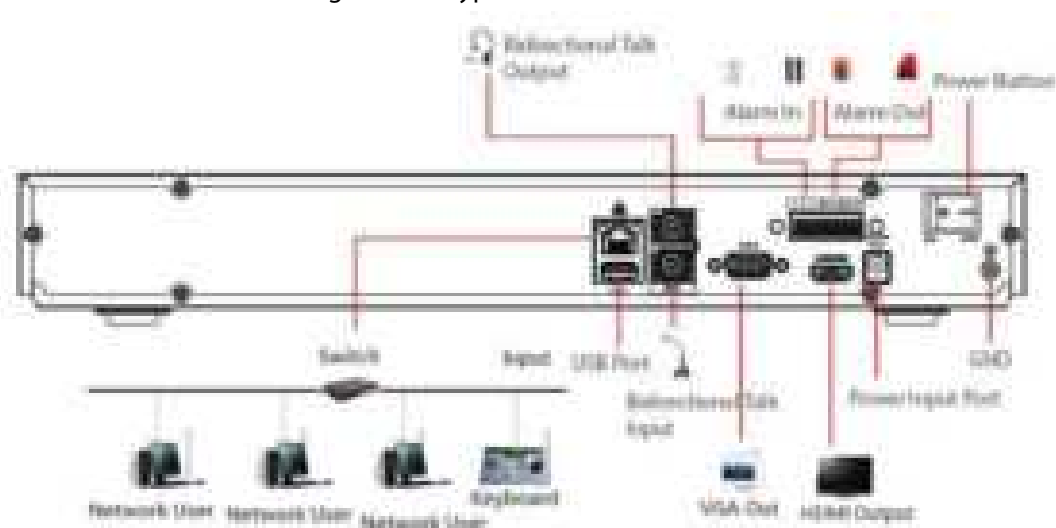
I/L/NVR42-8P-I/NVR42-16P-I Series

Figure 3-59 Typical connection



3.5.13 NVR4216-I Series

Figure 3-60 Typical connection

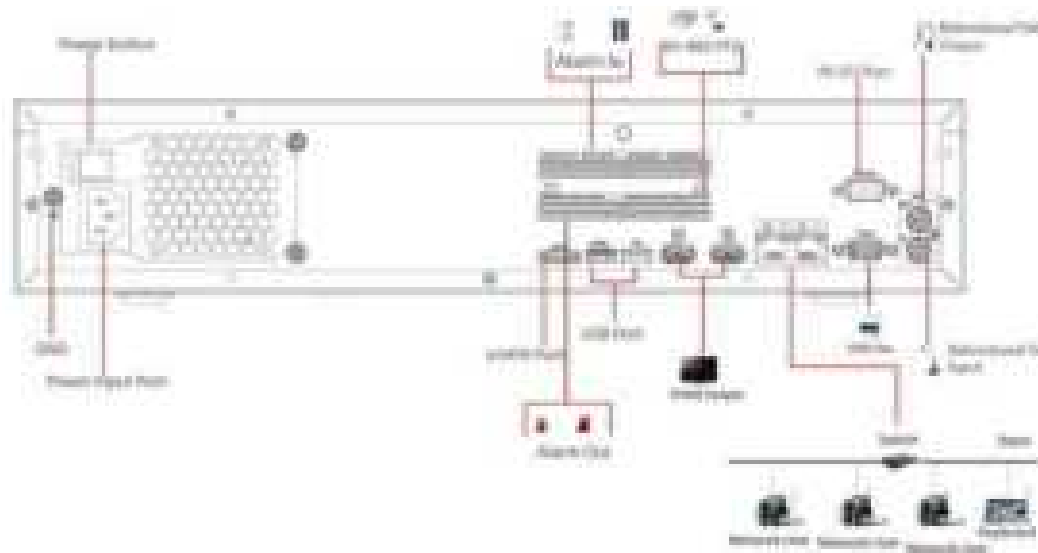


3.5.14 NVR608-4KS2/NVR608H-XI/NVR608RH-XI Series



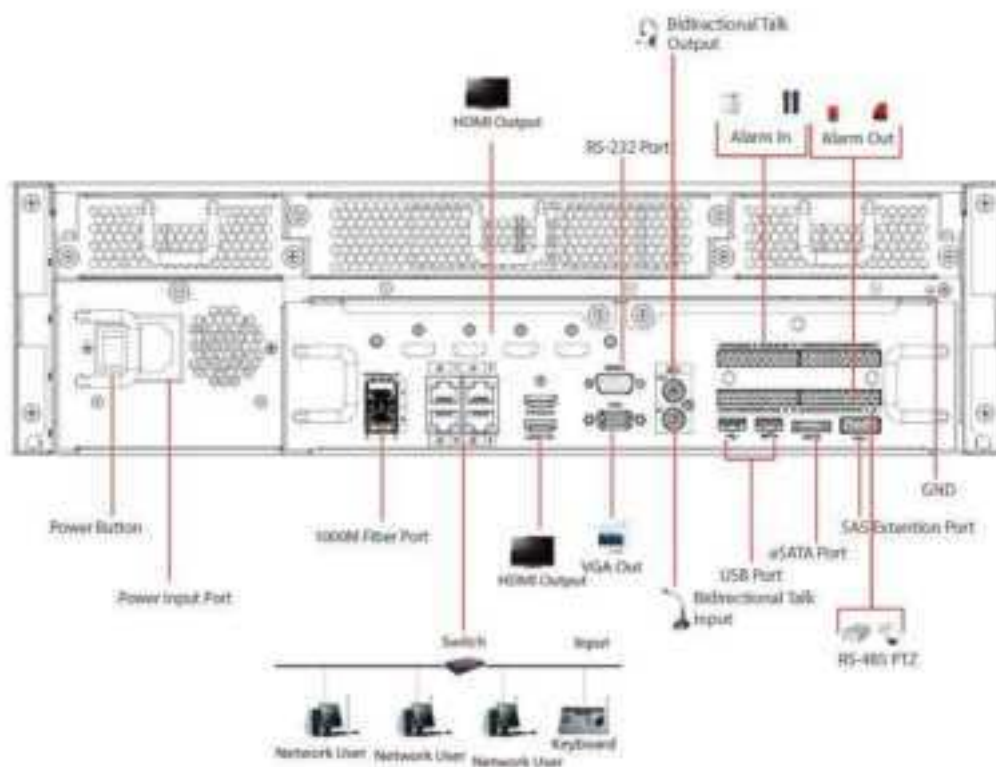
The following figure is for reference only and might differ from the actual product.

Figure 3-61 Typical connection



3.5.15 NVR616-4KS2 Series

Figure 3-62 Typical connection



4 Starting the Device

Background Information



- For device security, connect the NVR to the power adapter first and then connect the device to the power socket.
- The rated input voltage matches the device power button. Make sure the power wire connection is OK. Then press the power button.
- Always use the stable current, if necessary UPS is a best alternative measure.

Procedure

- Step 1 Connect the device to the monitor and then connect a mouse.
- Step 2 Connect power cable.
- Step 3 Press the power button on the front panel or turn on the power switch on the rear panel to start up the device.

After the device starts, the system is in multiple-channel display mode by default.



The Device will verify license during starting up. If the verification failed, the icon  is displayed on the screen. Contact the technical support.

5 Local Operations



The following figures are for reference only. Slight difference might be found on the actual page.

5.1 Initialization

Background Information

- For first-time use, set a login password for the admin account (default user).
- We recommend setting password protection so that you can reset password in case you forgot.



- For your device safety, keep your login password well, and change the password regularly.
- The IP address of the Device is 192.168.1.108 by default.

Procedure

Step 1 Start the NVR.

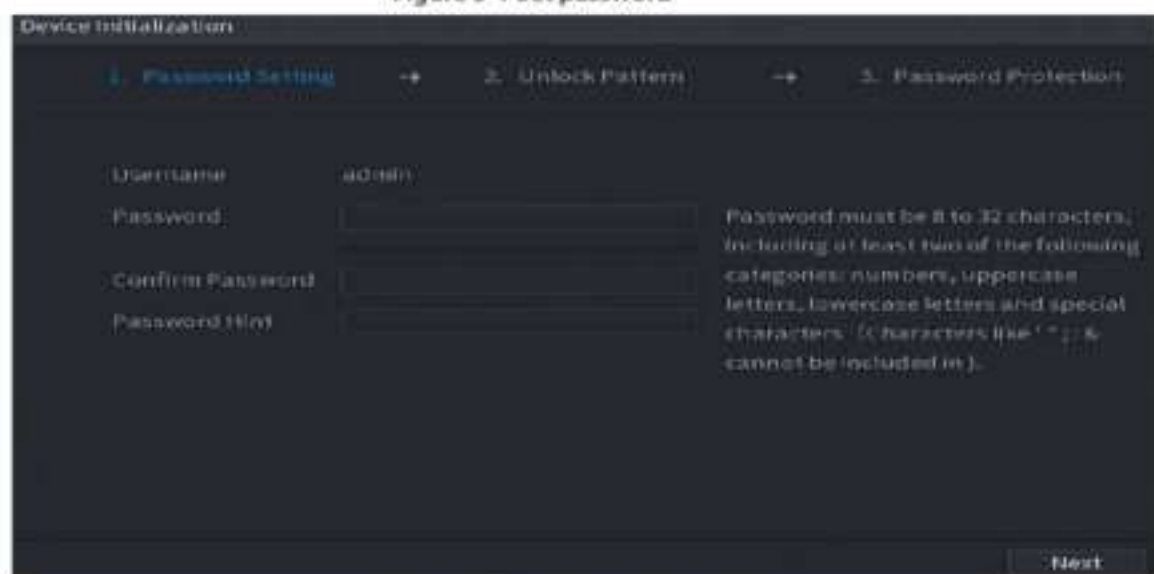
Step 2 Set region, time zone, and time according to the actual situation, and then click **Next**.



Click  to shut down the device. The system integrator or the user can shut down the Device directly after setting the time zone.

Step 3 Set the login password for the admin account and then click **Next**.

Figure 5-1 Set password



The screenshot shows the 'Device Initialization' window with three steps: 1. Password Setting, 2. Unlock Pattern, and 3. Password Protection. The 'Password Setting' step is active. It contains fields for Username (admin), Password, Confirm Password, and Password Hint. A text box on the right specifies password requirements: '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 it.)'. A 'Next' button is at the bottom right.

Table 5-1 Password parameters

Parameter	Description
User	By default, the user is admin.

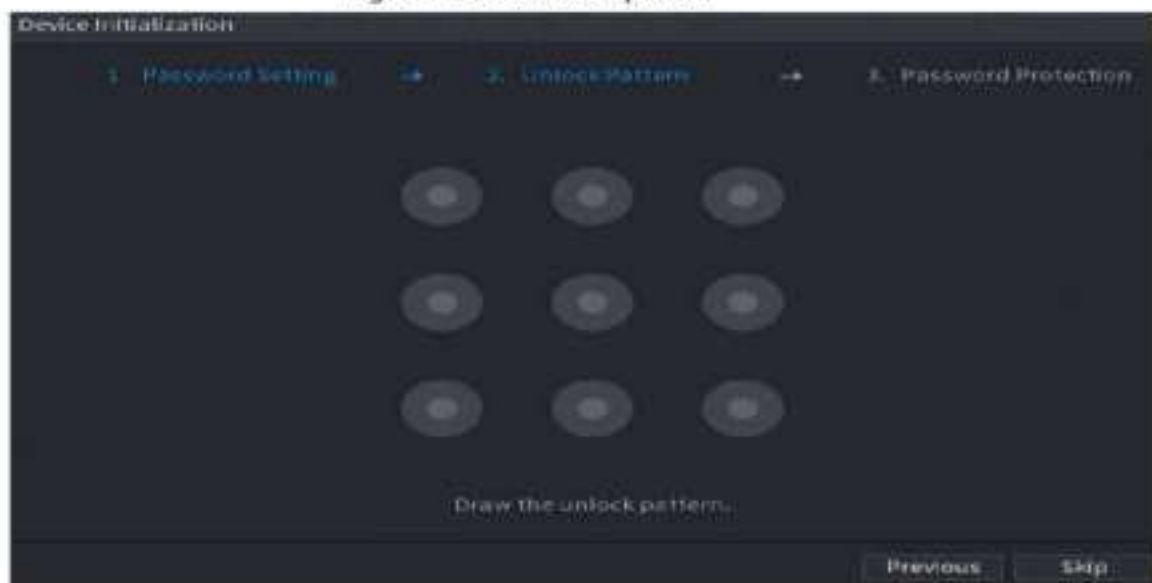
Parameter	Description
Password	Enter the password for admin and then confirm the password.
Confirm Password	
Password Hint	Enter the information that can remind you of the password.  On the login window, click  to display the password hint.

Step 4 Set unlock pattern.



- The pattern that you want to set must cross at least four 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 did not configure the unlock pattern, you need to enter password for login.

Figure 5-2 Draw unlock pattern



Step 5 Set password protection.

- After configuration, if you forgot the password for admin user, you can reset the password through the linked email address or security questions. For details on resetting the password, see "5.13.3 Resetting Password".
- If you do not need password protection, disable **Reserved Email** and **Security Question**.

Figure 5-3 Set password protection



Table 5-2 Security question parameters

Password Protection Mode	Description
Email Address	Enter the linked email address. Enter an email address for password reset. If you forgot the password, enter the security code that you will get from this linked email address to reset the password of admin.
Security Questions	Configure the security questions and answers. If you forgot the password, you can reset the password after entering the answers to the questions.

Step 6 Click **Save**.

5.2 Startup Wizard

Background Information

After initialization, the system goes to **Startup Wizard**. You can quickly configure your device.



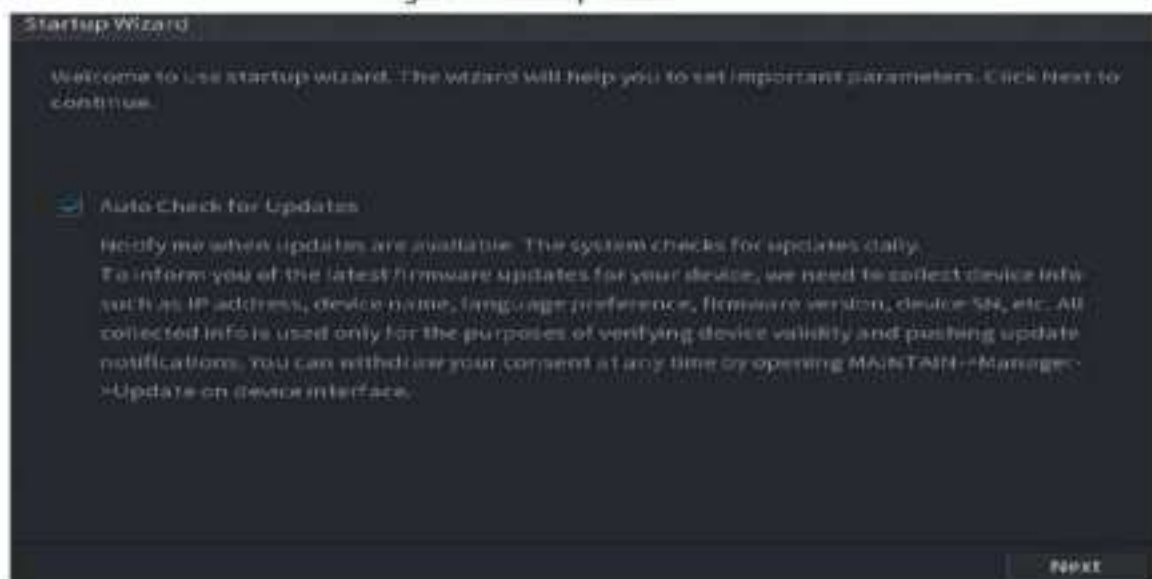
Startup Wizard is displayed only when you log in to the Device for the first time or have restored the Device to factory settings.

Procedure

Step 1 Select **Auto Check for Updates**, and then click **Next**.

If you select the **Auto Check for Updates** checkbox, the system will notify you automatically when updates are available.

Figure 5-4 Startup wizard



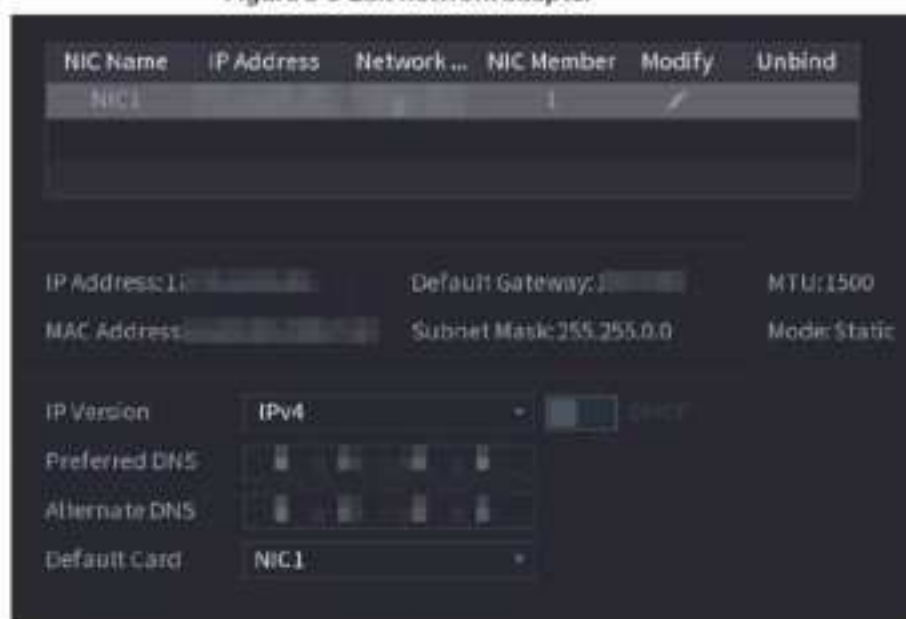
Step 2 Configure IP address, and then click **Next**.



The number of network adapters might vary with models. Configure the IP address of the network adapter according to the actual connection situation.

1) Click .

Figure 5-5 Edit network adapter



2) Configure parameters.

Table 5-3 Network parameters

Parameter	Description
Network Mode	

Parameter	Description
Default Ethernet Port	• Single NIC: Two network adapters work separately. If one of the two network adapters is disconnected, the system network status is regarded as offline. • Fault Tolerance: Two network adapters share one IP address. Normally only one network adapter is working. When this adapter fails, the other network adapter will start working automatically to ensure the network connection.  ◦ When you test the network status, the network is regarded as offline only when both network adapters are disconnected. ◦ The two network adapters are used under the same LAN. • Load Balance: Two network adapters share one IP address. The two adapters work at the same time to share the network load averagely. If one of them fails, the other can continue working normally.  ◦ When testing the network status, the network is regarded as offline only when both of the two network adapters are disconnected. ◦ The two network adapters are used under the same LAN.  The Device with single Ethernet port does not support this function.
IP Version	Select IPv4 or IPv6 . Both versions are supported for access.
DHCP	Enable the system to automatically obtain a dynamic IP address.
MAC Address	Displays the MAC address of the Device.
IP Address	• Enter the IP address and then configure the corresponding subnet mask and default gateway. • After configuration, click Test to check whether there is conflict in IP address.  IP address and default gateway must be on the same network segment.
Subnet Mask	
Default Gateway	



To unbind NIC, on the **TCP/IP** page, click . The unbinding will take effect after the Device restarts.

- 3) On the **TCP/IP** page, configure DNS server. This step should be performed when you enable the domain name service.
You can get DNS server address or manually enter it.

- Automatically get DNS server address: When there is a DHCP server in the network, you can enable **DHCP**, and then the Device gets a dynamic IP address.
- Enter DNS server address: Select **IP Version**, and then configure the preferred DNS server and alternate DNS server.

4) On the **Default Card** drop-down list, select the default NIC.

5) Click **Next**.

Step 3 Enable **P2P**, and then click **Next**.

Scan the QR code on the actual page to download the app. Register an account and then you can add the Device to the app.



Before using the P2P function, make sure that the NVR has connected to the WAN.

The **Status** becomes **Online** after you successfully configure P2P.

Figure 5-6 P2P



Step 4 Add cameras according to the actual situation.

After adding cameras, you can view the video images transmitted from the cameras, and change camera configuration.

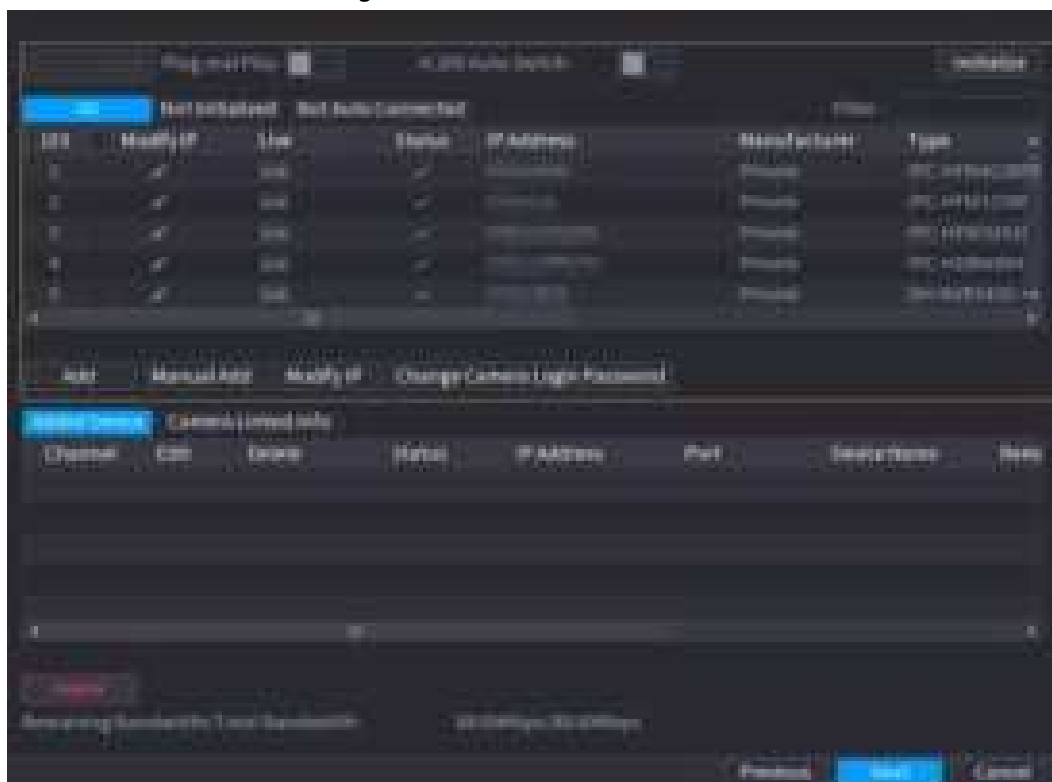


- The number of cameras that can be added to the NVR varies with models.
- The system supports adding camera through searching, manual add and batch add. This section uses adding by searching as an example.
- Initialize the camera before adding to the Device.

1) Click **Search Device**.

The devices found are displayed at the upper pane, excluding devices already added.

Figure 5-7 Search device



- To view the live image of a camera, click **LIVE** and then enter the username and password. You can only view live images of cameras accessed through private protocol.
- To filter the remote devices, select device name from the **Filter** drop-down list.
- To filter out the uninitialized devices, click the **Not Initialized** tab, and then you can initialize the devices remotely.
- To view all remote devices added through plug and play, click the **Not Auto Connected** tab. You can remove devices added through plug and play, and they can be automatically added again after plug and play is enabled.

2) (Optional) Enable **Plug and Play**.

When **Plug and Play** is enabled, the Device automatically adds cameras on the same LAN.



For uninitialized cameras, the Device automatically initializes them before adding them.

3) Enable **H.265 Auto Switch**

When **H.265 Auto Switch** is enabled, the video compression standard of added remote devices is switched to H.265 automatically.

4) Double-click a camera, or select a camera and then click **Add** to register it to the **Added Device** list.

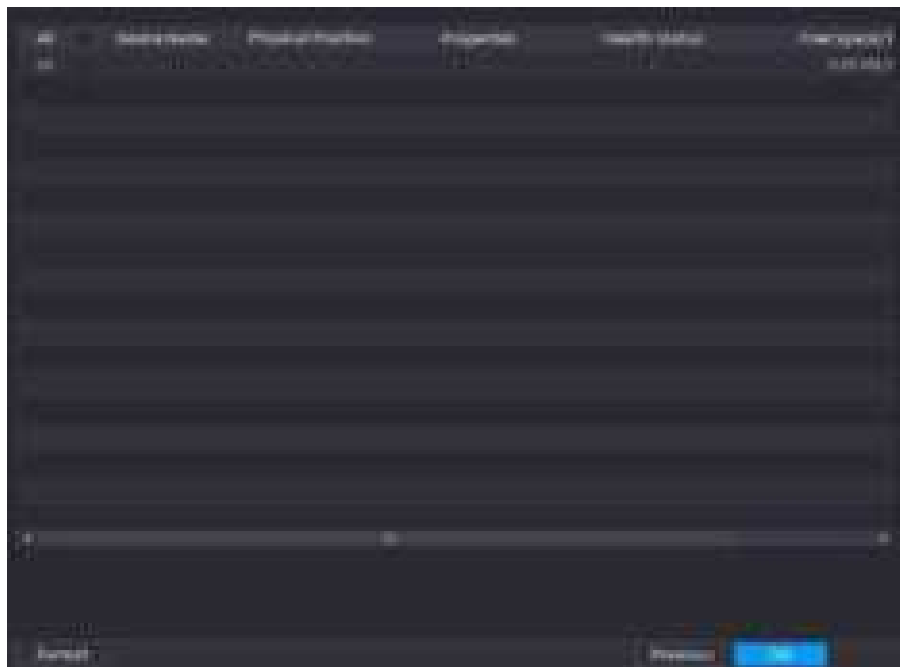
5) Click **Next**.

Step 5 Manage HDD. You can view HDD name, physical position, health status, capacity, and more.



- To configure read/write property, select an option from the **Properties** drop-down list.
- To format an HDD, select the HDD, and then click **Format**.

Figure 5-8 Manage HDD



Step 6 Click **OK**.

When the Device prompts whether to restart, click **OK**. The configurations through startup wizard take effect after the Device restarts.

5.3 Login

Log in to the Device to perform local operations.

Procedure

- Step 1** Right-click the live page, and then click the shortcut menu.
- If you have configured unlock pattern, the unlock pattern login window is displayed. Click **Forgot Pattern** to switch to password login.
 - If you did not configure unlock pattern, the password login window is displayed.

Figure 5-9 Unlock pattern login

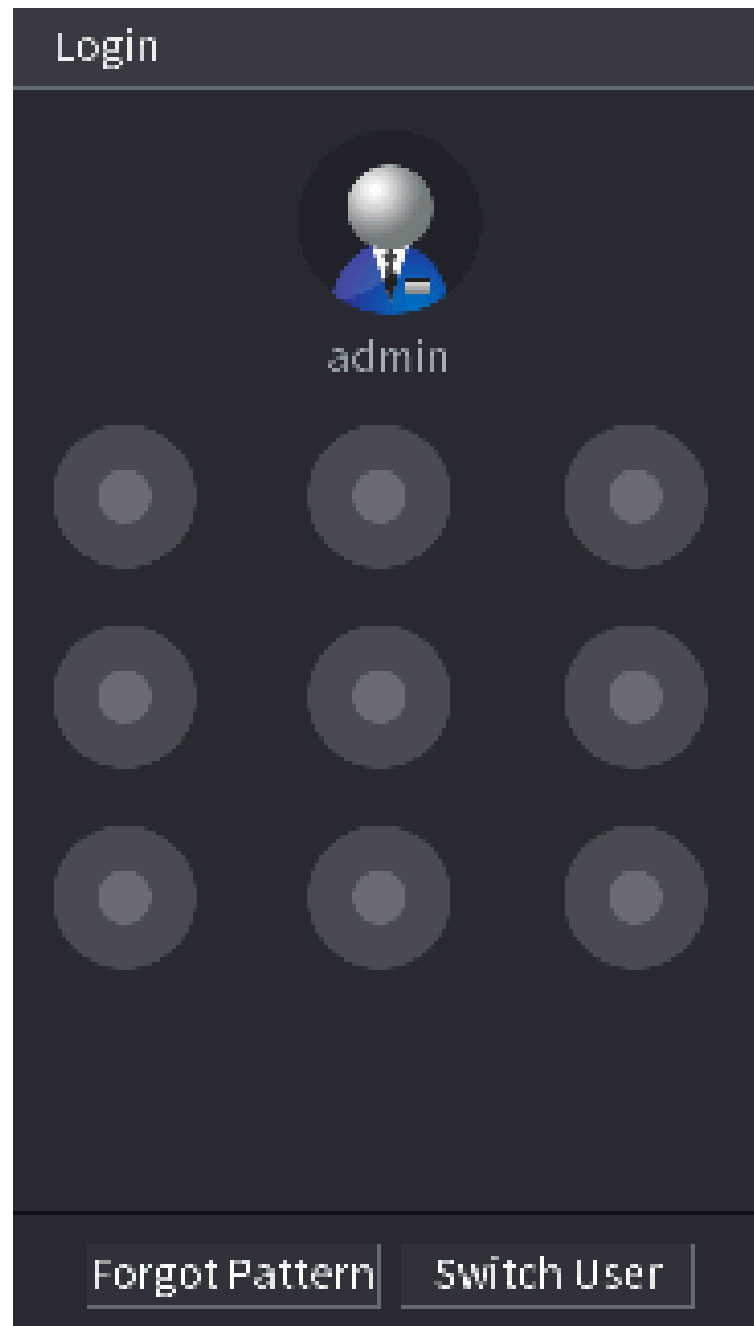
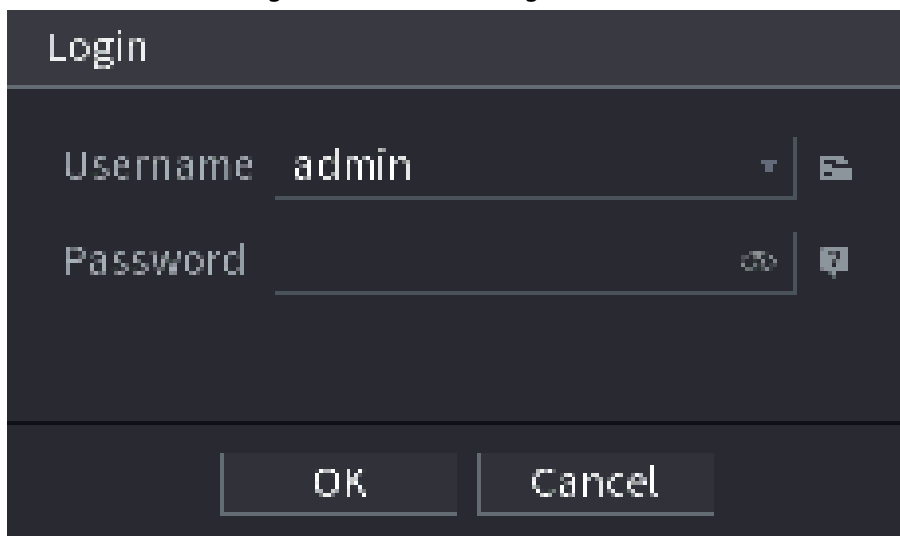


Figure 5-10 Password login



The image shows a dark-themed login dialog box titled "Login". It contains two input fields: "Username" with the text "admin" and a small icon to its right, and "Password" with a small icon to its right. Below the input fields are two buttons: "OK" and "Cancel".

Step 2 Draw unlock pattern, or enter password and then click **OK**.

5.4 Main Menu

After login, right-click the live page, and then click **Main Menu**.

Figure 5-11 Main menu

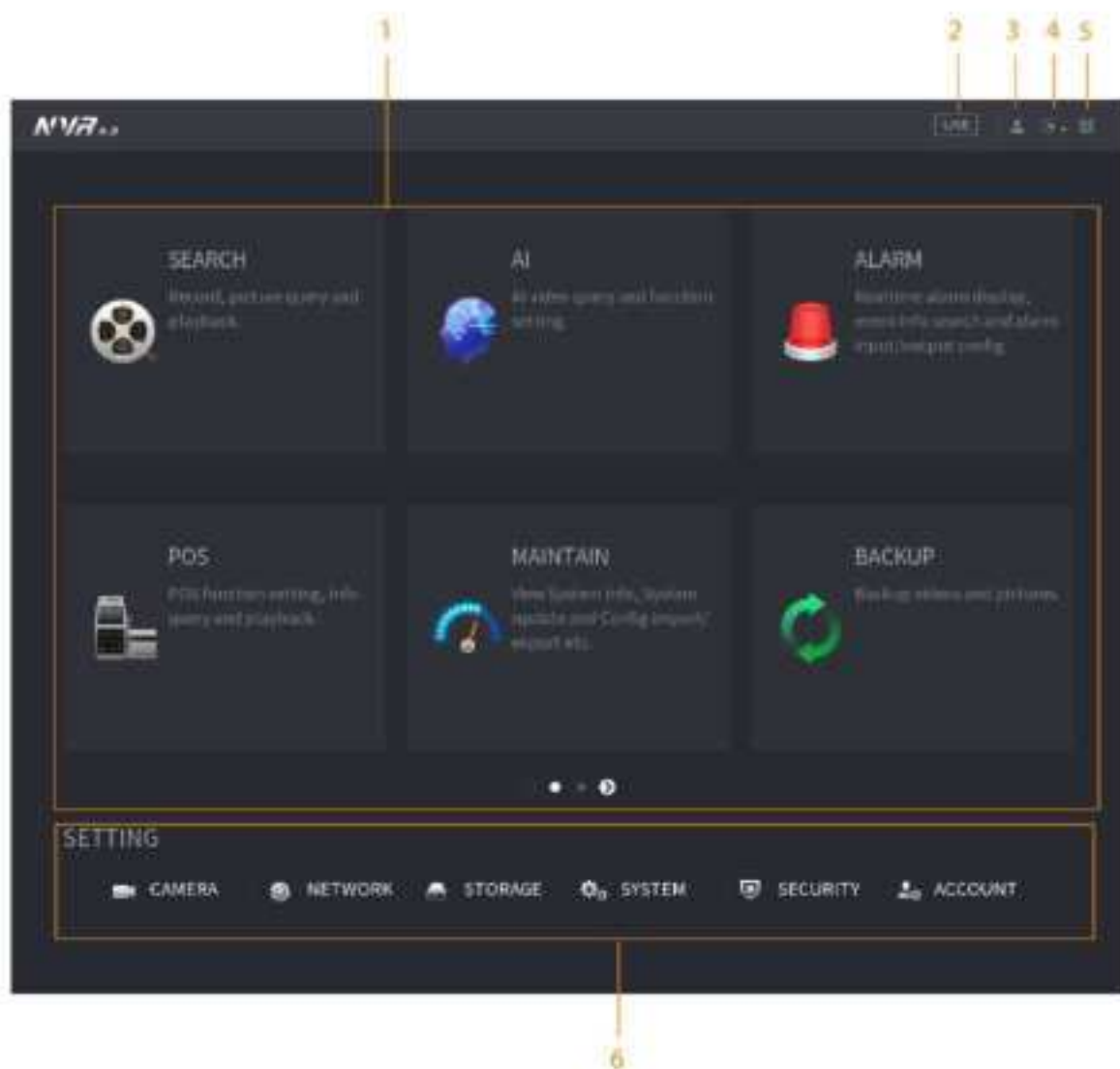


Table 5-4 Main menu description

No.	Description
1	Click each tile to open the corresponding configuration page.
2	Go back to live view.
3	Point to the icon to view the current username.
4	Log out of, restart, or shut down the Device.
5	Click the icon to get the QR codes of mobile client and device SN. You can add the Device to the mobile client for remote management.
6	Configure the settings of camera, network, storage, system, security and account.

5.5 Quick Operation Bar

You can click the icons on the main menu to go to the corresponding configuration page. After that,

you can go to other function tiles or setting item through the quick operation bar.

This section uses **ALARM** and **CAMERA** as examples to show how to quickly access other modules.

Shortcut Icons on Function Titles

Click **ALARM** to go to the **ALARM** page.

Figure 5-12 Quick operation bar (1)

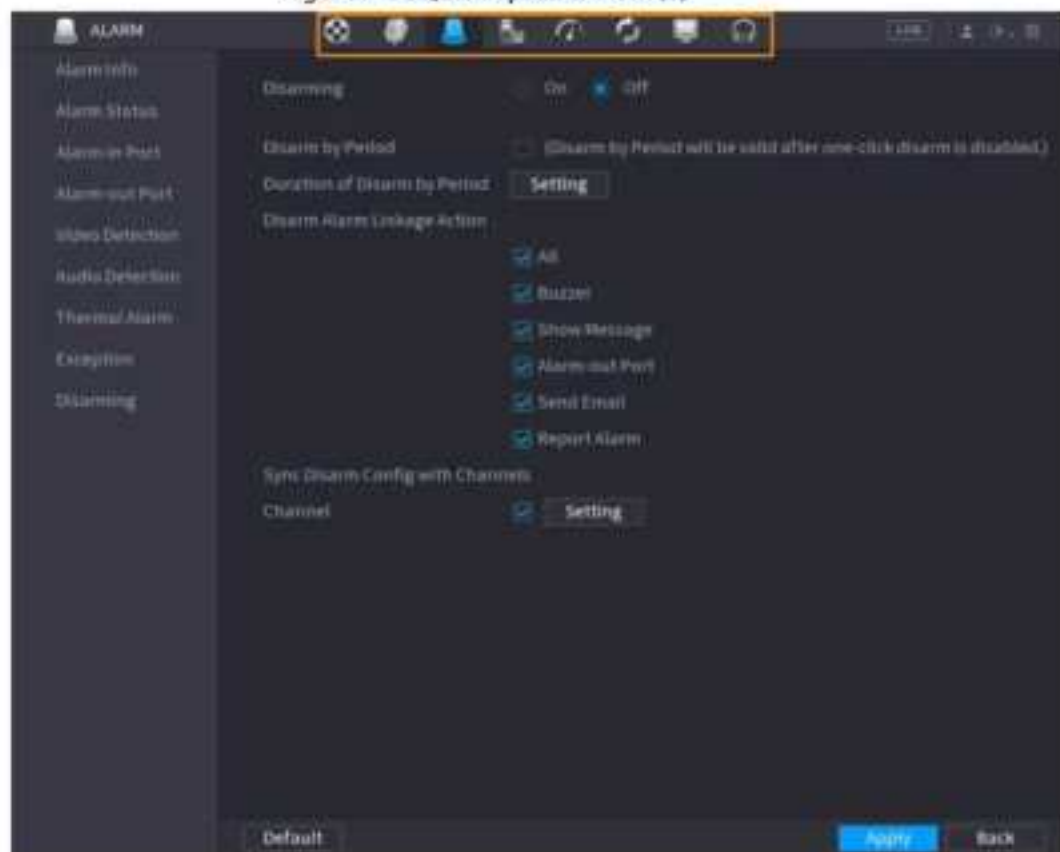


Table 5-5 Quick operation bar description (1)

Icon	Description
	Go to the SEARCH page.
	Go to the ALARM page.
	Go to the AI page.
	Go to the POS page.
	Go to NETWORK page.
	Go to the Maintenance Center page.
	Go to the BACKUP page.
	Go to the DISPLAY page.
	Go to the AUDIO page.

Shortcut Icons on Setting Menu

Click **CAMERA** to go to the **CAMERA** page.

Figure 5-13 Quick operation bar (2)

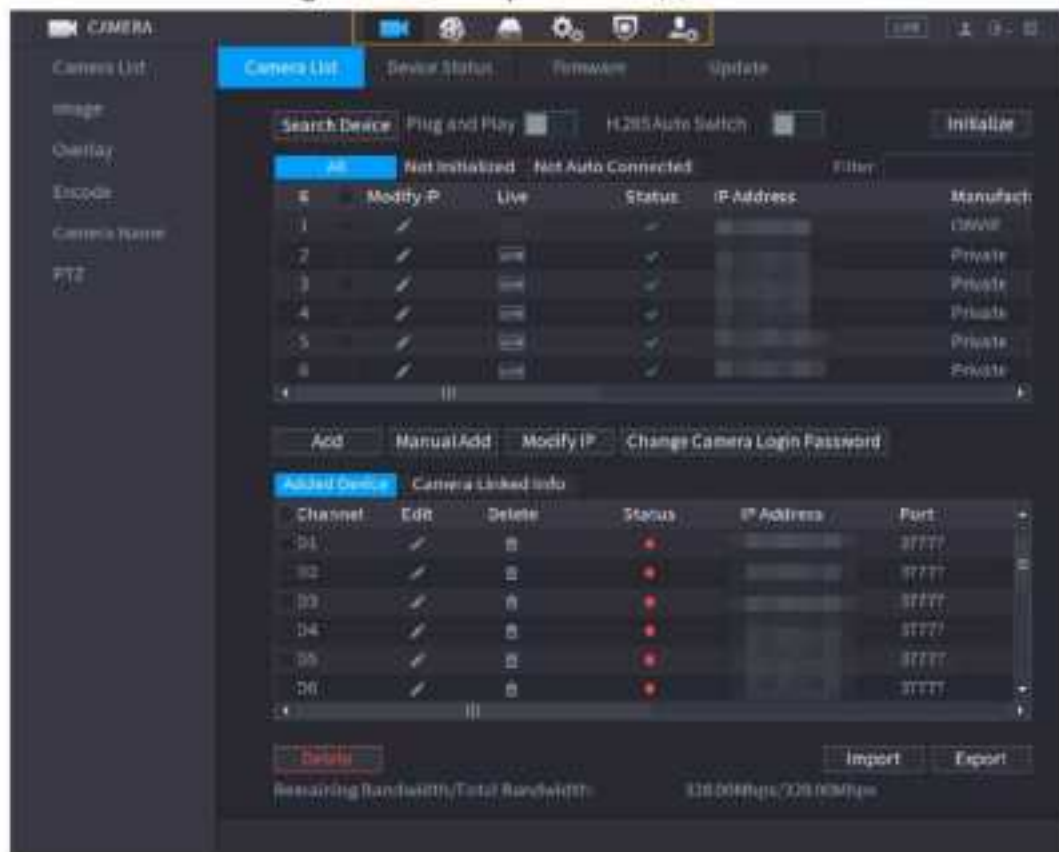


Table 5-6 Quick operation bar description (2)

Icon	Description
	Go to the CAMERA page.
	Go to the NETWORK page.
	Go to the STORAGE page.
	Go to the SYSTEM page.
	Go to the SECURITY page.
	Go to the ACCOUNT page.

5.6 Live View

After you logged in, the system goes to multiple-channel live view mode by default. You can view the live video of each channel.



The number of window splits might vary depending on the model you are using.

5.6.1 Live Page

On the live view page, you can view the live video of each channel. The corresponding channel displays date, time, and channel name after you overlay the corresponding information.

Table 5-7 Icon description

No.	Icon	Description
1		The current channel is recording.
2		Motion detection alarm occurs.
3		Video loss alarm occurs.
4		The current channel is in monitor lock status.
5		The Device connects to the network camera remotely.  This function is available on select models.

5.6.2 Navigation bar

Background Information

You can quickly perform operations through the icons on the navigation bar.



The navigation bar might vary with models.

Procedure

- Step 1** After login, right-click the live page, and then select **Main Menu**.
- Step 2** Select **System > General > Basic**.
- Step 3** Click  to enable navigation bar.
- Step 4** On the live page, click any position and then the navigation appears at the bottom.

Figure 5-14 Navigation bar



Table 5-8 Navigation bar description

Icon	Function
	Open Main Menu .
	Expand or condense the navigation bar.
	Select view layout.
	Go to the previous screen.
	Go to the next screen.
	Enable tour function. The icon switches to .  If you close the tour or the triggered tour operation has canceled, the Device restores the previous preview video.

Icon	Function
	Open the PTZ control panel. For details, see "5.6.7.2 PTZ Control".
	Configure image settings. For details, see "5.7.4 Configuring Image Settings".  This function is supported only in single-channel layout.
	Search for records. For detail, see "5.8.2.1 Search Page".
	Open the Voice Broadcast page. For detail, see "5.18.3 Broadcast".
	Open the Alarm Status page to view the device alarm status. For details, see "5.10.2 Alarm Status".
	Open the Channel Info page to display the information of each channel.
	Open the Add Camera page.
	Open the NETWORK page. For details, see "5.19.3 Network".
	Open the Disk Manager page. For details, see "5.12.2 Disk Manager".
	Open the USB Management page. You can view USB information, back up files, and update the system.
	Switch to the sub screen.

5.6.3 Live View Control Bar

Point to the top center of the video of current channel; and then the live view control bar appears. If your mouse stays in this area for more than 6 seconds and has no operation, the control bar automatically hides.



- Disable the navigation bar before using this function.
- The live view control bar is different depending on the model.

Figure 5-15 Live view control bar



Table 5-9 Live view control bar description

No.	Name	No.	Name
1	Instant playback.	5	Two-way talk.
2	Digital zoom.	6	Stream switch.
3	Instant backup.	7	Picture search.
4	Manual snapshot.	8	Quick pick/AcuPick.

5.6.3.1 Instant Playback

You can play back the previous 5-60 minutes record of current channel.

Click  for instant playback.

Figure 5-16 Instant playback



- Move the slider to choose the time you want to start playing.

- You can start, pause and close playback.
- The information such as channel name and recording status icon are shielded during instant playback and will not display until you exit playback.
- During playback, screen split layout switch is not allowed.
- Tour has high higher priority than the instant playback. The instant playback function is not available when tour function is in process and the live view control bar automatically hides either. The function becomes available again after tour ends.
- Supports AcuPick. For more details, see "5.6.3.9 AcuPick".



Go to the **Main Menu > SYSTEM > General > Basic** to set instant playback time.

5.6.3.2 Digital Zoom

You can zoom in a specified zone of the current channel to view details. They system supports multi-channel zoom. You can use the digital zoom in the following two ways:

- Click . The icon switches to . Select an area. The area is enlarged after you release the mouse button.



For some models, when the image is enlarged in this way, the selected area is zoomed proportionally according to the window.

- Point to the center that you want to enlarge, and then scroll the mouse to enlarge the area.

When the image is in the enlarged status, you can drag the image toward any direction to view the other enlarged areas. Right-click to cancel zoom and go back to the original video image.

Figure 5-17 Zoom



5.6.3.3 Instant Backup

You can record the video of any channel and save the clip to a USB storage device.

Clicking  to start the recording. To stop recording, click this icon again. The clip is automatically saved to the connected USB storage device.

5.6.3.4 Manual Snapshot

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

Click  to take snapshots. The snapshots are automatically saved to the connected USB storage device. You can view the snapshots on your PC.



To change the quantity of snapshots, select **Main Menu > CAMERA > Encode > Snapshot**, in the **Manual Snapshot** list, select the snapshot quantity.

5.6.3.5 Two-way Talk

You can perform the voice interaction between the NVR and the remote device to improve efficiency of emergency.

Procedure

- Step 1 Click  to start two-way talk. The icon changes to . The rest two-way talk buttons of digital channel become dimmed.
- Step 2 Click  again to cancel two-way talk.

5.6.3.6 Stream Switch

Click  to switch the bit stream type of the main stream and sub stream according to current network bandwidth.

- M: Main stream: Its bit streams are big and definition is high. It occupies large network bandwidth suitable for video wall surveillance, storage and more.
- S: Sub stream: Its definition is low but occupies small network bandwidth. It is suitable for general surveillance, remote connection and more. Some models support two sub streams (S1, S2).

5.6.3.7 Picture Search

Select the image of target person on the live view page and then search by image for all the related videos with the target person.

Procedure

- Step 1 Click . The live image is frozen.
- Step 2 Draw a search range according to the on-screen prompt, and then click **OK**.



You can adjust the searching area. Make sure that there are less than 30 faces in the selected range.

Figure 5-18 Draw a searching range



Step 3 Select the target face that you want to search for. You can select maximum 8 target faces.

Step 4 Click **Search**. The search results are displayed.

Figure 5-19 Picture search results



Related Operations

- Play video.

Select the picture and then click  to play back the video within 10 seconds before and after the snapshot. During playback, you can

- ◇ Click  to pause.
- ◇ Click  to stop.
- ◇ Click  to display or hide the intelligent rules.
- Add tag.
Select the picture and then click **Add Tag** to add a tag to the recorded video to find the target recorded video more fast.
- Lock recorded video.
If you want to keep the recorded video permanently, select the picture, and then click **Lock**. The locked video cannot be overwritten and deleted.
- Back up recorded video or picture.
Select the picture, and then click **Backup**. You can set save path, backup type, and file type, and then export to the external storage device.

5.6.3.8 Quick Pick

When connected with select IPC cameras, Quick Pick technology becomes available, allowing human and vehicle targets to be easily searched for and picked out.

Procedure

Step 1 Click  to freeze the live page.

Step 2 Drag the anchor points to draw a searching area.



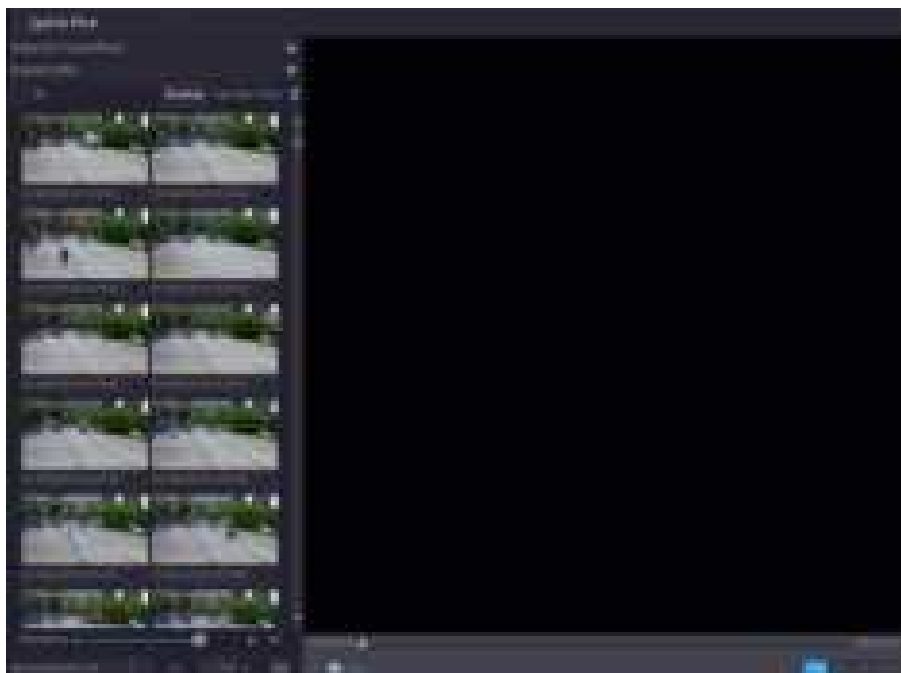
You can adjust the searching area. Make sure that there are less than 30 targets in the selected area.

Figure 5-20 Quick pick



Step 3 Click **OK**.
The search results are displayed.

Figure 5-21 Search results



Step 4 (Optional) Click **Search Condition**, change the search conditions, and then click **Search**.



You can only select up to 8 targets for search.

Figure 5-22 Search conditions



Step 5 Hover over a search result to view the basic information including channel, start time, end time and target type. Double-click a result to play the video.



You can select one or more search results and then click **Backup** to back up the results.

5.6.3.9 AcuPick

Search the human bodies and motor vehicles in the live videos. Both single image live and multi image live support AcuPick.

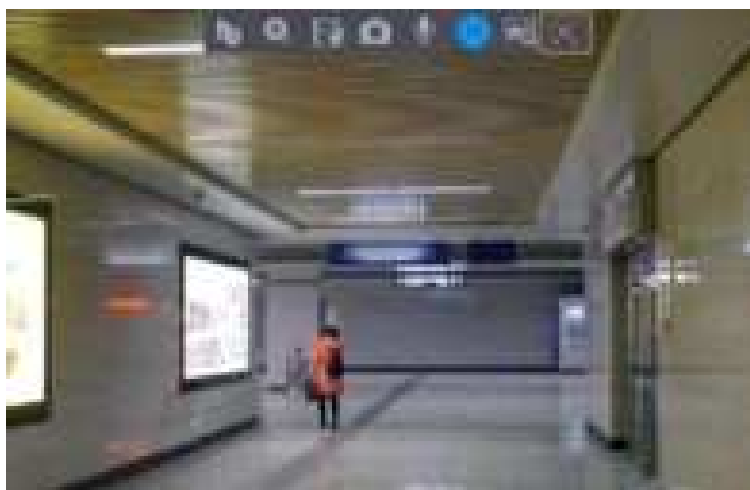
Prerequisites

The channel supports AcuPick, and the function has been enabled.

Procedure

- Step 1 Select a channel to play the live image.
- Step 2 Point to the top center of the video of current channel, and then the live view control bar appears.

Figure 5-23 Live view control bar



- Step 3 When you want to search the target in the image, click  to freeze the live page. The image automatically shows the targets.



- Supports human detection (blue detection box) and motor vehicle detection (yellow detection box).
- If you select **AI Mode** as **Live Mode**, when you enable AcuPick function, only the latest 5 records on the right side of the live page will be displayed.

- Step 4 Point to the target you want, and then click  to check the details.

Figure 5-24 AcuPick (human detection)



Figure 5-25 AcuPick (motor vehicle detection)



Step 5 Configure the search conditions as needed.

Figure 5-26 Search conditions and results

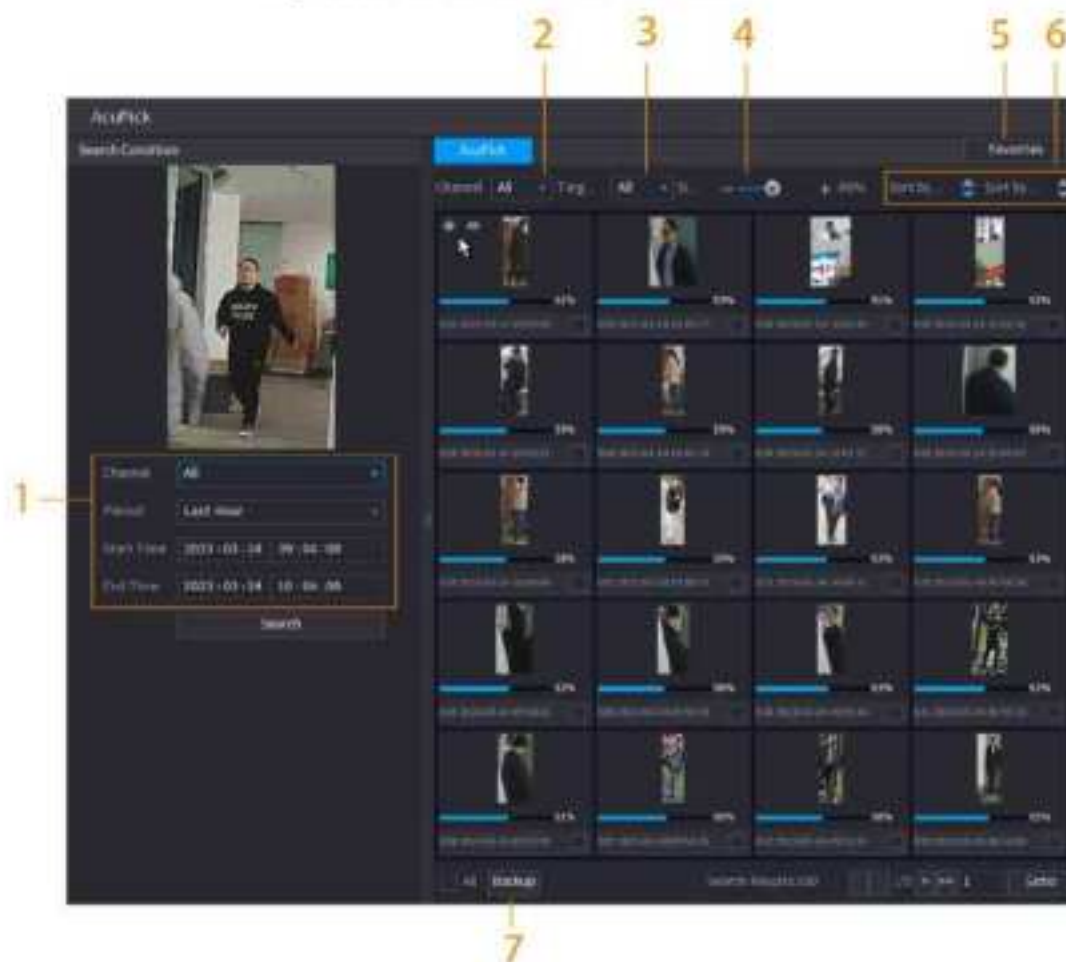
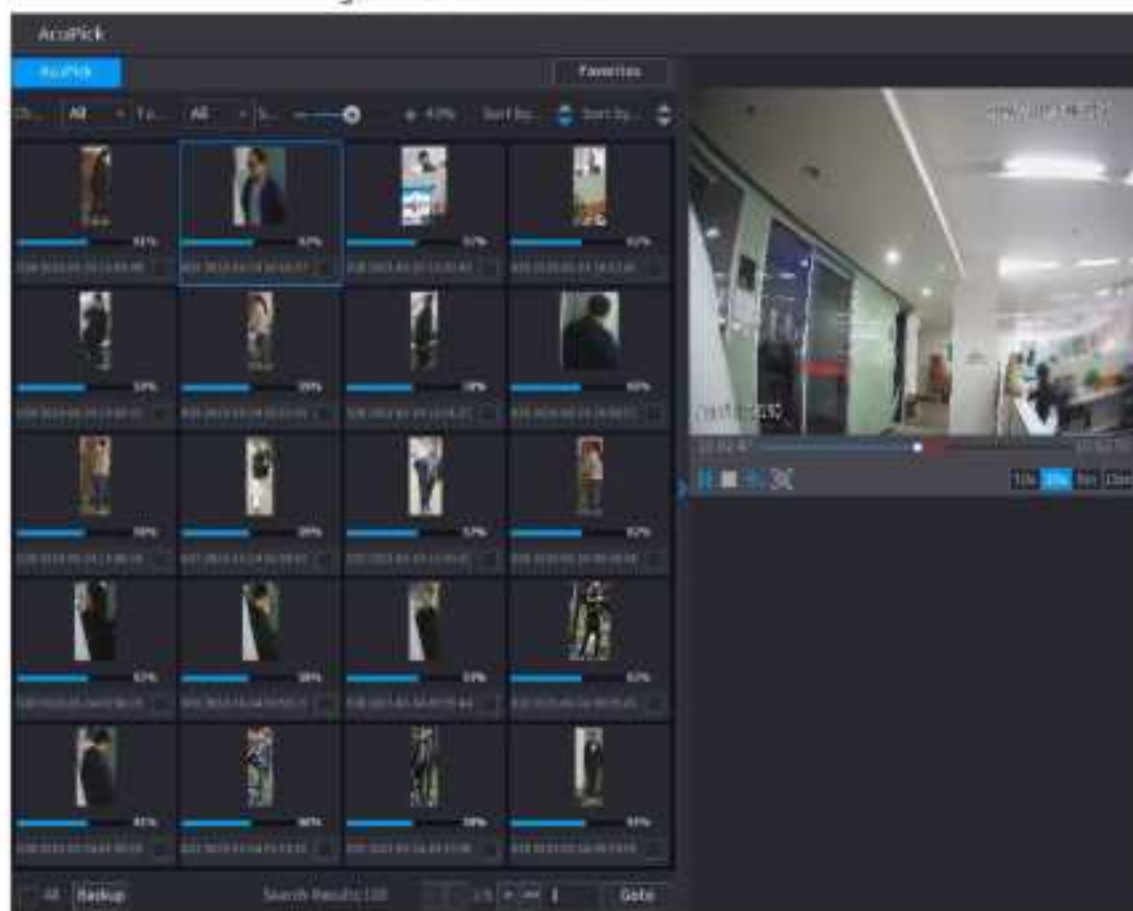


Table 5-10 Descriptions of search conditions and results

No.	Name	Description
1	Search Condition	Configure the channel and period. When choose Custom , you can set the start time and end time as needed. Up to 7 days can be set.
2	Channel	Displays the channels with search result.
3	Target Filter	Select from All , Favorite Items and Hidden Items . When you select the target items, the device will only search in this item.
4	Similarity	Configure the search similarity according to the actual conditions. The recommended value is 80% or above.
5	Favorites	The system only search the target in favorites.
6	Sort by Time/ Sort by Similarity	Reorder the search results by time or similarity.
7	Backup	You can select one or more search results, and then click Backup to back up the results.

Step 6 Select a result and double click it to check the video.

Figure 5-27 Check the search video



- Under 4K resolution, the video does not support full screen play on this page.
- Click , you can enable the AcuPick function again, freeze the image and search for the new target.

5.6.4 Shortcut Menu

Right-click the live view page to bring up the shortcut menu. You can go to main menu, play back videos or images, configure view split, and configure the settings of PTZ, image, and more.



The shortcut menu is different for different models.

Figure 5-28 Shortcut menu (1)

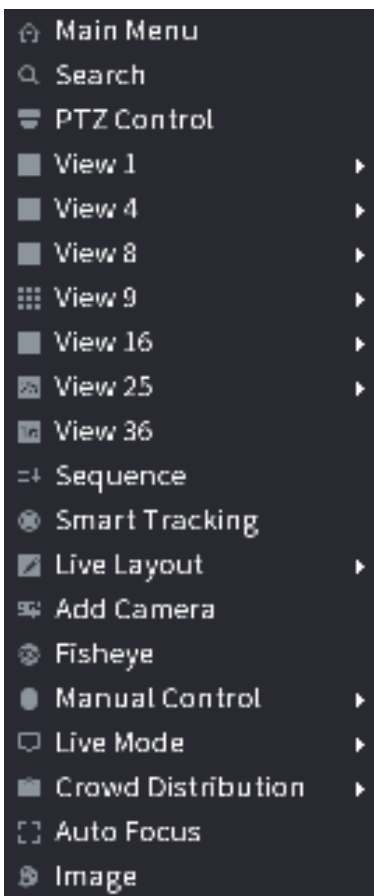


Figure 5-29 Shortcut menu (2)

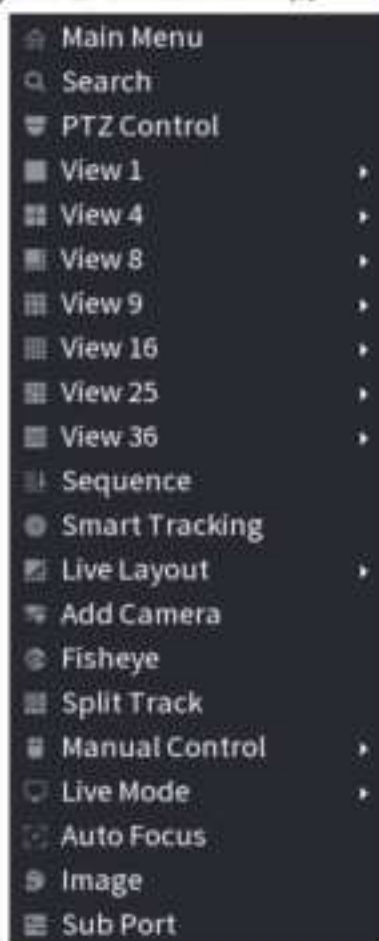


Figure 5-30 Shortcut menu (3)



Table 5-11 Shortcut menu description

Function	Description
Main Menu	Go to main menu.
Search	Search and play back videos or images.
PTZ Control	Open the PTZ control panel. For details, see "5.6.7 PTZ".

Function	Description
View 1/4/8/9/16/25/36	Configure the live view screen as a single-channel layout or multi-channel layout.
Sequence	Set customized screen split mode and channels. For details, see "5.6.9 Sequence".
Add Camera	Add cameras to the Device.
Wireless Pairing	Quickly add IPCs. For details, see "5.6.8 Wireless Pairing".
Split Track	Split the screen of a certain channel. For details, see "5.6.6 Split Tracking".
Manual Control	• Record Mode: You can configure the recording mode as Auto or Manual, or stop the recording. You can also enable or disable snapshot function • Alarm Mode: You can configure alarm output settings.
Live Mode	Select General or AI Mode . In the AI mode, the information of detected face, human or vehicles are displayed on the right side of the live page.
Crowd Distribution	Select On or Close to enable or disable crowd distribution function.
Auto Focus	Click to realize auto focus function.  Make sure the connected camera supports this function.
Image	Click to modify the camera image parameters. For details, see "5.7.4 Configuring Image Settings".
Sub Screen	Click Sub Screen to switch to the current monitor to the sub screen.
Smart Tracking	Enable smart tracking to track targets manually or automatically.
Mirror Sub Screen	Displays the image of the sub screen on the main screen.

5.6.5 AI Live View Mode

Background Information

When you select AI mode, the system displays information of human face, personnel, vehicle and non-motor vehicle on the right side of the live page, and it supports to play back records and display feature attributes.



- You need to enable face detection, body detection, vehicle detection and non-motor vehicle detection to support this function. For details, see "5.9.9.2 Configuring Video Metadata".
- AI live view mode supports AcuPick.

Procedure

Step 1 Right-click the live page, and then set **AI Mode** as **Live Mode**.

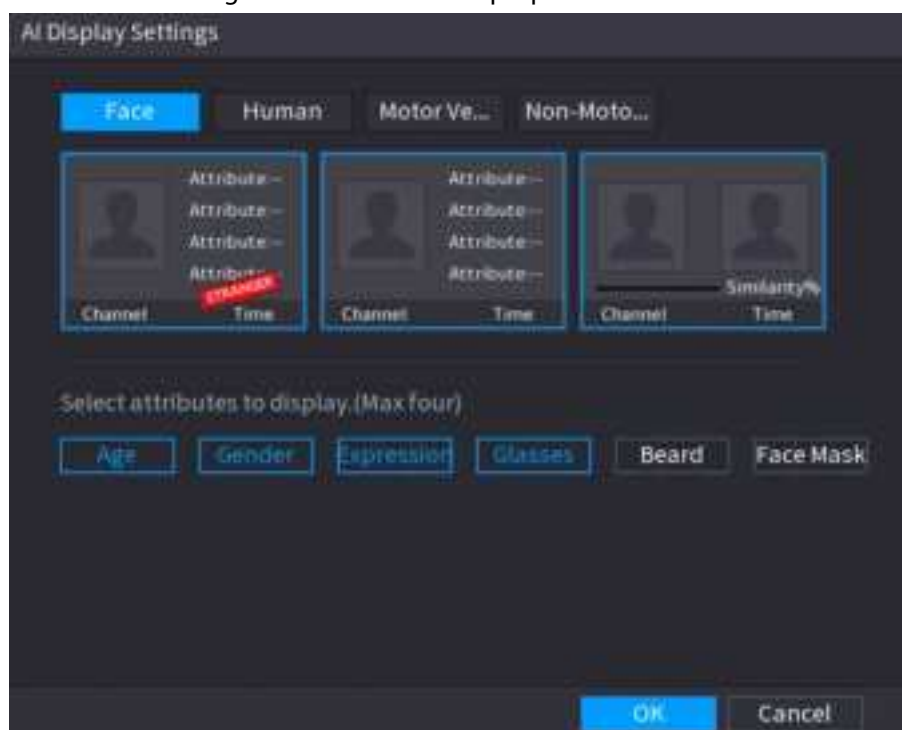
Figure 5-31 AI live view



Step 2 (Optional) Double-click the image on the right to play the corresponding video.

Step 3 Click  and then select the face attributes that you want to display. You can select up to 4 attributes.

Figure 5-32 Face vehicle properties



Step 4 (Optional) Double click the image on the right side of the page to replay the recording.



On the right side of the playback page, click **Add to Face Database** for the detected face to add the image to the face database.

Figure 5-33 AI live view and playback

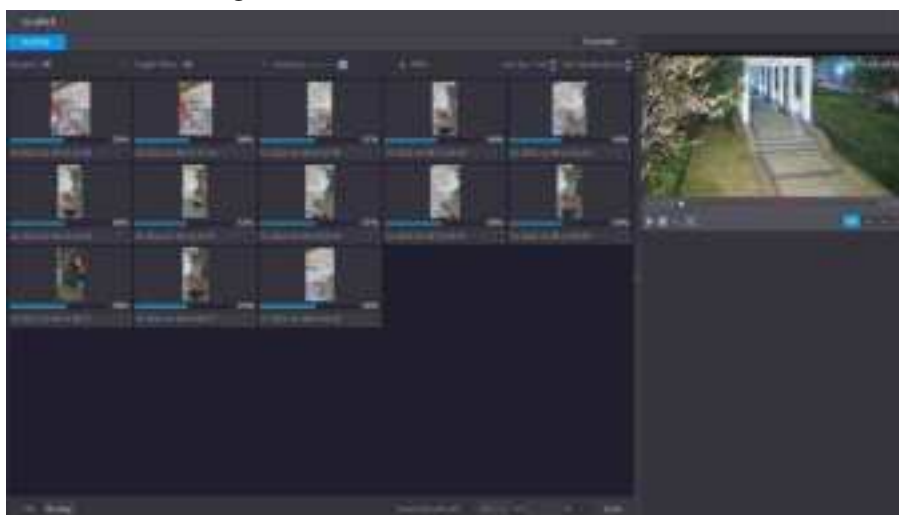


Step 5 Click  to freeze the image, and then perform AcuPick on the target.

Step 6 On the search results page, double-click one search result, and then the corresponding recording before and after the event being reported will be automatically played on the right side of the page.

You can configure the playback duration

Figure 5-34 AcuPick search result



Step 7 Click  to search the target again.



In addition to AcuPick, the recording supports pause, playback, display rules, and display areas.

Step 8 Click **OK**.



The system can display four attributes at most.

5.6.6 Split Tracking

You can track window split for a certain channel.

Background Information

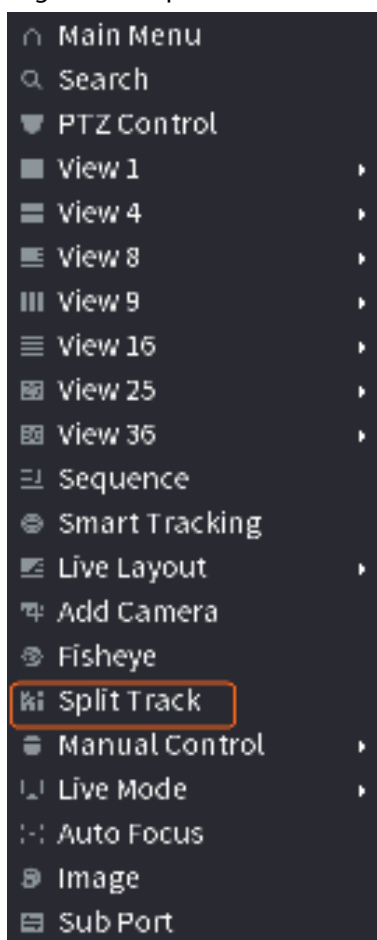


This function is for select models only.

Procedure

Step 1 Right-click the live page, and then select **Split Track**.

Figure 5-35 Split track



Step 2 Select a split mode.

Figure 5-36 Split mode



Split mode includes full screen, 1 main screen + 3 split screens and 1 main screen + 5 split screens.

- You can move the rectangles with color to adjust the videos displayed on split screens.
- You can scroll the mouse in split screens to zoom in or out the video.

Figure 5-37 Split display



5.6.7 PTZ

PTZ is a mechanical platform that carries a camera and a protective cover and performs overall control remotely. A PTZ can move in both horizontal and vertical direction to provide all-around view to the camera.



Before you control the PTZ, make sure the PTZ decoder and the NVR network connection is OK.

5.6.7.1 PTZ Settings

Background Information

You can set different PTZ parameters for local type and remote type. Before you use local PTZ, make sure you have set PTZ protocol; otherwise you cannot control the local PTZ.

- Local: The PTZ device connects to the NVR through the cable.
- Remote: The PTZ device connects to the NVR through the network.



This function is available on select models.

Procedure

Step 1 Select **Main menu** > **Camera** > **PTZ**.

Figure 5-38 PTZ (local)

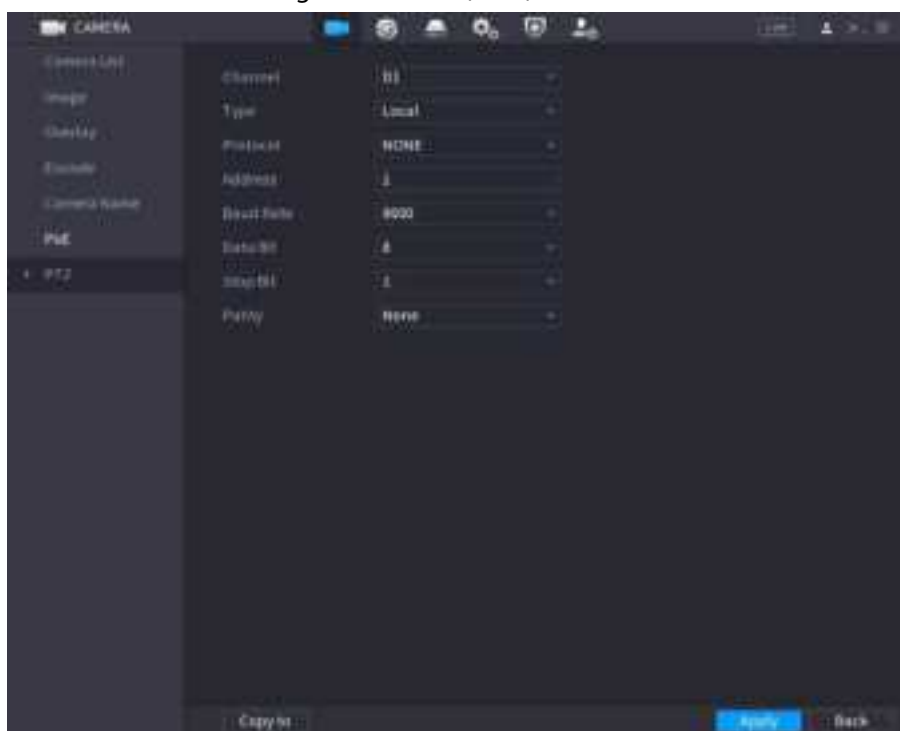
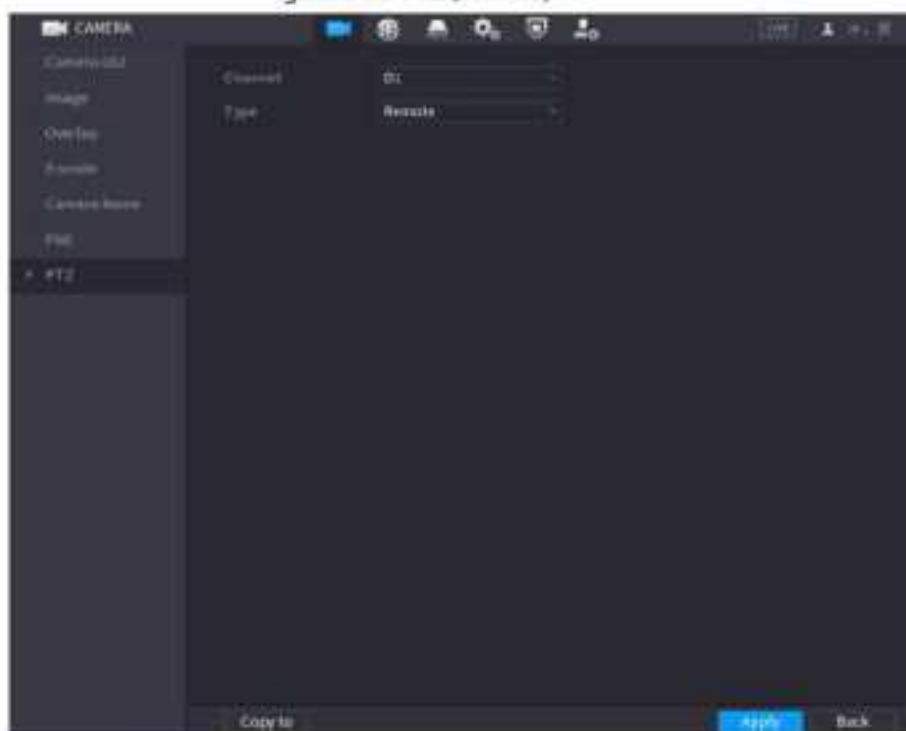


Figure 5-39 PTZ (remote)



Step 2 Configure parameters.

Table 5-12 PTZ parameters

Parameter	Description
Channel	Select the channel that you want to connect the PTZ camera to.
Type	- Local: Connect through RS-485 port. - Remote: Connect through network by adding IP address of PTZ camera to the Device.
Protocol	Select the protocol for the PTZ camera such as PELCOD.
Address	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 system cannot control PTZ camera.
Baud rate	Select the baud rate for the PTZ camera. The default is 9600.
Data Bit	The default value is 8.
Stop Bit	The default value is 1.
Parity	The default value is None .

Step 3 Click **Apply**.

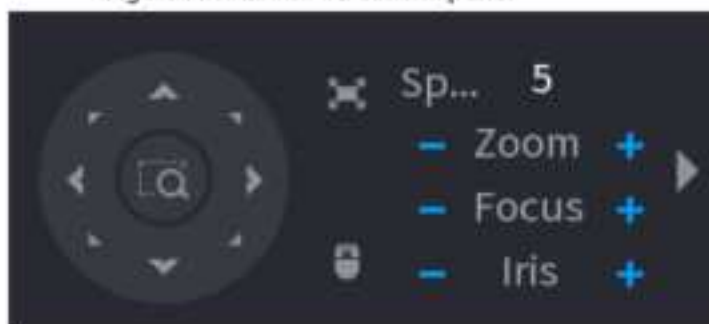
5.6.7.2 PTZ Control

You can use the PTZ control panel to perform the operations such as directing camera in eight directions, adjusting zoom, focus and iris settings, and quick positioning.

Basic PTZ Control Panel

Right-click the live page, and then select **PTZ Control**.

Figure 5-40 Basic PTZ control panel



- The gray button means system does not support current function.
- For some model, the PTZ function is available only in one-window mode.

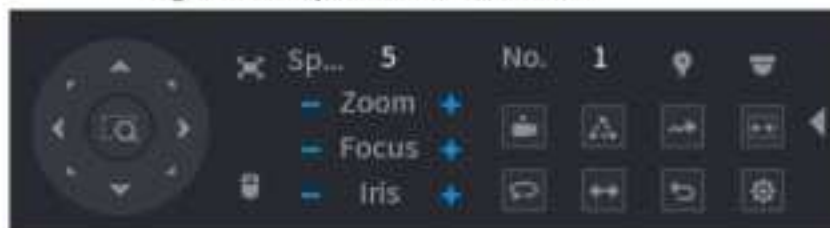
Table 5-13 PTZ control parameters

Parameter	Description
Speed	Controls the movement speed. The bigger the value, the faster the movement.
Zoom	 : Zoom out.  : Zoom in.
Focus	 : Focus far.  : Focus near.
Iris	 : Image darker.  : Image brighter.
PTZ movement	Supports eight directions.
	Fast positioning button. • Positioning: Click the icon, and then click any point on the live page. The PTZ will turn to this point and locate this point in the center. • Zooming: Click the icon, and then drag to draw a square on the view. The square supports zooming. ◊ Drag upward to zoom out, and drag downward to zoom in. ◊ The smaller the square, the larger the zoom effect.  This function is available on select models, and can only be controlled through mouse operations.
	Click the icon, and then you can control the four directions (left, right, up, and down) of PTZ movement through mouse operation.
	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. See Figure 5-41.

Figure 5-41 Expanded PTZ control bar



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

Table 5-14 PTZ functions

Icon	Function	Icon	Function
	Preset		Pan
	Tour		Flip
	Pattern		Reset
	Scan		Click the AUX Config icon to open the PTZ functions settings page.
	AUX Switch		Click the Enter Menu icon to open the PTZ Menu page.

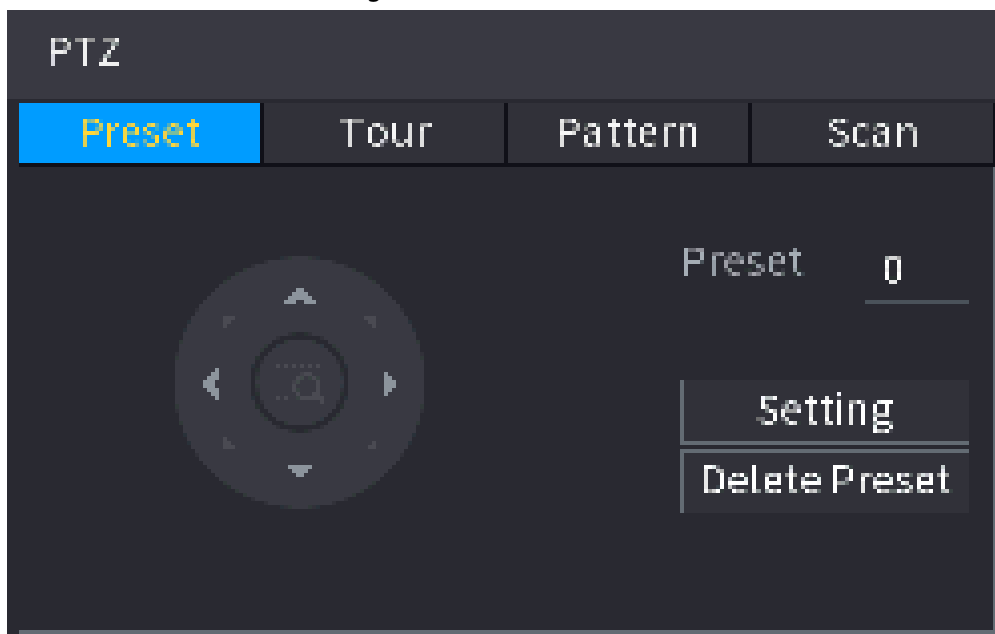
5.6.7.3 Configuring PTZ Functions

5.6.7.3.1 Configuring Presets

Procedure

Step 1 On the expanded PTZ control panel, click .

Figure 5-42 Preset



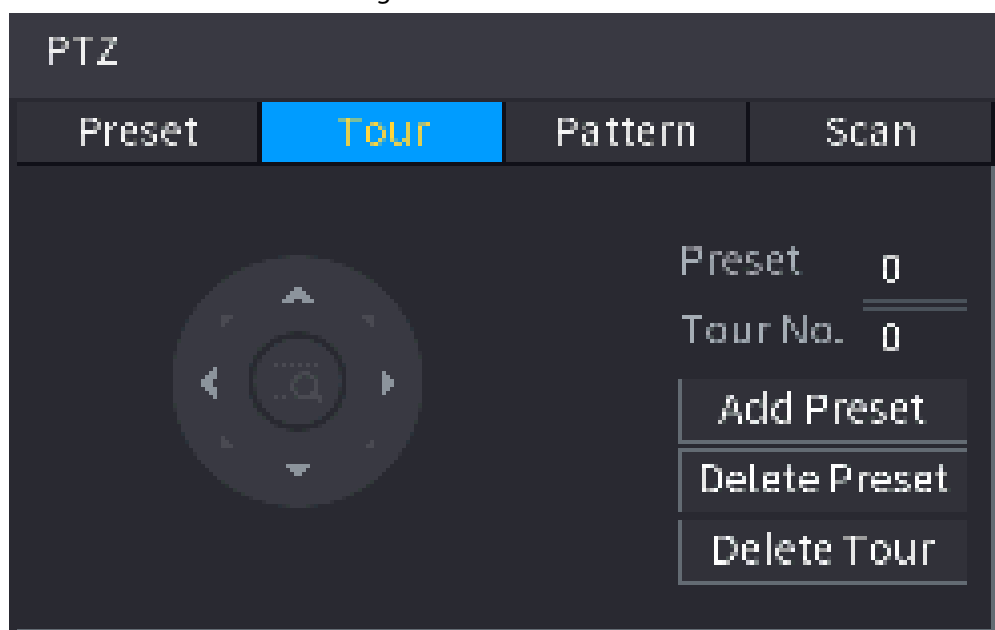
- Step 2 Click the direction arrows to the required position.
- Step 3 In the **Preset** box, enter the value to represent the required position.
- Step 4 Click **Setting** to complete the preset settings.

5.6.7.3.2 Configuring Tours

Procedure

- Step 1 On the expanded PTZ control panel, click .
- Step 2 Click the **Tour** tab.

Figure 5-43 Tour



- Step 3 In the **Tour No.** box, enter the value for the tour route.
- Step 4 In the **Preset** box, enter the preset value.
- Step 5 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.

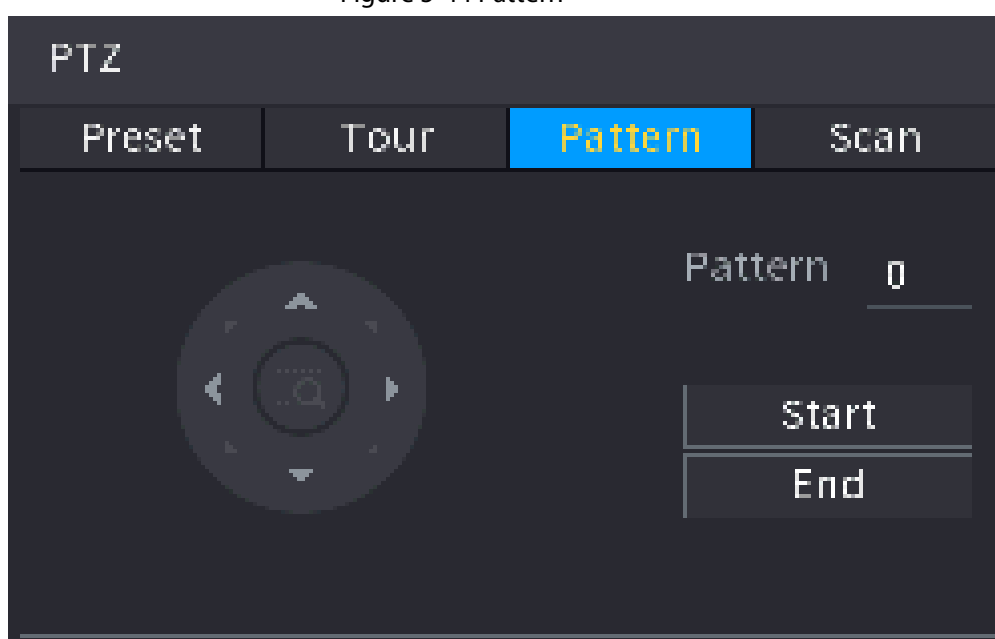
5.6.7.3.3 Configuring Patterns

Procedure

Step 1 On the expanded PTZ control panel, click .

Step 2 Click the **Pattern** tab.

Figure 5-44 Pattern



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** window, click **End** to complete the settings.

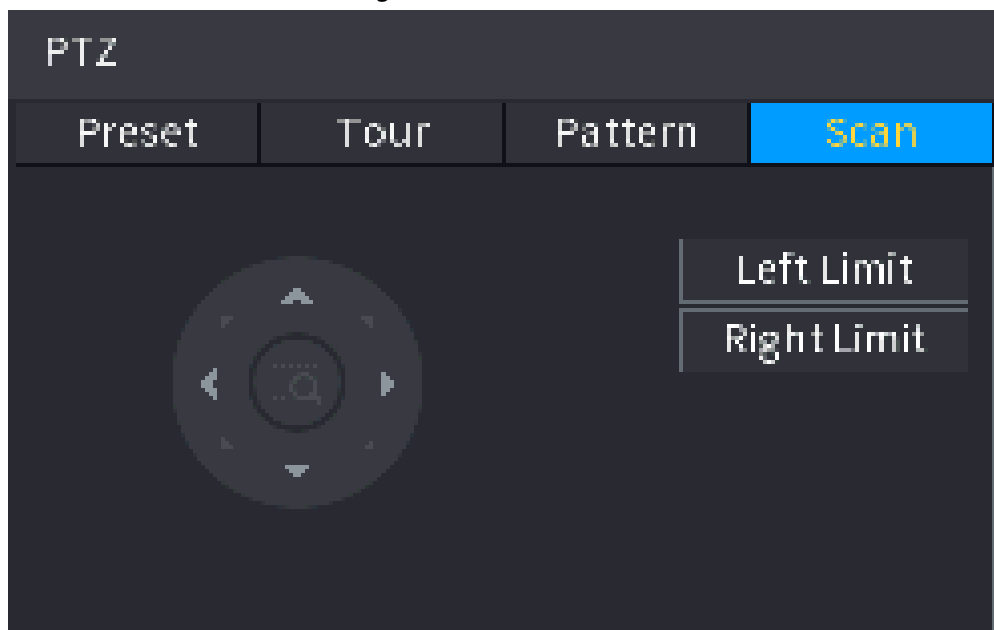
5.6.7.3.4 Configuring AutoScan

Procedure

Step 1 On the expanded PTZ control panel, click .

Step 2 Click the **Scan** tab.

Figure 5-45 Scan

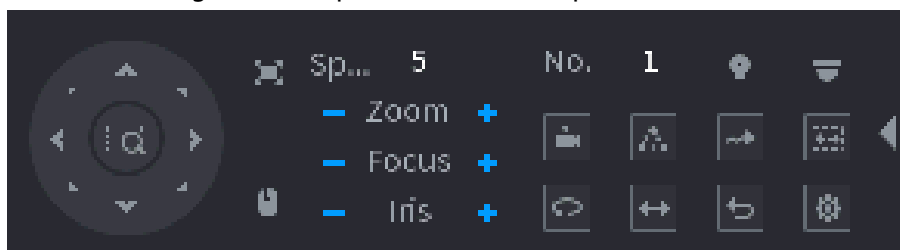


Step 3 Click the direction arrows to position the left and right limits.

5.6.7.4 Using PTZ Functions

After you have configured the PTZ settings, you can use the PTZ functions from the expanded PTZ control panel.

Figure 5-46 Expanded PTZ control panel



5.6.7.4.1 Presets

Procedure

- Step 1** On the expanded PTZ control panel, in the **No.** box, enter the value of the preset.
- Step 2** Click to call the preset.
- Step 3** Click again to stop calling the preset.

5.6.7.4.2 Tours

Procedure

- Step 1** On the expanded PTZ control panel, in the **No.** box, enter the value of the tour.
- Step 2** Click to call the tour.
- Step 3** Click again to stop calling the tour.

5.6.7.4.3 Patterns

Procedure

- Step 1** On the expanded PTZ control panel, in the **No.** box, enter the value of the pattern.
- Step 2** Click  to call the pattern.
The PTZ camera moves according to the configured pattern repeatedly.
- Step 3** Click  again to stop calling the pattern.

5.6.7.4.4 AutoScan

Procedure

- Step 1** On the expanded PTZ control panel, in the **No.** box, enter the value of the border.
- Step 2** Click .
The PTZ camera performs scanning according to the configured borders.
- Step 3** Click  again to stop auto scanning.

5.6.7.4.5 Calling AutoPan

Procedure

- Step 1** On the expanded PTZ control panel, click  to start moving in horizontal direction.
- Step 2** Click  again to stop moving.

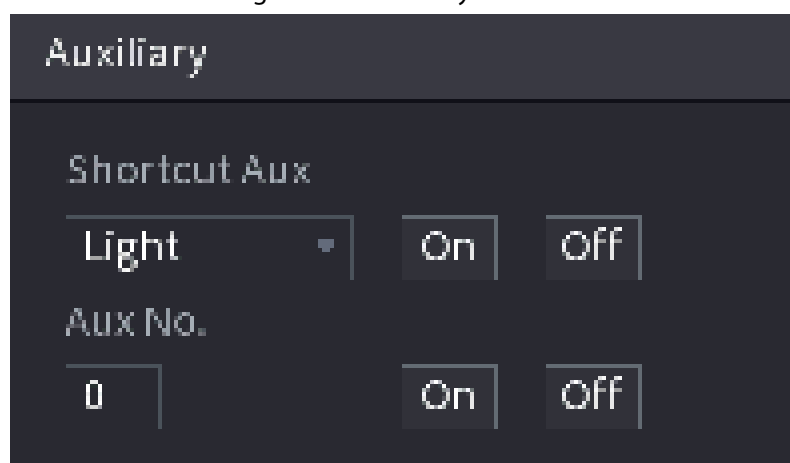
5.6.7.4.6 Auxiliary Button

On the expanded PTZ control panel, click .

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.

Figure 5-47 Auxiliary



5.6.7.5 EPTZ

5.6.7.5.1 Configuring EPTZ Linkage

Turn on the EPTZ linkage function on the live page. This function can simultaneously zoom in and track multiple humans and vehicles that trigger alarms. It provides rich details and a panoramic view at the same time.

Background Information

Some models need to configure the EPTZ linkage function in **Camera**, and then the EPTZ linkage function will be enabled on the live page.

Procedure

- Step 1** Right-click the live page, and then select **Main Menu**.
- Step 2** Select **CAMERA > EPTZ Linkage**.
- Step 3** Configure the parameters.

Figure 5-48 EPTZ linkage

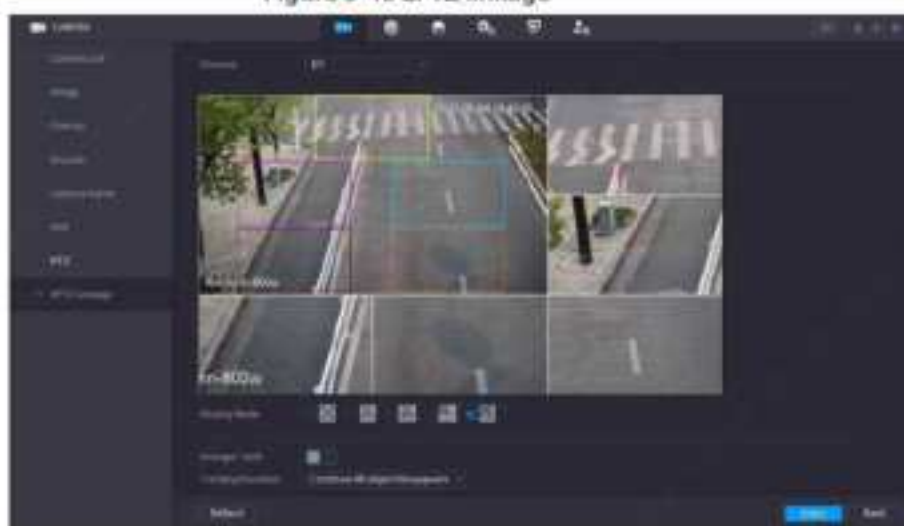


Table 5-15 Parameters description

Parameter	Description
Channel	Select the linkage channel.
Display Mode	Select the number of tracked channels. Full screen, 1+1, 1+3 and 1+5 modes are available, and full screen is selected by default.
Linkage Track	After Linkage Track is enabled, intelligent events will be tracked. It is disabled by default.
Tracking Duration	- Custom: Select the tracking duration time manually. For example, if you set from 30 s to 60 s, after tracking object A for 30 s, if object B appears, the camera will start tracking object B; if no other object appears in the process of tracking A, the camera will stop tracking object A after 60 s. - Continue till object disappears: The camera will stop tracking when the detected object disappears in the image.

Step 4 Click **Apply**.

Related Operations

When an intelligent event is triggered, the live page will display the linkage track effect.

Check the EPTZ linkage in the live page.

Right-click the live page, and then select **EPTZ**. Enable EPTZ, and then you can view local EPTZ live videos.

Figure 5-49 EPTZ live view



5.6.7.5.2 EPTZ Live View

Some models can directly turned on the EPTZ linkage function in the live page.

Right-click the live page, and then configure EPTZ linkages parameters. For details, see Table 5-15.

According to the EPTZ configuration of the corresponding channel, you can see split image and tracking display effects.



When switching to splitting, live view layout or channel order, the device automatically exits the EPTZ live view mode. When switching to main menu or playback page, the device exits that page, and then returns to EPTZ live view mode.

Figure 5-50 EPTZ live view



5.6.8 Wireless Pairing

You can use the wireless pairing to quickly add IPCs to the NVR.



Make sure that the IPC and NVR are on the same network segment.

Right-click the live page, and then select **Wireless Pairing**. The system starts a 120-second pairing countdown. You can see the video of the paired IPC after pairing is successful.

Figure 5-51 Wireless pairing



5.6.9 Sequence

You can configure the sequence of the channels displayed on the live page.

Procedure

Step 1 Right-click the live page, and then select **Sequence**.



- After you select **Sequence**, the system automatically switches to the max split amount mode.
- The channel list on the **Sequence** panel displays the added camera channel number and channel name.  means camera is online.  means camera is offline.

Figure 5-52 Sequence



- Step 2** On the **Sequence** panel, drag the channel to the desired window, or drag on the live window to switch the position.
- Check the channel number at the right bottom corner to view the current channel sequence.

Figure 5-53 Channel number

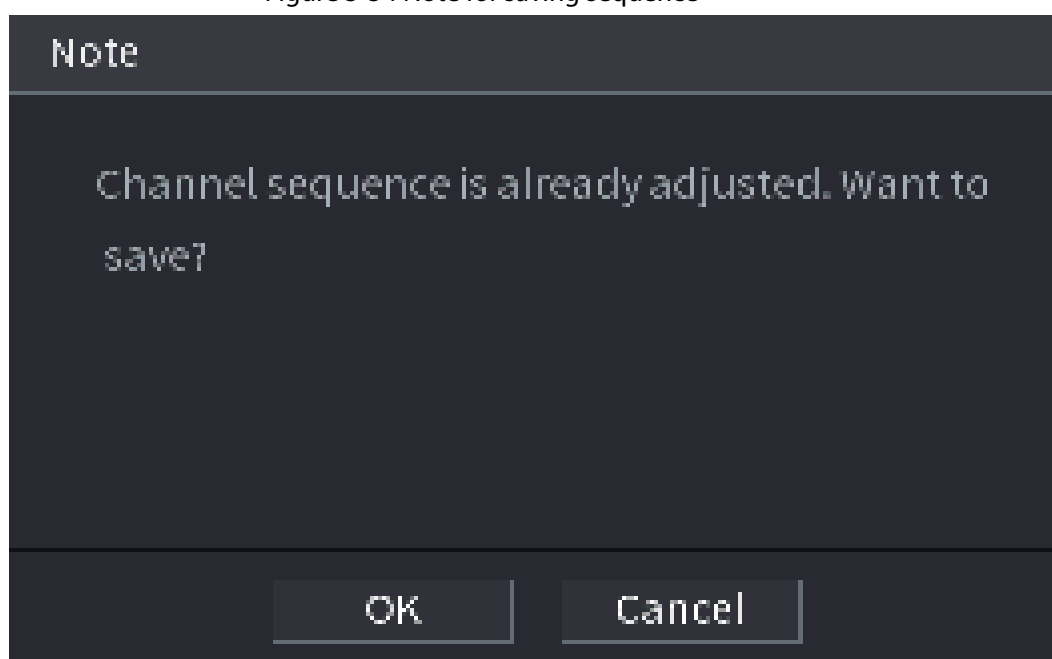


Step 3 Click **Apply**.

After you change the channel sequence, click **Cancel** or right-click the live view page, the system prompts you whether to save the sequence change.

- Click **OK** to save current settings.
- Click **No** to exit without saving the settings.

Figure 5-54 Note for saving sequence



5.6.10 Fisheye

This function is for some models only.

5.6.10.1 Fisheye De-warp on Live View Page

The fisheye camera (panoramic camera) has wide video of angle but its video is seriously distorted. The de-warp function can present the proper and vivid video suitable for human eyes. On the live page, right-click the fisheye channel, and then select **Fisheye**. You can set fisheye installation mode and display mode.



- For the non-fish eye channel, the system prompts you it is not a fisheye channel and does not support de-warp function.
- If system resources are insufficient, the system prompts you the de-warp function is not available.

Figure 5-55 Fisheye



There are three installation modes: ceiling mount, wall mount, and ground mount.



- The different installations modes have different de-warp modes.
- Some models support de-warp of 180° fisheye camera. 180° fisheye camera supports de-warp in wall mount mode only.

Figure 5-56 Fisheye settings

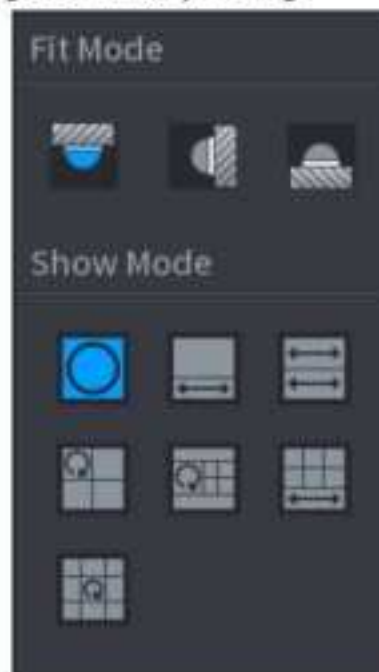


Table 5-16 Installation mode

Installation mode	Icon	Description
 (Ceiling mount)  (Ground mount)		360° panorama original view
		1 de-warp window+1 panorama stretching
		2 panorama stretching views
		1 360° panorama view+3 de-warp windows
		1 360°panorama view+4 de-warp windows
		4 de-warp windows+1 panorama stretching
		1 360° panorama view+8 de-warp windows
 (Wall mount)		360°panorama original view
		Panorama stretching
		1 panorama unfolding view+3 de-warp windows
		1 panorama unfolding view +4 de warp windows
		1 panorama unfolding view +8 de warp windows

Figure 5-57 De-warp



You can adjust the color pane on the left pane or use your mouse to change the position of the small images on the right pane to realize fish eye de-warp.

Operation: Use mouse to zoom in, zoom out, move, and rotate the image (Not for wall mount mode.)

5.6.10.2 Fisheye De-warp During Playback

When playing back the fisheye record file, you can use de-warp function to adjust video.

Procedure

- Step 1 On the main menu, click **BACKUP**.
- Step 2 Select 1-window playback mode and corresponding fish eye channel, click  to play.
- Step 3 Right-click , and then you can go to the de-warp playback page. For detailed information, see Figure 5-57.

5.6.11 Temperature Monitoring

Background Information

When NVR connects to the camera that supports temperature detection, the system can display instant temperature.



- This function might collect the human temperature in the surveillance video.
- This function is available on select models.

Procedure

- Step 1 Go to **Main Menu > DISPLAY > Display** to enable the temperature test function.
- Step 2 On the live page, click any position on the thermal channel video. The temperature at the position is displayed.

Figure 5-58 Temperature display



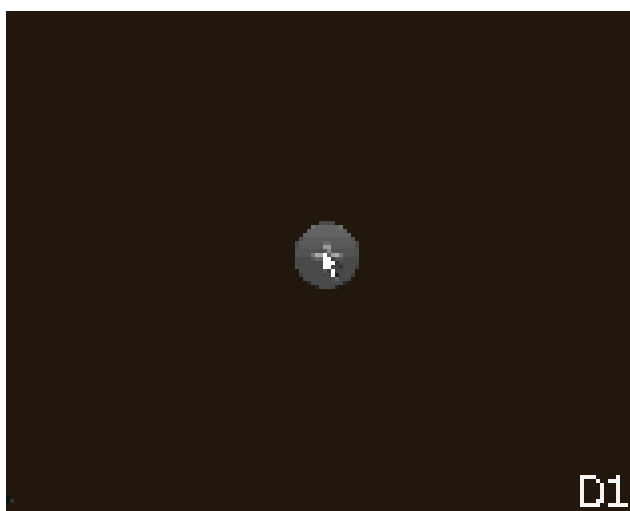
5.6.12 Shortcut Menu to Add Camera

You can add cameras on the live page.

Procedure

- Step 1** On the live page, point to a channel window.
There is an icon + on the channel window.

Figure 5-59 Add icon



- Step 2** Click "+", and then configure the parameters to add the remote device. For details, see "5.7.2 Adding Remote Devices".

5.6.13 Smart Tracking

Track targets manually or automatically. This function is only available on the multi-sensor panoramic camera + PTZ camera.

Background Information



Make sure that the linked tracking function has been enabled.

Procedure

- Step 1 Right-click the live video, and then select **Smart Tracking**.
- Step 2 Select the tracking method.
- Manual positioning: Click a spot or select a zone on the bullet camera video, and then the PTZ camera will automatically rotates there and zoom in.
 - Manual tracking: Click or select a target on the bullet camera video, and then the PTZ camera automatically rotates and tracks it.
 - Automatic tracking: The tracking action is automatically triggered by tripwire or intrusion alarms according to the pre-defined rules.

5.7 Camera

5.7.1 Initializing Remote Devices

Background Information

You can change the login password and IP address of a remote device when you initialize it.

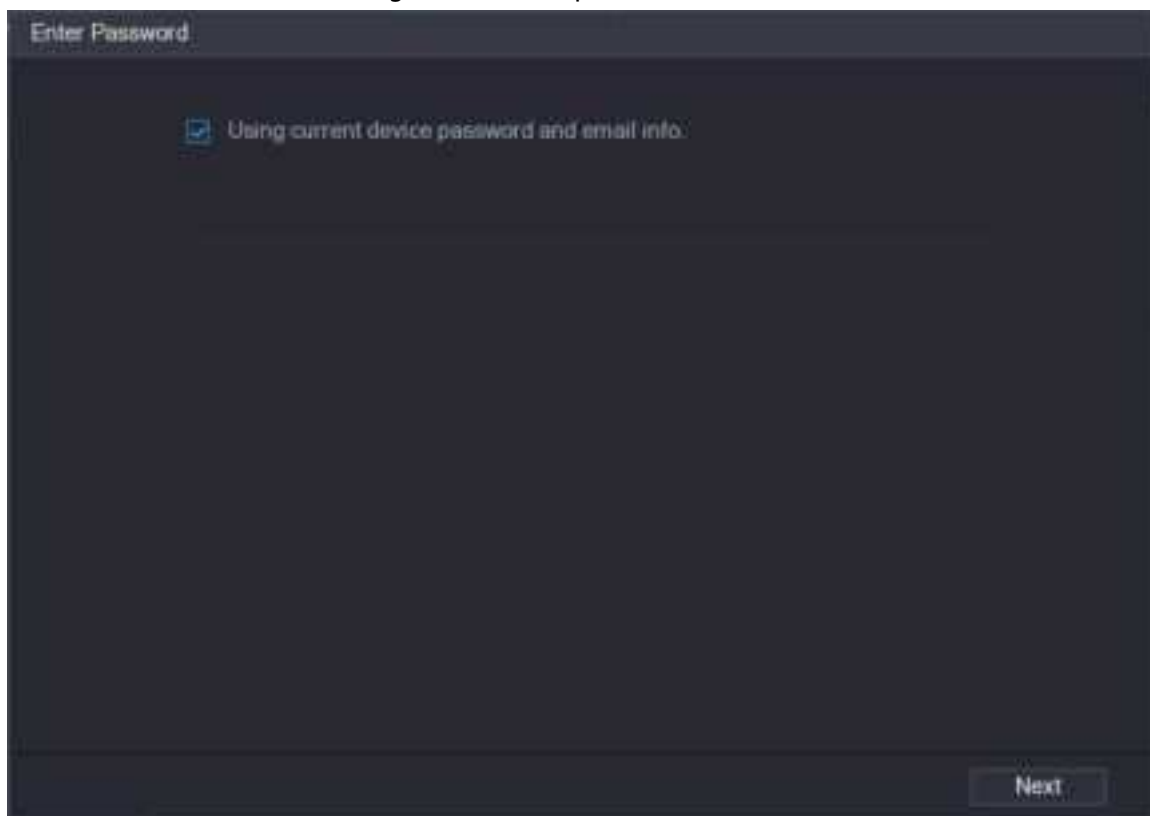


- When you connect a camera to the NVR via PoE port, NVR automatically initializes the camera. The camera adopts NVR current password and email information by default.
- When you connect a camera to the NVR via PoE port after NVR is upgraded to the new version, the NVR might fail to initialize the camera. You need to initialize the camera manually.

Procedure

- Step 1 Log in to the local system of the Device.
- Step 2 Right-click the live page and then select **Main Menu > CAMERA > Camera List > Camera List**.
- Step 3 Click **Uninitialized**, and then click **Search Device**.
The Device displays cameras to be initialized.
- Step 4 Select a camera to be initialized and then click **Initialize**.

Figure 5-60 Enter password



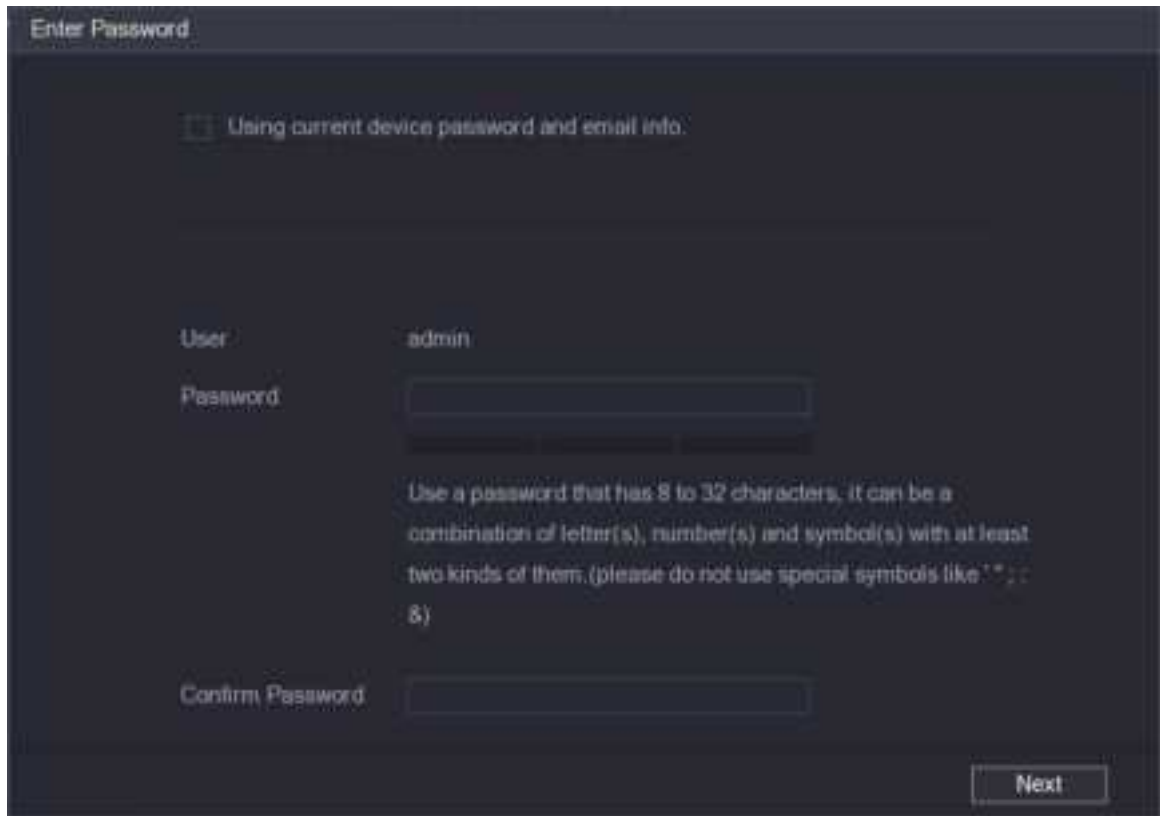
Step 5 Set password and email information for the remote device.



If you select **Using current device password and email info**, the remote device automatically uses NVR admin account information (login password and email). You can skip this step.

- 1) Cancel the selection of **Using current device password and email info**.

Figure 5-61 Password



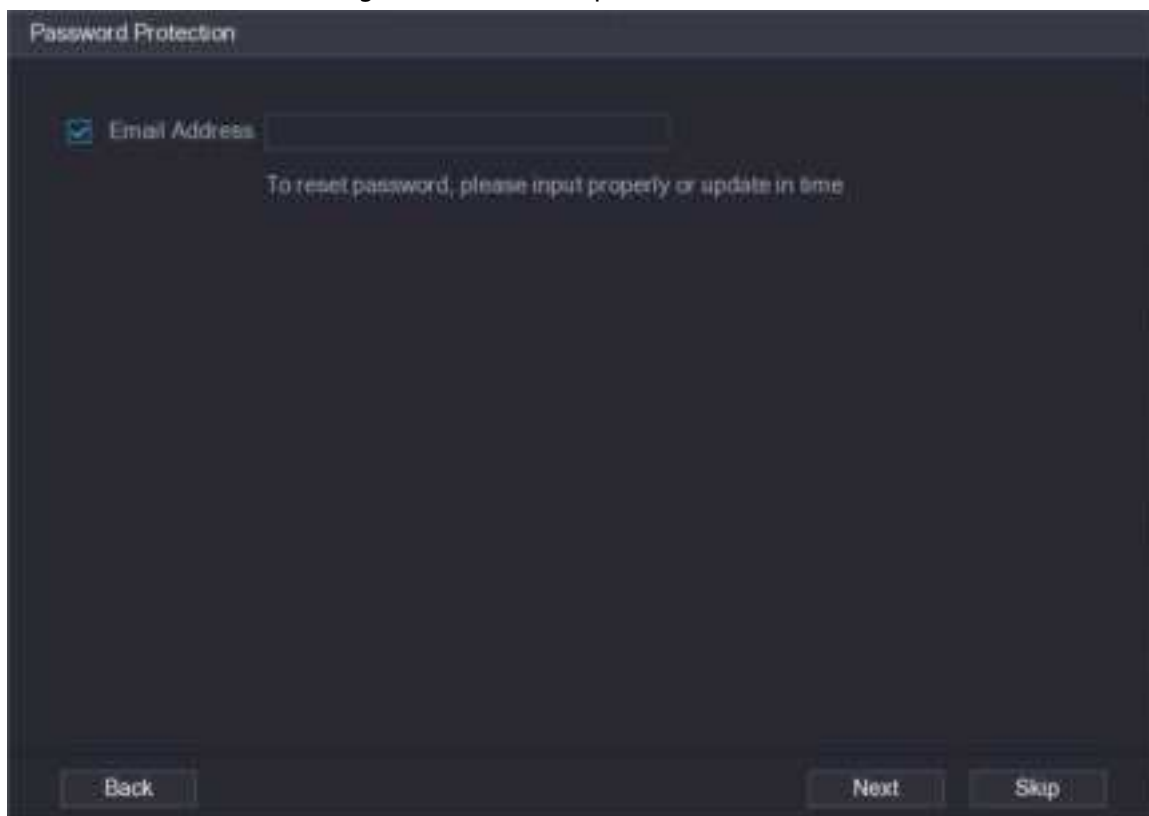
- 2) Enter the password and then confirm it.



For your device security, we recommend you create a strong password according to the password strength indication and change your password regularly.

- 3) Click **Next**.

Figure 5-62 Password protection



- 4) Enter your email address, and then click **Next**.

The email address is used to receive the security code for password resetting.



If you do not want to enter email information, cancel the selection of the checkbox and then click **Next** or **Skip**.

Step 6 Set camera IP address.

- **DHCP:** There is no need to enter IP address, subnet mask, and default gateway. Device automatically allocates the IP address to the camera.
- **Static:** You need to enter IP address, subnet mask, and default gateway.



- When you are changing IP addresses of several devices at the same time, enter incremental value. The system can add the fourth decimal digit of the IP address one by one to automatically allocate the IP addresses.
- If an IP conflict occurs when you change static IP address, the system will notify you of the issue. If you change IP addresses in batches, the system automatically skips the conflicted IP and begins the allocation according to the incremental value.

Figure 5-63 Modify IP

Index	IP Address
1	192.168.1.1

Step 7 Click **Next**.

Figure 5-64 Device initialization



Step 8 Click **Finished**.

5.7.2 Adding Remote Devices

Add remote devices to the NVR to receive, store, and manage the video streams of the remote device.



Before adding the remote devices, make sure that the devices have been initialized.

5.7.2.1 Adding Cameras from Search

Background Information

Search for the remote devices that are on the same network with the NVR, and then add the remote devices from the search results.



We recommend this method when you do not know the specific IP address of the remote device.

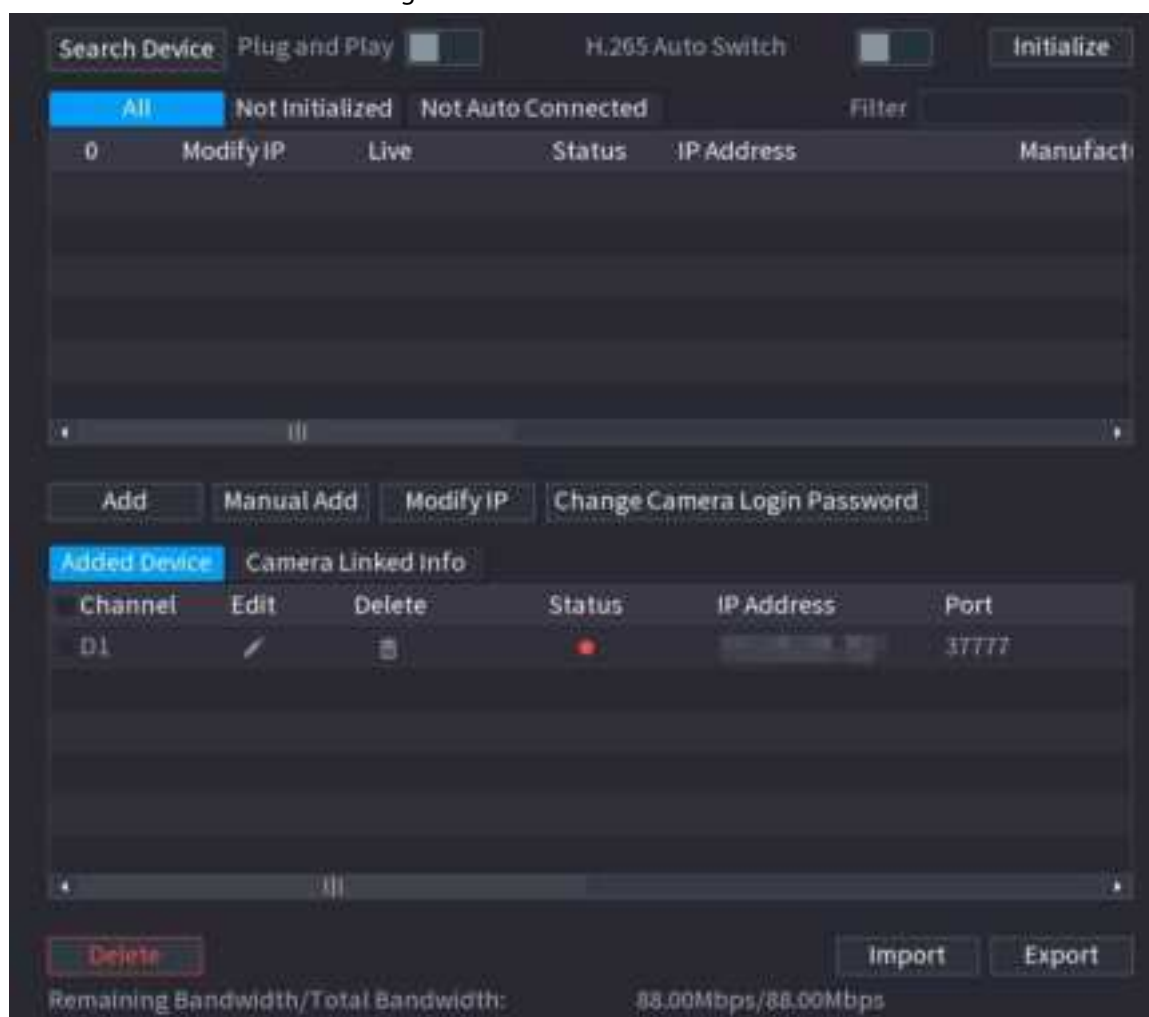
Procedure

Step 1 Select **Main Menu > CAMERA > Camera List > Camera List**.

Step 2 Click **Search Device**.

The remote devices found are displayed at the upper pane. Devices already added are not included in the searched results.

Figure 5-65 Search device



- For cameras accessed through private protocol, you can click **LIVE** and then enter the username and password to play live video.
- To filter the remote devices, you can enter all or part of device name in the **Filter** box.
- To filter out the uninitialized devices, click the **Not Initialized** tab, and then you can initialize the devices. For details, see "5.7.1 Initializing Remote Devices".
- To view all remote devices added through plug and play, you can click the **Not Auto Connected** tab. You can remove devices added through plug and play, and they can be automatically added again after plug and play is enabled.

Step 3 (Optional) Enable **Plug and Play**.

When **Plug and Play** is enabled, the NVR automatically adds remote devices on the same subnet.



For uninitialized remote devices, the NVR automatically initializes them before adding them.

Step 4 (Optional) Enable **H.265 Auto Switch**.



When **H.265 Auto Switch** is enabled, the video compression standard of added remote devices is switched to H.265 automatically.

- Step 5** Double-click a remote device, or select a remote device and then click **Add** to register it to the **Added Device** list.

Related Operations

- Change camera login password.
Select an added camera, and then click **Change Camera Login Password** to change the password.
- Edit camera information.
On the **Added Device** list, click  to change the IP address, username, password and other information.
- Import and export cameras.
You can export the information of the connected cameras and import camera information to the system to add cameras in batches. For details, see "5.7.2.3 Importing Cameras".
- View linked information.
If the remote device has multiple channels, you can click the **Camera Linked Info** to view linked information of the remote device.
- Delete cameras.
 - ◇ Delete one by one.
Click  to delete the corresponding camera.
 - ◇ Delete in batches.
Select one or more cameras, and then click **Delete**.

5.7.2.2 Adding Cameras Manually

Background Information

Configure the IP address, username, password and other information of the remote device manually to add to the NVR.



We recommend this method when you want to add only a few remote devices and know their IP addresses, usernames and passwords.

Procedure

- Step 1** Select **Main Menu > CAMERA > Camera List > Camera List**.
- Step 2** (Optional) Enable **H.265 Auto Switch**.



When **H.265 Auto Switch** is enabled, the video compression standard of added remote devices is switched to H.265 automatically.

- Step 3** Click **Manual Add**.

Figure 5-66 Manual add

Manual Add

Channel

D3

Manufacturer

Private

IP Address

192.168.1.1

TCP Port

37777

Username

admin

Password

Total Channels

1

Remote CH No.

D1

Decode Strategy

General

Connect

Setting

Step 4 Configure the parameters.



The parameters might vary depending on the manufacturer that you select.

Table 5-17 Remote channel parameters

Parameter	Description
Channel	Select the channel that you want use on the Device to connect the remote device.
Manufacturer	Select the manufacturer of the remote device.  Please connect the Imou camera to the Device through the ONVIF protocol, otherwise the Imou camera added through private protocols cannot be connected.
Registration ID	Enter the registration ID of the remote device.
IP Address	Enter the IP address of the remote device.
RTSP Port	Enter the RTSP port number. The default value is 554.
HTTP Port	Enter the HTTP port number. The default value is 80.
TCP Port	The default value is 37777. You can enter the value as needed.
Username	Enter the username of the remote device.
Password	Enter the password of the user for the remote device.

Parameter	Description
Total Channels	Click Connect to get the total number of channels of the remote device.
Remote CH No.	Enter the remote channel number of the remote device.
Decode Strategy	Select Default , Realtime , or Fluent .
Protocol Type	- 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	If the remote device is added through ONVIF protocol, select the Encrypt checkbox and then the system will provide encryption protection to the data being transmitted.  To use this function, make sure that the HTTPS function is enabled for the remote IP camera.

Step 5 Click **OK**.

5.7.2.3 Importing Cameras

Background Information

You can import remote devices in batches.



We recommend this method when you want to add lots of remote devices whose IP addresses, usernames and passwords are not the same.

Procedure

Step 1 Select **Main Menu > CAMERA > Camera List > Camera List**.

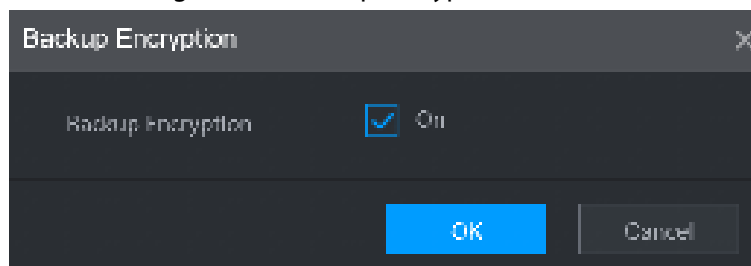
Step 2 Export the template.



The exported template includes the information of the added remote device. Pay attention to your data security.

1) Click **Export**.

Figure 5-67 Backup encryption



- 2) Cancel the selection of the **On** checkbox to disable backup encryption, and then click **OK**.



- If **Backup Encryption** is enabled, the file format is .backup.
- If **Backup Encryption** is disabled, the file format is .csv. Keep unencrypted files well to avoid data leakage.

- 3) Select the storage path and then click **Save**.

- The template file is named RemoteConfig_20220222191255.csv. 20220222191255 represents the export time.
- The template includes the IP address or registration ID, port, remote channel No., manufacturer, username, password and other information.

Step 3 Fill in the template and then save the file.



Do not change the file extension of the template. Otherwise, the template cannot be imported.

Step 4 Click **Import**, select the template file and then open it.

The remote devices in the template are added to the NVR. If the remote device in the template has been added, the system will prompt you whether to replace the existing one on the device list.

- If you select **Yes**, the system deletes the existing one and import the device again.
- If you select **No**, the system retains the existing one and add the device to another unoccupied channel.

5.7.3 Changing IP Address of Remote Device

The procedures to change the IP addresses of connected and unconnected cameras are different.



You can change the IP address only when the camera is online.

5.7.3.1 Changing IP Address of Connected Remote Device

Procedure

- Step 1 Select **Main Menu > CAMERA > Camera List > Camera List**.
- Step 2 On the **Added Device** list, double-click a remote device or click
- Step 3 Change the IP address.

Step 4 Click **OK**.

5.7.3.2 Changing IP Address of Unconnected Cameras

Procedure

Step 1 Select **Main Menu > CAMERA > Camera List > Camera List**.

Step 2 Click **Search Device**.

The remote devices found are displayed at the upper pane.

Step 3 Click , or select one or more remote devices and then click **Modify IP**.



When changing the IP addresses of multiple remote devices at the same time, make sure that they share the same username and password.

Step 4 Enter username and password of the remote device, and then configure the IP address.

- **DHCP:** The remote device gets a dynamic IP address automatically.
- **Static:** You need to enter static IP address, subnet mask, and default gateway. When changing IP addresses of multiple remote devices at the same time, enter the incremental value so that the system can add the fourth decimal digit of the IP address one by one according to the incremental value.

Step 5 Click **OK**.

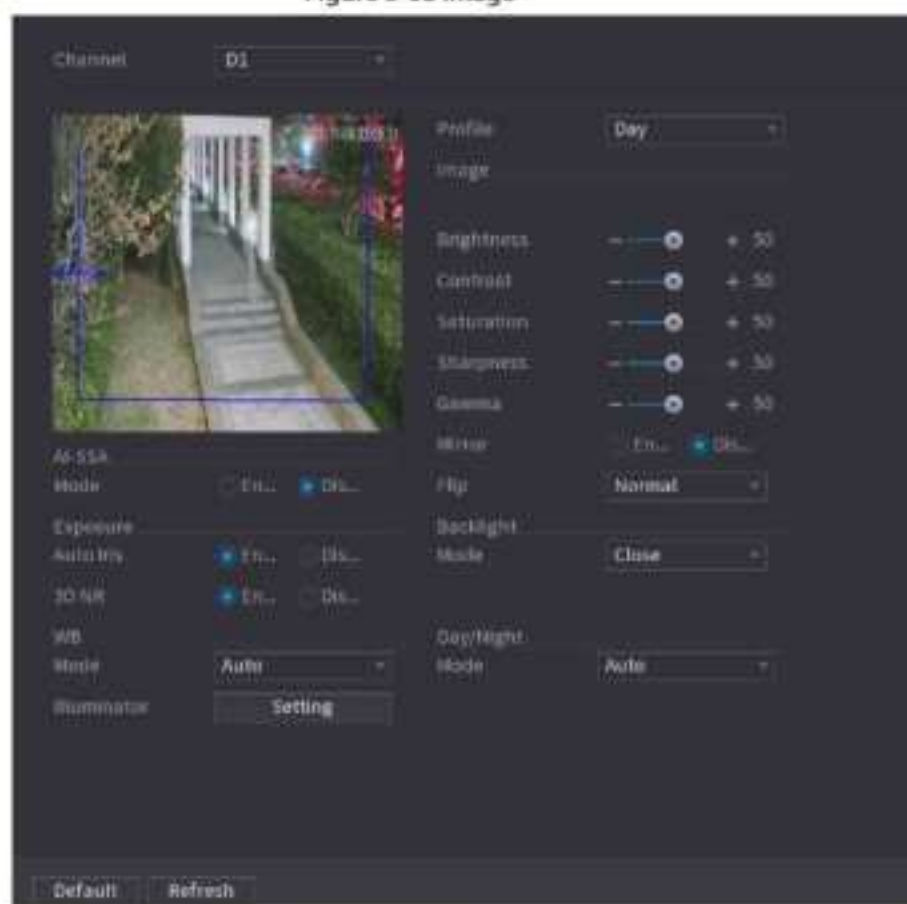
5.7.4 Configuring Image Settings

You can set network camera parameters according to different environments to get the best video effect.

Procedure

Step 1 Select **Main Menu > CAMERA > Image**.

Figure 5-68 Image



Step 2 Select a channel and then configure parameters.



The parameters might vary depending on the camera model.

Table 5-18 Image parameters

Parameter	Description
Profile	There are three configuration files. The system has configured the corresponding parameters for each file. You can select according to your actual situation.
Brightness	Adjust the image brightness. The bigger the value is, the brighter the image will become.
Contrast	Adjust the image contrast. The bigger the value is, the more obvious the contrast between the light area and dark area will become.
Saturation	Adjust the color shades. The bigger the value, the lighter the color will become.
Sharpness	Adjust the sharpness of image edge. The bigger the value is, the more obvious the image edge is.
Gamma	Adjust image brightness and enhance the image dynamic display range. The bigger the value is, the brighter the video is.

Parameter	Description	
Mirror	Switch the left and right sides of the video image. It is disabled by default.  This function is available on select models.	
Flip	Set video display direction. It includes normal, 180°, 90°, and 270°.	
AI SSA	After you enable AI SSA (AI Scene Self-adaptation), the camera can detect environmental conditions, such as rain, fog, backlight, low light and flicker, to adjust the parameters of the image to suit the conditions, ensuring that clear images are always produced.  When AI SSA is enabled, some image parameters such as exposure and backlight mode will become unavailable.	
Exposure	Auto Iris	• This function is available when the camera is equipped with the auto iris lens. • After you enable auto iris function, the iris can automatically zoom in and zoom out according to the brightness of the environment and the image brightness changes accordingly. • If you disable the auto iris function, the iris is at the biggest value. The iris does not automatically zoom in or zoom out according to the brightness of the environment.
	3D NR	This function specially applies to the image whose frame rate is configured as 2 at least. It reduces the noise by using the information between two frames. The bigger the value is, the better the effect.

Parameter	Description
Backlight Mode	You can set camera backlight mode. • SSA: In the backlight environment, the system can automatically adjust image brightness to clearly display the object. • BLC: ◦ Default: The device performs automatic exposures according to the environment situation to make the darkest area of the video clear. ◦ Customize: After you select the specified zone, the system can expose the specific zone so that the zone can reach the proper brightness. • WDR: In backlight environment, the system lowers the high bright section and enhances the brightness of the low bright section, so that you can view these two sections clearly at the same time. • HLC: In the backlight environment, the system lowers the brightness of the brightest section, reduces the area of the halo and lowers the brightness of the whole video. • Close: Disable the BLC function.
WB Mode	You can set camera white balance mode. The system adjusts the overall image hue to make the image color display precisely as it is.  Different cameras support different white balance modes, such as auto, manual, natural light, and outdoor.
Day/Night Mode	Configure the color and black & white mode of the image. This parameter is not affected by the configuration files. • Color: The camera outputs color image only. • Auto: The camera outputs color images or black and white images according to ambient brightness • B/W: The camera outputs black and white image only. • Sensor: Use this mode when there is peripheral IR light connected.  The Sensor mode is available on select non-IR models.

Parameter	Description
Illuminator	When the camera comes with an illuminator, you can configure the illuminator solution. - Click Settings next to Illuminator to configure the illuminator. - Select an illuminator solution from the Fill Light drop-down list. IR Mode: Enable the IR illuminator, and the white light is disabled. You can only capture black and white images after enabling this function. White Light: Enable the white light, and the IR illuminator is disabled. You can capture clear scene image after enabling this function. Smart Illumination: This function is mainly used at night. Smart illumination applies IR mode in most situations. When an event occurs (such as perimeter, motion detection and human detection), the camera automatically switches to white light mode to link image capturing and video recording under the full color mode. The white light turns off when the event stops, and then the mode switches to IR mode according to the ambient brightness.  The status of the illuminator mainly depends on time and environment. If the smart illumination is triggered at night and the event continues during the day, the illuminator configured for the daytime will be turned off. By Time: Set the illumination solution according to the time period and use different solutions at different time periods. - Configure the time plan. - Click Settings next to Time Plan. - Select an illumination solution, and then drag on the timeline to select the time period of the illumination solution. Different colors represent different illumination solutions on the timeline, as shown in the following figure.  - Click the selected time period, and then set an accurate start and end time. - Click Copy, select weeks, and then click Apply. Time plans for the current week can be quickly copied to other weeks. - Click OK.

Figure 5-69 Set the time plan



Step 3 Click **Apply**.

5.7.5 Configuring Overlay Settings

You can set parameters for overlay and private masking.

5.7.5.1 Overlay

You can add the information of time and channel in the live view page.

Procedure

Step 1 Select **Main Menu > CAMERA > Overlay > Overlay**.

Step 2 Select a channel and then configure parameters.

Table 5-19 Video overlay parameters

Parameter	Description
Time Title	Display the time title on the video image in live view and playback. 1. Select Time Title . 2. Drag the time title to a desired place. 3. Click Apply .
Channel Title	Display the channel title on the video image in live view and playback. 1. Select Channel Title and then edit the channel title. 2. Drag the channel title to a desired place. 3. Click Apply .
Custom Title	You can customize title to be overlaid on the video image. Click Setting to set the information such as font size, title content and text alignment, and then click OK .
Default	Restore the overlay settings to default configuration.
Copy to	Copy the overlay settings to other channels.

Step 3 Click **Apply**.

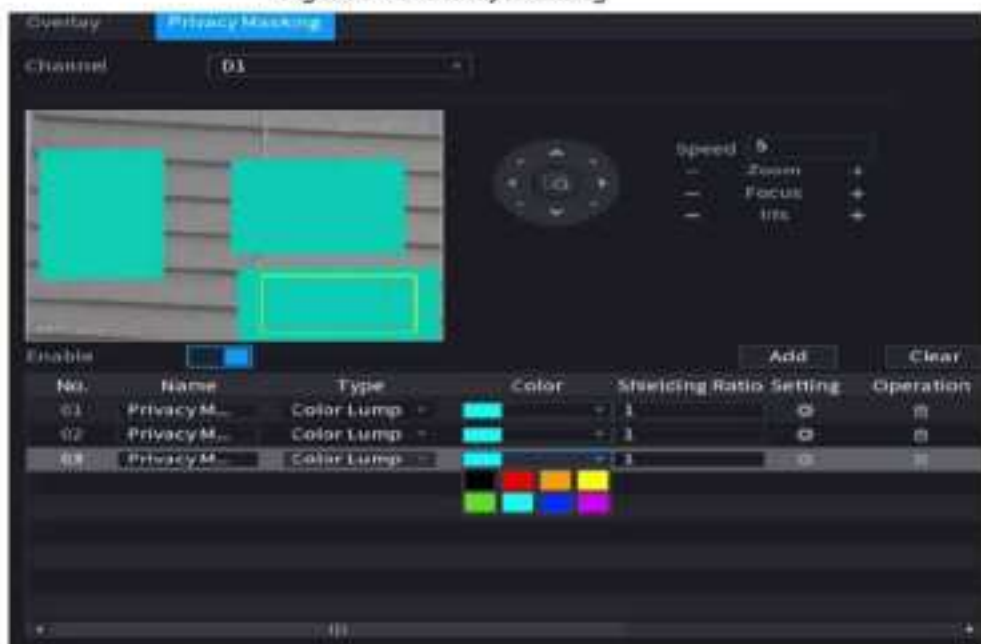
5.7.5.2 Privacy Masking

You can mask certain areas of the video image for privacy protection.

Procedure

Step 1 Select **Main Menu > CAMERA > Overlay > Privacy Masking**.

Figure 5-70 Privacy masking



Step 2 Select a channel.

Step 3 Click  to enable privacy masking.

Step 4 Click **Add**, select the masking type and color, and then draw mosaic or color blocks in the image as needed.

A masking block appears on the video image.



- The number of masking blocks that you can add might differ depending on the camera. You can add up to 24 masking blocks.
- Click **Clear** to delete all masking areas. Click  to delete a masking area.

Step 5 Drag the masking block to a desired position and then configure the type, color and other parameters.

Step 6 Click **Apply**.

5.7.6 Configuring Encoding Settings

You can set video bit stream and image parameters.

5.7.6.1 Configuring Audio and Video Encoding Settings

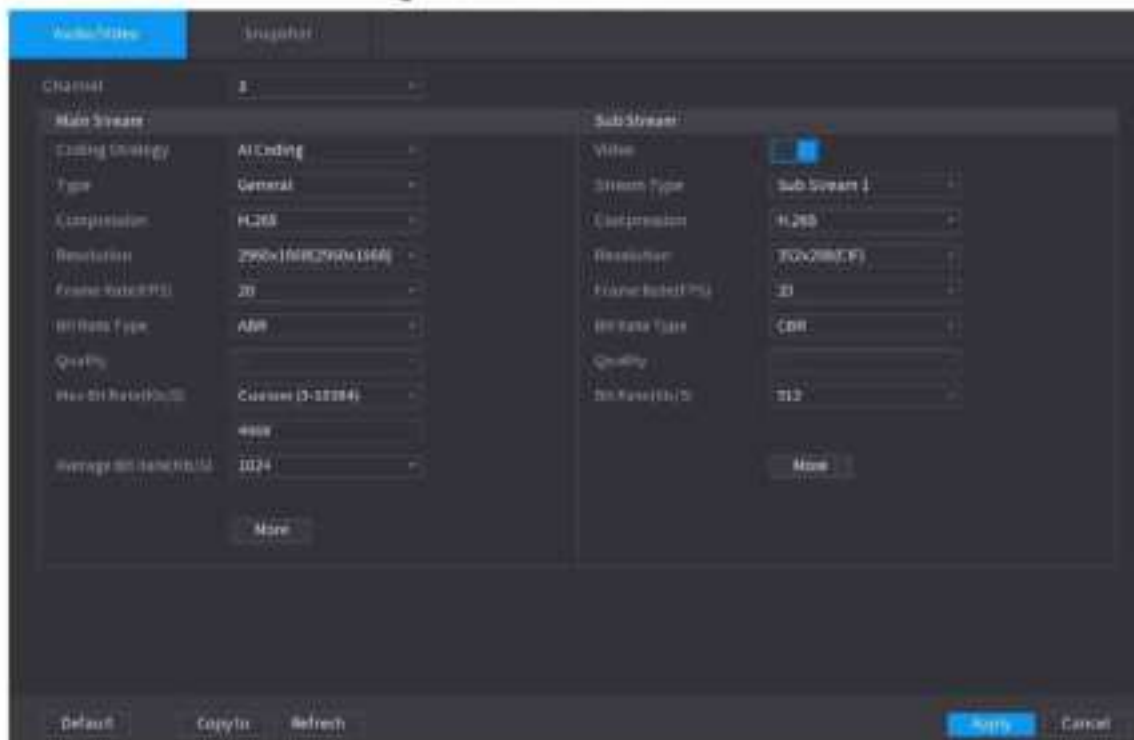
You can set audio and video encoding parameters such as bit stream type, compression, and

resolution.

Procedure

Step 1 Select **Main Menu > CAMERA > Encode > Audio/Video**.

Figure 5-71 Audio/video



Step 2 Select a channel and then configure parameters.



The parameters for main stream and sub stream are different. Some models support three streams: main stream, sub stream 1, sub stream 2.

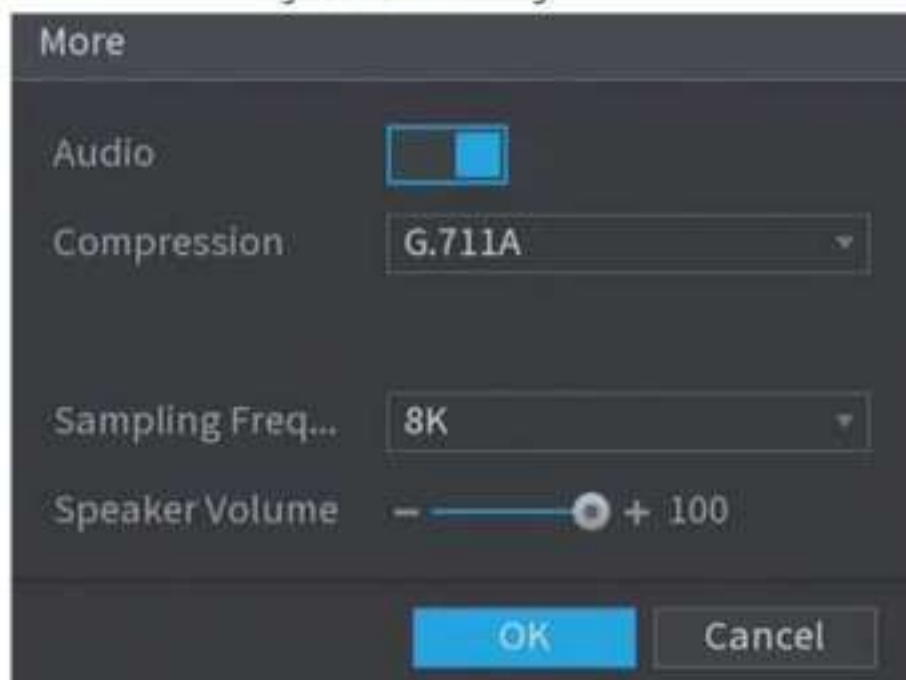
Table 5-20 Audio/video parameters

Parameter	Description
Coding Strategy	General: Use general coding strategy. 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. AI Codec: Enable the AI codec function. This function can reduce the camera code stream, network transmission pressure, and hard drive storage space without affecting the image quality.
Type	Select the recording type for main stream from General , Motion (motion detection), or Alarm .
Compression	Select the encoding mode. - 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 mode requires higher bit stream compared with other modes for the same definition.

Parameter	Description
Resolution	Select resolution for the video.  The maximum video resolution might be different 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	• CBR (constant bit rate): The bit rate changes slightly around the defined value. We recommended selecting CBR when there might be only small changes in the monitoring environment. • VBR (variable bit rate): The bit rate changes with monitoring scenes. Select variable stream when there might be big changes in the monitoring environment. • ABR (average bit rate): When selecting ABR, you need to configure Max Bit Rate and ABR.  The connected camera needs to support the average bit rate.
Quality	The bigger the value is, the better the image will become.  This parameter is available if you select VBR as Bit Rate Type.
I Frame Interval	The interval between two reference frames.
Bit Rate (Kb/S)	• Main stream: The higher the value, the better the image quality. • Sub stream: For constant stream, the bit rate changes near the defined value; for variable stream, the bit rate changes along with the image but the maximum value still stays near the defined value.

Step 3 Click **More**.

Figure 5-72 More settings



Step 4 Configure audio compression parameters.

Table 5-21 Audio compression parameters

Parameter	Description
Audio	This function is enabled by default for main stream. You need to manually enable it for sub stream. Once this function is enabled, the recorded video file is composite audio and video stream.
Compression	Select an audio compression format.
Sampling Frequency	Set how many times per second a sound is sampled. The bigger the value, the more natural the sound.
Speaker Volume	Adjust the volume of the camera.  Only the camera supporting the audio output have the function.

Step 5 Click **OK**.

Step 6 Click **Apply**.

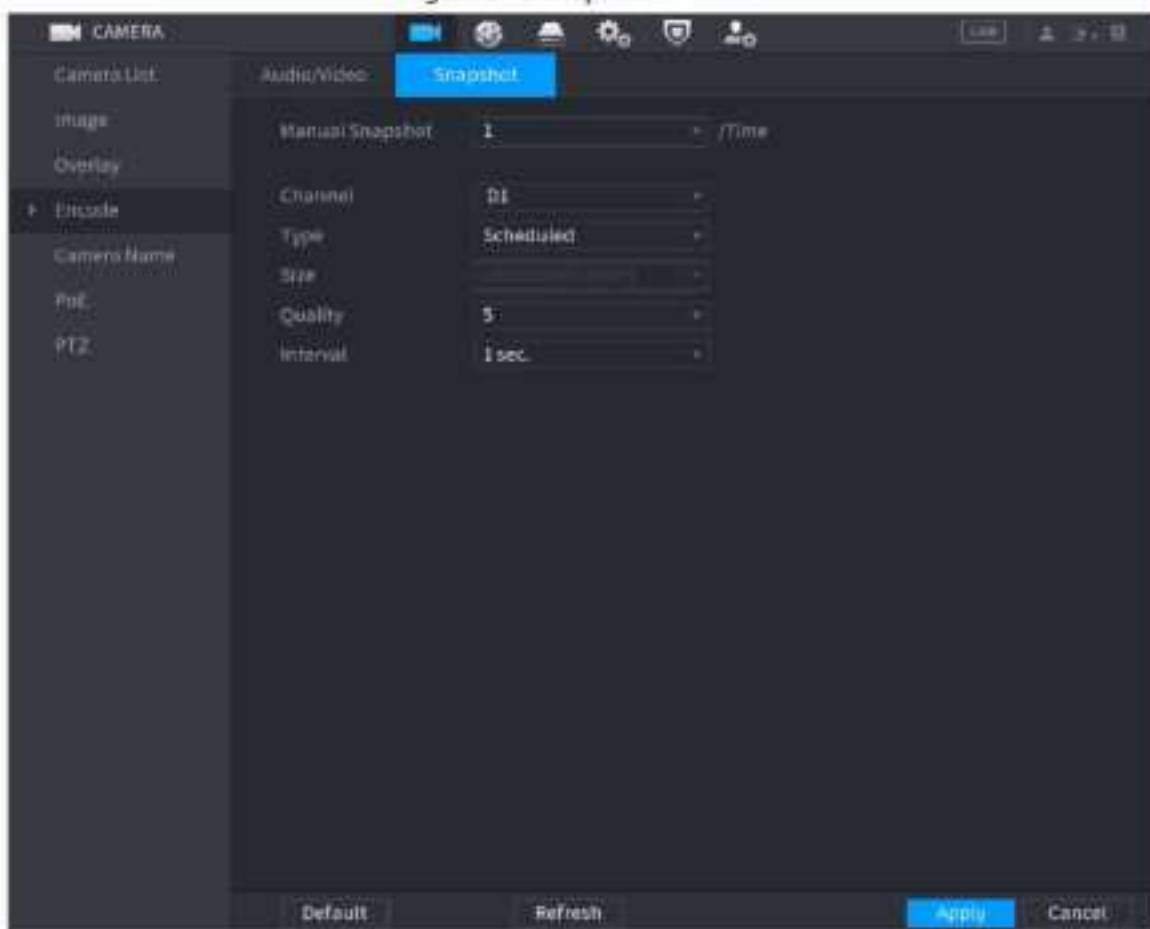
5.7.6.2 Snapshot

You can set snapshot mode, image size, quality and interval.

Procedure

Step 1 Select **Main Menu > CAMERA > Encode > Snapshot**.

Figure 5-73 Snapshot



Step 2 Configure parameters.

Table 5-22 Snapshot parameters

Parameter	Description
Manual Snapshot	Select the number of snapshots that you want to take each time.
Channel	Select the channel that you want to configure the settings for.
Type	Scheduled: The snapshot is taken during the scheduled period. Event: The snapshot is taken for motion detection, video loss, local alarms and other events.
Size	The size is determined by the resolution of the main stream or sub stream of the channel.
Quality	Configure the image quality. The higher the level is, the better the image will become. Level 6 represents the best quality.
Interval	Select or customize how frequently snapshots are to be taken.

Step 3 Click **Apply**.

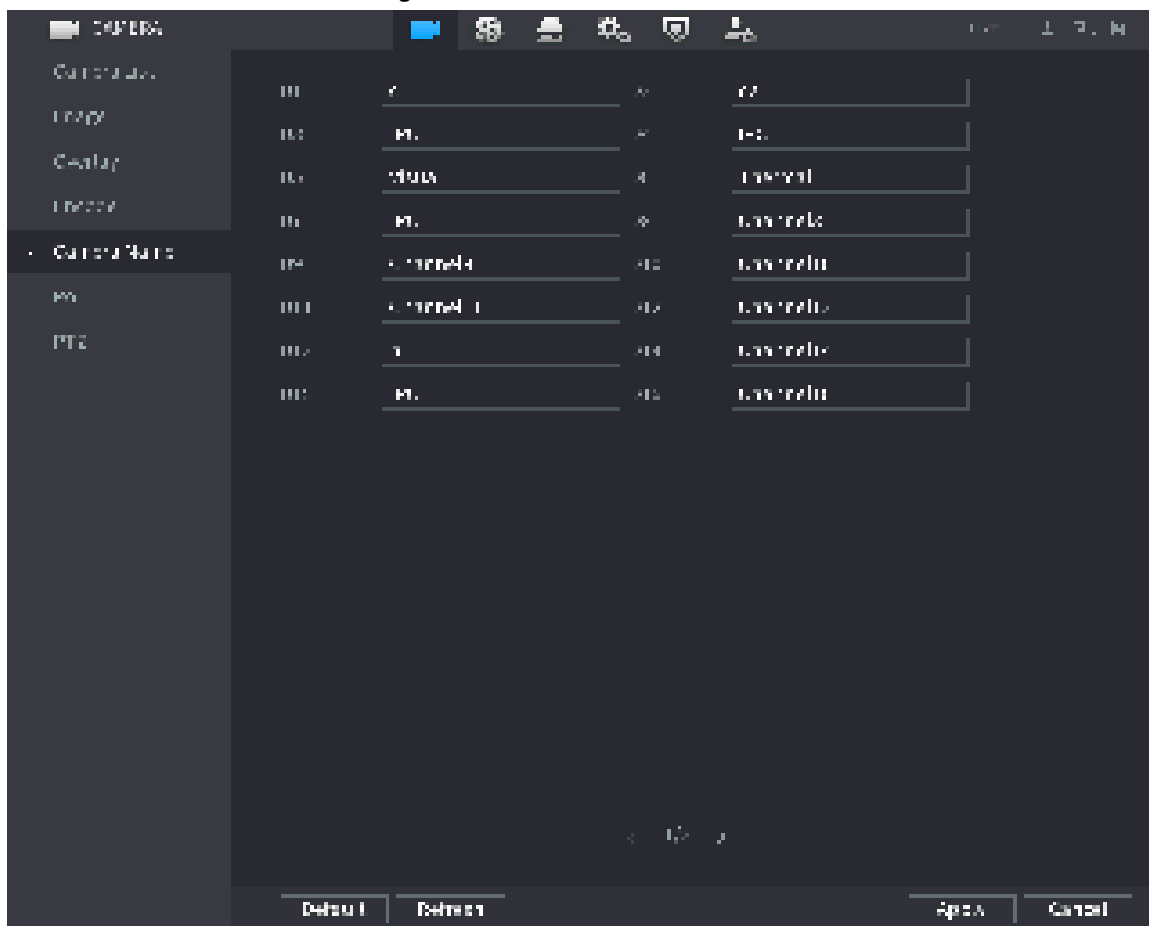
5.7.7 Modifying Channel Name

You can customize channel name.

Procedure

Step 1 Select **Main Menu > CAMERA > Camera Name**.

Figure 5-74 Camera name



Step 2 Modify a channel name.



- You can only change the name of the camera connected via the private protocol.
- You can enter up to 63 English characters for a channel name.
- When the system is in Chinese or English, the content in the text input box (excluding password input box) can be copied and pasted.

Step 3 Click **Apply**.

5.7.8 Checking the PoE Status

You can check the status of PoE ports and set enhancement mode for each PoE port.

Procedure

Step 1 Select **Main Menu > CAMERA > PoE**.

Figure 5-75 PoE

Port	Port	Enhancement Mode	Power Class	Power On
1	1	On	Class 0	On
2	2	On	Class 0	On
3	3	On	Class 0	On
4	4	On	Class 0	On
5	5	On	Class 0	On
6	6	On	Class 0	On
7	7	On	Class 0	On
8	8	On	Class 0	On

Notes:

- Class 0: 0W power consumption, supports 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps.
- Power class: 0W power consumption, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps.
- Power class: 0W power consumption, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps.
- Power class: 0W power consumption, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps, 100Mbps.

Step 2 (Optional) Set **Enhancement Mode** to **On** or **Off**.



When enhancement mode is enabled, the transmission distance of the PoE port will be extended.

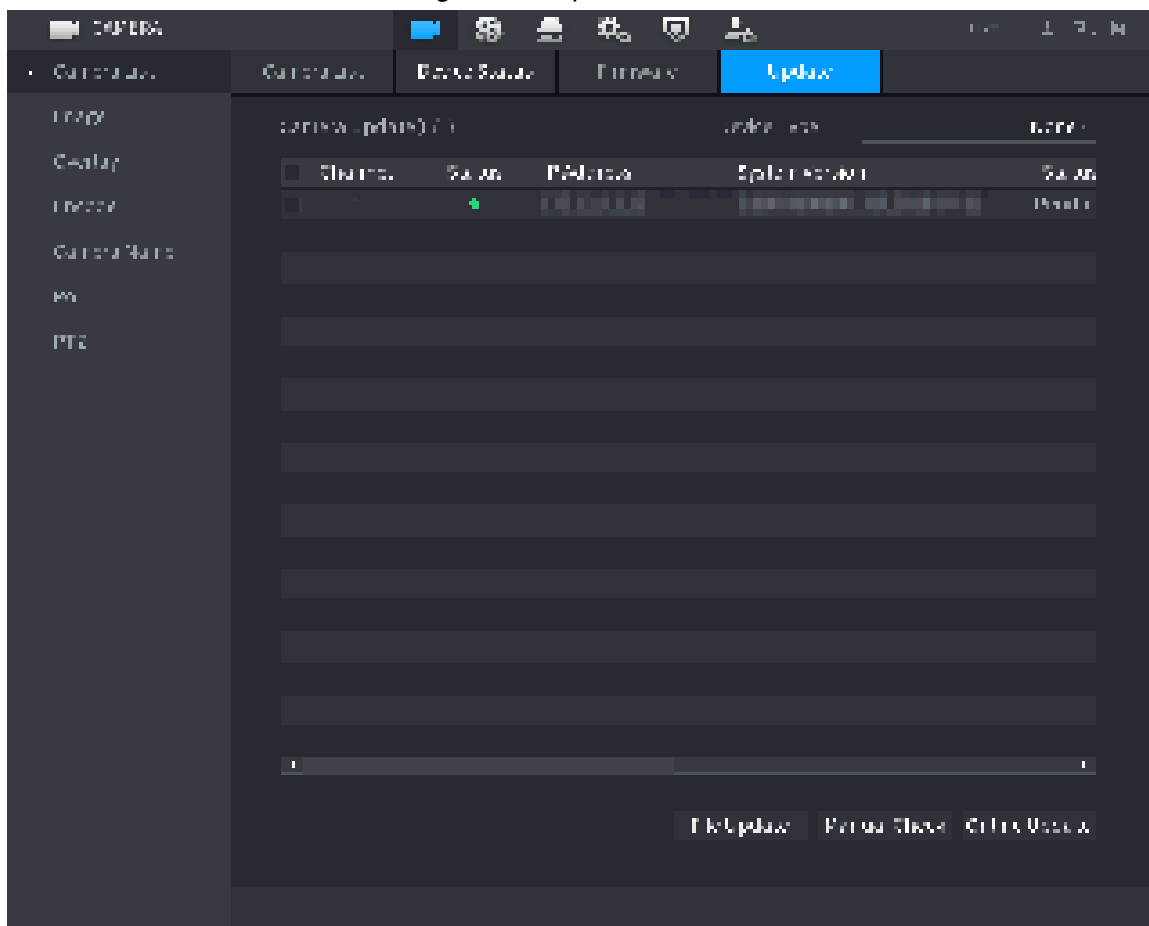
5.7.9 Updating Remote Devices

You can update the firmware of the connected network camera through online update or file update.

Procedure

Step 1 Select **Main Menu > CAMERA > Camera List > Update**.

Figure 5-76 Update



Step 2 Update the firmware of the connected remote device.

- Online update.

1. Select a remote device and then click **Manual Check**

The system checks for available updates.

2. Select a remote device that has an update available for it, and then click **Online Update**.

- File update.

1. Select a channel and then click **File Update**.

2. Select an update file.

3. Click **OK**.



If there are too many remote devices, you can filter them on the **Device Type** list.

5.7.10 Viewing Remote Device Information

5.7.10.1 Device Status

You can view the connection and alarm status of the corresponding channel.

Select **Main Menu** > **CAMERA** > **Camera List** > **Device Status**.

Figure 5-77 Device status

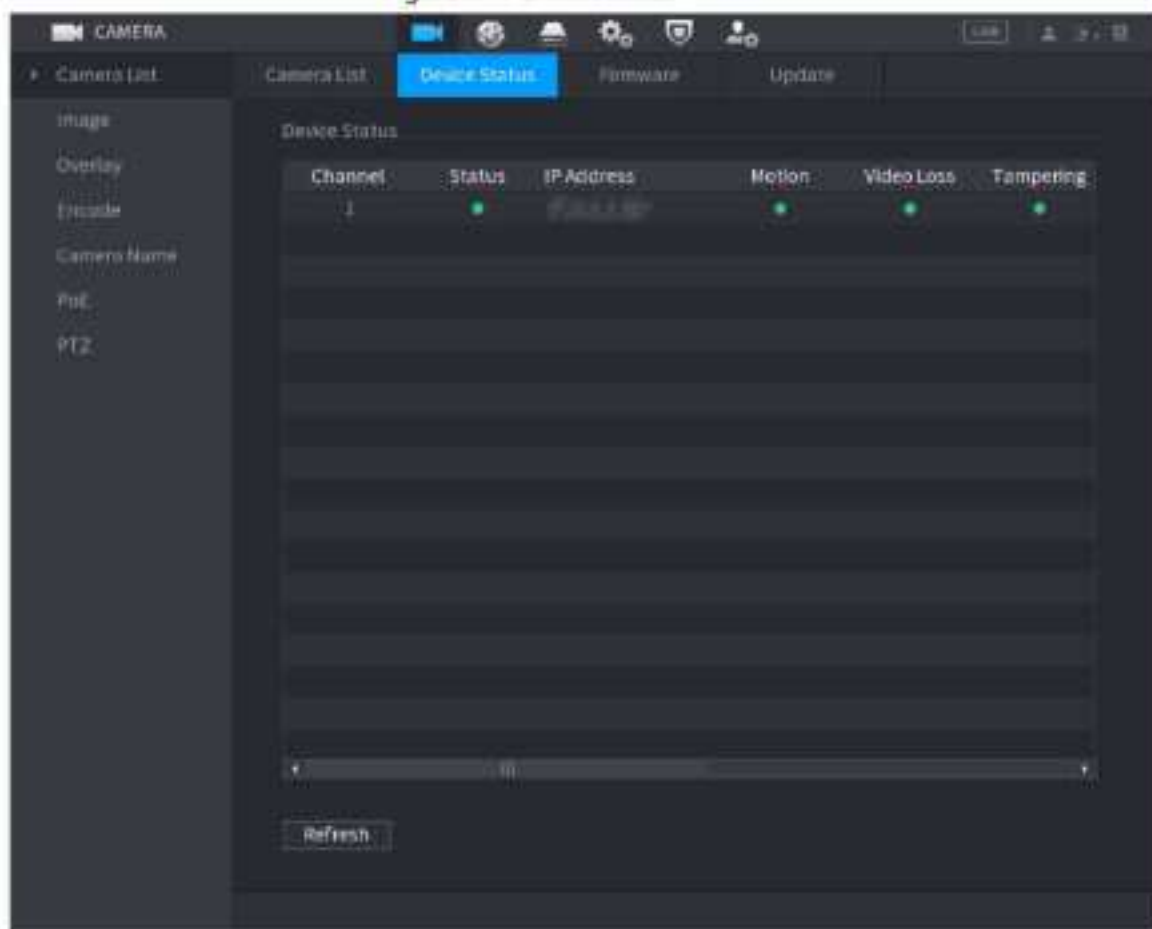


Table 5-23 Parameters of device status

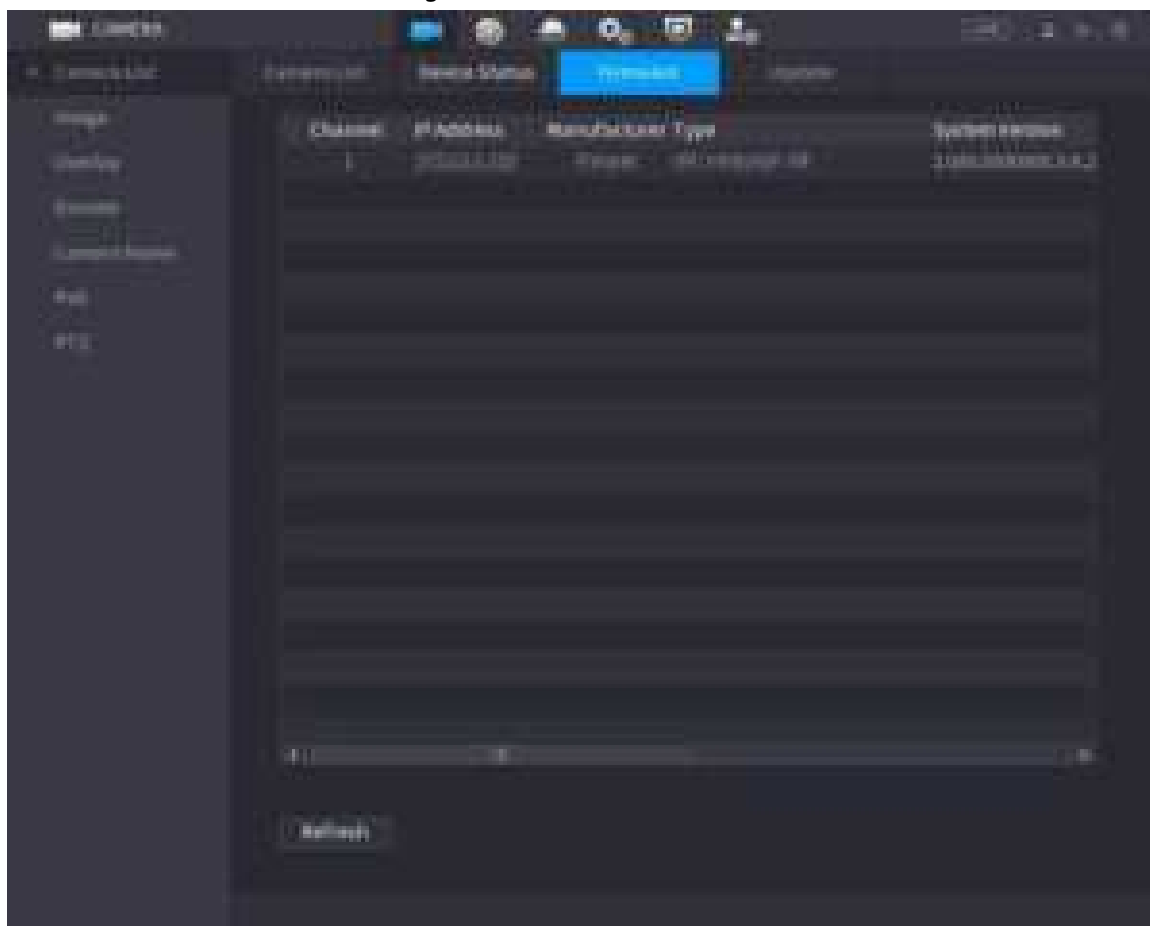
Icon	Description	Icon	Description
	IPC works properly.		IPC is not supported.
	Alarm.		Video loss.

5.7.10.2 Firmware

You can view the IP address, manufacturer, type, and system version of the connected remote device.

Select **Main Menu > CAMERA > Camera List > Firmware**.

Figure 5-78 Firmware



5.8 Recording Management

5.8.1 Recording Schedule

After you set the recording schedule for videos and snapshots, the Device can automatically record videos and snapshots at the scheduled time.

5.8.1.1 Configuring Video Recording Schedule

After you set the schedule for videos, the Device will record videos according to the period you set. For example, if the alarm recording period is from 6:00–18:00 on Monday, the Device will make a recording on Mondays from 6:00-18:00.

Procedure

Step 1 Right-click the live page, and then select **Main Menu > STORAGE > Schedule > Record**.

Figure 5-79 Video schedule



Step 2 Configure the parameters.

Table 5-24 Video schedule parameters

Parameter	Description
Channel	Select a channel to record a video.
Pre-record	Enter the amount of time that you want the pre-recording to last. A recording will be made prior to the event.

Parameter	Description
Redundancy	If there are several HDDs installed to the Device, you can set one of the HDDs as the redundant HDD to save the recorded files into different HDDs. If one of the HDDs becomes damaged, you can find the backup on the other HDD. • Select Main Menu > STORAGE > Disk Manager, and then set a HDD as redundant HDD. • Select Main Menu > STORAGE > Schedule > Record, and then select the Redundancy checkbox. ◊ If the selected channel is not recording, the redundancy function will take effect the next time that you record, whether or not you select the checkbox. ◊ If the selected channel is recording, the current recorded files will be packed, and then start recording according to the new schedule.  • This function is for some models only. • The redundant HDD only backs up the recorded videos but not snapshots.
ANR	You can set the ANR (auto network resume) function. • The IPC continues recording once the NVR and IPC connection fails. After the network becomes normal, the NVR can download recording files while it is disconnected from the IPC. This is to help protect against data loss from the current IPD channel that is connected. • Set the maximum recording upload period. If the offline period is longer than the period you set, IPC will only upload the recording file during the specified period.  Make sure that SD card is installed and the recording function is enabled on the IPC.
Period	Set a period during which the configured recording setting is active.  The system only activates the alarm in the defined period.
Copy to	Click Copy to to copy the settings to other channels.

Figure 5-80 Period

Step 3 Set one or more recording types from **General**, **Motion** (motion detection), **Alarm**, **M&A** (motion detection and alarm), **Intelligent** and **Alarm**.

Figure 5-81 Recording type

Step 4 Set recording period.



If you have added a holiday, you can set the recording period for the holiday.

Figure 5-82 Set record period

- Define the period by drawing.
 1. Select a corresponding date to set.
 - ◇ Define for the whole week: Click next to **All**. All the icon switch 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.
- 2. On the timeline, drag to define a period.
 - ◇ Once the time period overlaps, the recording priority is: **M&A** > **Alarm** > **POS** > **Intelligent** > **Motion** > **General**.
 - ◇ Select a recording type and then click the  of the corresponding date to clear the corresponding period.

Figure 5-83 Set period by drawing



The MD record and alarm record function are both null if you enabled the function of MD&Alarm.

- Define the period by editing.
 1. Select a date and then click .

Figure 5-84 Set period by editing



2. Set the recording type for each period.
 - ◇ 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 the week, or select specific days that you want to apply the settings to.
3. Click **Apply**.

Step 5 Click **Apply** to complete the settings.

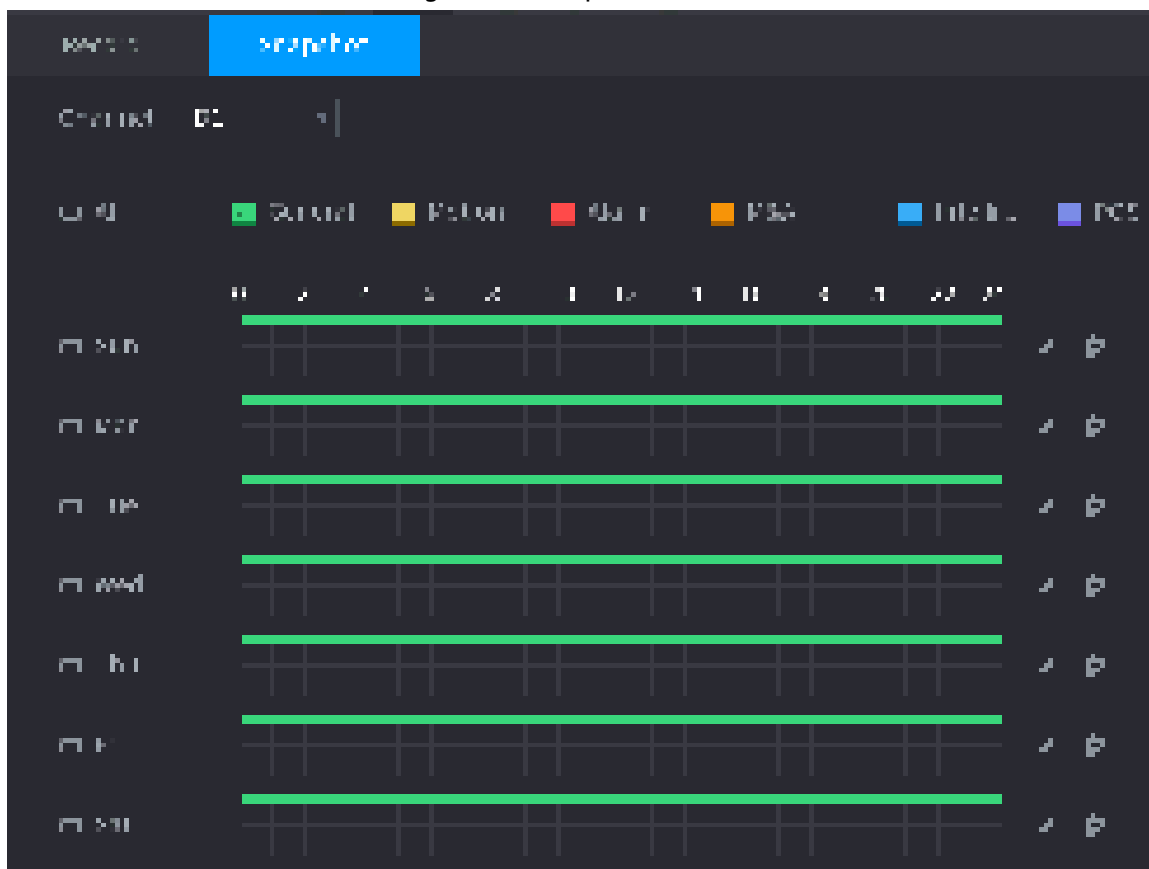
5.8.1.2 Configuring Snapshot Schedule

Configure recording schedule for snapshots.

Procedure

Step 1 Right-click the live page, and then select **Main Menu > STORAGE > Schedule > Snapshot**.

Figure 5-85 Snapshot



Step 2 Select a channel to set schedule snapshot.

Step 3 Set a recording type.

Figure 5-86 Recording type



Step 4 Set snapshot period. For details, see [Step 4](#) in "5.8.1.1 Configuring Video Recording Schedule".

Step 5 Click **Apply**.

5.8.1.3 Configuring Recording Mode

Background Information

After you set schedule record or schedule snapshot, you need to enable the auto record and snapshot function so that the system can automatically record or take snapshot.

- Auto: The system automatically records the videos and snapshots according to the defined schedule.
- Manual: The system records general files for the entire day.

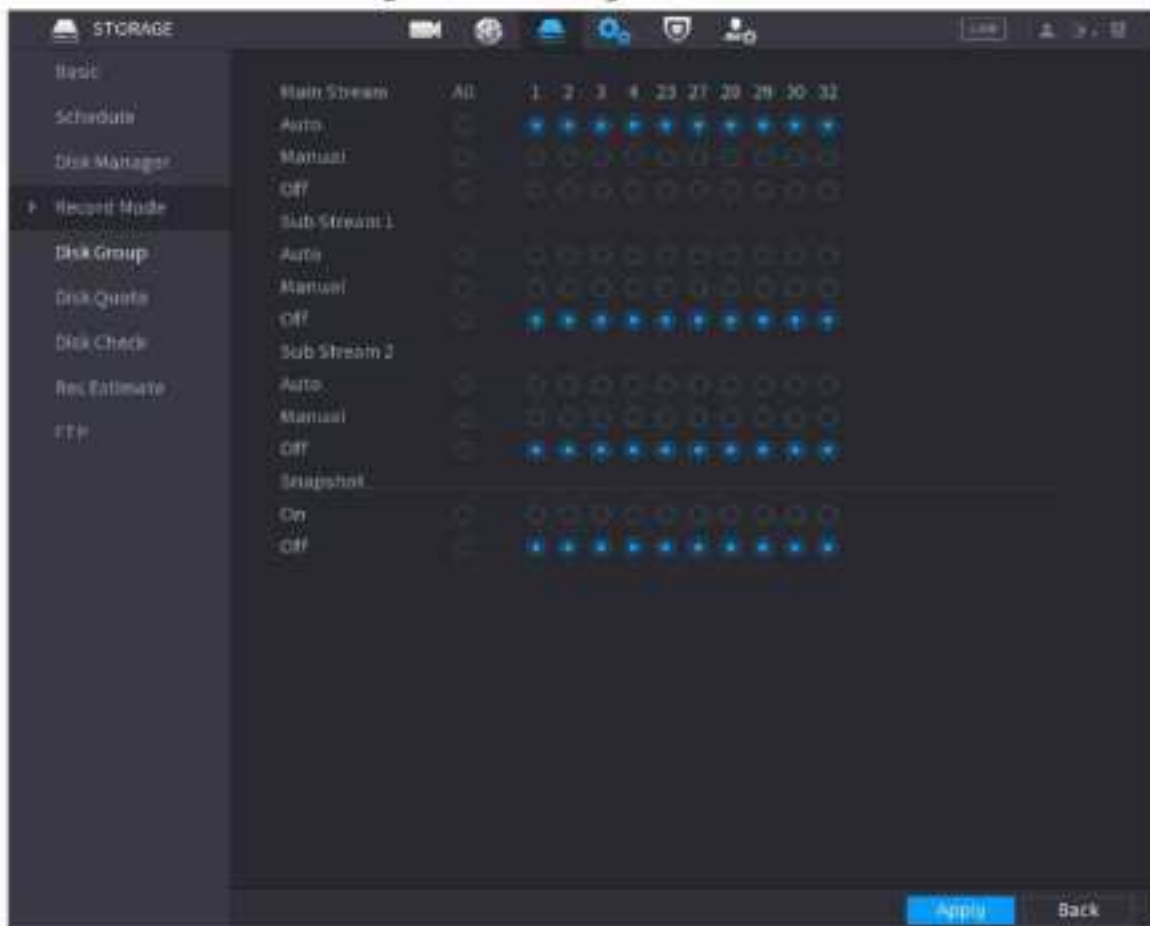


You need to have storage authorities to use the **Manual** recording mode.

Procedure

Step 1 Right-click the live page, and then select **Main Menu > STORAGE > Record**.

Figure 5-87 Recording mode



Step 2 Configure parameters.

Table 5-25 Recording mode parameters

Parameter	Description
Channel	Displays all the connected channels. You can select a single channel or select All .
Recording status	- Auto: Automatically make recordings according to the schedule. - Manual: Makes a general recording within 24 hours for the selected channel. - Off: Do not record.
Snapshot status	Enable or disable the scheduled snapshot for the corresponding channels.

Step 3 Click **Apply**.

5.8.2 Search and Playback

5.8.2.1 Search Page

You can search for and play back the recorded files on the NVR.

Select **Main Menu > SEARCH**, or right-click on the live view page and then select **Search**.



The following figure is for reference only.

Figure 5-88 Search



Table 5-26 Search page description

No.	Function	Description
1	Display window	Display the searched recorded video or picture. The system supports playing in single-channel, 4-channel, 9-channel, and 16-channel simultaneously. When playing back in the single-channel mode, hold down the left mouse button to select the area that you want to enlarge. The area is enlarged after the left mouse button is released. To exit the enlarged status, right-click the image.
2	Playback controls bar	Playback control buttons.
	Clip	Click to clip the recording file and then save the footage. See "5.8.2.6 Clipping Videos" for details.
	Backup	Click to back up recordings.

No.	Function	Description
3	Time bar	Display the type and time period of the current recorded video. - In the 4-channel layout, 4 time bars are displayed. In other view layouts, only 1 time bar is displayed. - Click the colored area to start playback from a certain time. - When you are configuring the settings, rotate the wheel button on the time bar to zoom in from 0. When a playback is being played, rotate the wheel button on the time bar, the time bar will zoom into the time point where the playback is located. - Time bar colors: Green for general type; red for external alarm; yellow for motion detection; blue for intelligent events; purple for POS events. - Click and hold the time bar, and the mouse pointer changes to a hand icon, and 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 a video in one channel mode, point to the time bar for 0.1 seconds, and then you can view 4 pictures before and after the selected time, and the thumbnail picture of the selected time. - For some models, when you click the blank area in the time bar, the system automatically jumps to the next time point where there is a recorded video located.
4	Play status	Includes 2 playback status: Play and Stop .
	Record type	Select the checkbox to define the recording type to search for.
5	Search type	Select the content to play back: Record , Picture , and Subperiod .
6	Calendar	Click the date that you want to search for.  The dates with recordings or snapshots have a small solid circle under the date.

No.	Function	Description
7	View layout and channel selection	- In the Camera Name list, select one or more channels that you want to play back. - The window split is decided by how you select the channels. For example, if you select 1 channel, the playback is displayed in the single-channel view. If you select two to four channels, the playback is displayed in the four-channel view. The maximum is eight channels. - Click  to switch the streams.  indicates main stream, and  indicates sub stream.
8	List display	This area includes Tag List and File List.  The icons displayed might vary with models. : Click Tag List to view the marked recorded video list. Double-click the file to start playing. : Click File List to view the files that were found. You can lock and unlock the files. See "5.8.2.8 File List" for detailed information. : fisheye dewarp. See "5.6.10.2 Fisheye De-warp During Playback" for detailed information.
9	Time bar unit	You can select 24 hr, 2 hr, 1 hr, or 30 min as the unit of time bar.



All the operations for playback might vary with hardware versions. Some functions are available on select models.

5.8.2.2 Playback

You can search for and play back videos, images or video clips. The operations are similar. This section uses video playback as an example.

Procedure

Step 1 Select **Main Menu > Search**, or right-click the live page and then select **Search**.

Step 2 Select **From R/W Disk** or **From I/O Device**.

- From R/W Disk: Search for recorded files on the HDD of the Device.

Figure 5-89 Search from R/W disk



- From I/O Device: Search for recorded files from external storage device.
Click **Browse**, select the storage path of the recorded video file that you want to play. Double-click the video file or click  to start playing.

Figure 5-90 Search from I/O device



Step 3 Select **Record** as the search type.

Step 4 Select the date, and channel.

Step 5 Click  or any position on the time bar.

The system starts playback. You can use the playback controls to control the playback process.

Figure 5-91 Playback control



Table 5-27 Playback control description

Icon	Function
	Play/Pause In slow play mode, click it to switch between play/pause.
	Stop When playing back, click to stop current playback process.
	Rewind In normal play mode, left-click the button, the file begins to rewind. Click it again to pause it. While it is rewinding, click  or  to restore normal play.
	Display previous frame/next frame. When you pause the normal playback file, click  or  to play back frame by frame. In frame by frame playback mode, click  or  to resume normal playback mode.
	Slow play In playback mode, click it to use various slow play modes such as slow play 1, slow play 2, and more.
	Fast forward In playback mode, click to realize various fast play modes such as fast play 1, fast play 2 and more.
	Adjust the volume of the playback.
	Smart search. See "5.8.2.3 Smart Search Playback" for detailed information.

Icon	Function
	Smart motion detection. You can click the icon to select a human or motor vehicle, and the system plays detected videos of the person or motor vehicle.  Human and motor vehicle can be selected at the same time.
	Click the snapshot button in the full-screen mode to take one snapshot. System supports custom snap picture saved path. Connect the peripheral device first, click snap button on the full-screen mode, you can select or create a path. Click Start button, the snapshot picture can be saved to the specified path.
	Mark button. This function is available on select models. Make sure there is a mark button in the playback control pane. See "5.8.2.9 Tag Playback" for detailed information.
	Display and hide POS information. In 1-channel playback mode, you can click it to display/hide POS information on the video.
	In 1-channel playback mode, click it to enable or disable display IVS rule information on the video.  This function is for some series only.
	Picture search. For details, see "5.6.3.7 Picture Search".
	- Quick pick. For details, see "5.6.3.8 Quick Pick". - AcuPick. For details, see "5.8.2.4 AcuPick".  Both one-channel and multiple-channel playback mode support AcuPick. Click the icon to accurately search for the target.

5.8.2.3 Smart Search Playback

Background Information



This function is for some models only.

During the playback process, the system can analyze the motion detection zone in the scene and give the analysis result.



Make sure that motion detection has been enabled in **Main Menu > ALARM > Video Detection > Motion Detection**.

Procedure

Step 1 Select a channel to playback video and then click . You can view the grids on the playback video.



- This function is for one-channel playback mode.
- In multiple-channel playback mode, double-click a channel to switch to one-channel playback mode.

Step 2 Select smart search zones (22*18(PAL), 22*15(NTSC)).

Step 3 Click  to go to smart search and playback. The system is going to play back all motion detection record footage.

Step 4 Click  again to stop smart search.



- The motion detection region cannot be the full screen zone.
- The motion detection region adopts the current whole play pane by default.
- The time bar unit switch, rewinding, frame by frame are not available when the system is playing a motion detection file.

5.8.2.4 AcuPick

5.8.2.4.1 Common Search

Procedure

Step 1 Select **Main Menu > Search**, or right-click on the live view page and then select **Search**.

Step 2 (Optional) Click  to select the displayed results. You can choose **Human** and **Motor Vehicle**.

Step 3 When you want to search the target in the image, click  to freeze the page. The image automatically shows the targets.



Supports human detection (blue detection box) and motor vehicle detection (yellow detection box).

Step 4 Point to the target you want, and then click  to check the details.

Figure 5-92 AcuPick (human detection)



Figure 5-93 AcuPick (motor vehicle detection)



Step 5 Configure the search conditions as needed.

Figure 5-94 Search conditions and results

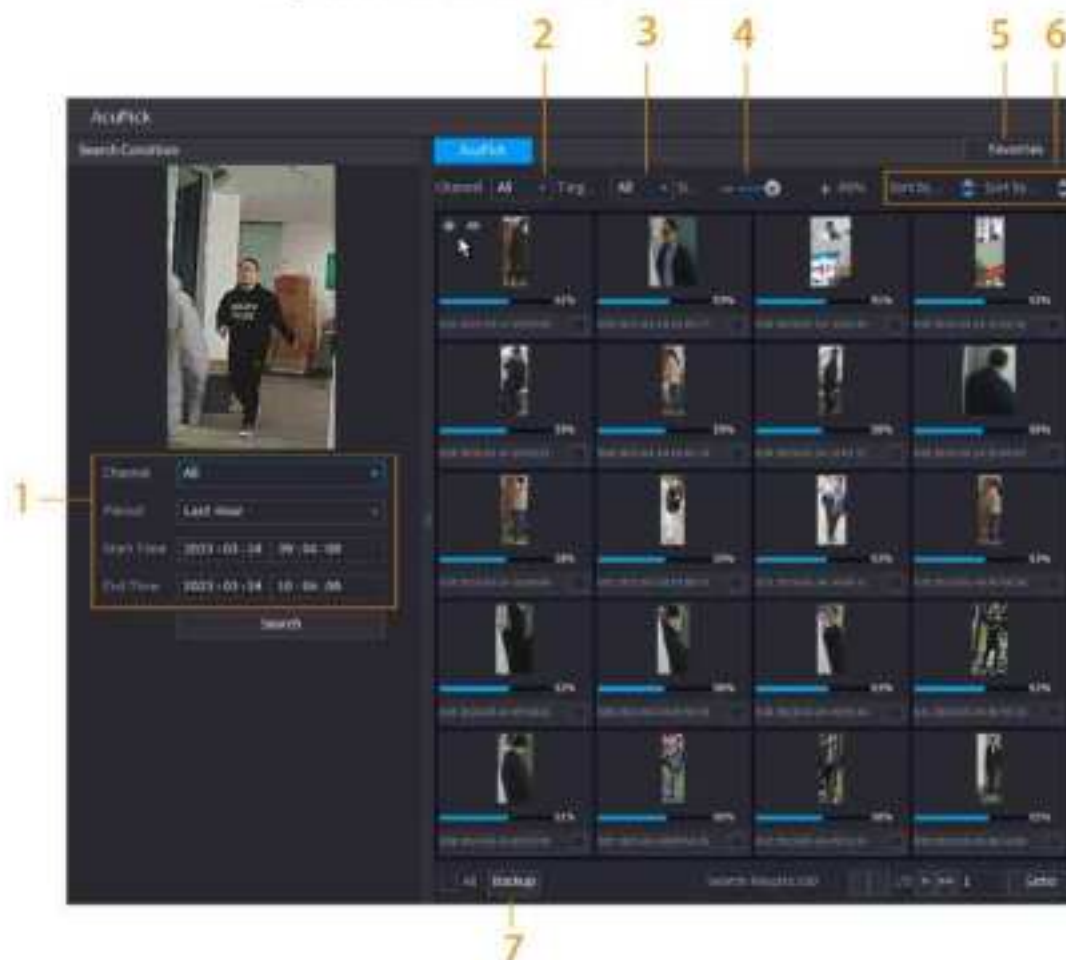


Table 5-28 Descriptions of search conditions and results

No.	Name	Description
1	Search Condition	Configure the channel and period. When choose Custom , you can set the start time and end time as needed. Up to 7 days can be set.
2	Channel	Displays the channels with search result.
3	Target Filter	Select from All , Favorite Items and Hidden Items . When you select the target items, the device will only search in this item.
4	Similarity	Configure the search similarity according to the actual conditions. The recommended value is 80% or above.
5	Favorites	The system only search the target in favorites.
6	Sort by Time/ Sort by Similarity	Reorder the search results by time or similarity.
7	Backup	You can select one or more search results, and then click Backup to back up the results.

Step 6 Select a result, and then double click it to check the video.



- Under 4K resolution, the video does not support full screen play on this page.
- Click , you can enable the AcuPick function again, freeze the image and search for the new target.

Related Operations

Hover over a search result, and then you can:

- Click , add the result into the favorite items. Up to 1,000 items can be added into favorites.
- Click , add the result into the hidden items.

5.8.2.4.2 Custom Search

Procedure

- Step 1** Select **Main Menu > Search**, or right-click on the live view page and then select **Search**.
- Step 2** (Optional) Click  to select the displayed results. You can choose **Human** and **Motor Vehicle**.

Figure 5-95 Select the result



- Step 3** In multiple-channel playback mode, double-click a channel to switch to one-channel playback mode.
- Step 4** Drag the mouse to draw a searching area in the image, and then the NVR will automatically show search results of the selected area in the time bar (orange).

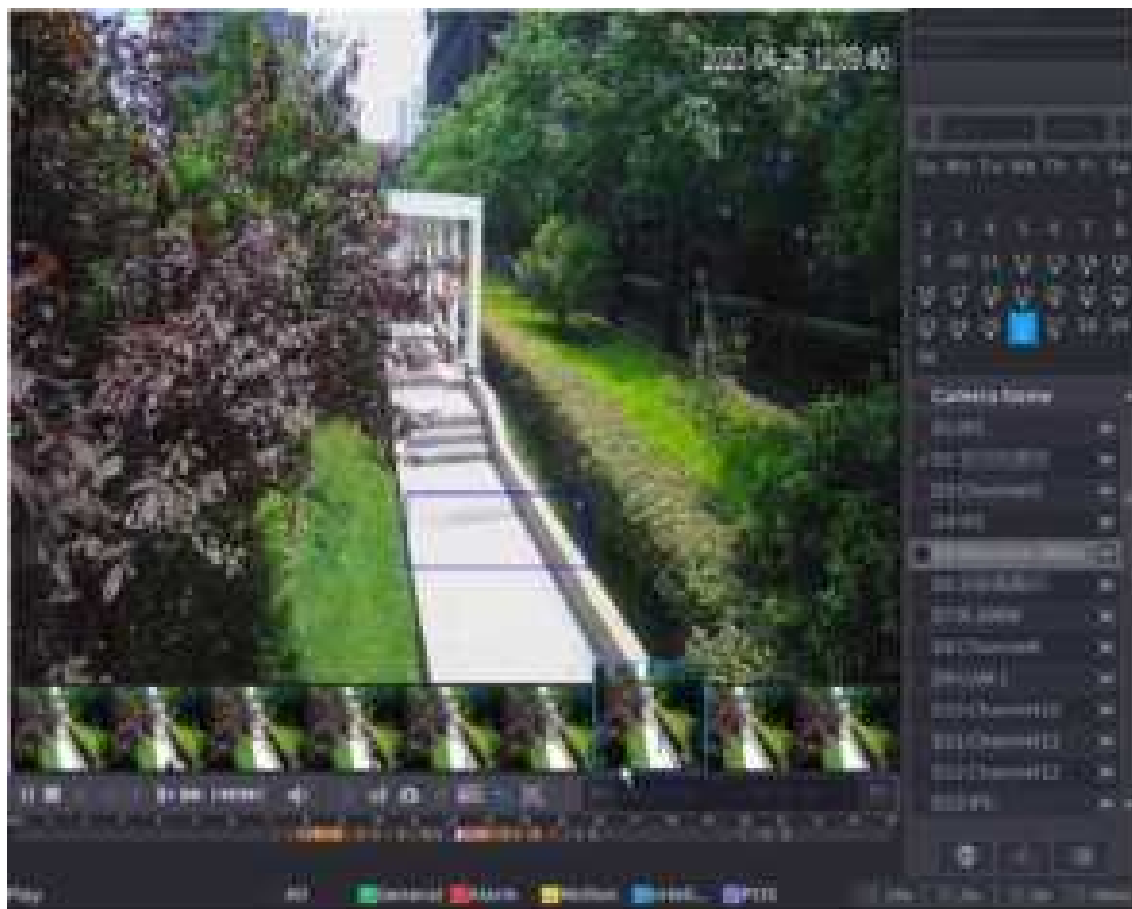
Figure 5-96 Custom search 1



Step 5 When you want to search the target in the image, click  to freeze the page. The image automatically shows the targets.

Step 6 Point to the time bar, the NVR displays the thumbnails in recent times.

Figure 5-97 Thumbnails



Step 7 Point to the target you want, and then click  to check the details.

Figure 5-98 Custom search 2



Figure 5-99 Custom search 3



Step 8 Configure the search conditions as needed.

Figure 5-100 Search conditions and results

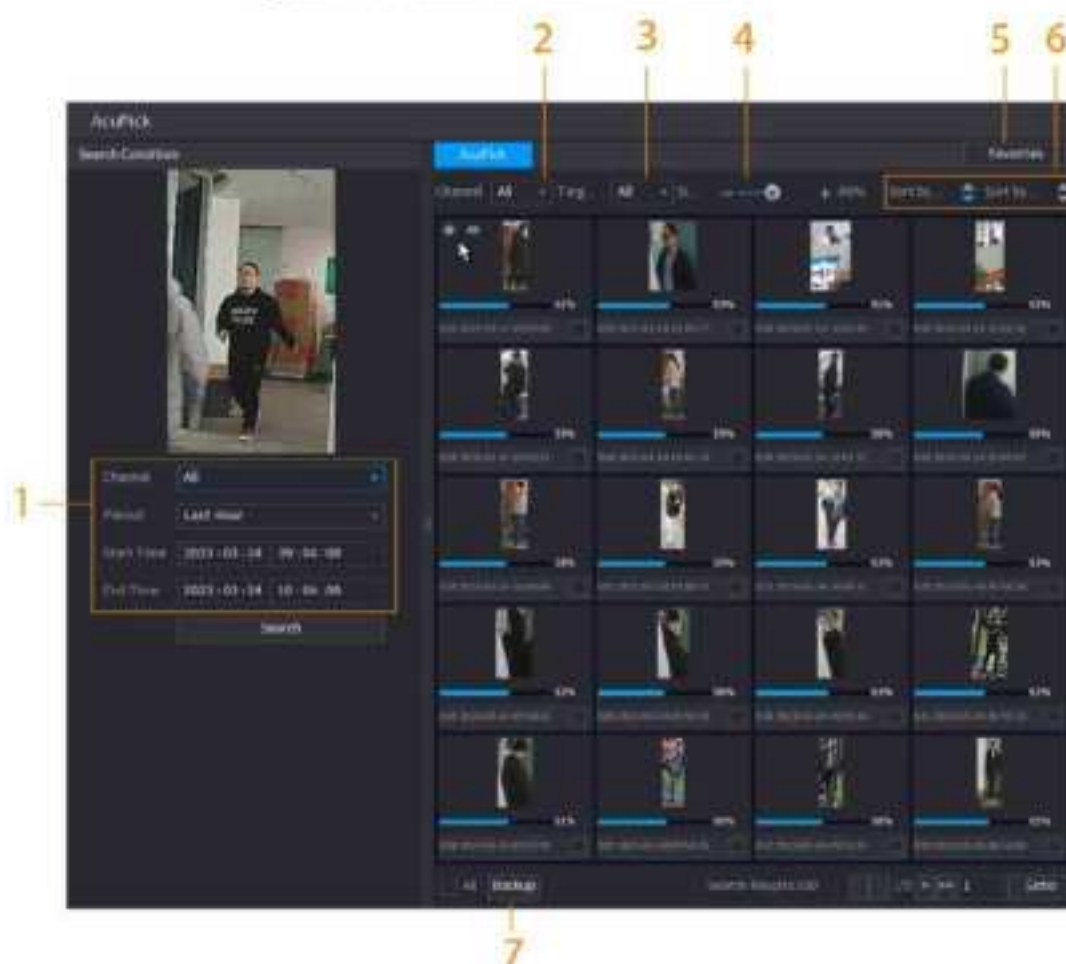


Table 5-29 Descriptions of search conditions and results

No.	Name	Description
1	Search Condition	Configure the channel and period. When choose Custom , you can set the start time and end time as needed. Up to 7 days can be set.

No.	Name	Description
2	Channel	Displays the channels with search result.
3	Target Filter	Select from All , Favorite Items and Hidden Items . When you select the target items, the device will only search in this item.
4	Similarity	Configure the search similarity according to the actual conditions. The recommended value is 80% or above.
5	Favorites	The system only search the target in favorites.
6	Sort by Time/ Sort by Similarity	Reorder the search results by time or similarity.
7	Backup	You can select one or more search results, and then click Backup to back up the results.

Step 9 Select a result, and then double click it to check the video.



- Under 4K resolution, the video does not support full screen play on this page.
- Click , you can enable the AcuPick function again, freeze the image and search for the new target.

Related Operations

Hover over a search result, and then you can:

- Click , add the result into the favorite items. Up to 1,000 items can be added into favorites.
- Click , add the result into the hidden items.

5.8.2.5 EPTZ Linkage

Turn on the EPTZ linkage function on the playback page. This function can simultaneously zoom in and track multiple humans and vehicles that trigger alarms. It provides rich details and a panoramic view at the same time.

Background Information

- Only supports the EPTZ linkage function in single channel and 4-channels playback modes.
- When selecting the 4-channels playback mode, only the EPTZ linkage function of one channel can be turned on at the same time.

Procedure

Step 1 Select **Main Menu > Search**, or right-click on the live view page and then select **Search**.

Step 2 Select one channel, and then click  under **Camera Name**.

Figure 5-101 EPTZ linkage for playback



Step 3 Turn on the EPTZ linkage function, and then configure parameters.



If a certain channel has turned on the EPTZ linkage function, the configuration will still take effect after exiting playback. When replaying the recording of this channel again, the EPTZ linkage effect is still displayed.

Figure 5-102 Setting the EPTZ linkage for playback



Table 5-30 Parameters description

Parameter	Description
Display Mode	Select the number of tracked channels. Full screen, 1+1, 1+3 and 1+5 modes are available, and full screen is selected by default.
Linkage Track	After Linkage Track is enabled, intelligent events will be tracked. It is disabled by default.

Parameter	Description
Tracking Duration	- Custom: Select the tracking duration time manually. For example, if you set from 30 s to 60 s, after tracking object A for 30 s, if object B appears, the camera will start tracking object B; if no other object appears in the process of tracking A, the camera will stop tracking object A after 60 s. - Continue till object disappears: The camera will stop tracking when the detected object disappears in the image.

Related Operations

When an intelligent event is triggered, the playback page will display the linkage track effect.

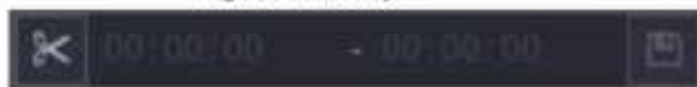
5.8.2.6 Clipping Videos

You can clip some footage from recorded videos to a new file and then save to the USB device.

Procedure

- Step 1** Select a record first and then click  to play back.
- Step 2** Select a time on the time bar and then click  to start clip.
- Step 3** Select a time on the time bar and then click  to stop clip.
- Step 4** Click , the system pops up dialogue box to save the clip file.

Figure 5-103 Clip



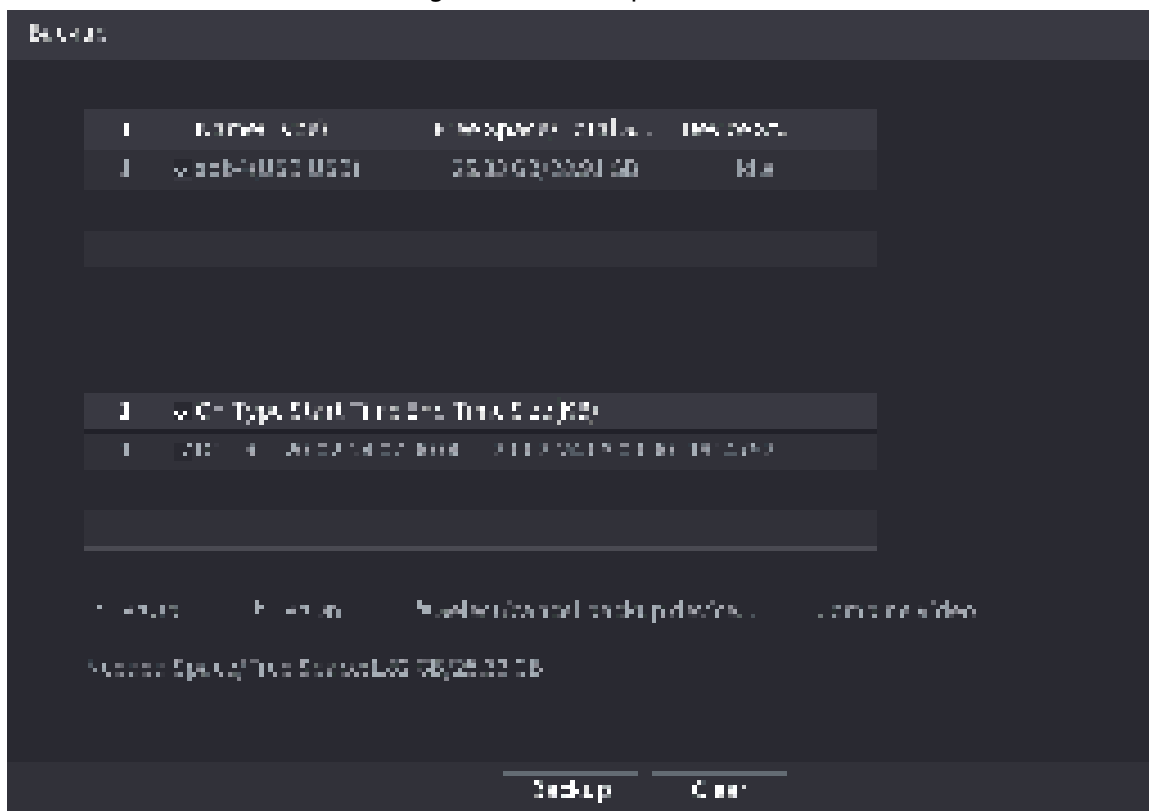
5.8.2.7 Backing Up

You can back up recorded videos, images, or video clips to a USB storage device.

Procedure

- Step 1** Select the files that you want to back up.
- Videos or images. Click  at the lower-right corner of the search page, and then on the file list, select the files for backup.
 - Video clips. See "5.8.2.6 Clipping Videos".
- Step 2** Click .

Figure 5-104 Backup



Step 3 Select the storage device, and then click **Backup**.



- You can cancel the selection of the files that you do not want to back up.
- Select **Combine Video** to merge several videos into one.

5.8.2.8 File List

On the search page, select a channel, and then click  to view the file list. On the file list, you can manage the files of the selected channel.

- Play.
Double-click a file to play.
- Search.
Select a specific time and then click .
- Lock or unlock files.
 - To lock files, on the file list, select one or more files, and then click . The locked files will not be overwritten.
 - To unlock files, click , and then select one or more files and then click **Unlock**.
- Go back to the previous page.
Click  to return to the page with calendar.

5.8.2.9 Tag Playback

When you are playing back a video, you can add a tag to mark an important point in time on the

video. After playback, you can use time or the tag keywords to search for the corresponding video and then play.

Adding Tag

When the system is playing back, click  and then configure the tag name.

Playing back Tag

During single-channel playback, click  and then on the tag list, double-click a file to play back.



To search for tagged videos by time, select the tag time and then click .

Playing before Tagged Time

You can choose to play back from the previous N seconds of the tag time.

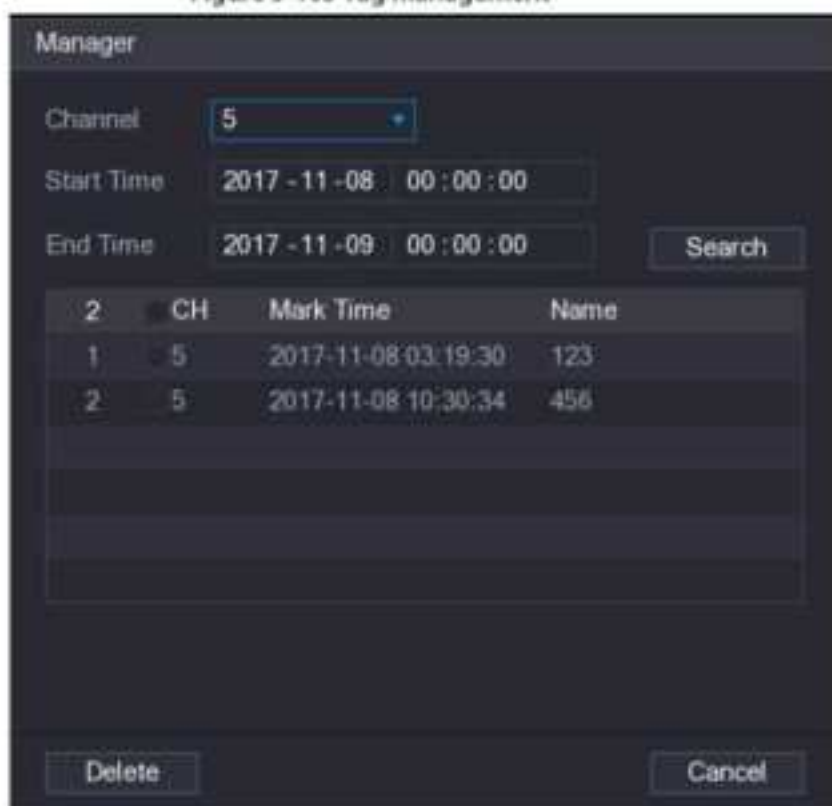


The system can play back previous N seconds before the tagged time if there is a video at that point. Otherwise, the system plays back as much as there is.

Managing Tags

On the tag list, click .

Figure 5-105 Tag management



The dialog box titled "Manager" contains the following fields and controls:

- Channel:** A dropdown menu with the value "5" selected.
- Start Time:** A date and time field showing "2017 - 11 - 08 00 : 00 : 00".
- End Time:** A date and time field showing "2017 - 11 - 09 00 : 00 : 00".
- Search:** A button to the right of the End Time field.
- Table:** A table with 4 columns: "2" (checkbox), "CH", "Mark Time", and "Name".

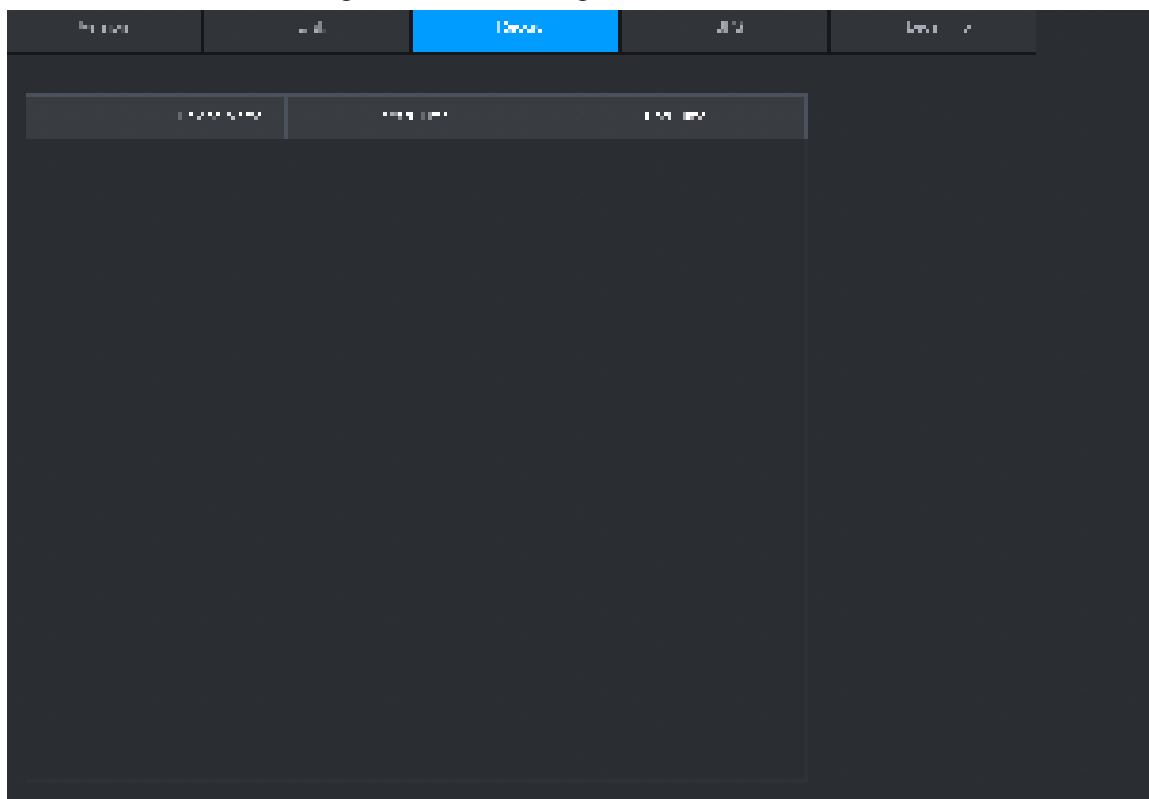
2	CH	Mark Time	Name
☐	5	2017-11-08 03:19:30	123
☐	5	2017-11-08 10:30:34	456
☐			
☐			
☐			
- Delete:** A button at the bottom left.
- Cancel:** A button at the bottom right.

- To search for the tagged video, select channel number, start time and end time, and then click **Search**.
- To change the tag name, double-click a tagged video, and then enter the new name.
- To delete tags, select one or more tagged videos, and then click **Delete**.

5.8.3 Recording Information

Select **Main Menu > Maintenance Center > System Info** to view the recording information.

Figure 5-106 Recording information



5.9 AI

AI detection is to process and analyze the image and extract the key information, and then compare the key information with the preset detection rule. An alarm is triggered when the detected behavior matches the detection rule.



The following figures are for reference only and might differ from the actual situation.

5.9.1 Overview

AI detection falls into AI by camera and AI by recorder.

- AI by camera: Some cameras themselves support AI detection. The cameras perform AI detection and send the detection results to the NVR for display. When using AI by camera, make sure to connect the Device to the cameras that support the corresponding AI detection functions.
- AI by recorder: The cameras send videos to NVR for detection, analysis and result display.



- Some models support AI by camera only.
- The AI functions might vary with models.
- Different AI functions might conflict with each other. You cannot enable two conflicting AI functions for the same channel.

5.9.2 AI Search

Supports accurately searching for the target (person or motor vehicle) through locally uploaded images, viewing event playback videos, and then accurately searching for the target again.

Procedure

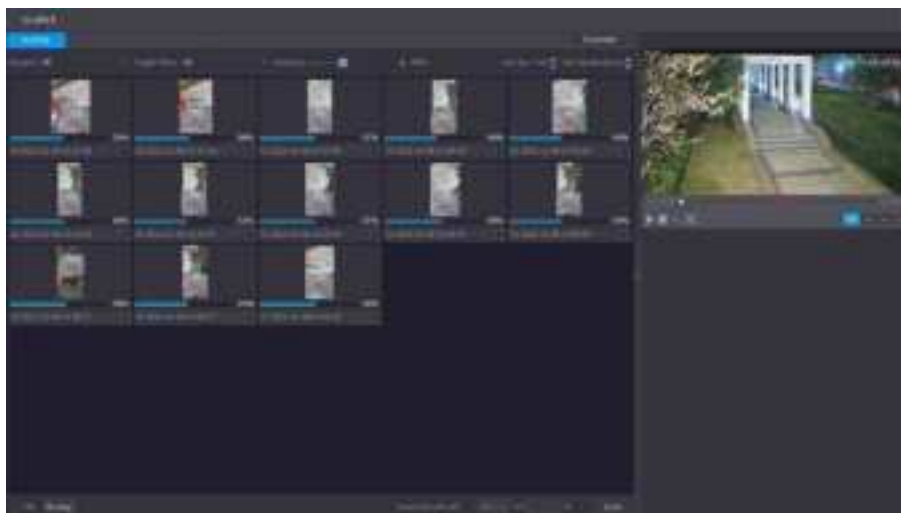
- Step 1** Select **Main Menu > AI > AI Search > AcuPick**.
- Step 2** Click **Local Upload**, select the image you want to upload from the external device, and then click **OK**.
The system automatically extracts the target (person or motor vehicle) from the image and displays it at the top of the page.
- Step 3** Select the image containing the target you want to search for, configure search conditions, and then click **Search**.
After the search is completed, the AcuPick page displays the search results.

Figure 5-107 Upload the image locally



- Step 4** On the search results page, double-click one search result, and then the corresponding recording before and after the event is reported will be automatically played on the right side of the page.

Figure 5-108 View the recording of the search results



Step 5 Click  to search the target again.



In addition to AcuPick, the recording supports pause, playback, display rules, and display areas.

5.9.3 Smart Plan

5.9.3.1 Configuring Smart Plan

To use AI by camera for face detection, face recognition and other detection functions, you need to enable the corresponding smart plan first.

Procedure

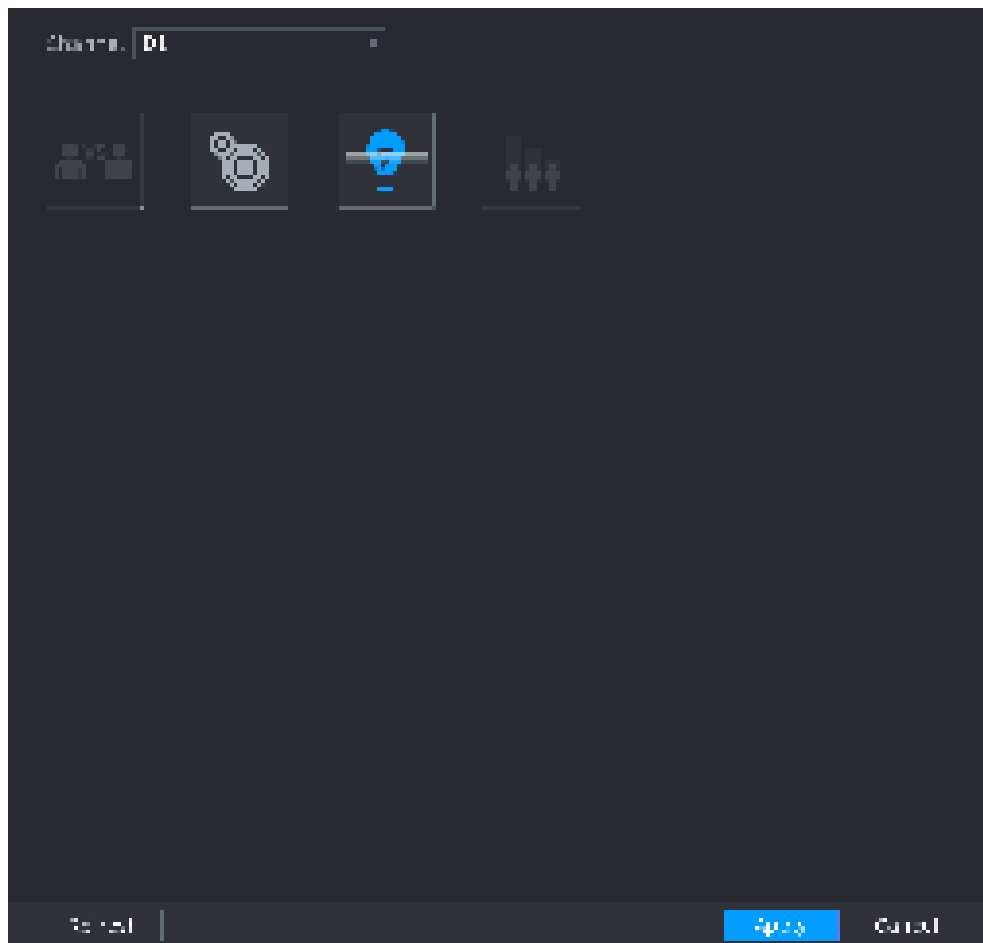
Step 1 Select **Main Menu > AI > Parameters > Smart Plan**.

Step 2 Select a channel.



The page might differ depending on which smart plans that the remote device supports.

Figure 5-109 Smart plan

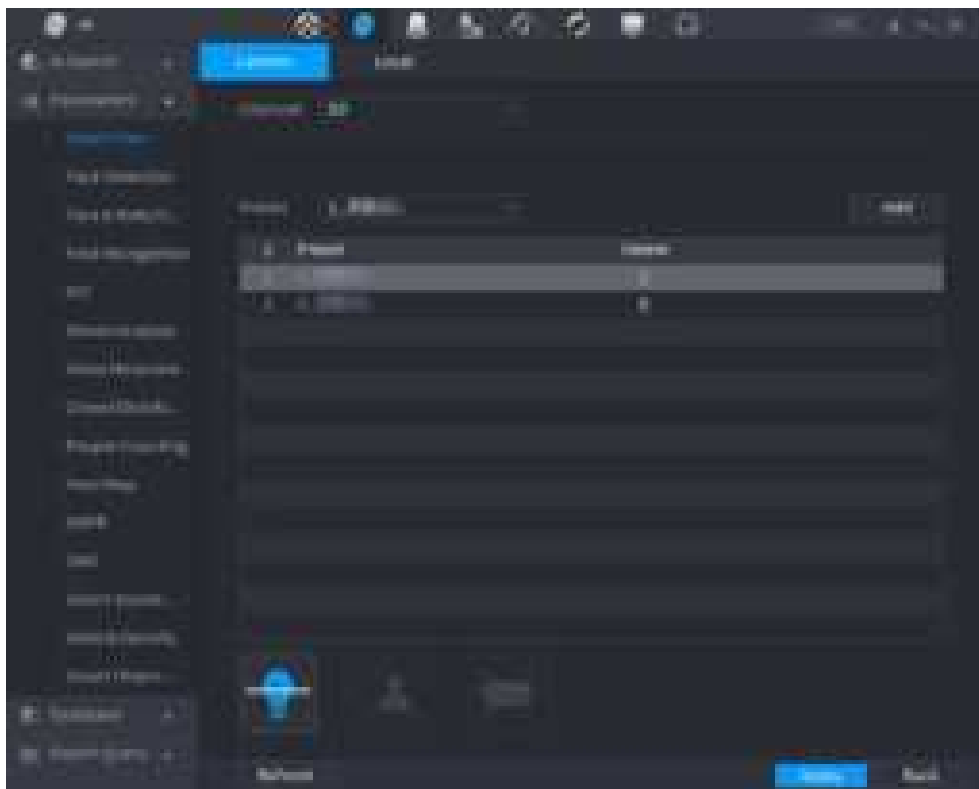


Step 3 Click the icon that represents the smart plan to enable it. The icon becomes highlighted.



If the channel is connected to a PTZ camera, you can set smart plans separately for each preset point.

Figure 5-110 Smart plan (PTZ)



Step 4 Click **Apply**.

5.9.3.2 Configuring AcuPick Mode

Use cameras and NVRs with intelligent analysis capability to achieve accurate and quick search about human bodies and motor vehicles.

Background Information



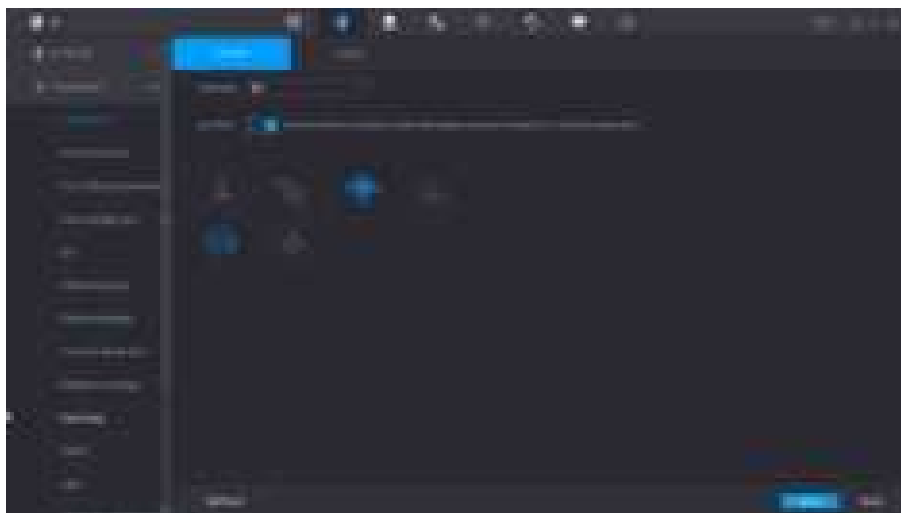
Make sure both the camera and NVR support AcuPick function.

Procedure

Step 1 Select **Main Menu > AI > Parameters > Smart Plan > Camera**.

1. Select the channel.
AcuPick is enabled by default.

Figure 5-111 Camera



2. Click **Apply**.

Step 2 Select **Main Menu > AI > Parameters > Smart Plan > Local**.

1. Select the mode.

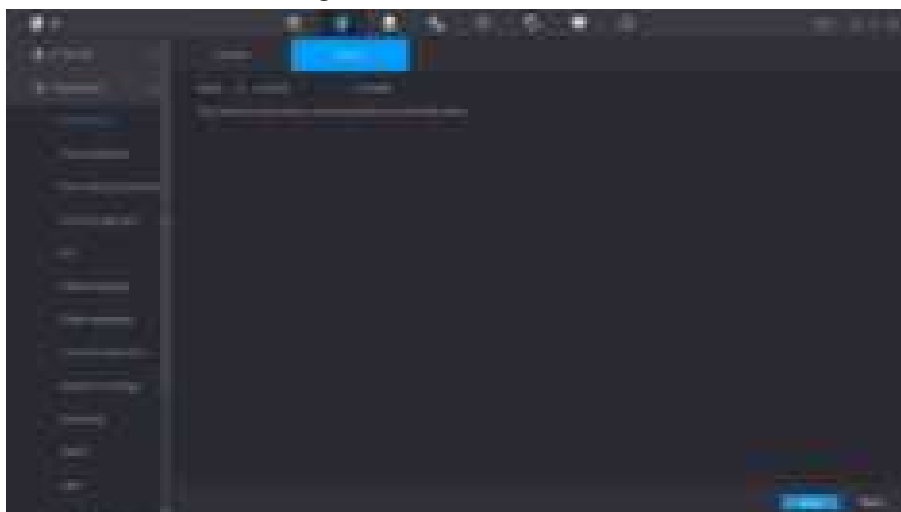
AcuPick is enabled by default.



After changing the mode, the NVR will automatically restart.

- When AcuPick is enabled, the auxiliary screen cannot display images in 4K resolution. AI by Recorder including face detection, face recognition, perimeter protection and SMD cannot be enabled, and fisheye dewarping is not supported.
- When AI Mode is enabled, AcuPick of devices is not supported. AI by Recorder including face detection, face recognition, perimeter protection and SMD can be enabled, and fisheye dewarping is supported.

Figure 5-112 Local



2. Click **Apply**.

5.9.4 Face Detection

The Device can detect faces on the video image.

5.9.4.1 Enabling Smart Plan

To use AI by camera, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

5.9.4.2 Configuring Face Detection

Configure alarm rules for face detection.

Procedure

Step 1 Select **Main Menu > AI > Parameters > Face Detection**.

Figure 5-113 Face detection

Step 2 Select a channel, and then select **AI by Reorder** or **AI by Camera** as **Type**.



When **AI by Camera** is selected, you can enable **Face Enhancement** to improve face detection efficiency.

Step 3 Click  to enable face detection.

Step 4 Click **Setting** next to **Rule** to draw areas to filter the target.

You can configure two target filters (maximum size and minimum size). The system triggers an alarm when the size of detected target is between the maximum size and the minimum size.

Step 5 Click **Setting** next to **Schedule** to configure the arming period.

The system triggers corresponding alarm actions only during the arming period.

- On the time line, drag to set the period.
- You can also click  to set the period.

Step 6 Configure alarm linkage actions. For details, see **Step 7**.

Step 7 Click **Apply**.

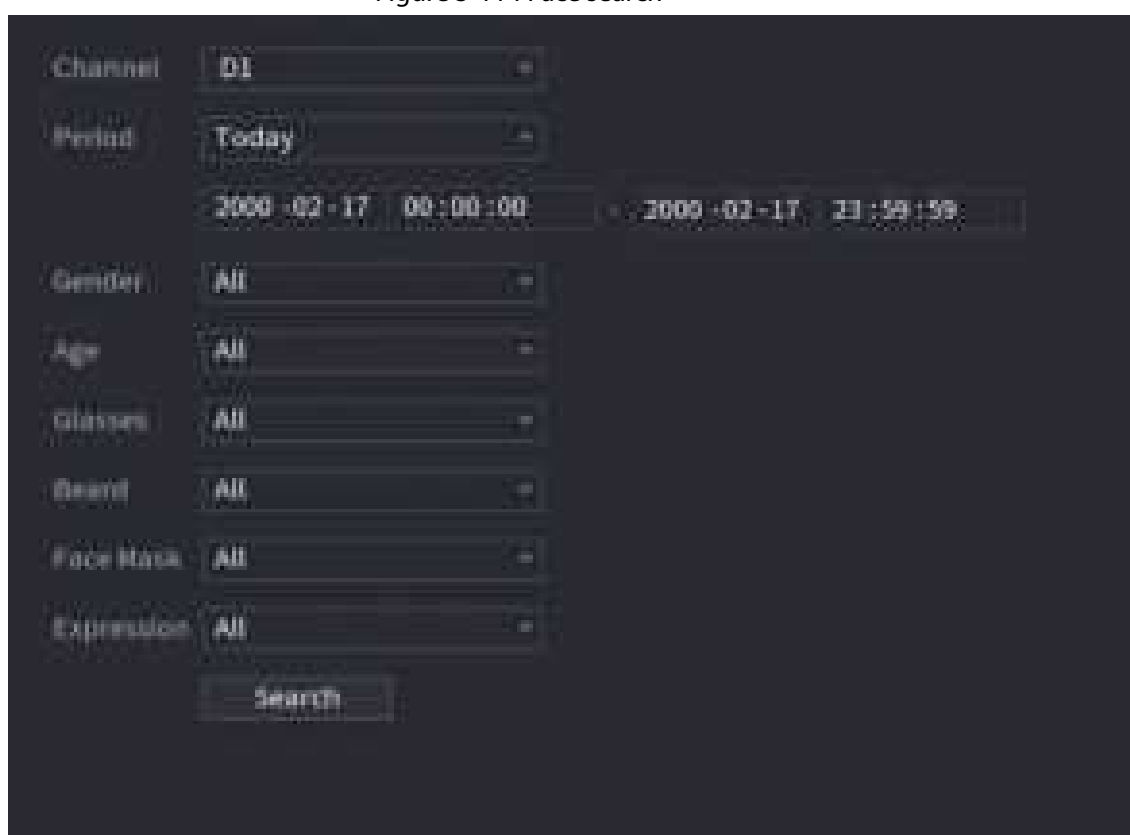
5.9.4.3 AI Search (Face Detection)

You can search for the detected faces and play back related recordings.

Procedure

Step 1 Select **Main Menu > AI > AI Search > Face Detection**.

Figure 5-114 Face search



Step 2 Select the channel, enter the start time and end time, and select the attributes.

Step 3 Click **Search**.

The results are displayed.



For privacy reason, the human faces in the image are intentionally blurred. The actual image is clear.

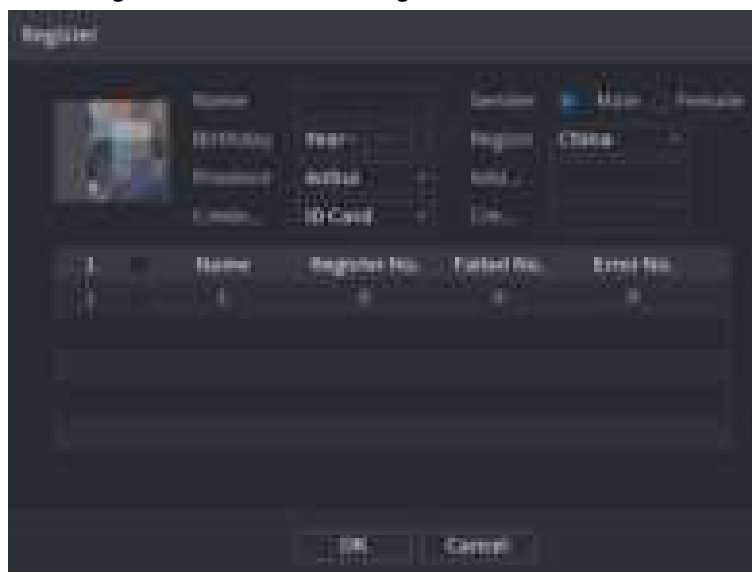
Figure 5-115 Search results



Related Operations

- Play related video.
Click a face and then click . The system plays back the video around the snapshot time.
- Export.
Click **Export** to export results in Excel format.
- Back up.
Select one or more images, click **Backup**, select the storage path and file type, and then click **Start** to back up the selected files to an external storage device.
- Lock.
Select one or more images and then click **Lock**. The locked files will not be overwritten.
- Add tags.
Select one or more images and then click **Add Tag**.
- Add to face database.
Click **Add to Face Database**, enter corresponding information, and then add the image to the face database.

Figure 5-116 Add face image to database



5.9.5 Face & Body Detection

After enabling face & body detection, you can view the face and body snapshots and related attributes on the live page.

5.9.5.1 Enabling Smart Plan

To use AI by camera, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

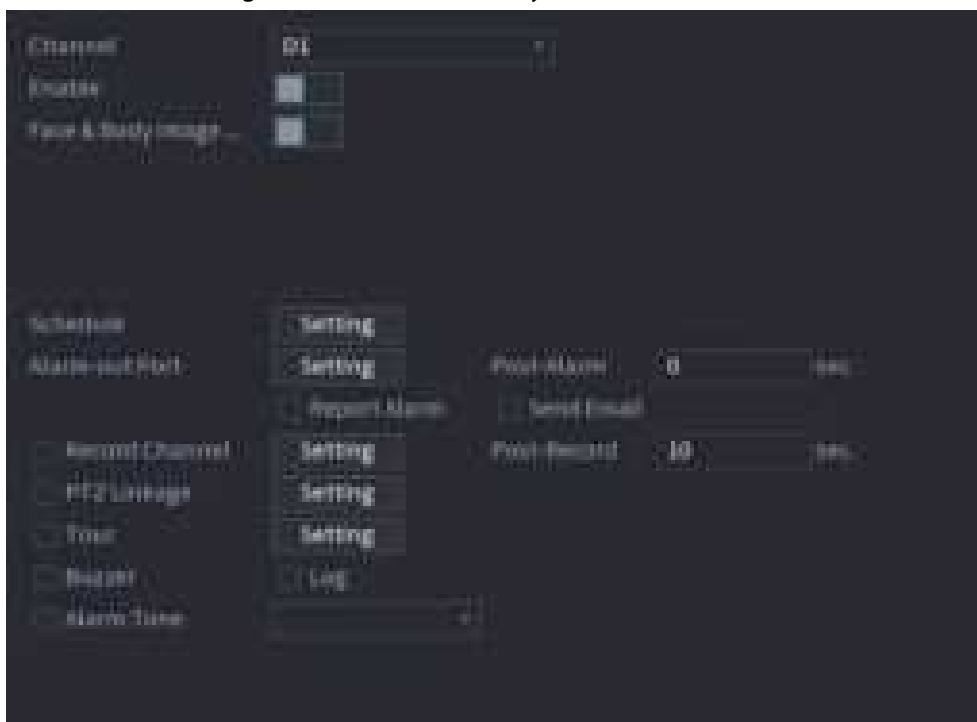
5.9.5.2 Configuring Face & Body Detection

Configure alarm rules for face and body detection.

Procedure

Step 1 Select **Main Menu > AI > Parameters > Face Detection**.

Figure 5-117 Face and body detection



Step 2 Select a channel, and then click  to enable the function.

Step 3 Enable **Face & Body Image Enhancement** to improve detection efficiency.

Step 4 Configure target filters.

You can configure two target filters (maximum size and minimum size). The system triggers an alarm when the size of detected target is between the maximum size and the minimum size.

Step 5 Click **Setting** next to **Schedule** to configure the arming period.

The system triggers corresponding alarm actions only during the arming period.

- On the time line, drag to set the period.
- You can also click  to set the period.

Step 6 Configure alarm linkage actions. For details, see [Step 7](#).

Step 7 Click **Apply**.

5.9.5.3 AI Search (Face & Body Detection)

To search for face detection results, see "5.9.4.3 AI Search (Face Detection)". To search for body detection results, see "5.9.9.3.1 Human Detection".

5.9.6 Face Recognition

The system compares the detected faces with the faces in the database to judge whether the detected face belongs to the database. When the similarity reaches the defined threshold, an alarm is triggered.

5.9.6.1 Enabling Smart Plan

To use AI by camera, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

5.9.6.2 Creating Face Database

Create face databases to manage face images for face recognition.

5.9.6.2.1 Creating Local Face Databases

You can create face databases on the Device to manage face images for face recognition by Device.

Procedure

Step 1 Select **Main Menu > AI > Database > Face Database Config.**

Figure 5-118 Face database configuration



Step 2 Select **Local** as **Type**, and then click **Add**.

Figure 5-119 Add database

Step 3 Select **Normal Database** from the **Type** list, and then enter database name.

Step 4 Click **OK**.

5.9.6.2.2 Creating Remote Face Databases

The Device can get face databases from the remote devices, and also allows creating face databases for remote devices. The remote device face database is suitable for face recognition by Camera.

Procedure

Step 1 Select **Main Menu > AI > Database > Face Database Config.**

Step 2 Select **Remote** as **Type**, select a channel and then click **Add**.

Step 3 Enter database name.

Step 4 Click **OK**.

5.9.6.2.3 Creating the Passerby Database

Background Information

If you use the passerby database for alarm linkage, when the detected face is not in the face database, the system automatically captures the face image, and then save it to the passerby database.



This function is available on select models.

Procedure

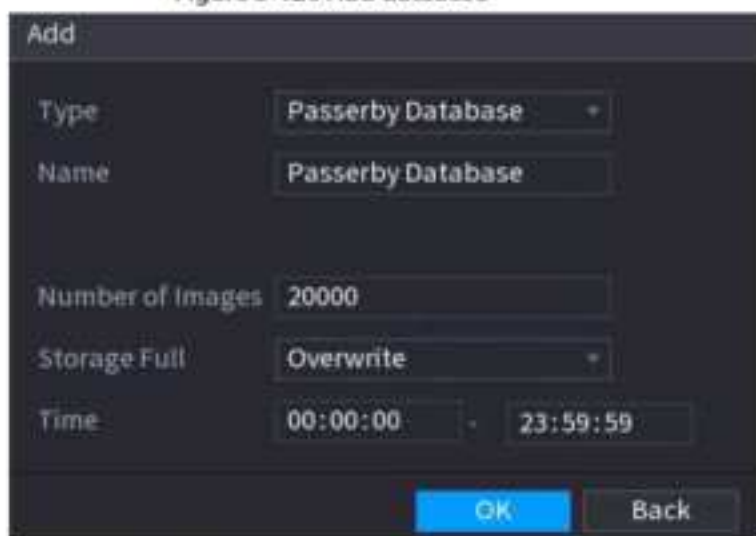
Step 1 Select **Main Menu > Database > Face Database Config.**

Step 2 Select **Local** as **Type**, and then click **Add**.



You can create only one passerby database.

Figure 5-120 Add database



Step 3 Select **Passerby Database** from the **Type** list, and then configure other parameters.

Table 5-31 Passerby database parameters

Parameter	Description
Name	Enter a name for the passerby database.
Number of Images	Configure the number of images that the database can contain.
Storage Full	Select the storage strategy when space is full. - Stop: No more images can be added. - Overwrite: The newest images overwrite the oldest images. Back up the old images as necessary.
Time	Set the period in which the system removes duplicate face images from the database.

Step 4 Click **OK**.

5.9.6.3 Adding Images to Face Database

You can add face images to the existing databases one by one or in batches.

5.9.6.3.1 Adding Face Images One by One

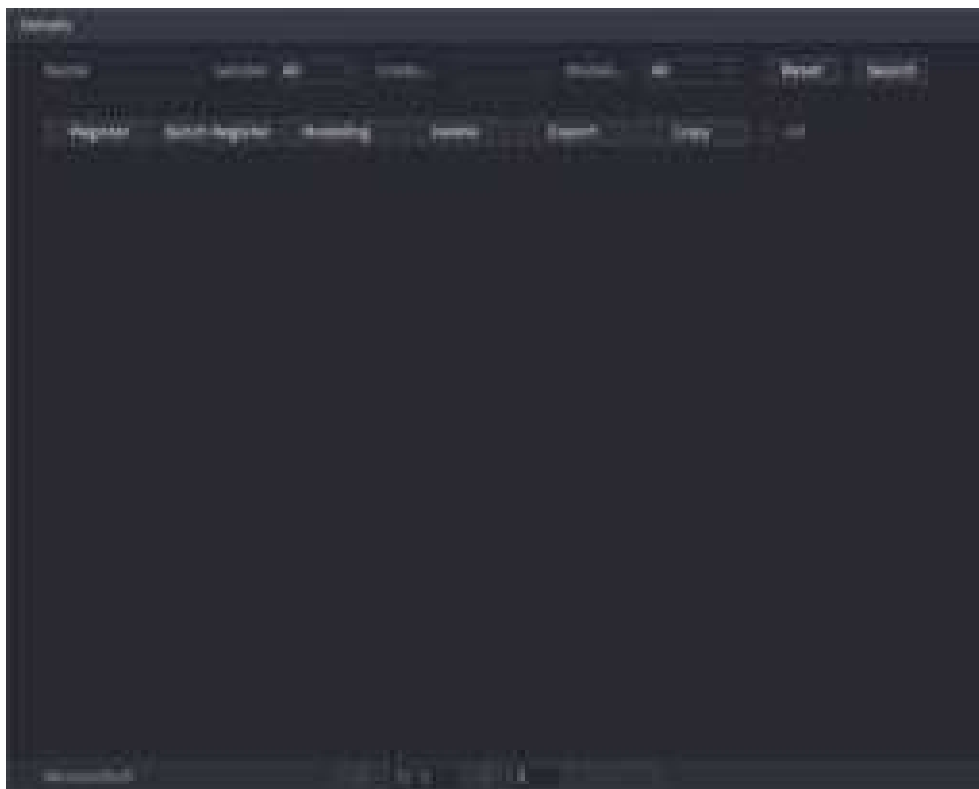
You can add one face image to the database. It is for the scenario that the registered human face picture amount is small.

Procedure

Step 1 Select **Main Menu > AI > Database > Face Database Config**.

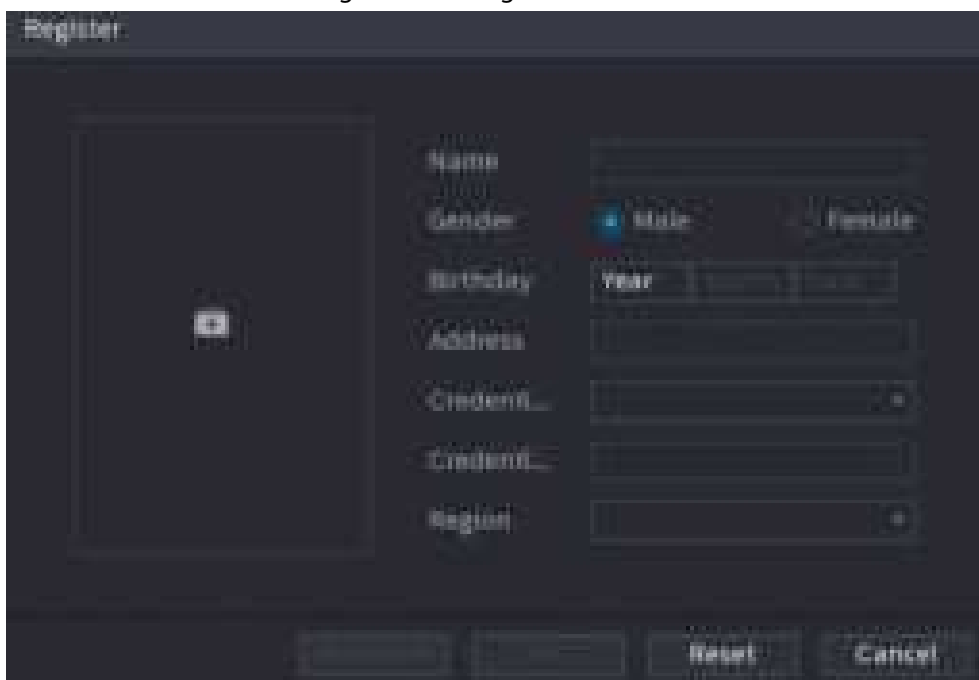
Step 2 Click  of the database that you want to configure.

Figure 5-121 Databases details



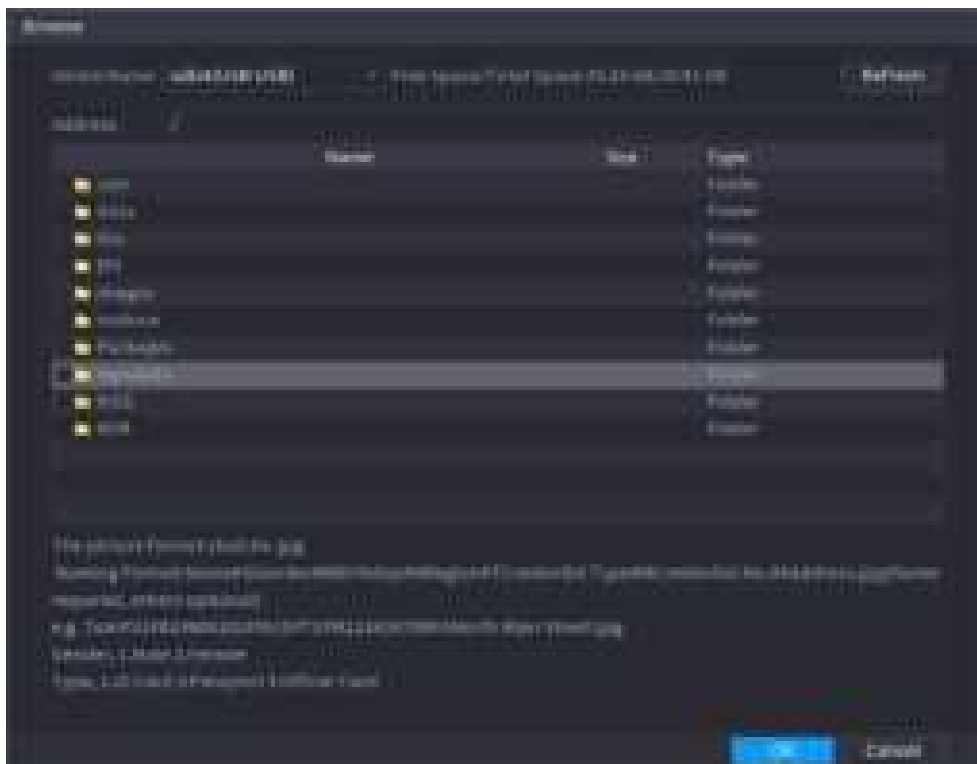
Step 3 Click **Register**.

Figure 5-122 Register



Step 4 Click  to add a face image.

Figure 5-123 Browse



Step 5 Select a face image and then enter the registration information.

Step 6 Click **OK**.

The system prompts the registration is successful.

Step 7 On the **Details** page, click **Search**.

The system prompts modeling is successful.



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

Related Operations

- Edit registration information.
Click  to modify the registration information.
- Model face images.
The face images are modeled automatically after added to face database. You can also model face images manually.
 - ◇ On the **Database Config** page, select a database, and then click **Modeling** to model all the face images in the database.
 - ◇ On the **Details** page, select one or more face images, and then click **Modeling** to model the selected images.
- Export face images.
Select one or more face images, and then click **Export**.
- Delete face images.
Select one or more face images, and then click **Delete**.

5.9.6.3.2 Adding Face Images in Batches

The system supports batch add if you want to import several human face images at the same time.

Procedure

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

Table 5-32 Naming rule

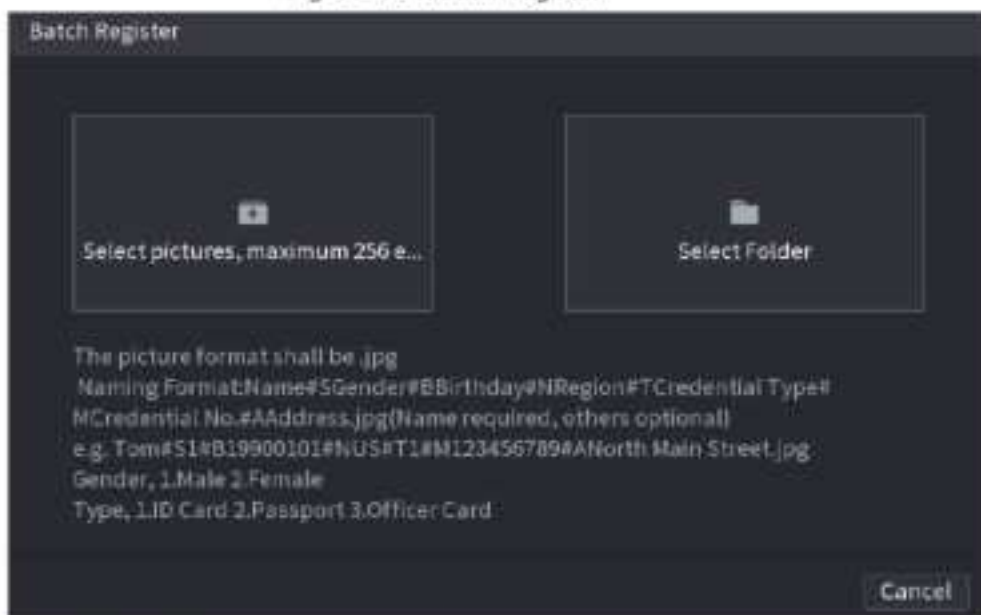
Naming format	Description
Name	Enter the name.
Gender	Enter 1 or 2. 1 represents male, and 2 represents female.
Birthday	Enter numbers in the format of yyyy-mm-dd.
Region	Enter the abbreviation of region. For example, CN for China.
Credential Type	1 represents ID card; 2 represents passport; 3 represents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

Step 2 Select **Main Menu > AI > Database > Face Database Config.**

Step 3 Click  of the database that you want to configure.

Step 4 Click **Batch Register.**

Figure 5-124 Batch register



Step 5 Click  or  to import face images.

Step 6 Click **OK.**

Related Operations

- Edit registration information.

Click  to modify the registration information.

- Model face images.

The face images are modeled automatically after added to face database. You can also model face images manually.

- ◇ On the **Database Config** page, select a database, and then click **Modeling** to model all the face images in the database.
- ◇ On the **Details** page, select one or more face images, and then click **Modeling** to model the selected images.
- Export face images.
Select one or more face images, and then click **Export**.
- Delete face images.
Select one or more face images, and then click **Delete**.

5.9.6.4 Configuring Face Recognition

Configure alarm rules for face recognition.

5.9.6.4.1 Configuring AI by Recorder

Prerequisites

Make sure the face detection function is enabled at corresponding channel.

Procedure

- Step 1 Select **Main Menu > AI > Parameters > Face Recognition**.
- Step 2 Select the channel, enable the function, and select **AI by Recorder** in the **Type** list.

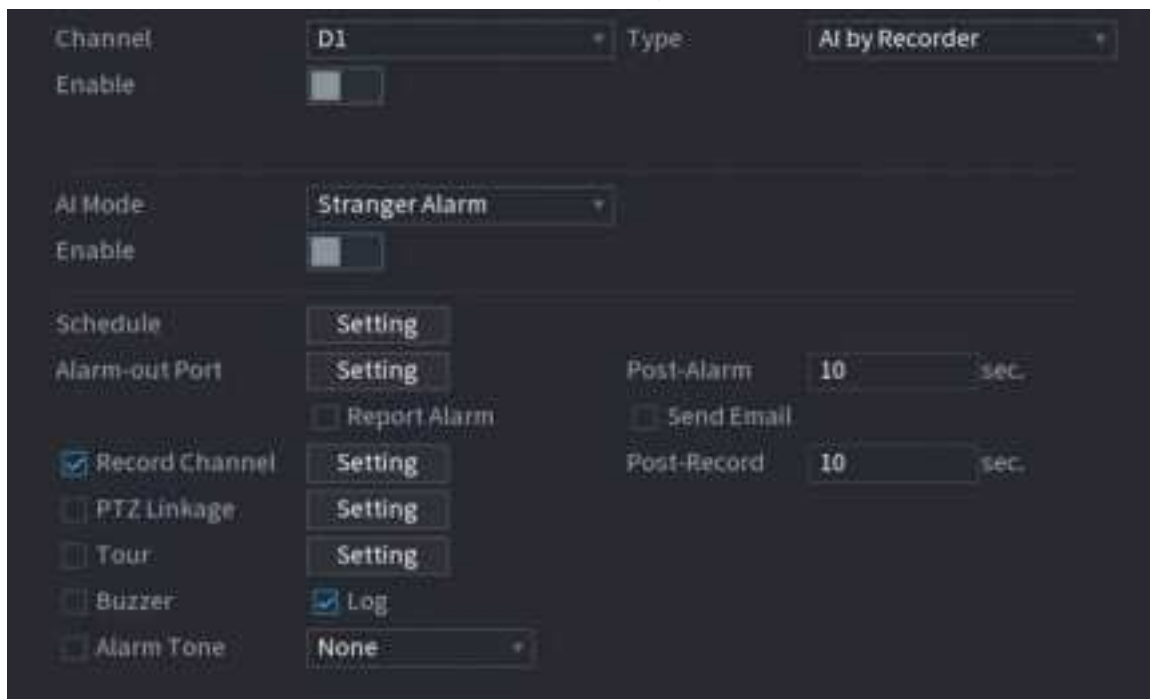
Figure 5-125 AI by recorder



- Step 3 Click **Setting** next to **Schedule** to configure arming periods. The corresponding alarm actions are linked by the alarm events triggered during armed period.
- Step 4 Arm target face database.
- **General Alarm:** The alarm is triggered when the similarity of detected faces reaches the defined value.
 1. Select **General Alarm** in **AI Mode**.

2. Click **Setting** next to **Target Face Database**.
 3. Select the face database that you want to arm, and then click **OK**.
 4. Click  to modify similarity.
 5. Click  to configure alarm linkages.
- **Stranger Alarm:** The alarm is triggered when the similarity of detected faces does not reach the defined value.

Figure 5-126 Stranger alarm (AI by recorder)



1. Select **Stranger Alarm** in **AI Mode**.
2. Click  enable the function.
3. Configure the alarm linkage actions. For details on alarm linkage, see Table 5-50.

Step 5 Click **Apply**.

5.9.6.4.2 Configuring AI by Camera

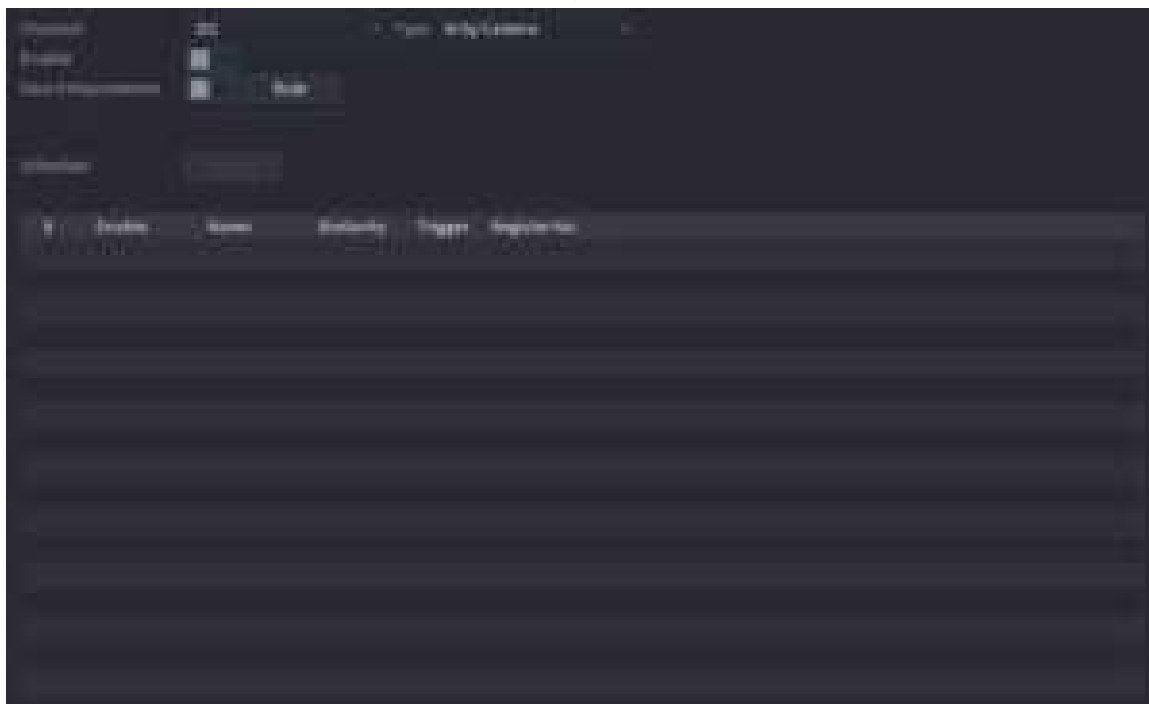
Prerequisites

Make sure the connected camera supports face recognition.

Procedure

- Step 1 Select **Main Menu > AI > Parameters > Face Recognition**.
- Step 2 Select the channel, enable the function, and select **AI by Camera** in the **Type** list.

Figure 5-127 AI by camera



Step 3 Enable **Face Enhancement** to make the faces displayed more clear.

Step 4 Click **Rule** to draw areas to filter the target.

You can configure two target filters (maximum size and minimum size). When the target is smaller than the minimum size or larger than the maximum size, no alarms will be activated.

Step 5 Select target face database, and then click  to configure alarm linkage. For details on alarm linkage, see Table 5-50.

Step 6 Click **Apply**.

5.9.6.5 AI Search (Face Recognition)

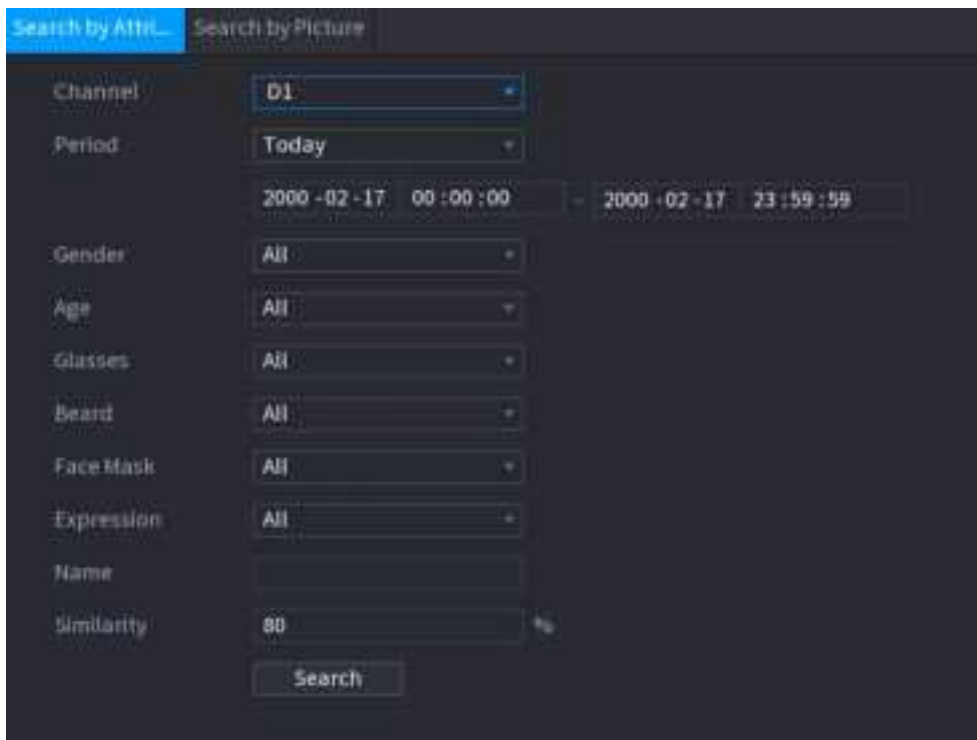
You can search for the face recognition results by attributes or by image.

5.9.6.5.1 Search by Attributes

Procedure

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

Figure 5-128 Search by attributes



Step 2 Select the channel and set the parameters including start time, end time, gender, age, glasses, beard, mask, name and similarity.

Step 3 Click **Search**.



The faces in the image are intentionally blurred for privacy protection. The actual images are clear.

Figure 5-129 Search results



Related Operations

- Play back video.
Click an image, and then click  to play back the related video.
During playback, you can:
 - ◇ Click  to pause.

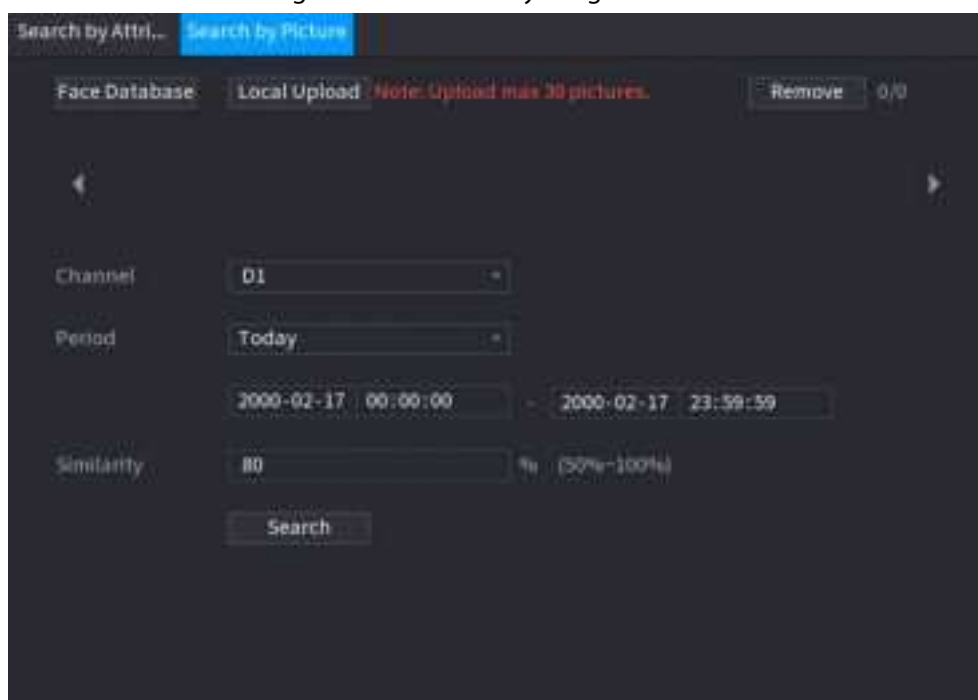
- ◇ Click to stop.
- ◇ Click to display AI rule. The icon changes to .
- Add tags.
Select one or more images, and then click **Add Tag**.
- Lock.
Select one or more images, and then click **Lock**. The locked files will not be overwritten.
- Export.
Select one or more images, and then click **Export** to export selected search results in excel.
- Back up.
Select one or more images, click **Backup**, select the storage path and file type, and then click **Start** to export files to external storage device.

5.9.6.5.2 Search by Image

Procedure

- Step 1 Select **Main Menu** > **AI** > **AI Search** > **Face Recognition** > **Search by Picture**.

Figure 5-130 Search by image



- Step 2 Upload face images.
- **Face Database:** Upload face images from database.
 - **Local Upload:** Upload face images from external storage device.
- Step 3 Select the image used to search and then set the parameters including channel, start time, end time, gender, age, glasses, beard, mask, and similarity.
- Step 4 Click **Search**.
The search results are displayed.

Related Operations

- Play back video.
Click an image, and then click to play back the related video.

During playback, you can:

- ◇ Click to pause.
- ◇ Click to stop.
- ◇ Click to display AI rule. The icon changes to .
- Add tags.
Select one or more images, and then click **Add Tag**.
- Lock.
Select one or more images, and then click **Lock**. The locked files will not be overwritten.
- Export.
Select one or more images, and then click **Export** to export selected search results in excel.
- Back up.
Select one or more images, click **Backup**, select the storage path and file type, and then click **Start** to export files to external storage device.

5.9.6.5.3 Report Query

Background Information

You can search for and export face statistics.



- The statistics might be overwritten when the storage space runs out. Back up in time.
- When you restore the Device to factory settings, all the data except data in the external storage device will be cleared. You can clear the data in the external storage device through formatting or other methods.

Procedure

Step 1 Select **Main Menu > AI > Report Query > Face Statistics**.

Figure 5-131 Face statistics



Step 2 Select the report type, start time and end time, and then click **Search**.

Related Operations

- Switch chart type.
Click **Bart Chart** or **Line Chart** to switch the chart type.
- Export.
Select file type, and then click **Export** to export the report in picture or csv format.

5.9.7 IVS

The IVS function processes and analyzes the images to extract the key information to match the specified rules. When the detected behaviors match the rules, the system activates alarms.



- This function is available on select models.
- IVS and face detection cannot be enabled at the same time.

5.9.7.1 Enabling Smart Plan

To use AI by camera, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

5.9.7.2 Configuring IVS

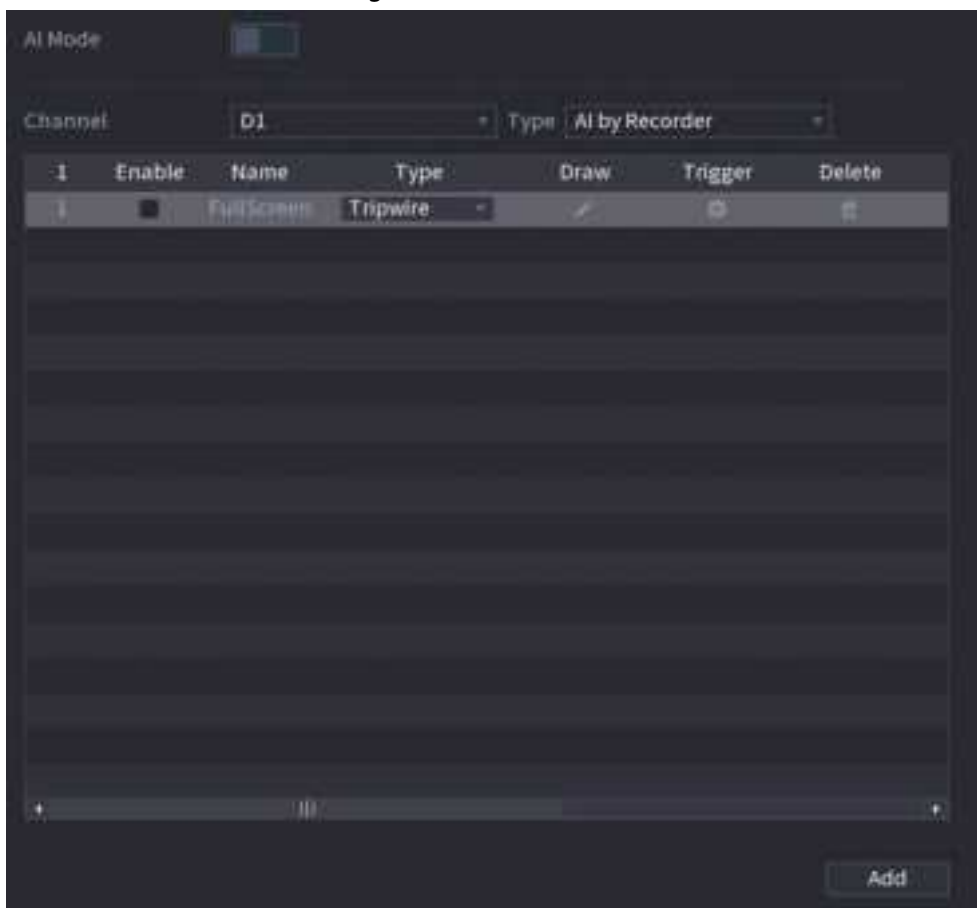
5.9.7.2.1 Tripwire

When the detection target crosses the warning line along the set direction, the system performs an alarm linkage action.

Procedure

Step 1 Select **Main Menu > AI > Parameters > IVS**.

Figure 5-132 IVS



Step 2 Select the channel and AI type.

Step 3 Click **Add** to add a rule.

Step 4 On the **Type** list, select **Tripwire**.

Step 5 Draw the detection rule.

- 1) Click  to draw a straight line or a curve on the surveillance video image. Right-click the image to stop drawing.

Figure 5-133 Tripwire (AI by camera)



Figure 5-134 Tripwire (AI by recorder)



- 2) Click  to draw the minimum size or maximum size to filter the target.
The system triggers an alarm only when the size of detected target is between the maximum size and the minimum size.
- 3) Configure the parameters.

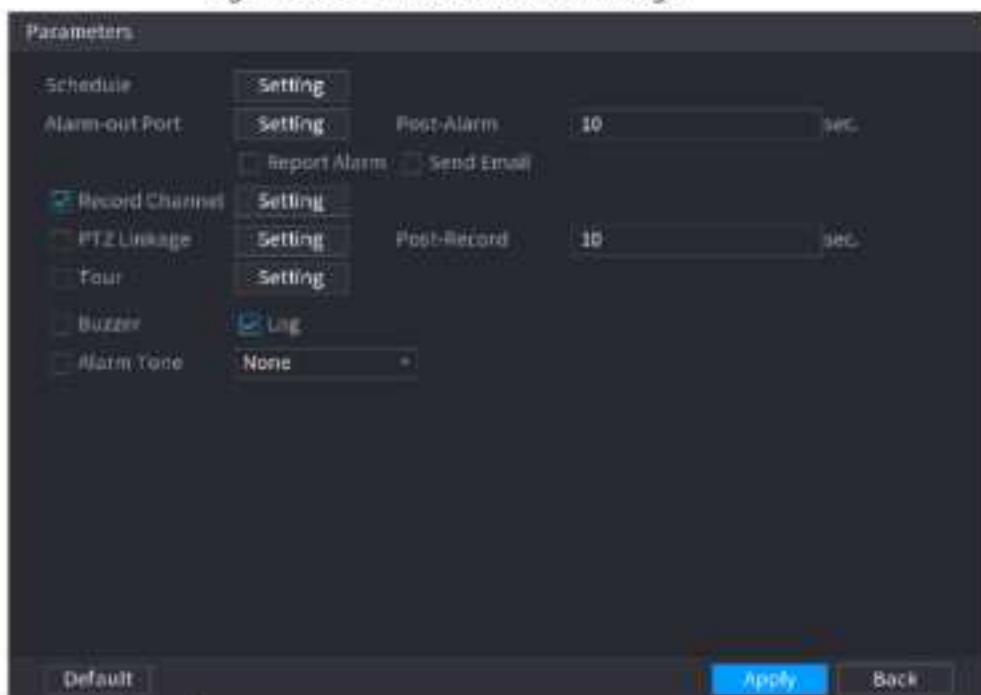
Table 5-33 Tripwire parameters

Parameter	Description
Name	Customize the rule name.
Direction	Set the tripwire direction, including A→B, B→A and A↔B.
Target Filter	Click  and then select effective target. With Human and Motor Vehicle selected by default, the system automatically identifies the person and motor vehicle appeared within the monitoring range.

4) Click **OK**.

Step 6 Configure alarm schedule and linkage.

Figure 5-135 Schedule and alarm linkage



1) Click .

2) Click **Setting** next to **Schedule** to configure the alarm period.

The system performs linkage actions only for alarms during the arming period.

- On the time line, drag to set the period.
- You can also click  to set the period.

3) Configure alarm linkage. For details, see Table 5-50.

4) Click **Apply**.

Step 7 Select the **Enable** checkbox and then click **Apply**.

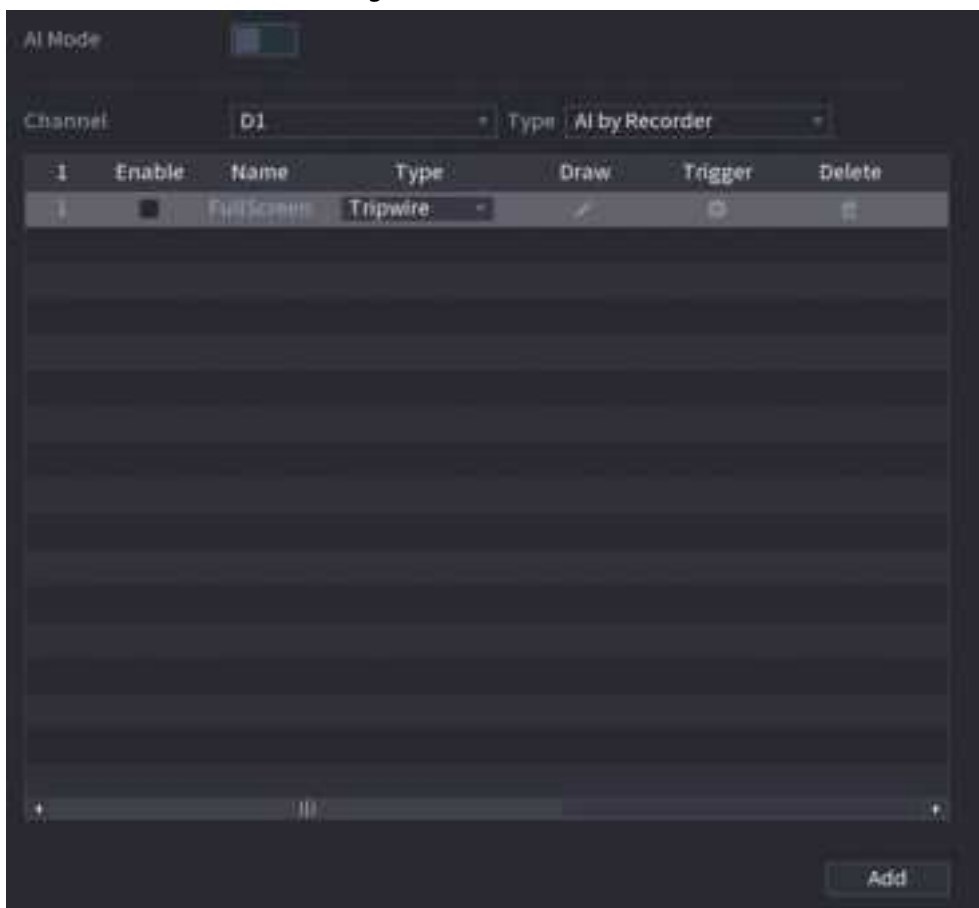
5.9.7.2.2 Intrusion

When the detection target passes the edge of the monitoring area, and enters, leaves or traverses the monitoring area, the system performs an alarm linkage action.

Procedure

Step 1 Select **Main Menu > AI > Parameters > IVS**.

Figure 5-136 IVS



Step 2 Select the channel and AI type.

Step 3 Click **Add** to add a rule.

Step 4 On the **Type** list, select **Intrusion**.

Step 5 Draw the detection rule.

- 1) Click  to draw the rule on the surveillance video image. Right-click the image to stop drawing.

Figure 5-137 Intrusion (AI by camera)



Figure 5-138 Intrusion (AI by recorder)



- 2) Click  to draw the minimum size or maximum size to filter the target.
The system triggers an alarm only when the size of detected target is between the maximum size and the minimum size.
- 3) Configure the parameters.

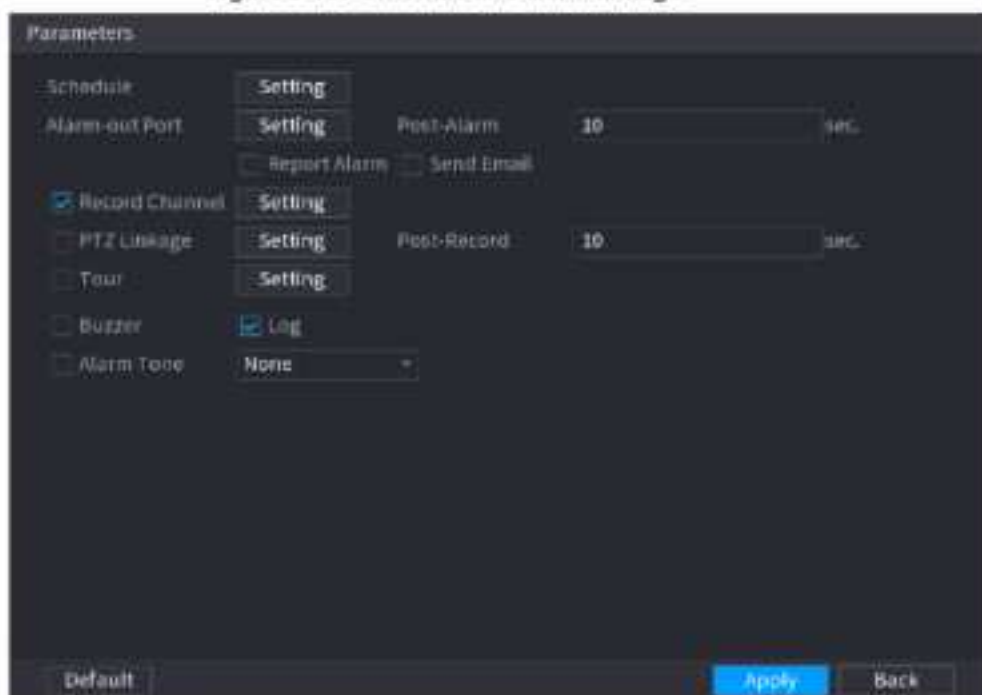
Table 5-34 Intrusion parameters

Parameter	Description
Name	Customize the rule name.
Action	Set the intrusion action, including appear and crossing area.
Direction	Set the direction to cross the area, including enter, exit and both.
Target Filter	Click  and then select effective target. With Human and Motor Vehicle selected by default, the system automatically identifies the person and motor vehicle appeared within the monitoring range.

4) Click **OK**.

Step 6 Configure alarm schedule and linkage.

Figure 5-139 Schedule and alarm linkage



1) Click .

2) Click **Setting** next to **Schedule** to configure the alarm period.

The system performs linkage actions only for alarms during the arming period.

- On the time line, drag to set the period.
- You can also click  to set the period.

3) Configure alarm linkage. For details, see Table 5-50.

4) Click **Apply**.

Step 7 Select **Enable** checkbox and then click **Apply**.

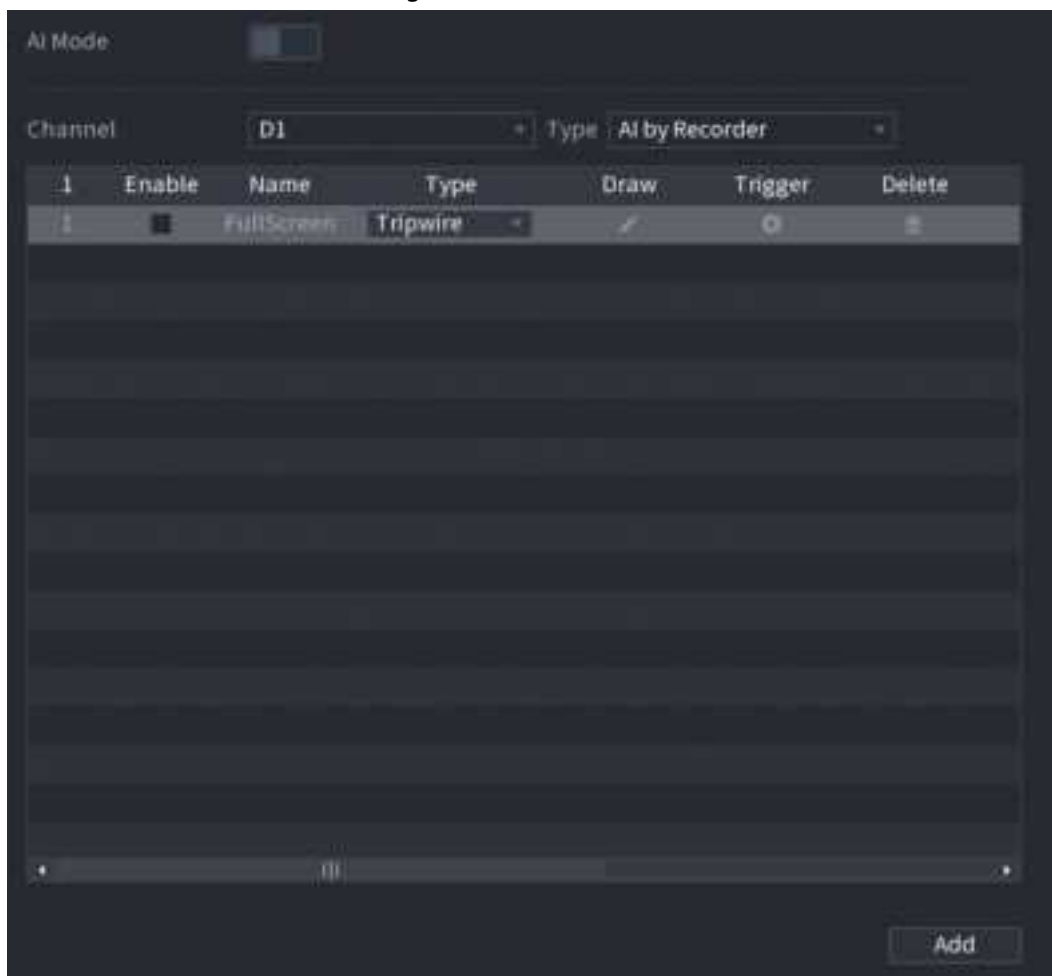
5.9.7.2.3 Abandoned Object Detection

The system generates an alarm when there is an abandoned object in the specified zone.

Procedure

Step 1 Select **Main Menu > AI > Parameters > IVS**.

Figure 5-140 IVS



Step 2 Select channel and AI type.

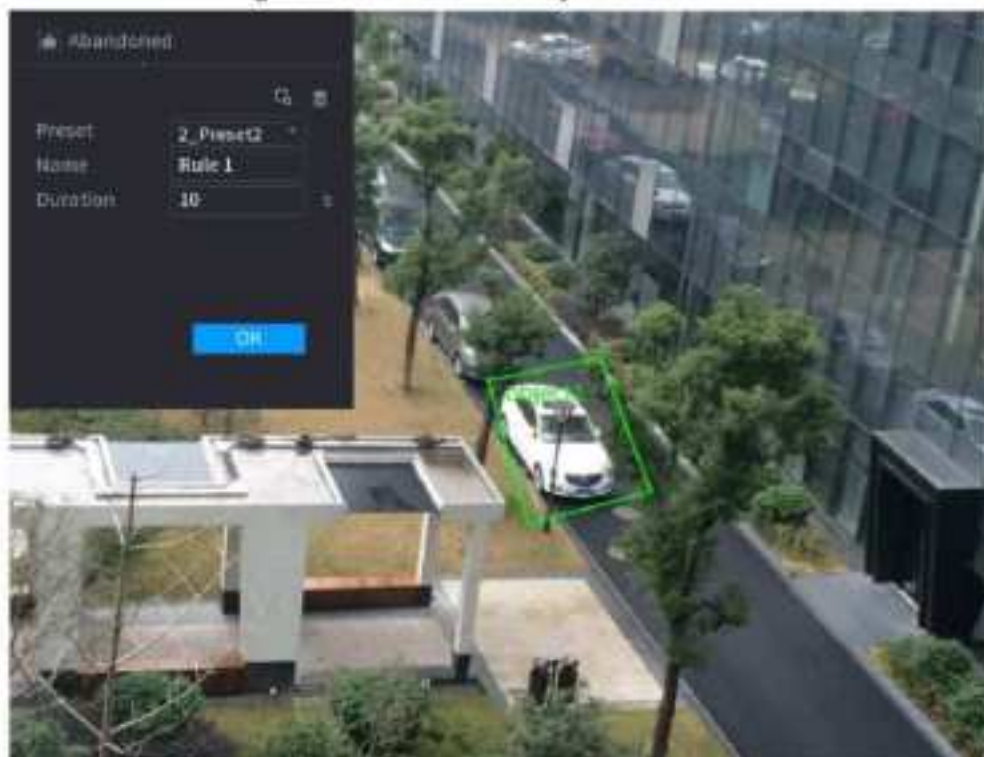
Step 3 Click **Add** to add a rule.

Step 4 On the **Type** list, select **Abandoned Object**.

Step 5 Draw the detection rule.

- 1) Click  to draw a rectangle on the surveillance video image. Right-click the image to stop drawing.

Figure 5-141 Abandoned object rule



- 2) Click  to draw the minimum size or maximum size to filter the target.

The system triggers an alarm only when the size of detected target is between the maximum size and the minimum size.

- 3) Configure parameters.

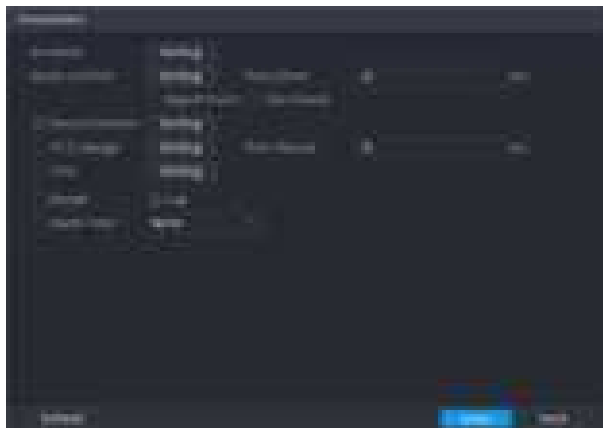
Table 5-35 Parameters of abandoned object detection

Parameter	Description
Preset	Select a preset you want to use IVS.
Name	Customize the rule name.
Duration	The system generates an alarm once the object is in the zone for the defined period.

- 4) Click **OK**.

Step 6 Configure alarm schedule and linkage.

Figure 5-142 Schedule and alarm linkage



- 1) Click .
- 2) Click **Setting** next to **Schedule** to configure the alarm period.
The system performs linkage actions only for alarms during the arming period.
 - On the time line, drag to set the period.
 - You can also click  to set the period.
- 3) Configure alarm linkage. For details, see Table 5-50.
- 4) Click **Apply**.

Step 7 Select **Enable** checkbox and then click **Apply**.

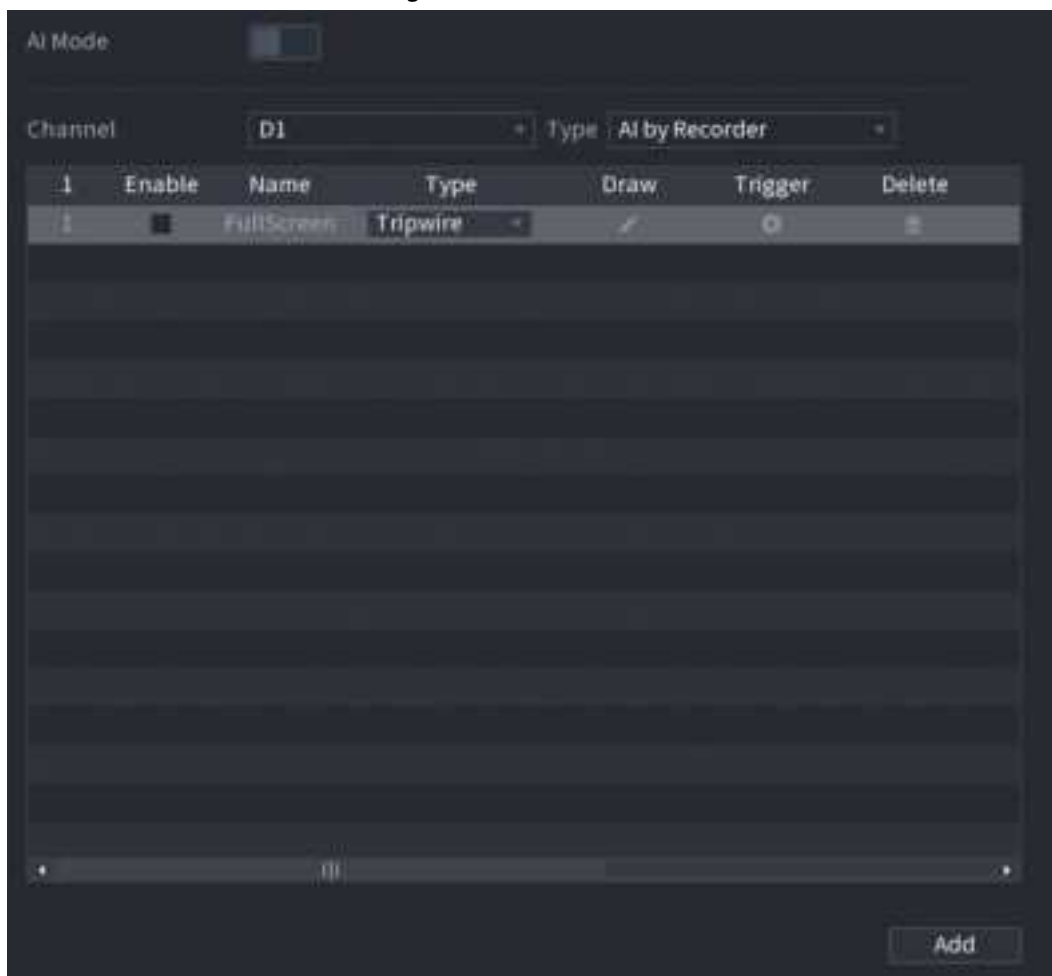
5.9.7.2.4 Fast Moving

You can detect the fast moving object in the specified zone.

Procedure

Step 1 Select **Main Menu > AI > Parameters > IVS**.

Figure 5-143 IVS



Step 2 Select channel and AI type.

Step 3 Click **Add** to add a rule.

Step 4 On the **Type** list, select **Fast Moving**.

Step 5 Draw the detection rule.

- 1) Click  to draw a rectangle on the surveillance video image. Right-click the image to stop drawing.

Figure 5-144 Fast moving



- 2) Click  to draw the minimum size or maximum size to filter the target.

The system triggers an alarm only when the size of detected target is between the maximum size and the minimum size.

- 3) Configure parameters.

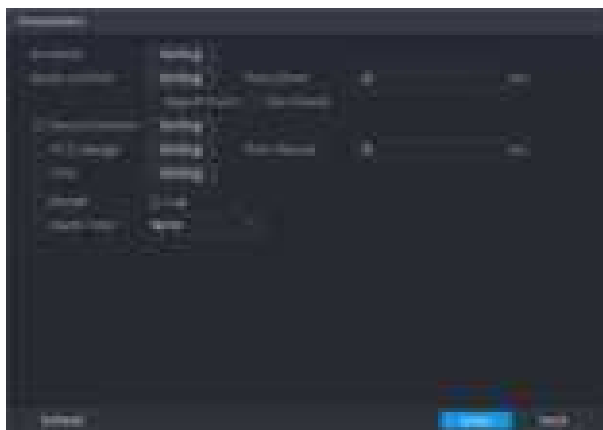
Table 5-36 Fast moving parameters

Parameter	Description
Preset	Select a preset you want to use IVS.
Name	Customize the rule name.
Sensitivity	You can set alarm sensitivity. The higher the value, the easier to detect a fast moving object but meanwhile the higher false alarm rate.

- 4) Click **OK**.

Step 6 Configure alarm schedule and linkage.

Figure 5-145 Schedule and alarm linkage



- 1) Click .
- 2) Click **Setting** next to **Schedule** to configure the alarm period.
The system performs linkage actions only for alarms during the arming period.
 - On the time line, drag to set the period.
 - You can also click  to set the period.
- 3) Configure alarm linkage. For details, see Table 5-50.
- 4) Click **Apply**.

Step 7 Select **Enable** checkbox and then click **Apply**.

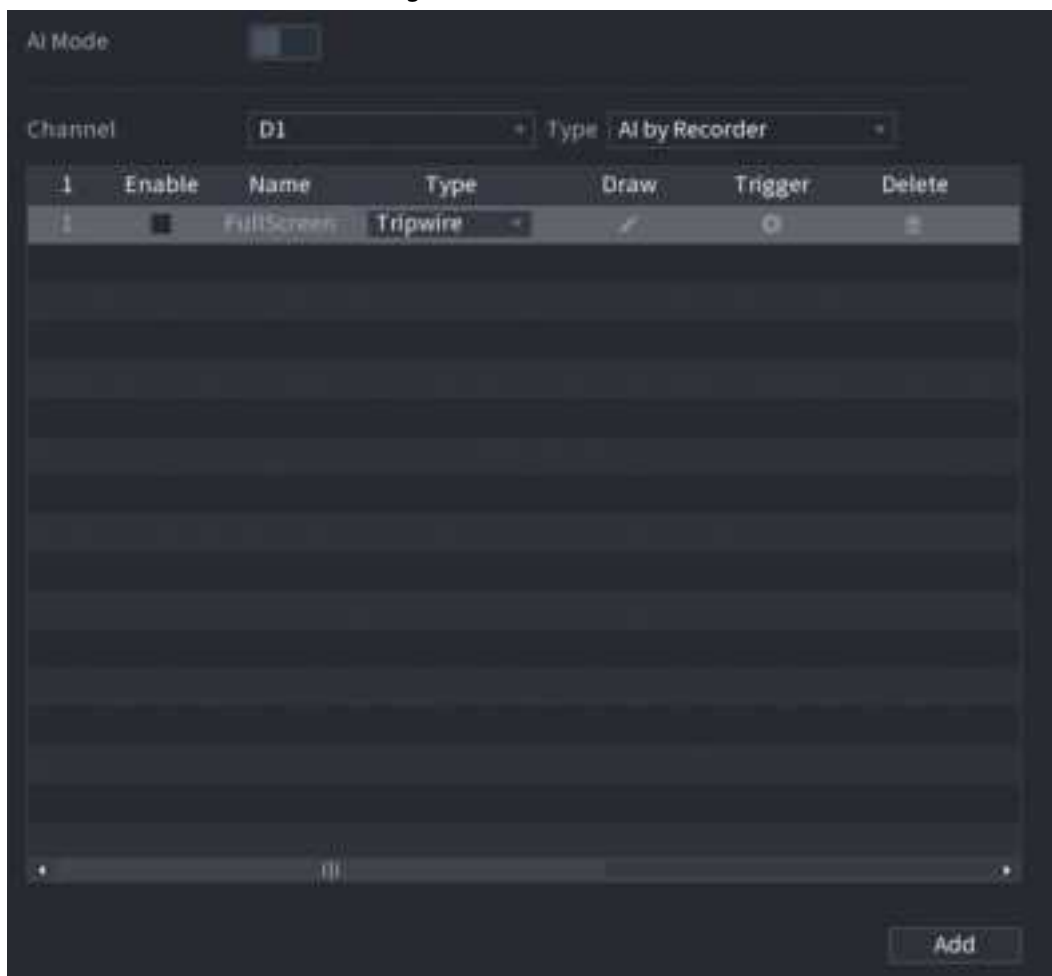
5.9.7.2.5 Parking

When the detection target stays in the monitoring area longer than the set duration, the system performs alarm linkage action.

Procedure

Step 1 Select **Main Menu > AI > Parameters > IVS**.

Figure 5-146 IVS



Step 2 Select channel and AI type.

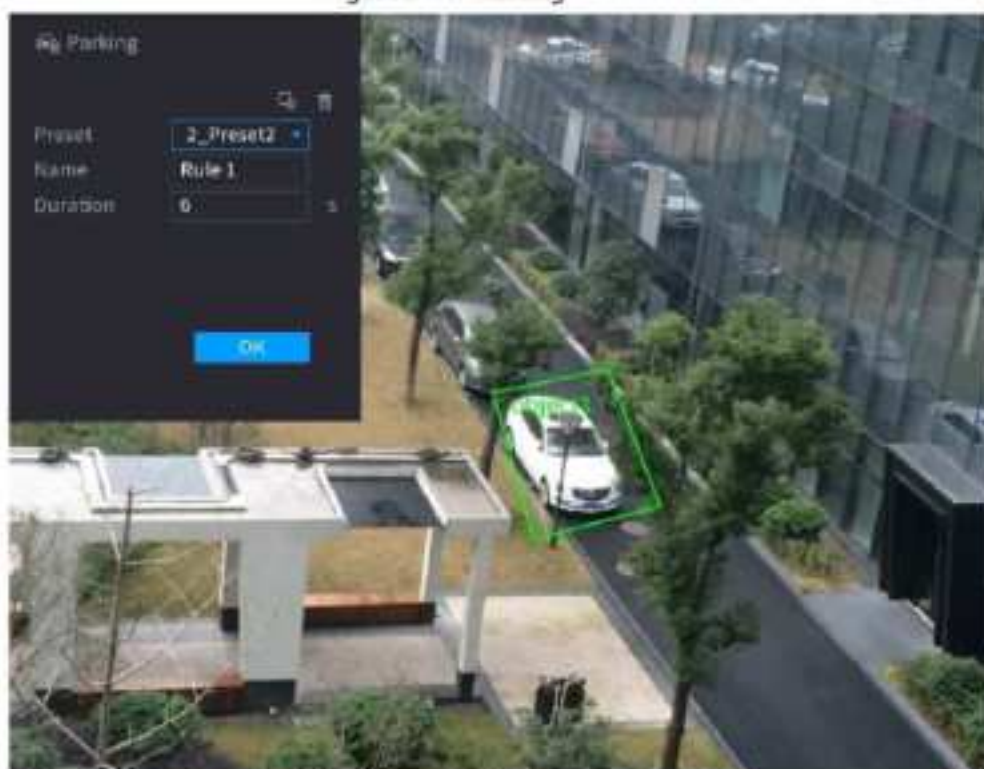
Step 3 Click **Add** to add a rule.

Step 4 On the **Type** list, select **Parking**.

Step 5 Draw the detection rule.

- 1) Click  to draw a rectangle on the surveillance video image. Right-click the image to stop drawing.

Figure 5-147 Parking



- 2) Click  to draw the minimum size or maximum size to filter the target.

The system triggers an alarm only when the size of detected target is between the maximum size and the minimum size.

- 3) Configure parameters.

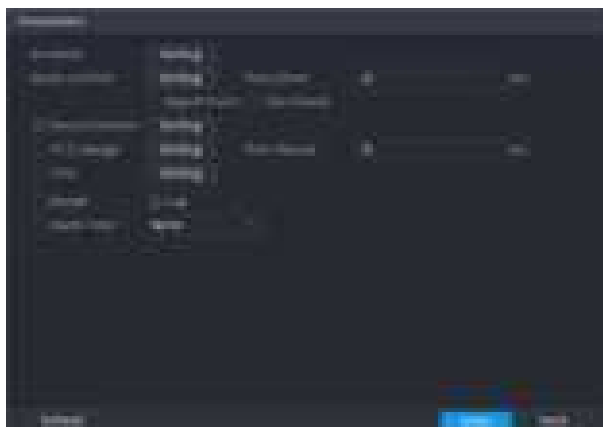
Table 5-37 Parking parameters

Parameter	Description
Preset	Set the preset point for IVS detection.
Name	Customize the rule name.
Duration	Set how long the object stays until the alarm is triggered.

- 4) Click **OK**.

Step 6 Configure alarm schedule and linkage.

Figure 5-148 Schedule and alarm linkage



- 1) Click .
- 2) Click **Setting** next to **Schedule** to configure the alarm period.
The system performs linkage actions only for alarms during the arming period.
 - On the time line, drag to set the period.
 - You can also click  to set the period.
- 3) Configure alarm linkage. For details, see Table 5-50.
- 4) Click **Apply**.

Step 7 Select **Enable** checkbox and then click **Apply**.

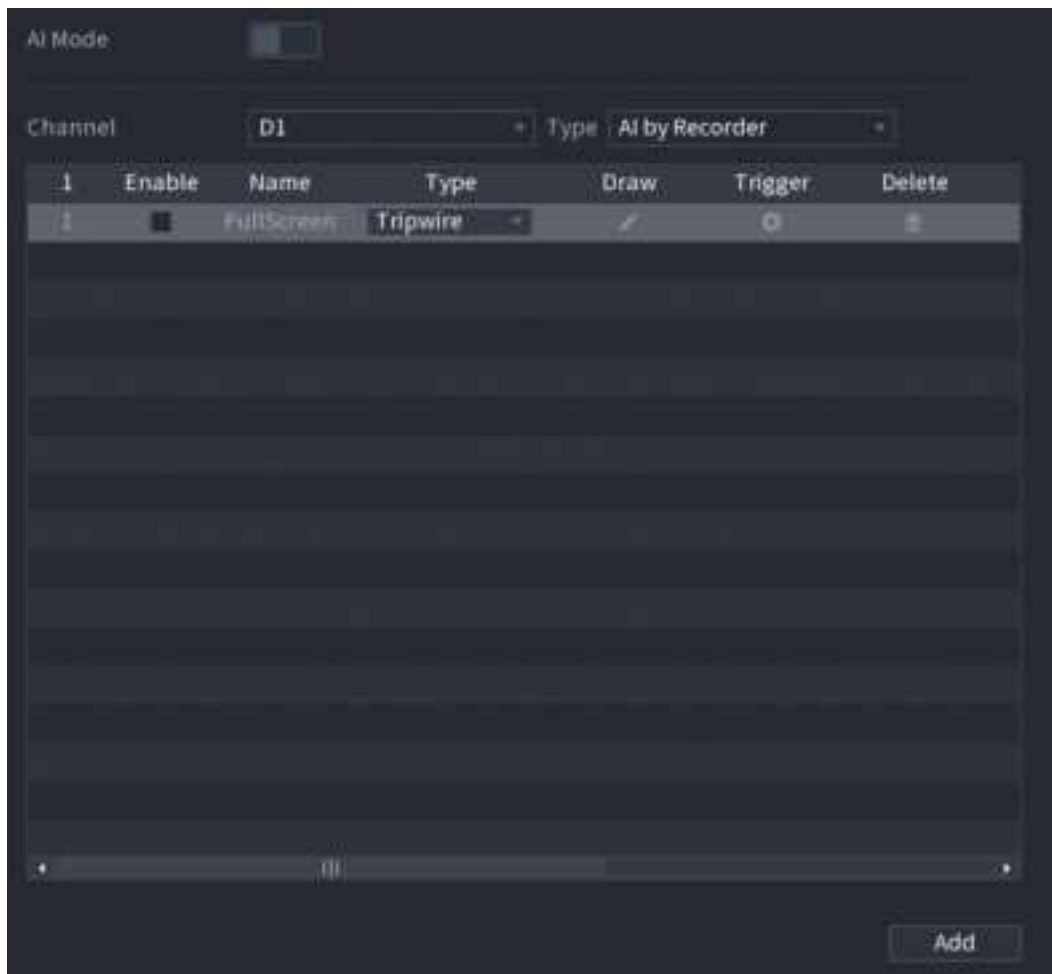
5.9.7.2.6 Crowd Gathering

The system generates an alarm once people are gathering in the specified zone longer than the defined duration.

Procedure

Step 1 Select **Main Menu > AI > Parameters > IVS**.

Figure 5-149 IVS



Step 2 Select channel and AI type.

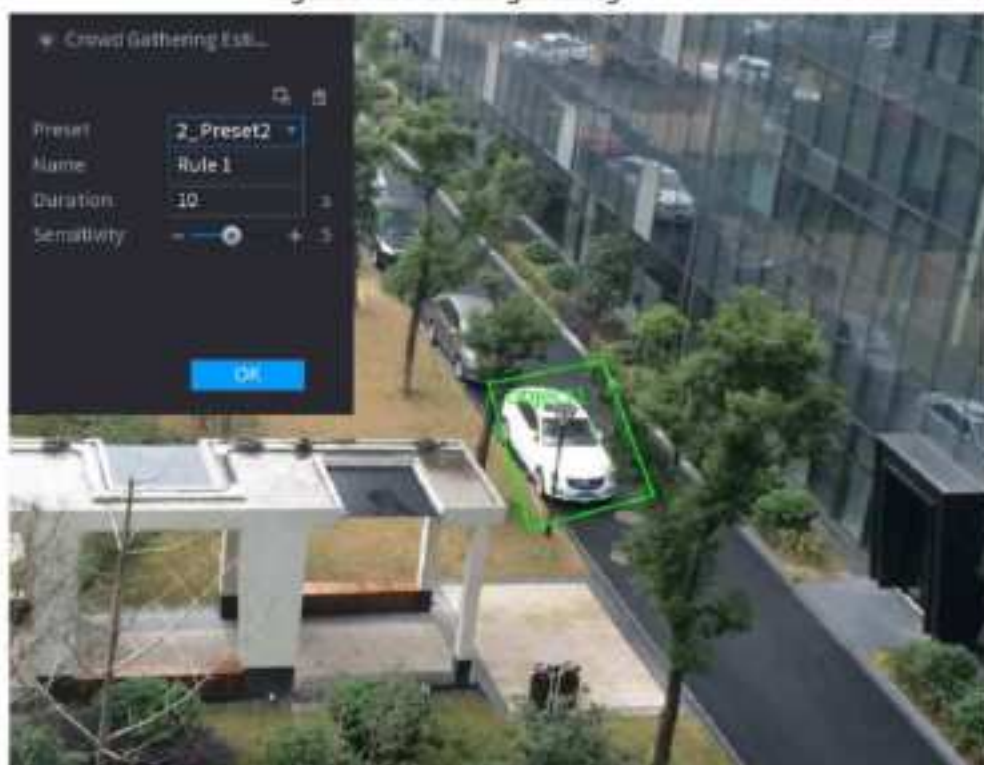
Step 3 Click **Add** to add a rule.

Step 4 On the **Type** list, select **Crowd Gathering Estimation**.

Step 5 Draw the detection rule.

- 1) Click  to draw a rectangle on the surveillance video image. Right-click the image to stop drawing.

Figure 5-150 Crowd gathering



- 2) Click  to draw the minimum size or maximum size to filter the target.

The system triggers an alarm only when the size of detected target is between the maximum size and the minimum size.

- 3) Set parameters.

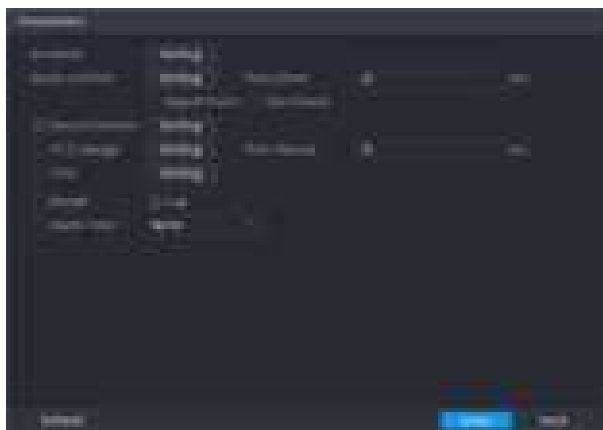
Table 5-38 Crowd gathering parameters

Parameter	Description
Preset	Select a preset you want to use IVS.
Name	Customize the rule name.
Duration	Set how long the object stays until the alarm is triggered.
Sensitivity	You can set alarm sensitivity. The higher the value, the easier to detect crowd gathering but meanwhile the higher false alarm rate.

- 4) Click **OK**.

Step 6 Configure alarm schedule and linkage.

Figure 5-151 Schedule and alarm linkage



- 1) Click .
- 2) Click **Setting** next to **Schedule** to configure the alarm period.
The system performs linkage actions only for alarms during the arming period.
 - On the time line, drag to set the period.
 - You can also click  to set the period.
- 3) Configure alarm linkage. For details, see Table 5-50.
- 4) Click **Apply**.

Step 7 Select **Enable** checkbox and then click **Apply**.

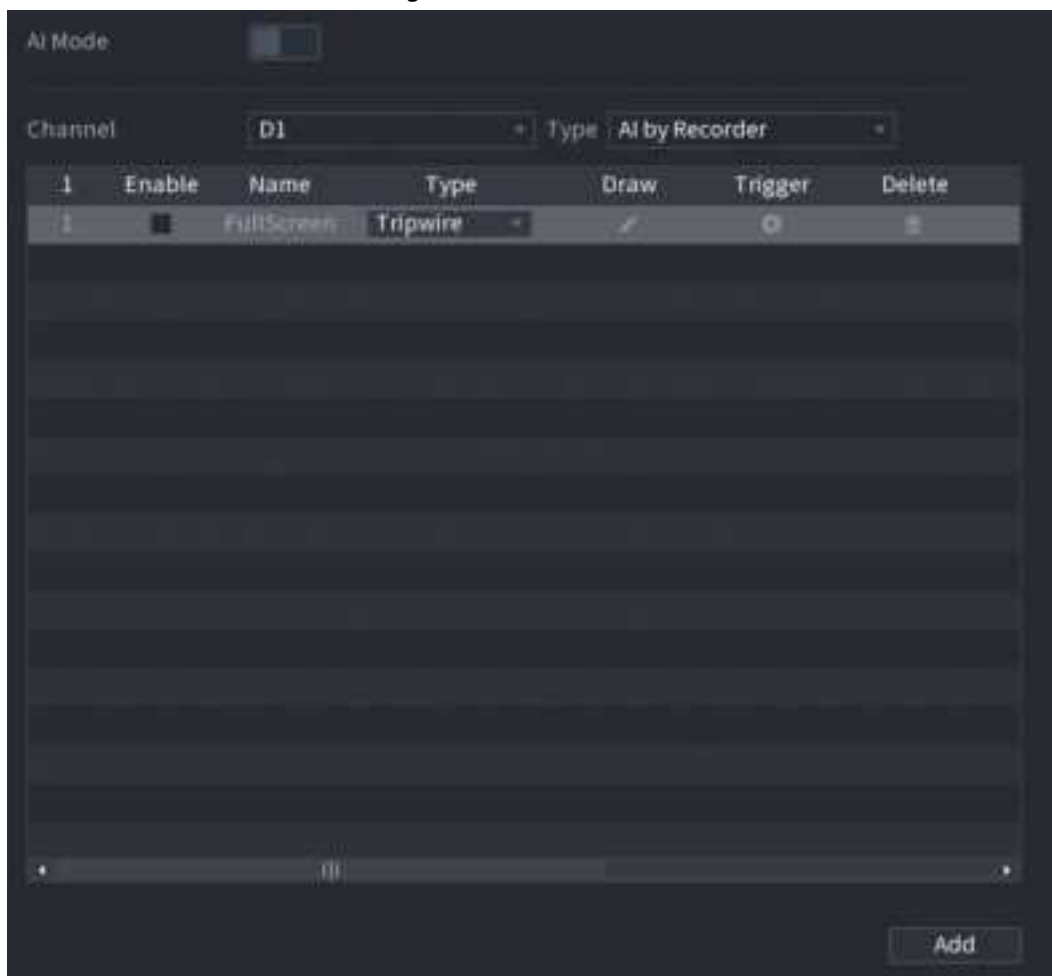
5.9.7.2.7 Missing Object Detection

The system generates an alarm when there is missing object in the specified zone.

Procedure

Step 1 Select **Main Menu > AI > Parameters > IVS**.

Figure 5-152 IVS



Step 2 Select channel and AI type.

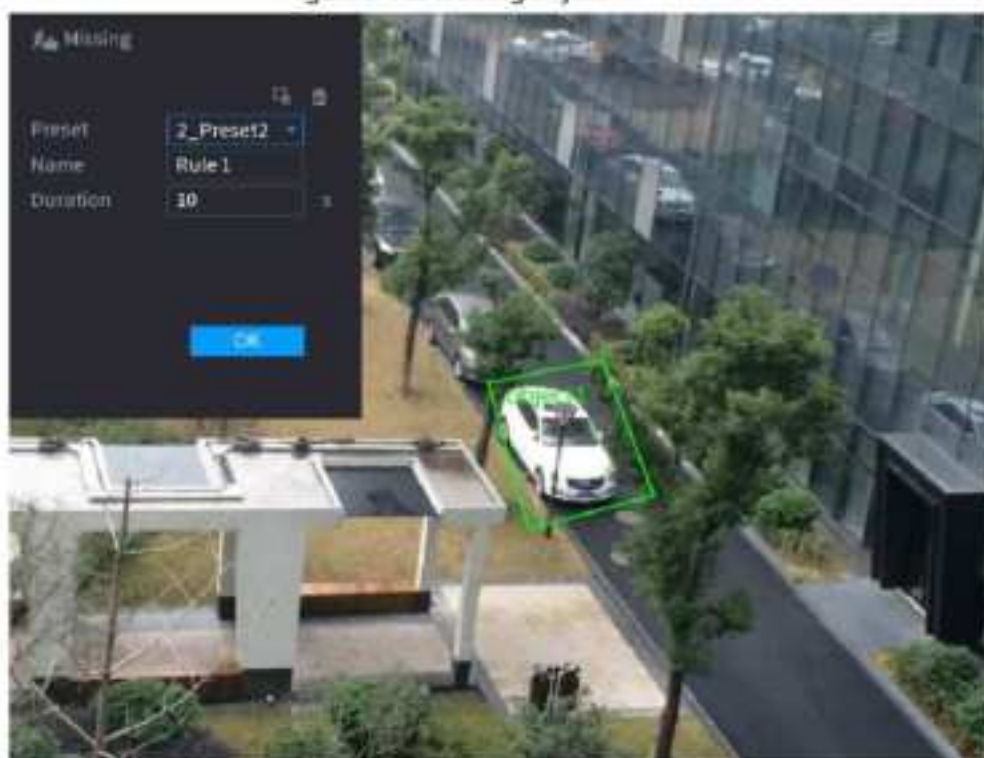
Step 3 Click **Add** to add a rule.

Step 4 On the **Type** list, select **Missing**.

Step 5 Draw the detection rule.

- 1) Click  to draw a rectangle on the surveillance video image. Right-click the image to stop drawing.

Figure 5-153 Missing object



- 2) Click  to draw the minimum size or maximum size to filter the target.

The system triggers an alarm only when the size of detected target is between the maximum size and the minimum size.

- 3) Configure parameters.

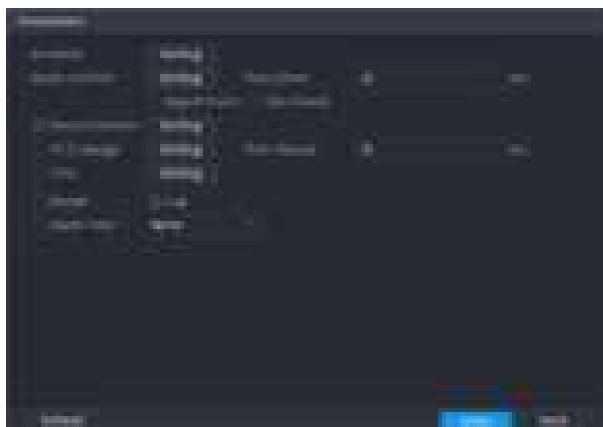
Table 5-39 Parameters of missing object detection

Parameter	Description
Preset	Set the preset point for IVS detection according to the actual needs.
Name	Customize the rule name.
Duration	Set how long the object stays until the alarm is triggered.

- 4) Click **OK**.

Step 6 Configure alarm schedule and linkage.

Figure 5-154 Schedule and alarm linkage



- 1) Click .
- 2) Click **Setting** next to **Schedule** to configure the alarm period.
The system performs linkage actions only for alarms during the arming period.
 - On the time line, drag to set the period.
 - You can also click  to set the period.
- 3) Configure alarm linkage. For details, see Table 5-50.
- 4) Click **Apply**.

Step 7 Select **Enable** checkbox and then click **Apply**.

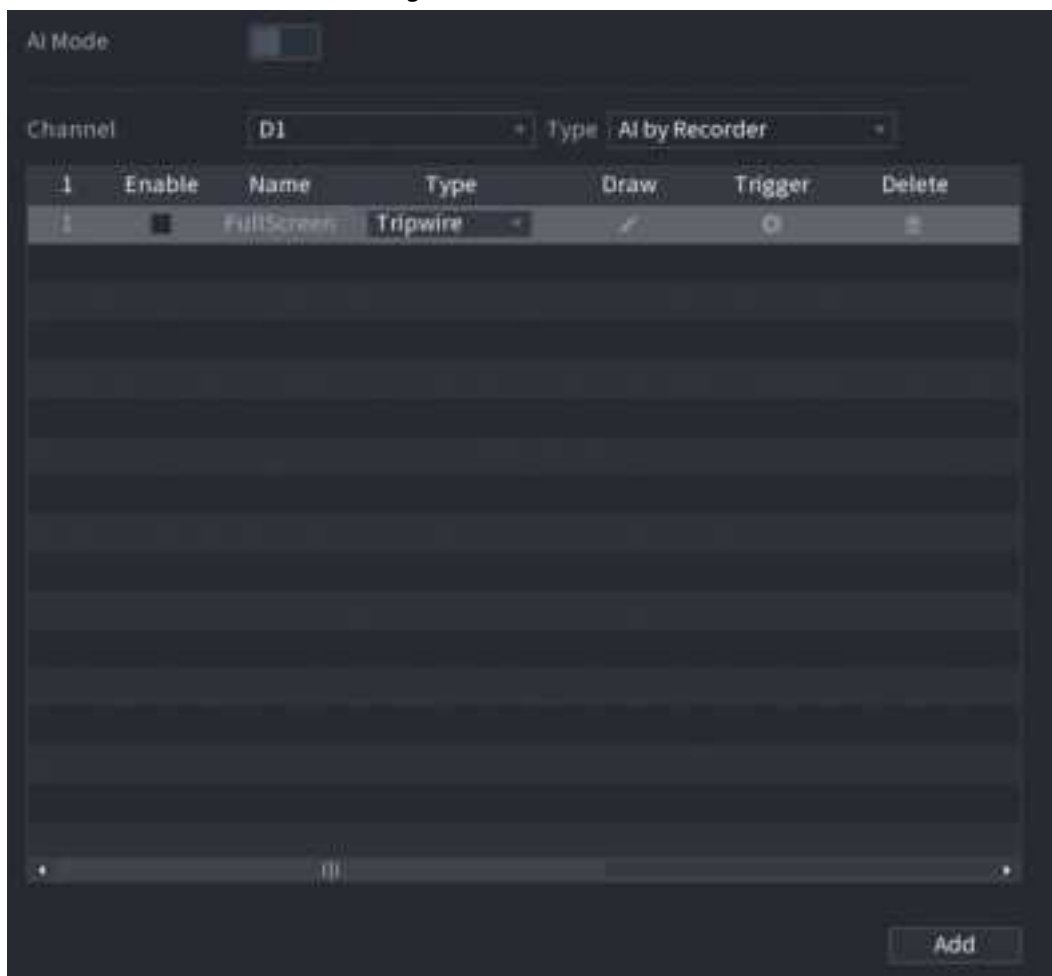
5.9.7.2.8 Loitering Detection

The system generates an alarm once the object is staying in the specified zone longer than the defined duration.

Procedure

Step 1 Select **Main Menu > AI > Parameters > IVS**.

Figure 5-155 IVS



Step 2 Select channel and AI type.

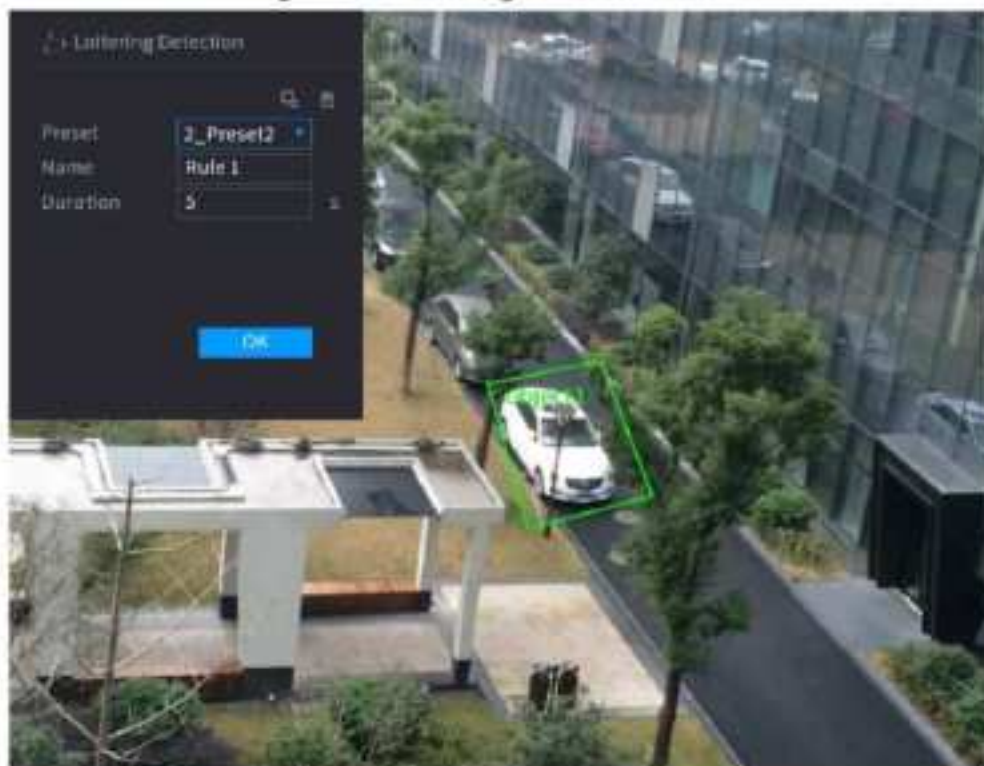
Step 3 Click **Add** to add a rule.

Step 4 On the **Type** list, select **Loitering Detection**.

Step 5 Draw the detection rule.

- 1) Click  to draw a rectangle on the surveillance video image. Right-click the image to stop drawing.

Figure 5-156 Loitering detection



- 2) Click  to draw the minimum size or maximum size to filter the target.

The system triggers an alarm only when the size of detected target is between the maximum size and the minimum size.

- 3) Configure parameters.

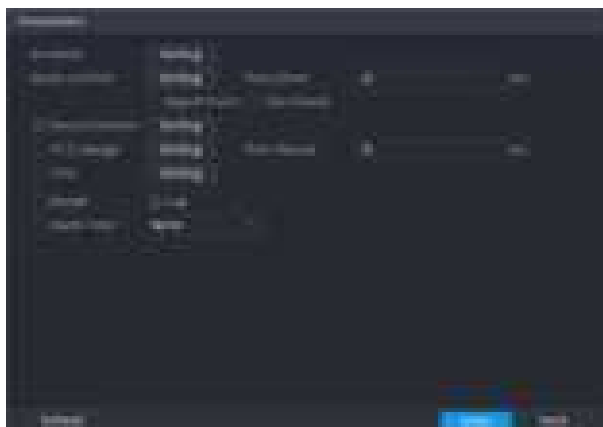
Table 5-40 Loitering detection parameters

Parameter	Description
Preset	Set the preset point for IVS detection.
Name	Customize the rule name.
Duration	Set how long the object stays until the alarm is triggered.

- 4) Click **OK**.

Step 6 Configure alarm schedule and linkage.

Figure 5-157 Schedule and alarm linkage



- 1) Click .
- 2) Click **Setting** next to **Schedule** to configure the alarm period.
The system performs linkage actions only for alarms during the arming period.
 - On the time line, drag to set the period.
 - You can also click  to set the period.
- 3) Configure alarm linkage. For details, see Table 5-50.
- 4) Click **Apply**.

Step 7 Select **Enable** checkbox and then click **Apply**.

5.9.7.3 AI Search (IVS)

You can search for IVS detection results.

Procedure

Step 1 Select **Main Menu** > **AI** > **AI Search** > **IVS**.

Figure 5-158 IVS search



Step 2 Select a channel, start time, end time, event type, and then click **Search**.
The search results are displayed.

Related Operations

- Play back video.
Click an image, and then click  to play back the related video.
During playback, you can:
 - ◇ Click  to pause.
 - ◇ Click  to stop.
 - ◇ Click  to display AI rule. The icon changes to .
- Add tags.
Select one or more images, and then click **Add Tag**.
- Lock.
Select one or more images, and then click **Lock**. The locked files will not be overwritten.
- Export.
Select one or more images, and then click **Export** to export selected search results in excel.
- Back up.
Select one or more images, click **Backup**, select the storage path and file type, and then click **Start** to export files to external storage device.

5.9.8 Stereo Analysis

By drawing and setting the rules of stereo behavior analysis, the system will perform alarm linkage actions when the video matches the detection rule. Types of events include: people approach detection, fall detection, violence detection, people No. exception detection and people stay detection.



- This function requires access to a camera that supports stereo behavior analysis.
- Stereo analysis and IVS are mutually exclusive and cannot be enabled at the same time.

5.9.8.1 Enabling Smart Plan

To use AI by camera, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

5.9.8.2 Configuring Stereo Analysis

5.9.8.2.1 People Approach Detection

When two people stay in the same detection area longer than the defined duration or when the distance between two people is larger or smaller than the defined threshold, an alarm will be triggered.

Procedure

- Step 1 Select **Main Menu > AI > Parameters > Stereo Analysis**.
- Step 2 Select a channel and then click **Add**.
- Step 3 Select **Enable** and then set **Type** to **People Approach Detection**.
- Step 4 Draw detection rule.

- 1) Click , and then draw a detection area on the video image. Right-click the image to stop drawing.
- 2) Configure parameters.

Table 5-41 Parameters of people approach detection

Parameter	Description
Name	Customize the rule name.
Sensitivity	Set alarm sensitivity.
Duration	Set how long two people stay in the same detection area until an alarm is triggered.
Repeat Alarm Time	Set repeat alarm time. If the alarm-triggering event continues, an alarm will be triggered again when repeat alarm time passed.
Interval Threshold	When the distance between people in the area is greater than or less than the defined threshold, an alarm will be triggered.

- 3) Click **OK**.

Step 5 Configure alarm schedule and linkage.

Figure 5-159 Schedule and alarm linkage



- 1) Click .
- 2) Click **Setting** next to **Schedule** to configure the alarm period.
The system performs linkage actions only for alarms during the arming period.
 - On the time line, drag to set the period.
 - You can also click  to set the period.
- 3) Configure alarm linkage. For details, see Table 5-50.
- 4) Click **Apply**.

Step 6 Click **Apply**.

5.9.8.2.2 Fall Detection

When someone falls from a height in the detection area and the duration of the action is greater than the defined threshold, an alarm will be triggered.

Procedure

- Step 1** Select **Main Menu > AI > Parameters > Stereo Analysis**.
- Step 2** Select a channel and then click **Add**.

Step 3 Select **Enable** and then set **Type** to **Fall Detection**.

Step 4 Draw detection rule.

- 1) Click , and then draw a detection area on the video image. Right-click the image to stop drawing.
- 2) Configure parameters.

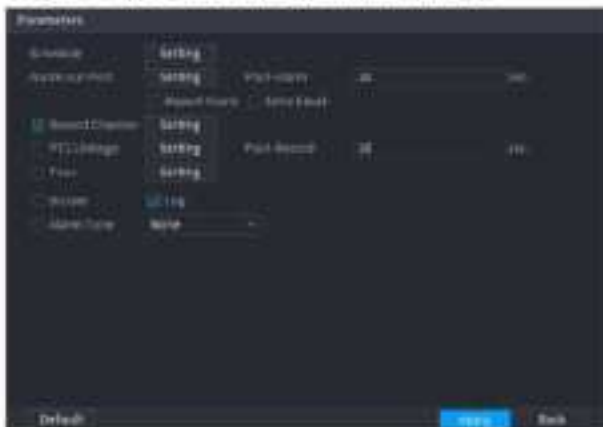
Table 5-42 Parameters of fall detection

Parameter	Description
Name	Customize the rule name.
Sensitivity	Set alarm sensitivity.
Duration	Set the minimum time of triggering an alarm when people fall.
Repeat Alarm Time	Set repeat alarm time. If the alarm-triggering event continues, an alarm will be triggered again when repeat alarm time passed.

- 3) Click **OK**.

Step 5 Configure alarm schedule and linkage.

Figure 5-160 Schedule and alarm linkage



- 1) Click .
- 2) Click **Setting** next to **Schedule** to configure the alarm period.
The system performs linkage actions only for alarms during the arming period.
 - On the time line, drag to set the period.
 - You can also click  to set the period.
- 3) Configure alarm linkage. For details, see Table 5-50.
- 4) Click **Apply**.

Step 6 Click **Apply**.

5.9.8.2.3 Violence Detection

When the target in the detection region has large body movements such as smashing and fighting, an alarm will be triggered.

Procedure

Step 1 Select **Main Menu > AI > Parameters > Stereo Analysis**.

Step 2 Select a channel and then click **Add**.

Step 3 Select **Enable** and then set **Type** to **Violence Detection**.

Table 5-44 Parameters of people No. exception detection

Parameter	Description
Name	Customize the rule name.
Sensitivity	Set alarm sensitivity.
Duration	Set the minimum time to trigger an alarm after the system detects an abnormal number of people.
Repeat Alarm Time	Set repeat alarm time. If the alarm-triggering event continues, an alarm will be triggered again when repeat alarm time passed.
Alarm People No.	When the number of people in the area is greater than, equal to, or less than the defined threshold, an alarm will be triggered.

3) Click **OK**.

Step 5 Configure alarm schedule and linkage.

Figure 5-162 Schedule and alarm linkage



1) Click .

2) Click **Setting** next to **Schedule** to configure the alarm period.

The system performs linkage actions only for alarms during the arming period.

- On the time line, drag to set the period.
- You can also click  to set the period.

3) Configure alarm linkage. For details, see Table 5-50.

4) Click **Apply**.

Step 6 Click **Apply**.

5.9.8.2.5 People Stay Detection

When the target stays in the detection area longer than the defined duration, an alarm will be triggered.

Procedure

Step 1 Select **Main Menu > AI > Parameters > Stereo Analysis**.

Step 2 Select a channel and then click **Add**.

Step 3 Select **Enable** and then set **Type** to **People Stay Detection**.

Step 4 Draw detection rule.

- Click , and then draw a detection area on the video image. Right-click the image to stop drawing.

- 2) Configure parameters.

Table 5-45 Parameters of people stay detection

Parameter	Description
Name	Customize the rule name.
Sensitivity	Set alarm sensitivity.
Duration	Set low long people stay in the detection area until an alarm is triggered.
Repeat Alarm Time	Set repeat alarm time. If the alarm-triggering event continues, an alarm will be triggered again when repeat alarm time passed.

- 3) Click **OK**.

Step 5 Configure alarm schedule and linkage.

Figure 5-163 Schedule and alarm linkage



- 1) Click .
- 2) Click **Setting** next to **Schedule** to configure the alarm period.
The system performs linkage actions only for alarms during the arming period.
 - On the time line, drag to set the period.
 - You can also click  to set the period.
- 3) Configure alarm linkage. For details, see Table 5-50.
- 4) Click **Apply**.

Step 6 Click **Apply**.

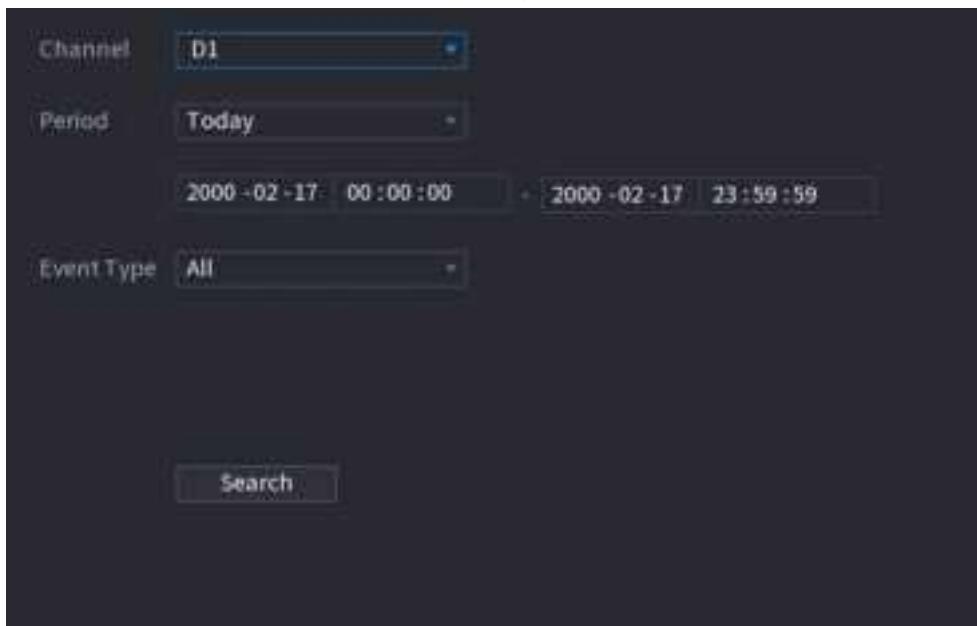
5.9.8.3 AI Search (Stereo Analysis)

You can search for detection results of stereo analysis.

Procedure

Step 1 Select **Main Menu > AI > AI Search > Stereo Analysis**.

Figure 5-164 Stereo analysis search



- Step 2** Select a channel, start time, end time, event type, and then click **Search**.
The search results are displayed.

Related Operations

- Play back video.
Click an image, and then click  to play back the related video.
During playback, you can:
 - ◇ Click  to pause.
 - ◇ Click  to stop.
 - ◇ Click  to display AI rule. The icon changes to .
- Add tags.
Select one or more images, and then click **Add Tag**.
- Lock.
Select one or more images, and then click **Lock**. The locked files will not be overwritten.
- Export.
Select one or more images, and then click **Export** to export selected search results in excel.
- Back up.
Select one or more images, click **Backup**, select the storage path and file type, and then click **Start** to export files to external storage device.

5.9.9 Video Metadata

The system analyzes real-time video stream to detect the existence of human, motor vehicle, and non-motor vehicle. Once a target is detected, an alarm is triggered.

5.9.9.1 Enabling Smart Plan

To use AI by camera, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

5.9.9.2 Configuring Video Metadata

When a metadata alarm is triggered, the system links the corresponding camera to record videos and logs and take snapshots. Other alarm linkage actions are not supported for video metadata.

Procedure

Step 1 Select **Main Menu > AI > Parameters > Video Metadata**.

Figure 5-165 Video metadata



Step 2 Select a channel and AI type.



AI by Recorder is available on select models.

Step 3 Click **Add** to add a rule.

Step 4 Select **Enable** and then set **Type** to **People Detection**, **Non-motor Vehicle Detection** or **Motor Vehicle Detection**.

Step 5 Draw detection rule.

1) Click and then draw a detection area on the video image. Right-click the image to stop drawing.

Figure 5-166 People detection



- 2) Enter the rule name.
- 3) Click  to draw the minimum size or maximum size to filter the target.
The system triggers an alarm only when the size of detected target is between the maximum size and the minimum size.
- 4) Click  to enable face detection.
- 5) Select **A to B**, **B to A**, or **Both** as direction for tripwire counting.



Tripwire counting is available when AI by Camera is used and the camera supports this function.

- 6) Click **OK**.

Step 6 Click **Apply**.

5.9.9.3 AI Search (Video Metadata)

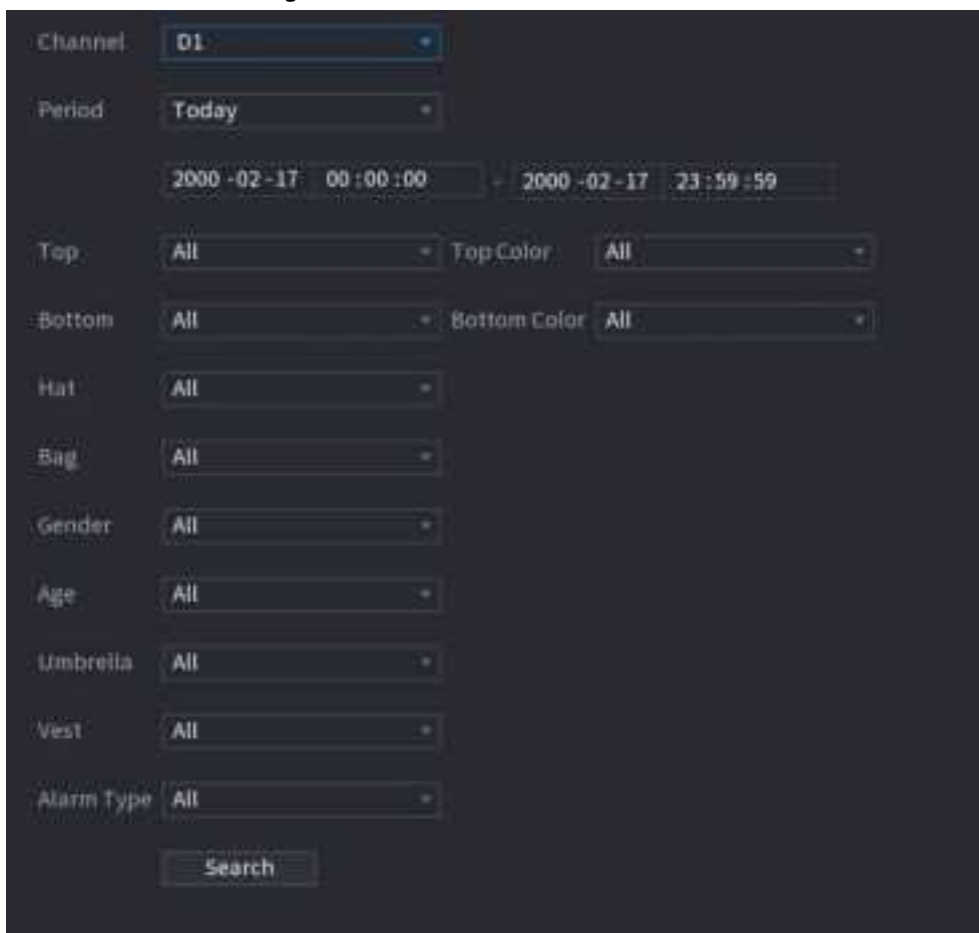
You can search for the video metadata detection results and play back related videos.

5.9.9.3.1 Human Detection

Procedure

Step 1 Select **Main Menu > AI > AI Search > Human Detection**.

Figure 5-167 Human detection



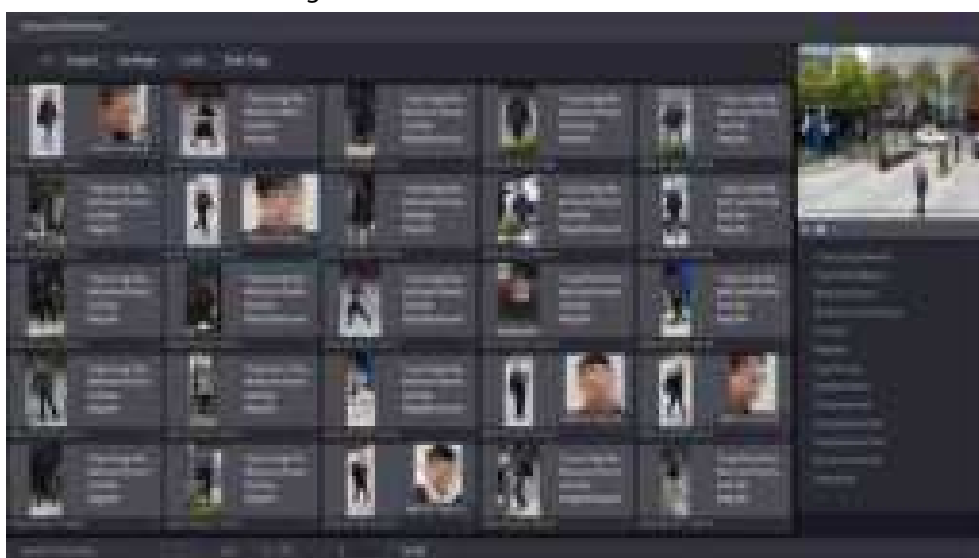
Step 2 Select a channel, start time, end time, and set corresponding parameters.

Step 3 Click **Search**.



For privacy protection, the faces are intentionally blurred.

Figure 5-168 Search results



Related Operations

- Play back video.

Click an image, and then click  to play back the related video.

During playback, you can:

- ◇ Click  to pause.
- ◇ Click  to stop.
- ◇ Click  to display AI rule. The icon changes to .

- Add tags.

Select one or more images, and then click **Add Tag**.

- Lock.

Select one or more images, and then click **Lock**. The locked files will not be overwritten.

- Export.

Select one or more images, and then click **Export** to export selected search results in excel.

- Back up.

Select one or more images, click **Backup**, select the storage path and file type, and then click **Start** to export files to external storage device.

5.9.9.3.2 Motor Vehicle Detection

Background Information

You can search for motor vehicle detection results according to the vehicle parameters.



This function is available on select models.

Procedure

Step 1 Select **Main Menu** > **AI** > **AI Search** > **Motor Vehicle Detection**.

Figure 5-169 Motor vehicle detection

Step 2 Select a channel and then set parameters.



- The system supports fuzzy search of plate numbers.
- The system searches all plate numbers by default if you have not set a plate number.

Step 3 Click **Search**.

The search results are displayed.

Related Operations

- Play back video.
Click an image, and then click to play back the related video.
During playback, you can:
 - ◇ Click to pause.
 - ◇ Click to stop.
 - ◇ Click to display AI rule. The icon changes to .
- Add tags.
Select one or more images, and then click **Add Tag**.
- Lock.
Select one or more images, and then click **Lock**. The locked files will not be overwritten.
- Export.
Select one or more images, and then click **Export** to export selected search results in excel.
- Back up.
Select one or more images, click **Backup**, select the storage path and file type, and then click

Start to export files to external storage device.

5.9.9.3.3 Non-motor Vehicle Detection

Background Information

You can search for non-motor vehicle detection results according to the non-motor vehicle parameters.

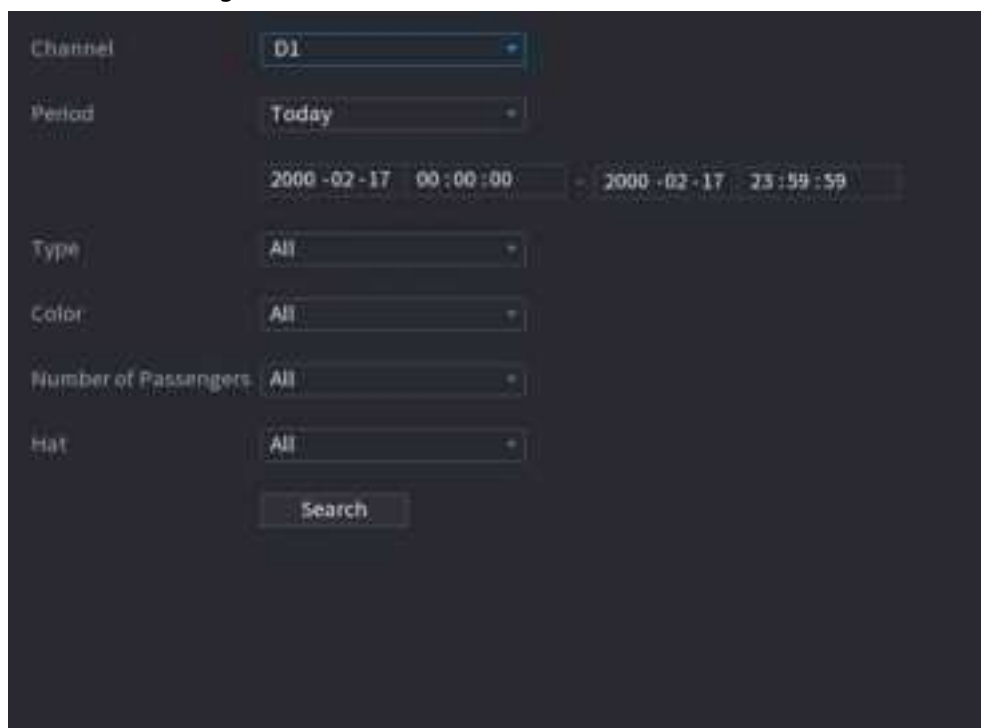


This function is available on select models.

Procedure

Step 1 Select **Main Menu > AI > AI Search > Non-Motor Vehicle Detection**.

Figure 5-170 Non-motor vehicle detection



Step 2 Select a channel and then set parameters.

Step 3 Click **Search**.

Figure 5-171 Search results



Related Operations

- Play back video.
Click an image, and then click to play back the related video.
During playback, you can:
 - ◇ Click to pause.
 - ◇ Click to stop.
 - ◇ Click to display AI rule. The icon changes to .
- Add tags.
Select one or more images, and then click **Add Tag**.
- Lock.
Select one or more images, and then click **Lock**. The locked files will not be overwritten.
- Export.
Select one or more images, and then click **Export** to export selected search results in excel.
- Back up.
Select one or more images, click **Backup**, select the storage path and file type, and then click **Start** to export files to external storage device.

5.9.9.3.4 Report Query

Background Information

You can search for and export video metadata statistics.

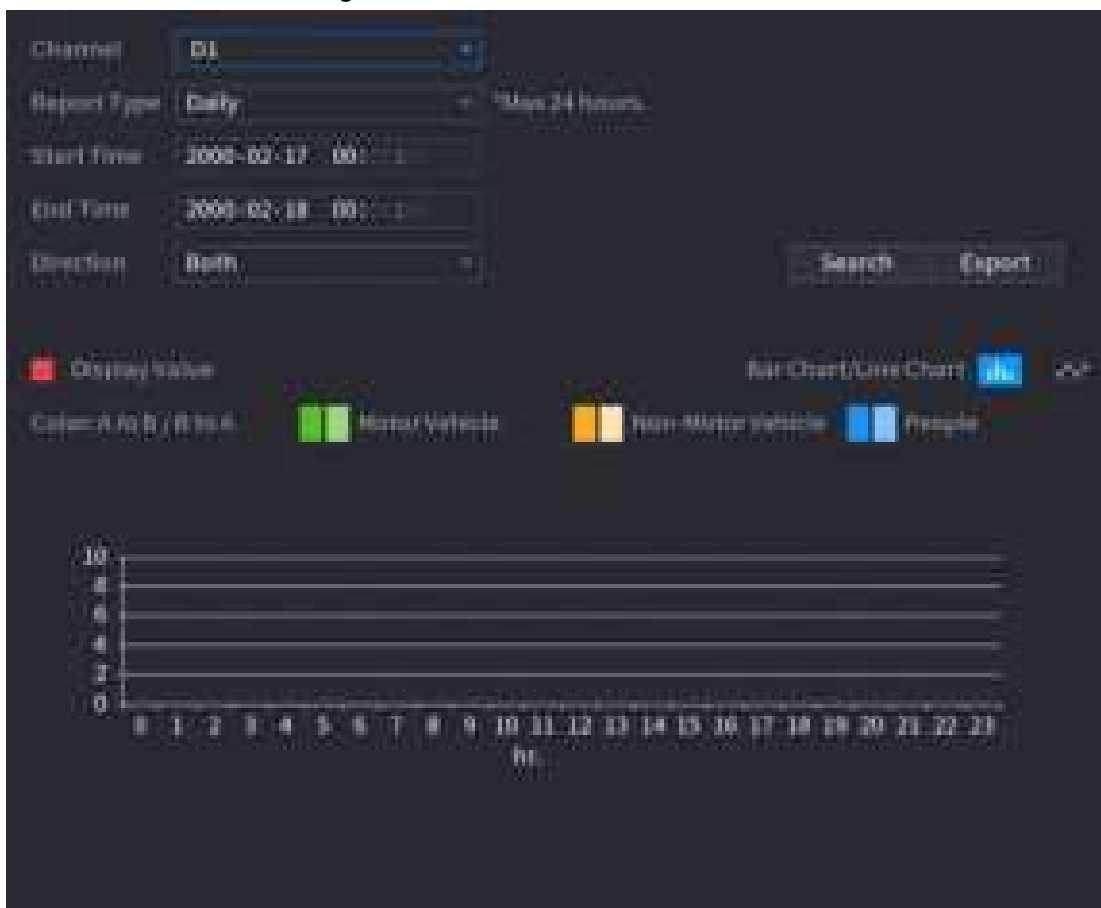


- The statistics might be overwritten when the storage space runs out. Back up in time.
- When you restore the Device to factory settings, all the data except data in the external storage device will be cleared. You can clear the data in the external storage device through formatting or other methods.

Procedure

Step 1 Select **Main Menu** > **AI** > **Report Query** > **Video Metadata**.

Figure 5-172 Metadata statistics



Step 2 Select channel, report type, start time and end time, direction and then click **Search**.

Related Operations

- Switch chart type.
Click **Bar Chart** or **Line Chart** to switch the chart type.
- Export.
Select file type, and then click **Export** to export the report in picture or csv format.

5.9.10 ANPR

The system extracts the plate number on the surveillance video and then compare it with the specified plate information. When a match is detected, the system triggers an alarm.

5.9.10.1 Adding Vehicle Blocklist and Allowlist

Background Information

To facilitate vehicle management, you can add the plate numbers to the blocklist or allowlist. The system can compare the detected plate information with the plate on the blocklist and allowlist and then trigger the corresponding alarm linkage.

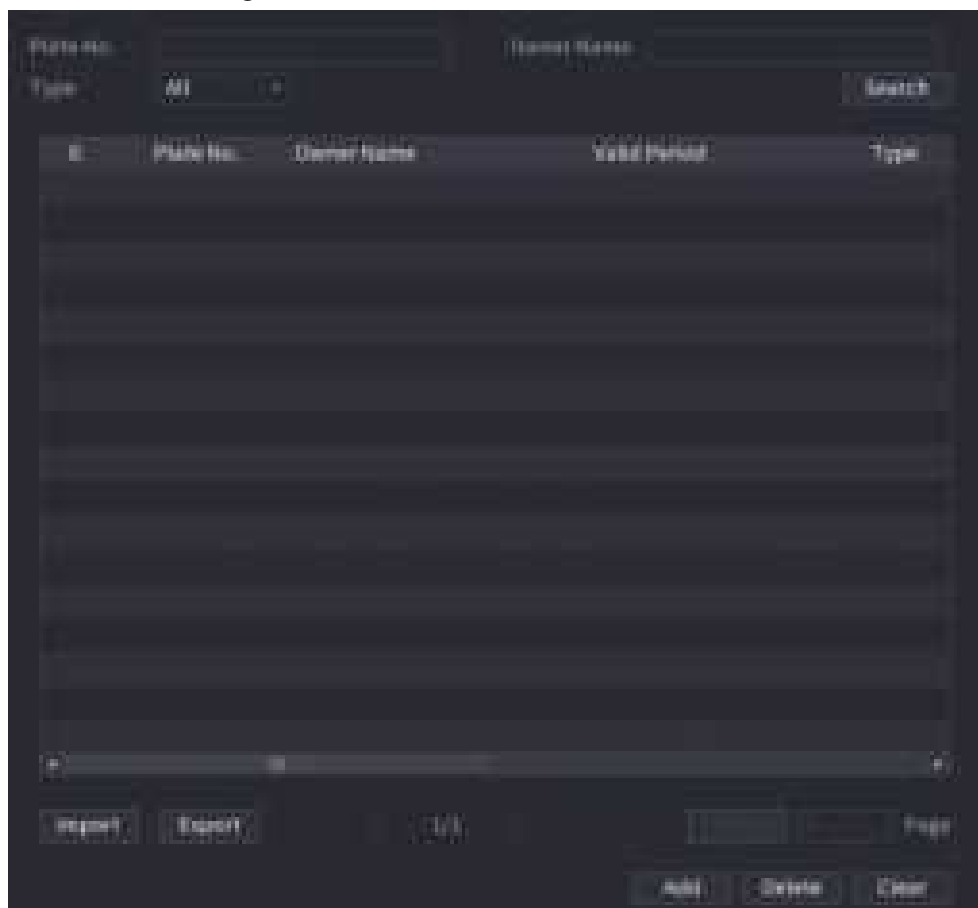
- With the blocklist and allowlist enabled, on the live page, the plate on the blocklist is displayed as red on the plate list and the plate on the allowlist is displayed as green. For the plate not on the blocklist or allowlist, the color is white.

- The added blocklist and allowlist will be synchronized to the connected ITC camera.

Procedure

Step 1 Select **Main Menu > AI > Database > Vehicle Blocklist/Allowlist**.

Figure 5-173 Vehicle blocklist/allowlist



Step 2 Click **Add**.

Step 3 Set plate information such as plate number, car owner name, select **Block List** or **Allow List**, and then set validity period.

Step 4 Click **OK**.

Related Operations

- Search.
Enter keywords for **Plate No.** and **Owner Name**, select type and then click **Search**.
- Import and export plate information.
 - ◇ Import: Click **Import**, select the corresponding file, and then click **Browse** to import the file.
 - ◇ Export: Click **Export**, select the file storage path and then click **Save**.
- Delete plate information.
 - ◇ Delete one by one: Click the  of the corresponding plate number.
 - ◇ Delete in batches: Select the plate numbers and then click **Delete**.

5.9.10.2 Configuring ANPR

Configure the ANPR alarm rules.

Procedure

Step 1 Select **Main Menu > AI > Parameters > ANPR**.

Figure 5-174 ANPR

Step 2 Select a channel and then select the **Enable** checkbox to enable ANPR.

Step 3 (Optional) Enable **Sync Vehicle Blocklist/Allowlist** to synchronize the blocklist and allowlist on the NVR to the connected camera.

Step 4 Click **General** (default), **Blocklist** or **Allowlist** tab.



Before enabling the blocklist alarm or allowlist alarm, you need to add the corresponding plate information.

- **General:** The system triggers an alarm when it detects any plate number.
- **Block List:** The system triggers an alarm when it detects plate number on the blocklist.
- **Allow List:** The system triggers an alarm when it detects plate number on the allowlist.

Step 5 Click **Setting** next to **Schedule** to configure the arming period.

The system triggers corresponding alarm actions only during the arming period.

- On the time line, drag to set the period.

- You can also click  to set the period.

Step 6 Configure alarm linkage actions. For details, see Step 7.

Step 7 Click **Apply**.

5.9.10.3 AI Search (ANPR)

You can search for the ANPR detection results. For details, see "5.9.9.3.2 Motor Vehicle Detection".

5.9.11 Crowd Distribution

The system detects the crowd distribution. When the crowd density exceeds the defined threshold, an alarm is triggered.

5.9.11.1 Enabling Smart Plan

To use AI by camera, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

5.9.11.2 Configuring Crowd Distribution

Configure the alarm rules of crowd distribution detection.

Prerequisites

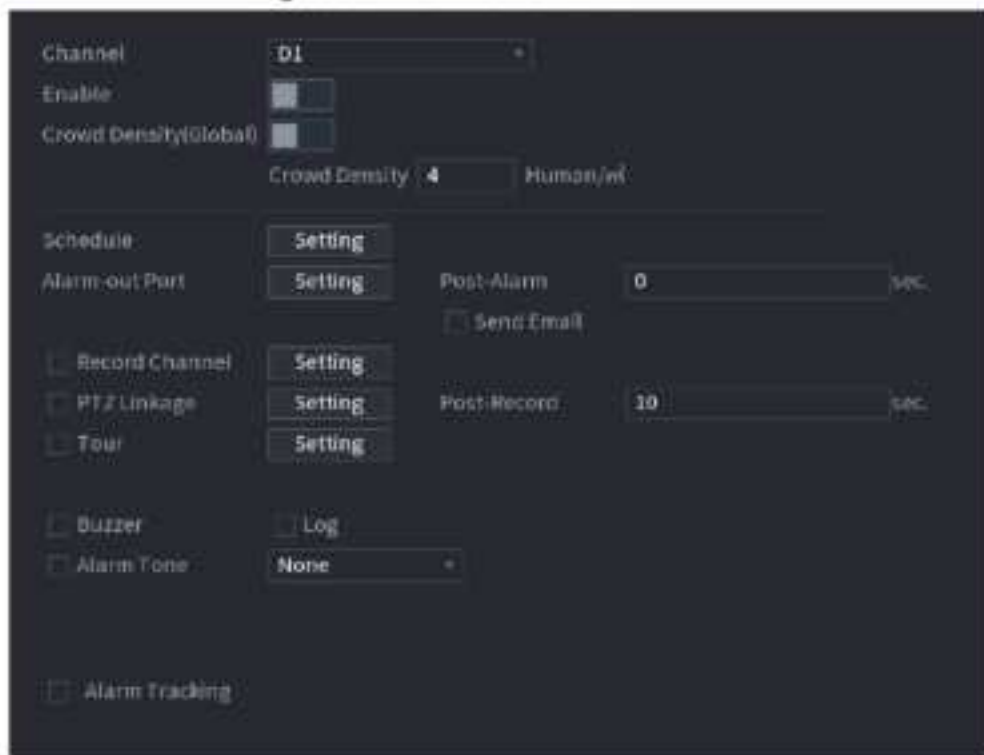
Make sure that the connected camera supports the crowd distribution function.

Background Information

Procedure

Step 1 Select **Main Menu > AI > Parameters > Crowd Distribution**.

Figure 5-175 Crowd distribution



Step 2 Select a channel and then click  next to **Enable**.

Step 3 Configure parameters.

Table 5-46 Crowd distribution parameters

Parameter	Description
Crowd Density (Global)	Click  and then configure the density threshold.
Crowd Density	
Alarm Tracking	After an alarm occurs, the system tracks the target automatically.

Step 4 Click **Setting** next to **Schedule** to configure the arming period.
The system triggers corresponding alarm actions only during the arming period.

- On the time line, drag to set the period.
- You can also click  to set the period.

Step 5 Configure alarm linkage actions. For details, see [Step 7](#).

Step 6 Click **Apply**.

5.9.11.3 Report Query

Background Information

You can search for and export video metadata statistics.



- The statistics might be overwritten when the storage space runs out. Back up in time.
- When you restore the Device to factory settings, all the data except data in the external storage device will be cleared. You can clear the data in the external storage device through formatting or other methods.

Procedure

Step 1 Select **Main Menu > AI > Report Query > Crowd Density**.

Step 2 Select the channel, report type, start time and end time, and then click **Search**.

Related Operations

- Switch chart type.
Click **Bart Chart** or **Line Chart** to switch the chart type.
- Export.
Select the file type, and then click **Export** to export the report in picture or csv format.

5.9.12 People Counting

The system can calculate the number of entry or exit people in the detection zone. An alarm is triggered when the number has exceeded the threshold.



Make sure that the connected camera supports people counting.

5.9.12.1 Enabling Smart Plan

To use AI by camera, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

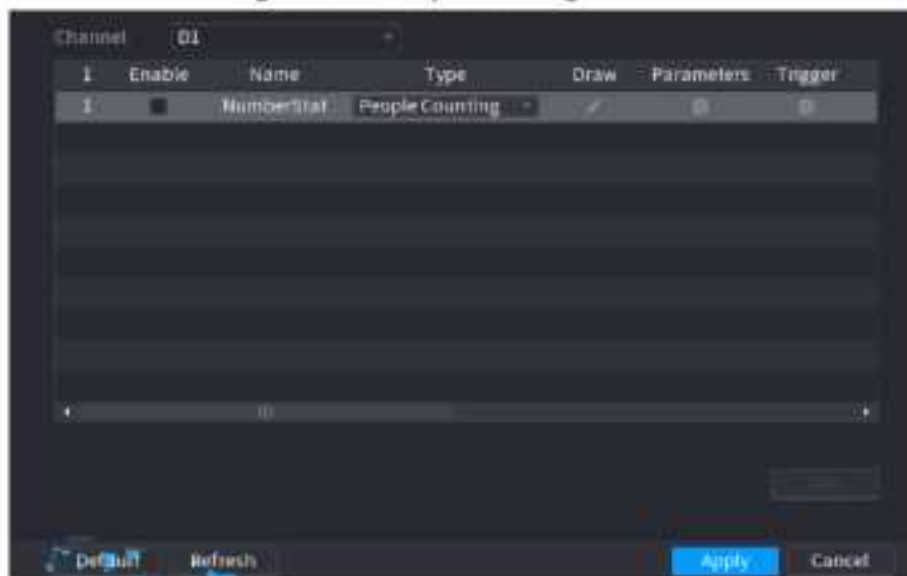
5.9.12.2 Configuring People Counting

The system counts the number of people in and out of the detection area. When the number of entry, exit or staying people exceeds the threshold, an alarm is triggered.

Procedure

Step 1 Select **Main Menu > AI > Parameters > People Counting > People Counting**.

Figure 5-176 People counting



Step 2 Select a channel, and then click **Add**.

Step 3 Select the **Enable** checkbox, and then set **Type** to **People Counting**.

Step 4 Draw people counting rule.

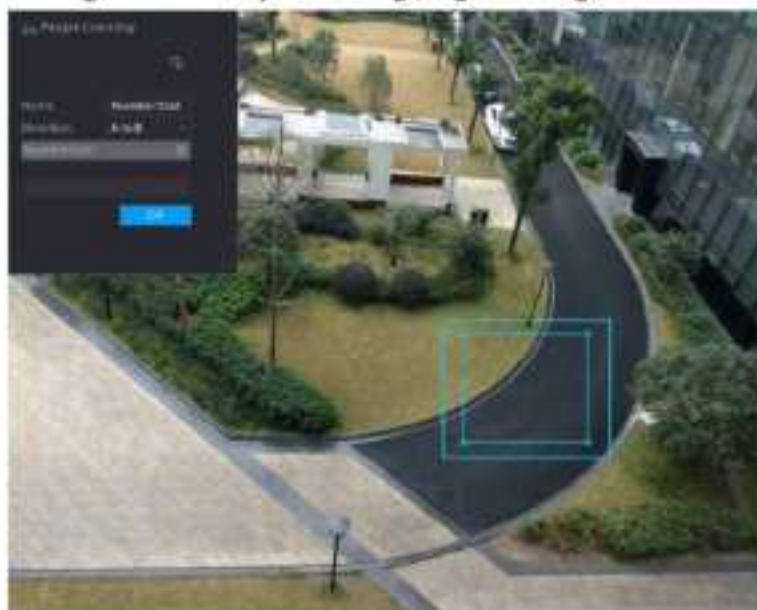
- 1) Click  to draw the people counting rule. Right-click the image to stop drawing.
 - Press and hold the vertex of the rule line to adjust the size of the rule line.
 - Click  to delete the drawn rule line.

Table 5-47 Relationship between rule and people counting

Rule	People Counting Type
Drawing detection area.	Count the number of people staying in the area.
Draw rule lines within the detection area and detection area separately.  You can draw polylines for the tripwire, supporting up to 20 vertices.	Count the number of people crossing the rule lines within the detection area, such as the number of people entering, leaving, and passing.

- 2) Click  to draw a target filtering area on the image.

Figure 5-177 People counting (target filtering)



- Press and hold the 4 vertices of the area to adjust the size of the filtering area.
- Click  to delete the drawn filtering area.

3) Customize the rule name and then select direction.

4) Click **OK**.

Step 5 Click  under **Parameters** and then configure the parameters.

Table 5-48 People counting parameters

Parameter	Description
OSD	• Select Enter No., and then the number of people entering the detection zone will be displayed on the live page. • Select Exit No., and then the number of people leaving the detection zone will be displayed on the live page. • Select Pass No., and then the number of people passing the detection zone will be displayed on the live page.
Setting	• Enter No.: An alarm is triggered when the number of people entering the detection zone exceeds the defined threshold. • Exit No.: An alarm is triggered when the number of people leaving the detection zone exceeds the defined threshold. • Stay No.: An alarm is triggered when the number of people staying the detection zone exceeds the defined threshold. • Pass No.: An alarm is triggered when the number of people passing the detection zone exceeds the defined threshold.

Step 6 Click  under **Trigger** to configure alarm schedule and linkage. For details on alarm linkage, see Table 5-50.

Step 7 Click **Apply**.

5.9.12.3 Configuring In Area No.

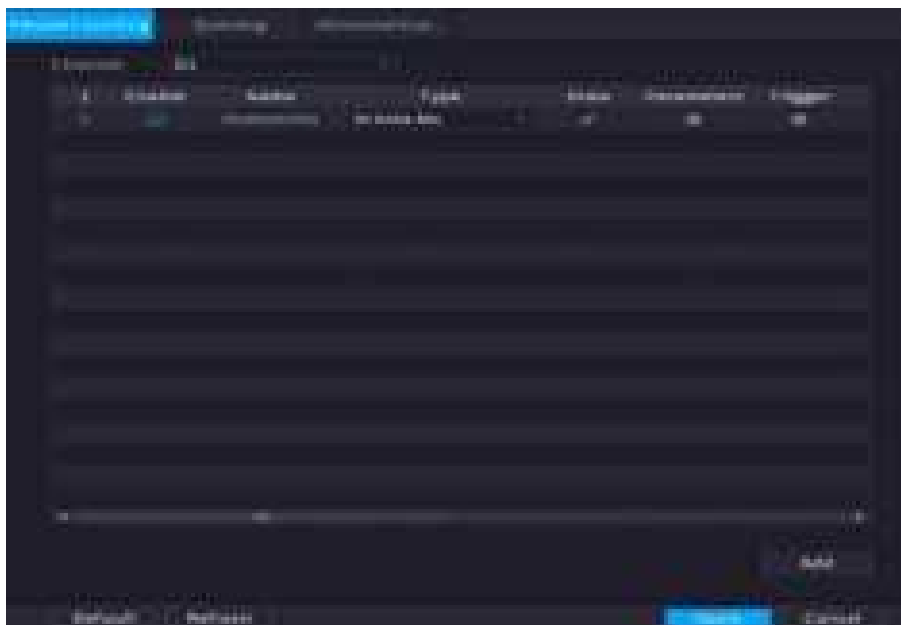
When the number of people in the detection area is larger or lower than the defined threshold, or

when the staying period exceeds the defined duration, an alarm is triggered.

Procedure

Step 1 Select **Main Menu > AI > Parameters > People Counting > People Counting**.

Figure 5-178 People counting



Step 2 Select a channel, and then click **Add**.

Step 3 Select the **Enable** checkbox, and then set **Type** to **In Area No.**

Step 4 Draw people counting rule.

- 1) Click  to draw a rule. Right-click the image to stop drawing.
- 2) Configure the parameters.
- 3) Click **OK**.

Step 5 Click  and then enable in-area people number alarm and stay alarm.

Step 6 Click  under **Trigger** to configure the alarm schedule and linkage. For details on alarm linkage, see Table 5-50.

Step 7 Click **Apply**.

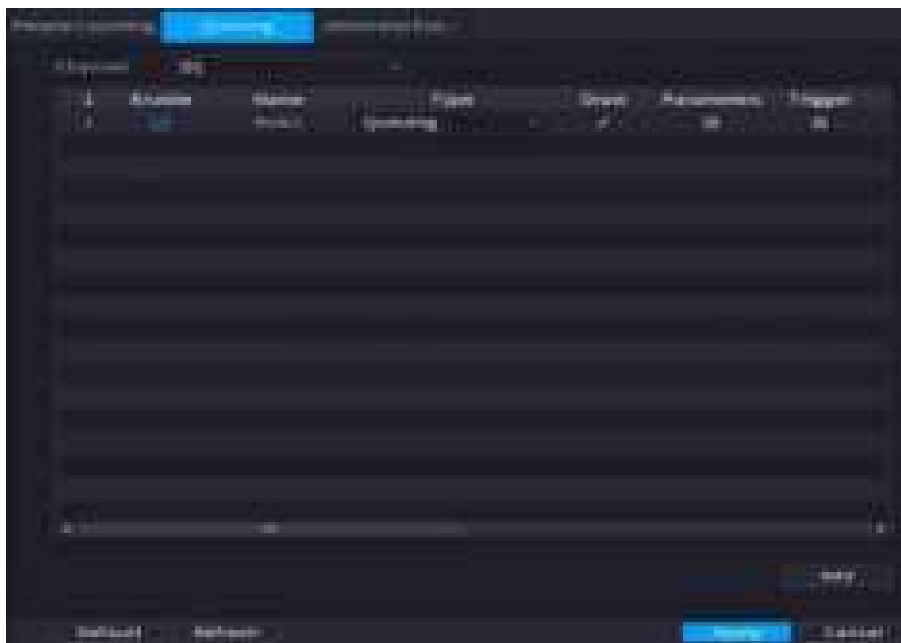
5.9.12.4 Configuring Queuing

After configuring queuing alarm, the system can realize the corresponding linkage actions once the number of people in the queue or the waiting time has triggered an alarm.

Procedure

Step 1 Select **Main Menu > AI > Parameters > People Counting > Queuing**.

Figure 5-179 Queuing



- Step 2 Select a channel, and then click **Add**.
- Step 3 Select the **Enable** checkbox.
- Step 4 Click  to draw queuing rule and area.
- Step 5 Click  under **Parameters**, and then enable **Queue People No. Alarm** or **Queue Time Alarm**.
- Step 6 Click  under **Trigger** to configure alarm schedule and linkage. For details on alarm linkage, see Table 5-50.
- Step 7 Click **Apply**.

5.9.12.5 Configuring Abnormal Detection

After configuring queuing alarm, the system can realize the corresponding linkage actions once the number of people in the queue or the waiting time has triggered an alarm.

Procedure

- Step 1 Select **Main Menu > AI > Parameters > People Counting > Abnormal Detection**.

Figure 5-180 Abnormal Detection



Step 2 Select a channel, and then click **Add**.

Step 3 Select the **Enable** checkbox.

Step 4 Click  to draw abnormal detection rule and area.

Step 5 Click  under **Parameters**, and then select **Self-adaptive** or **Custom**.

1. Select the alarm type.

- **Self-adaptive:** The algorithm will customize the number of people who have reached crowding based on target pixels in the current image.

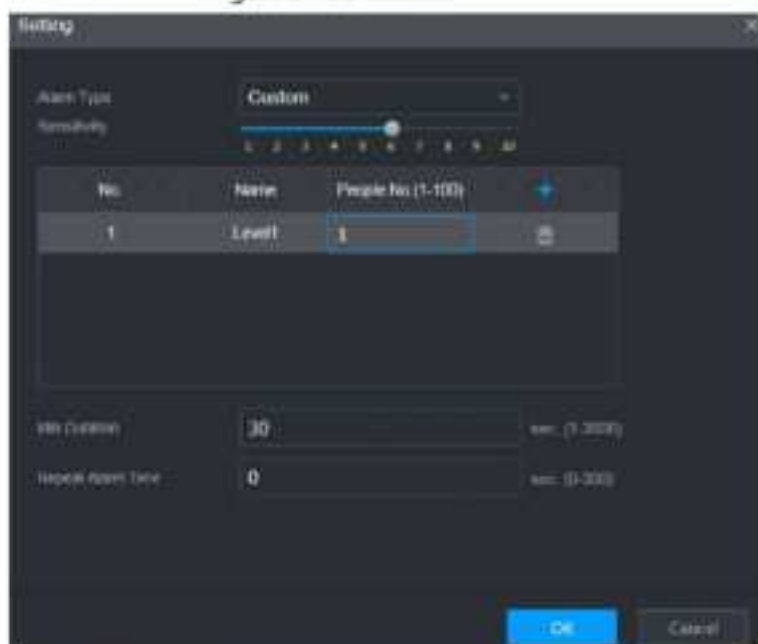
Figure 5-181 Self-adaptive



- **Custom:** You can customize the number of people who have reached crowding as need.

You can configure the alarm level and the number of people.

Figure 5-182 Custom



2. Configure parameters.

Table 5-49 Parameters description

Parameters	Description
Sensitivity	The default is 5. The higher the sensitivity, the more sensitive the detection will be. Although there are more targets captured in the same scene, false detections occur.
Min Duration	Set the minimum time for the crowding in the detection area until an alarm is triggered.
Repeat Alarm Time	Set the repeat alarm time. If the alarm state persists, when reaching the repeat alarm time, the alarm is triggered again.



If the alarm is triggered for less than the set minimum duration, the alarm cannot be established.

Step 6 Click under **Trigger** to configure alarm schedule and linkage. For details on alarm linkage, see Table 5-50.

Step 7 Click **Apply**.

5.9.12.6 Report Query

Background Information

You can search for and export the people counting statistics.



- The statistics might be overwritten when the storage space runs out. Back up in time.
- When you restore the Device to factory settings, all the data except data in the external storage device will be cleared. You can clear the data in the external storage device through formatting or other methods.

Procedure

Step 1 Select **Main Menu > AI > Report Query > People Counting**.

Figure 5-183 People counting



Step 2 Select channel, rule, report type, start and end time, and direction, and then click **Search**.

Related Operations

- Switch chart type.
Click **Bart Chart** or **Line Chart** to switch the chart type.
- Export.
Select file type, and then click **Export** to export the report in picture or csv format.

5.9.13 Heat Map

The Device can monitor the distribution of active objects in the detection zone during a period of time, and use different colors to display the objects on the heat map.

5.9.13.1 Enabling Smart Plan

To use AI by camera, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

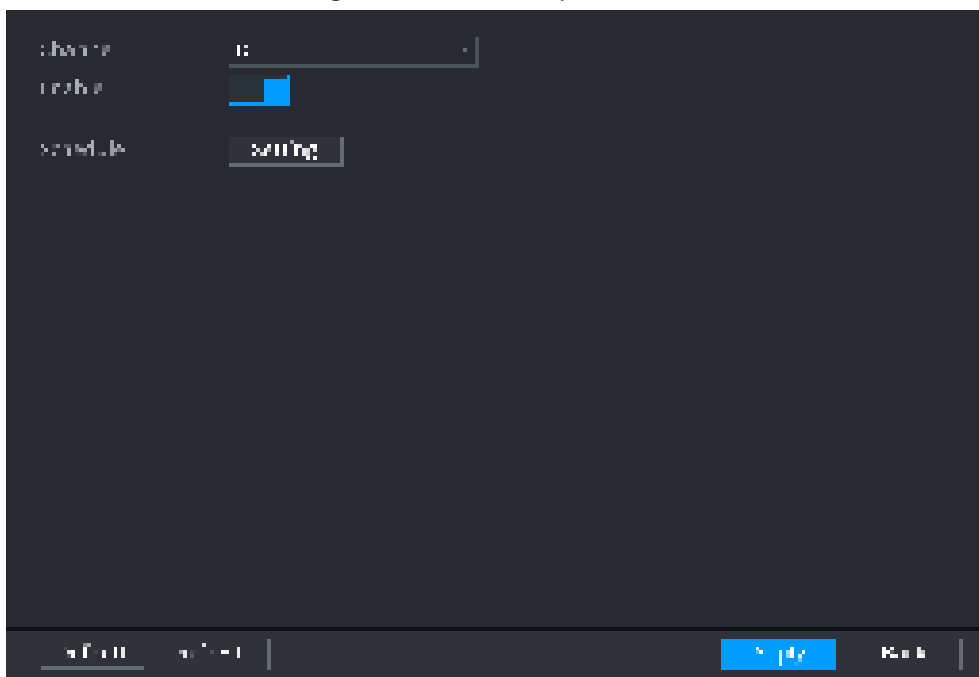
5.9.13.2 Configuring Heat map

Heat map technology can monitor the active objects distribution status on the specified zone during a period of time, and use different colors to display on the heat map.

Procedure

Step 1 Select **Main Menu > AI > Parameters > Heat Map**.

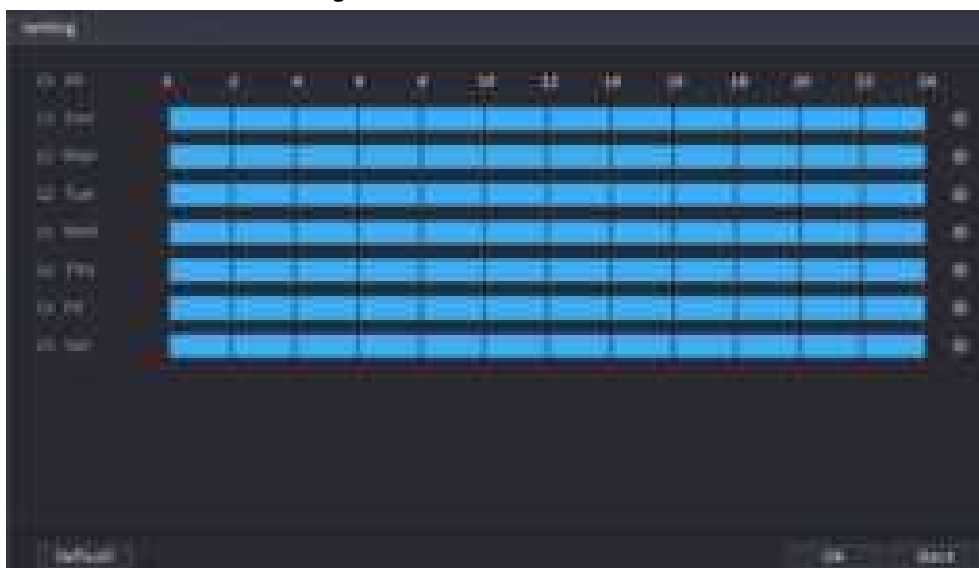
Figure 5-184 Heat map



Step 2 Select a channel and then click  to enable the function.

Step 3 Click **Setting** to configure the alarm schedule.

Figure 5-185 Schedule



Step 4 Click **Apply**.

5.9.13.3 Report Query

You can search for and export the heat map report of general and fisheye cameras.

5.9.13.3.1 General

Procedure

Step 1 Select **Main Menu > AI > Report Query > Heat Map > General**.

Figure 5-186 General



Step 2 Select the channel, start time, and end time.

Step 3 Click **Search**.

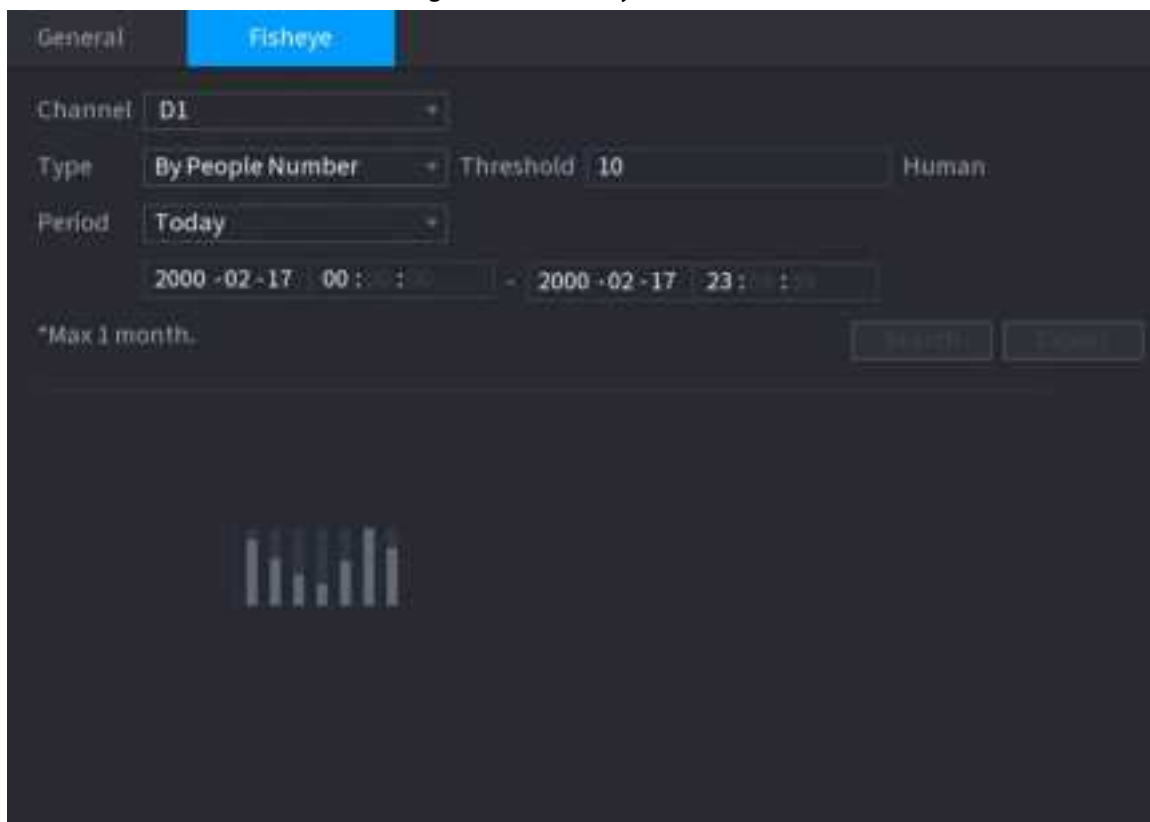
Step 4 Click **Export** to export the heat map.

5.9.13.3.2 Fisheye

Procedure

Step 1 Select **Main Menu > AI > Report Query > Heat Map > Fisheye**.

Figure 5-187 Fisheye



Step 2 Set channel, type and period, and then click **Search**.

Step 3 Click **Export** to export the heat map.

5.9.14 SMD

You can use SMD (Smart Motion Detection) to detect humans and vehicles in the video, and store the detection results in structured storage for fast retrieval.

5.9.14.1 Enabling Smart Plan

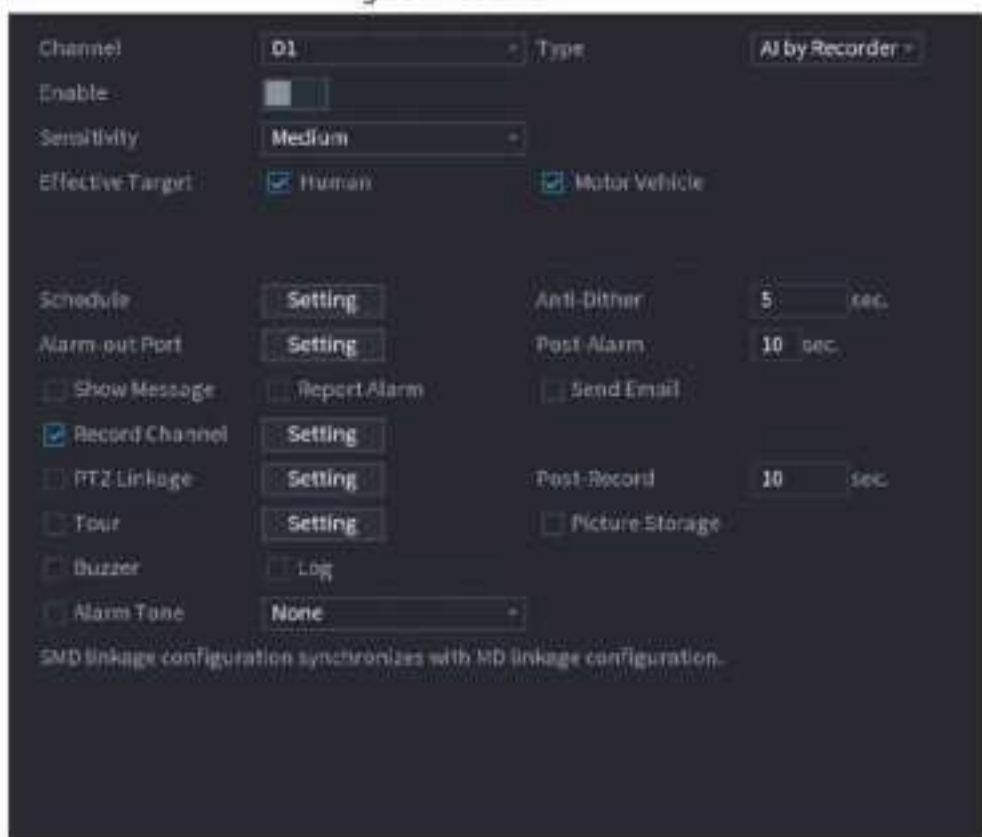
To use AI by camera, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

5.9.14.2 Configuring SMD

Procedure

Step 1 Select **Main Menu > AI > Parameters > SMD**.

Figure 5-188 SMD



Step 2 Select a channel and AI type.

Step 3 Click  to enable the function.

Step 4 Configure the sensitivity.

The higher the value, the easier it is to trigger an alarm. But meanwhile, the false alarm might occur. The default value is recommended.

Step 5 Select effective target from **Human** and **Motor Vehicle**.

Step 6 Click **Setting** next to schedule to configure the alarm period.

Step 7 Configure alarm linkage.

Table 5-50 Alarm linkage parameters

Parameter	Description
Anti-Dither	The system records only one motion detection event within the defined period.
Alarm-out Port	When an alarm occurs, the NVR links the alarm output device to generate an alarm. The alarm lasts a period of time depending on the defined value for Post-Alarm .
Post-Alarm	 - Make sure that the alarm devices are connected to the alarm output port of NVR. - In Main Menu > ALARM > Alarm-out Port, set the mode to Auto so that the system can link the alarm output device to generate an alarm.

Parameter	Description
Show Message	Enable on-screen prompt when an alarm occurs.
Report Alarm	Enable the system to report the alarm to the alarm center.  Make sure that alarm center has been configured in Main Menu > NETWORK > Alarm Center.
Send Email	Enable the system to send an email to notify you when an alarm occurs.  Make sure that the email settings have been configured in Main Menu > NETWORK > Email.
Record Channel	When an alarm occurs, the system activates recording of the selected channel. After the alarm ends, the recording continues for a period of time depending on the defined value for Post-Record .
Post-Record	 Make sure that intelligent recording schedule and auto recording have been configured. For details, see "5.8.1 Recording Schedule".
PTZ Linkage	When an alarm occurs, the NVR associates the channel to perform the corresponding PTZ action. For example, rotate the PTZ to the preset point.  Make sure that PTZ actions have been configured. For details, see "5.6.7 PTZ".
Tour	When an alarm occurs, the local page of the NVR displays the image of the selected channels in turn.  Make sure that the time interval and mode for tour have been configured in Main Menu > DISPLAY > Tour Setting.
Picture Storage	When an alarm occurs, the system takes a snapshot of the channel and stores the snapshot on the Device.  Make sure that snapshot schedule and snapshot mode have been configured. For details, see "5.8.1 Recording Schedule".

Parameter	Description
Buzzer	The system activates the buzzer when an alarm occurs.
Log	When an alarm occurs, the system records the event in the logs.
Alarm Tone	When an alarm occurs, the system plays the selected audio file.  Make sure that the audio files have been uploaded to the system. For details, see "5.18.1 File Management".

Step 8 Click **Apply**.

5.9.14.3 AI Search (SMD)

You can search for and play back videos that triggered SMD alarms.

Procedure

- Step 1** Select **Main Menu > AI > AI Search > SMD**.
- Step 2** Select channel, type, start time and end time, and then click **Search**.
- Click  to play back the video.
 - Select a video and click **Export** to export video file to a USB flash drive.

5.9.15 Vehicle Density

You can configure the rules for traffic congestion and parking upper limit, , and view the counting data on the live page.

- Traffic congestion:** The system counts the vehicles in the detection area. When the counted vehicle number and the continuous congestion time exceed the configured values, an alarm is triggered and the system performs an alarm linkage.
- Parking upper limit:** The system counts the vehicles in the detection area. When the counted vehicle number exceeds the configured value, an alarm triggered and the system performs an alarm linkage.

5.9.15.1 Enabling Smart Plan

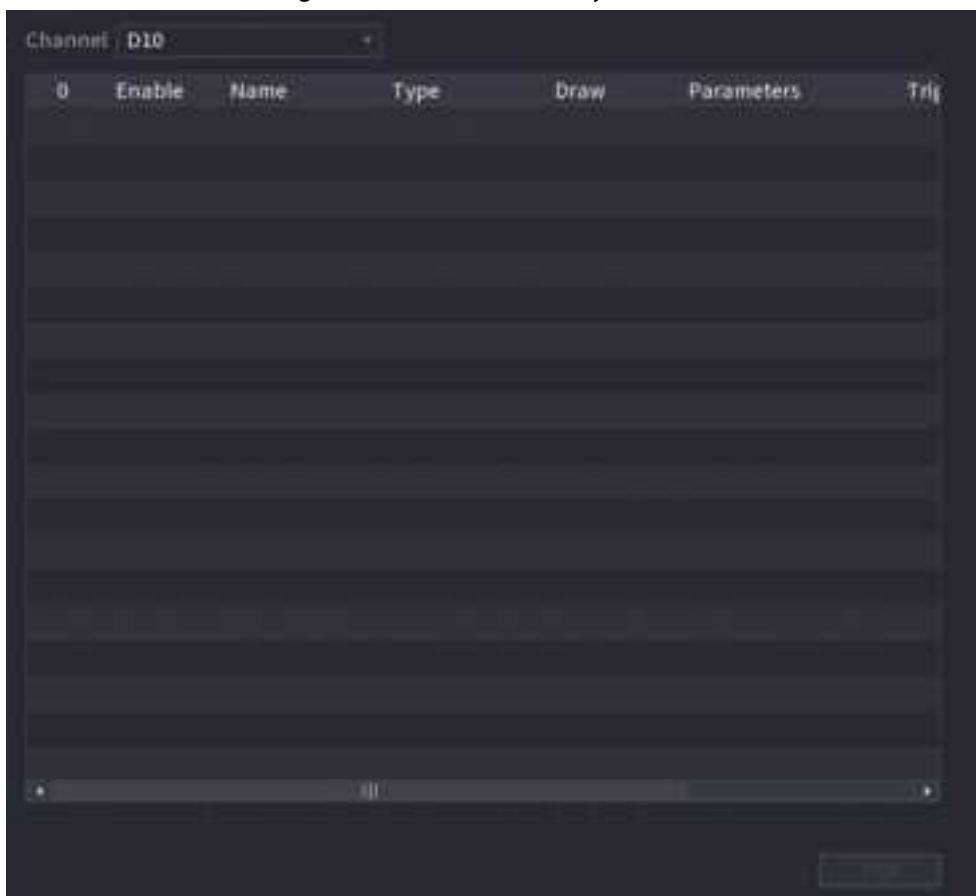
To use AI by camera, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

5.9.15.2 Configuring Vehicle Density

Procedure

- Step 1** Select **Main Menu > AI > Parameters > Vehicle Density**.

Figure 5-189 Vehicle density



- Step 2** Select a channel and then click **Add**.
- Step 3** Select the **Enable** checkbox and then select a detection type.
- Step 4** Click  to draw the detection rule.
- Step 5** Click  under **Parameters** and then configure the parameters.
- Step 6** Click  under **Trigger** to configure alarm schedule and linkage.
- Step 7** Click **Apply**.

5.9.15.3 Report Query

Background Information

You can search for and export statistics on vehicle density.

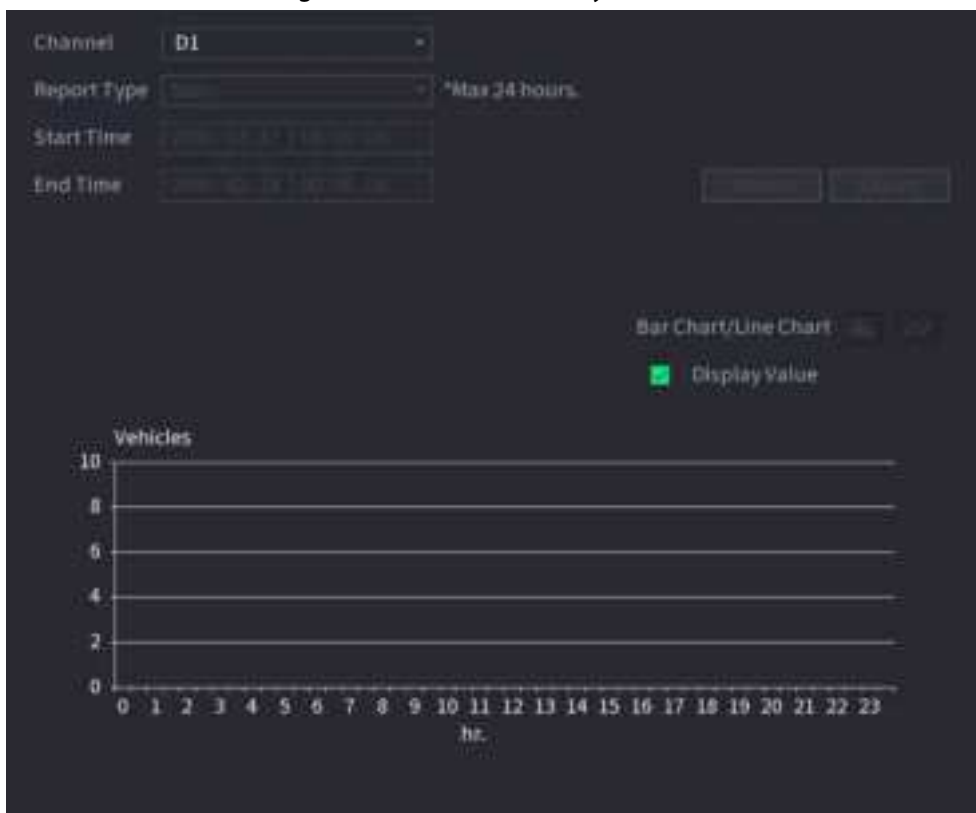


- The statistics might be overwritten when the storage space runs out. Back up in time.
- When you restore the Device to factory settings, all the data except data in the external storage device will be cleared. You can clear the data in the external storage device through formatting or other methods.

Procedure

- Step 1** Select **Main Menu > AI > Report Query > Vehicle Density**.

Figure 5-190 Vehicle density



Step 2 Select channel, report type, start and end time, and then click **Search**.

Related Operations

- Switch chart type.
Click **Bar Chart** or **Line Chart** to switch the chart type.
- Export.
Select file type, and then click **Export** to export the report in picture or csv format.

5.9.16 Main-sub Tracking

Main-sub tracking refers to fisheye camera and speed dome linkage system. The fisheye camera serves as the main camera and captures panoramic videos. The speed dome serves as the sub camera and captures details of the video.

Prerequisites

- The monitoring areas of fisheye camera and speed dome are the same area.
- Fisheye camera and speed dome are added through private protocol.

Background Information



This function is available on select models.

Procedure

- Step 1** Select **Main Menu > AI > Parameters > Main-Sub Tracking**.
- Step 2** Add monitoring area.

- 1) Click **Add**.
- 2) Configure parameters.

Table 5-51 Main-sub tracking parameters

Parameter	Description
Type	Select a type according to the number of fisheye and PTZ cameras: • 1 Fisheye + 1 PTZ. • 1 Fisheye + 2 PTZ. • 1 Fisheye + 3 PTZ.
Scene Name	Customize the scene name.
Main Camera	Select a fisheye camera. a. Click Select in Main Camera line. b. Select a fisheye camera. c. Click Apply.
Sub Camera	Select speed domes as needed. a. Click Select in Sub Camera line. b. Select speed domes. c. Click Apply.

Step 3 Click **Apply**.

The monitoring area is successfully added.

Step 4 Configure calibration points to set the binding relationship of fisheye camera and speed dome.



Set a distant place as the first calibration point to improve accuracy.

- 1) Click  or double-click the target scene.
- 2) Click the target place on the video of fisheye camera, or move  to the target place.



The video at upper-left corner is the fisheye camera screen, and the video at upper-right corner is the speed dome screen.

- 3) Adjust position through the icons below the speed dome screen to make the center of speed dome identical to the  of fisheye camera.

The  on the speed dome screen is the center of speed dome.

Table 5-52 Icon description

Icon	Description
 	Zoom in and zoom out.
 	Adjust resolution.
 	Adjust height.

Icon	Description
	Electronic mouse. You can use this icon to move the mouse to control PTZ direction.
	Quick positioning key. Click this icon to select a place, and the screen will be focused and centered on the selected place.

4) Click **Add**.

The calibration point will be displayed on the list at lower-right corner.

Step 5 Click  to save the newly added calibration point.

Step 6 Repeat Step 2 to Step 5 to add more calibration points.



Set 3–8 calibration points for a speed dome.

Step 7 Click **Apply**.

5.9.17 Video Quality Analytics

When conditions such as blurry, overexposure, or the color changes appear on the screen, the system triggers the alarm.



- This function takes effect only when the remote IPC supports video quality analytics.
- This function is available on select models.

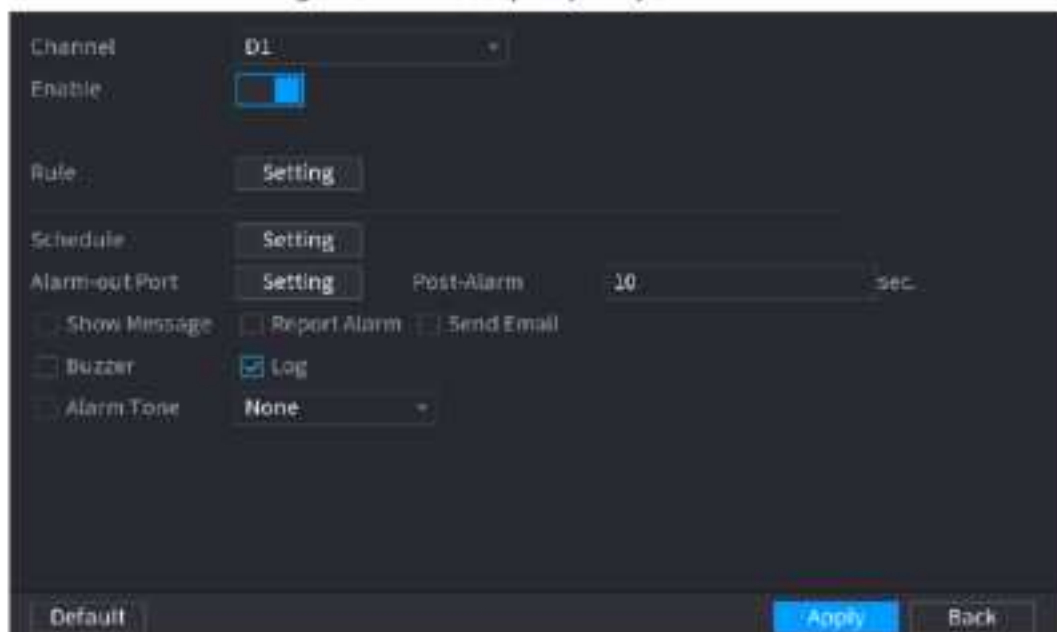
5.9.17.1 Configuring Video Quality Analytics

Procedure

Step 1 Select **Main Menu > AI > Parameters > Video Quality Analytics**.

Step 2 Select a channel and click **Enable**.

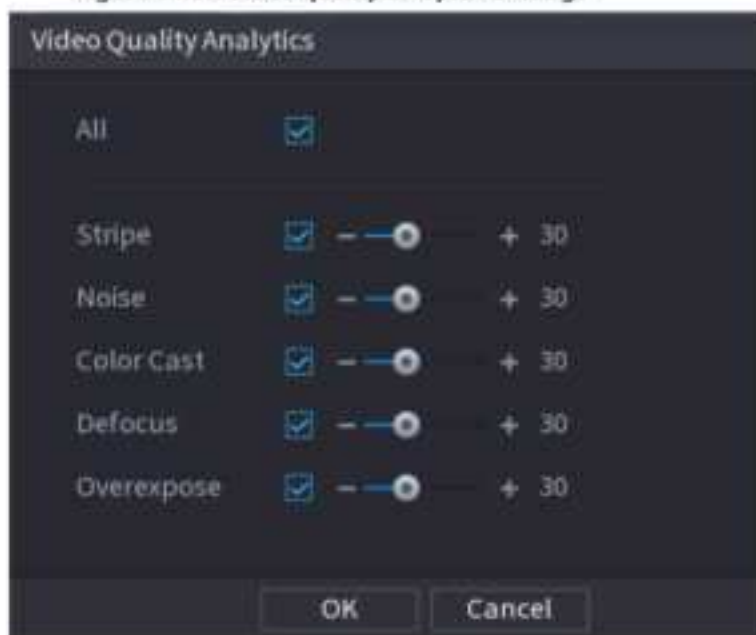
Figure 5-191 Video quality analytics



Step 3 Click **Setting** next to **Rule**.

Step 4 Select items and set thresholds as needed.

Figure 5-192 Video quality analytics settings



The value range of threshold is 0–100, and the default value is 30. When the value exceeds the set threshold, an alarm will be triggered.

Table 5-53 Video quality analytics parameters

Parameter	Description
Stripe	Stripes refer to the striped interferences in the video which might be due to device aging or signal interference. The stripe might be horizontal, vertical, or oblique.
Noise	Video noise refers to the distortion of optical system or the degradation of image quality caused by hardware equipment during transmission.
Color Cast	An image in the video is generally a colorful image that contains color information, such as RGB. When these three components appear at some unusual scale in an image, the image is biased.
Defocus	An image with high resolution contains more details, but image blur is a common problem of image quality decrease which is caused by many factors in the process of image acquisition, transmission and processing, and is defined as virtual focus in video diagnosis.
Overexpose	The brightness of the image refers to the intensity of the image pixels. Black is the darkest and white is the brightest. Black is represented by 0 and white is represented by 255. When the brightness value exceeds the threshold, the image is over exposed.

Step 5 Click **OK**.

Step 6 Click **Setting** next to **Schedule** to configure the arming period.

The system triggers corresponding alarm actions only during the arming period.

- On the time line, drag to set the period.

- You can also click to set the period.

Step 7 Configure alarm linkage actions. For details, see [Step 7](#).

Step 8 Click **Apply**.

5.9.17.2 Analytics List

Search for the results of video quality analytics.

Procedure

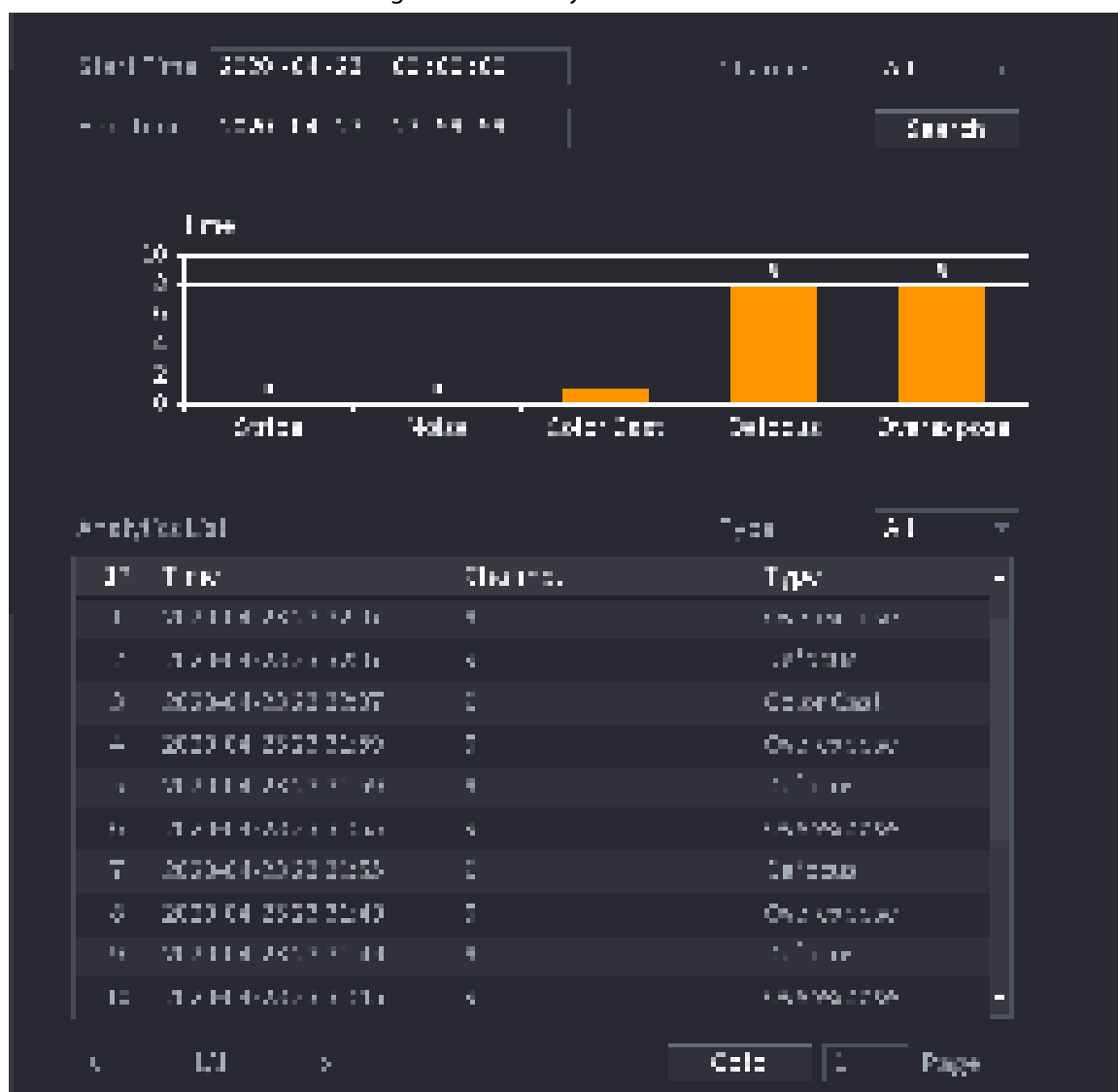
Step 1 Select **Main Menu > AI > AI Search > Analytics List**.

Step 2 Select the start time and end time.

Step 3 Select one or more channels.

Step 4 Click **Search**.

Figure 5-193 Analytics list



5.9.18 Entries Frequency

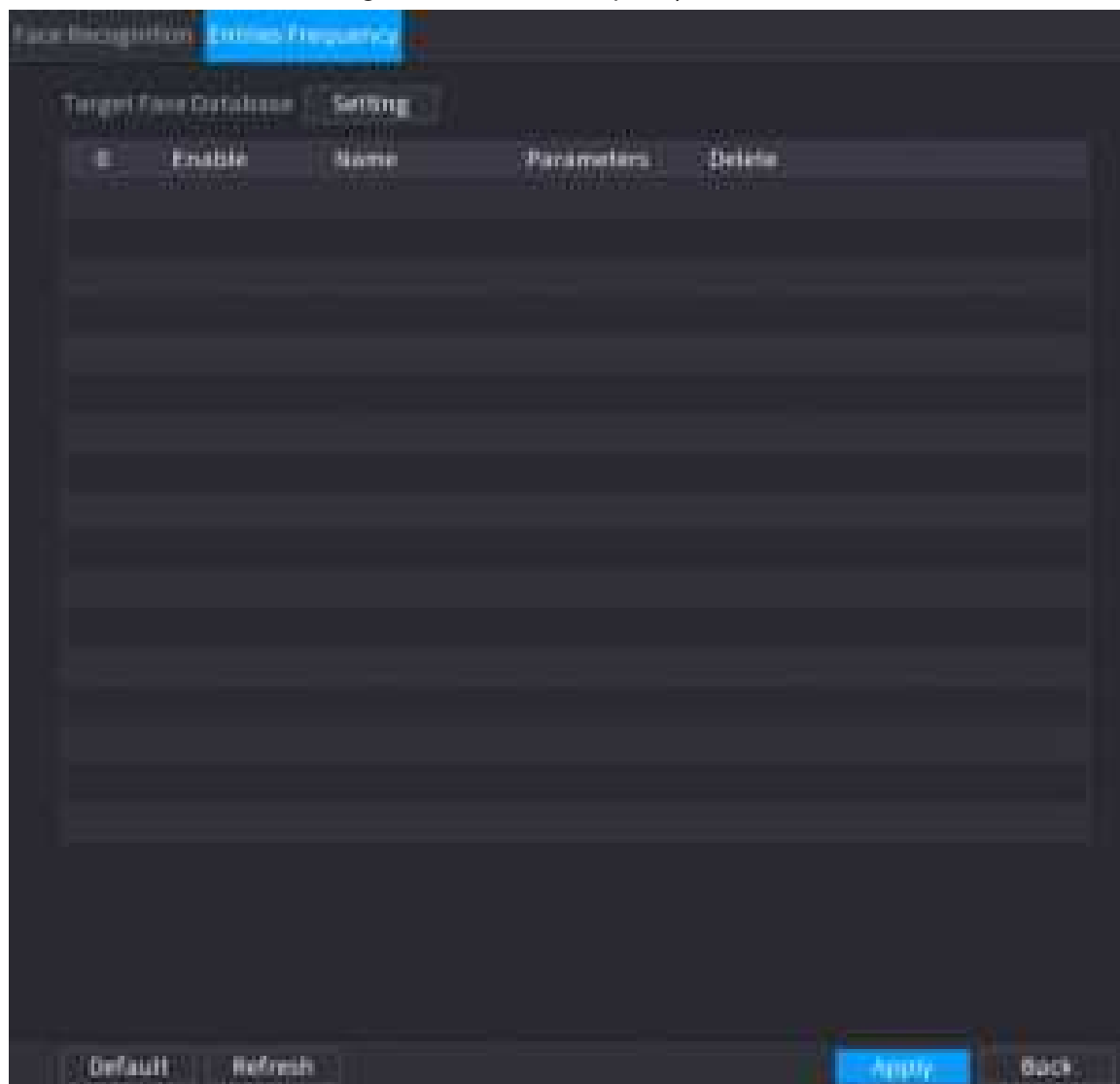
After setting entries frequency, when the entries detected of a person reach or exceed the threshold,

an alarm is triggered.

Procedure

Step 1 Select **Main Menu > AI > Parameters > Face Recognition > Entries Frequency**.

Figure 5-194 Entries frequency



Step 2 Click **Setting** to select a database and then click **OK**.

Step 3 Click  and then configure the parameters.

Figure 5-195 Configure entries frequency

Parameters

Statistical Cycle

1

Days

Entries Detected

10

time

Alarm Name

Entries Frequency

Reset

OK

Cancel

Table 5-54 Entries frequency parameters

Parameter	Description
Statistical Cycle	Set the cycle for counting the entries frequency.
Entries Detected	Set the threshold of entries frequency. When the entries detected reaches or exceeds the threshold, an alarm is triggered.
Alarm Name	The name is Entries Frequency by default. You can change the name.

Step 4 Click **Apply**.

5.9.19 Smart Object Detection

You can configure rules and set parameters. When someone is taking or placing an item in the monitoring area, an alarm is triggered.

5.9.19.1 Configuring Smart Plan

To use the smart detection function, you need to enable the smart plan first. For details, see "5.9.3 Smart Plan".

5.9.19.2 Configuring Object Detection

Procedure

- Step 1 Select **AI > Parameters > Smart Object Detection**.
- Step 2 Select channel and type, and then click **Apply**.



The target type includes luggage, bag, box, and non-motor vehicle.

Step 3

Draw the detection rule.

1. Click  to draw a rectangle on the surveillance video image. Right-click the image to stop drawing.
2. Click  to draw the minimum size or maximum size to filter the target.
The system triggers an alarm only when the size of detected target is between the maximum size and the minimum size.



Click  to delete the drawn size.

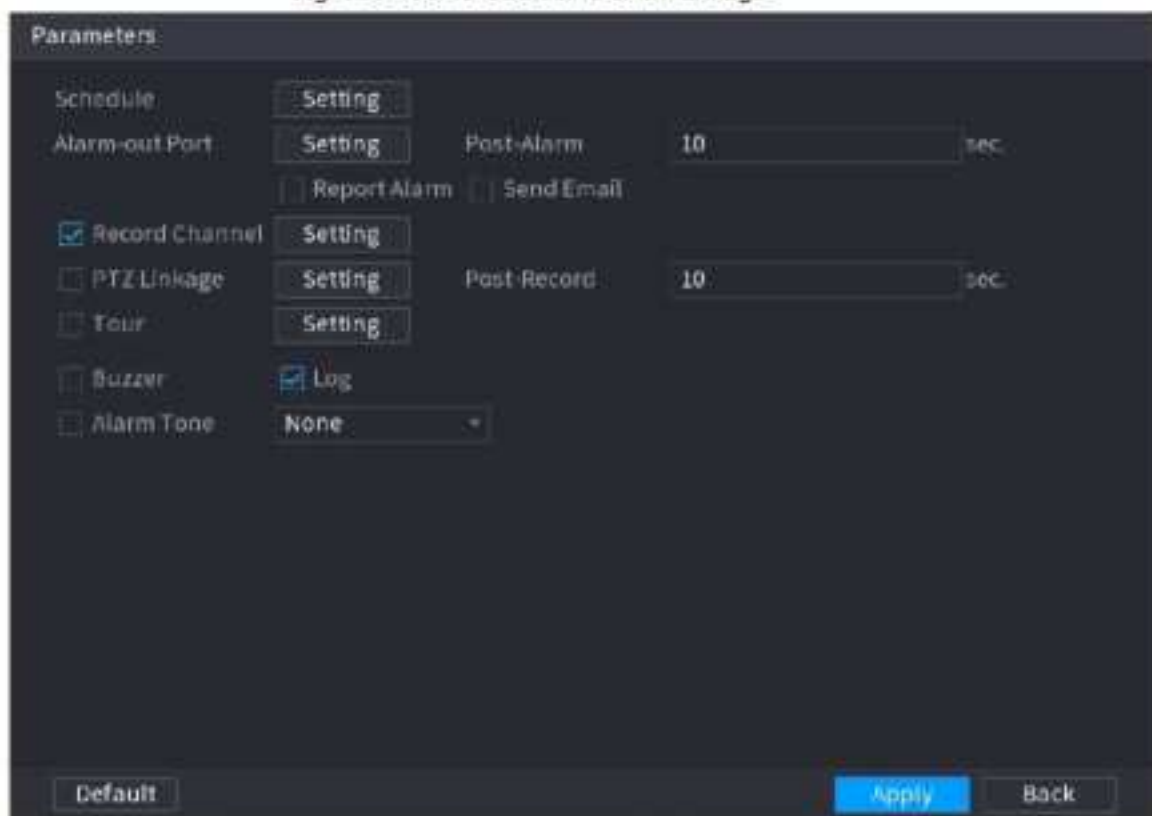
3. Configure the rule name and duration.
4. Click **OK**.

Step 4

Configure alarm schedule and linkage.

1. Click .
2. Click **Setting** next to **Schedule** to configure the alarm period.
The system performs linkage actions only for alarms during the arming period.

Figure 5-196 Schedule and alarm linkage



Parameters	
Schedule	Setting
Alarm-out Port	Setting
Post-Alarm	10 sec
Report Alarm	☐
Send Email	☐
☒ Record Channel	Setting
☐ PTZ Linkage	Setting
Post-Record	10 sec
☐ Tour	Setting
☐ Buzzer	☒ Log
Alarm Tone	None
Default Apply Back	

3. Configure alarm linkage. For details, see Table 5-50.
4. Click **Apply**.

Step 5

Click **Apply**.

5.9.19.3 Searching for Smart Object Detection

Query the detection result within a specified time period, and play back the related video.

Procedure

- Step 1 Select **AI > AI Search > Smart Object Detection**.
- Step 2 Select the channel, period, event type, and target, and then click **Search**.

Related Operations

- Play back video.
Click an image, and then click  to play back the related video.
 - ◇ Click  to pause.
 - ◇ Click  to stop.
 - ◇ Click  to display AI rule. The icon changes to .
- Add tags.
Select one or more images, and then click **Add Tag**.
- Lock.
Select one or more images, and then click **Lock**. The locked files will not be overwritten.
- Export.
Select one or more images, and then click **Export** to export selected search results in excel.
- Backup.
Select one or more images, click **Backup**, select the storage path and file type, and then click **Start** to export files to external storage device.

5.9.20 Smart Sound Detection

When the detected sound matches the alarm rules, an alarm is triggered.

5.9.20.1 Configuring Smart Sound Detection

Set sound parameters.

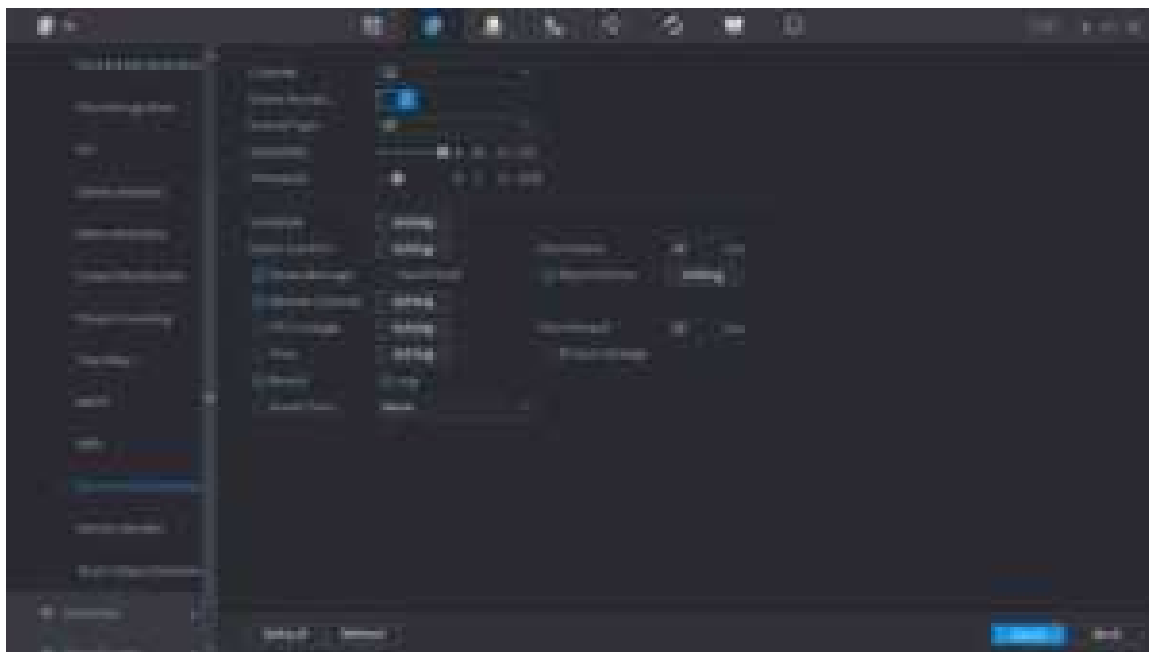
Background Information

The front-end camera can detect the sound.

Procedure

- Step 1 Select **AI > Parameters > Smart Sound Detection**.

Figure 5-197 Configuring smart sound detection



- Step 2** Select channel, and then enable **Smart Sound**.
- Step 3** Select sound type, sensitivity, and threshold as needed.
- Step 4** Click **Setting** next to **Schedule** to configure the arming period.
The system triggers corresponding alarm actions only during the arming period.
- Step 5** Configure alarm linkage. For details, see Table 5-50.
- Step 6** Click **Apply**.

5.9.20.2 Searching for Smart Sound Detection

Procedure

- Step 1** Select **AI > AI Search > Smart Sound Detection**.
- Step 2** Select channel, sound type, and period, and then click **Search**.
- Click  to play back the video.
 - Click **Backup** to back up the video.

5.9.21 PPE Detection

Detects whether the person is wearing the workwear, hat, gloves, shoe covers and the like.

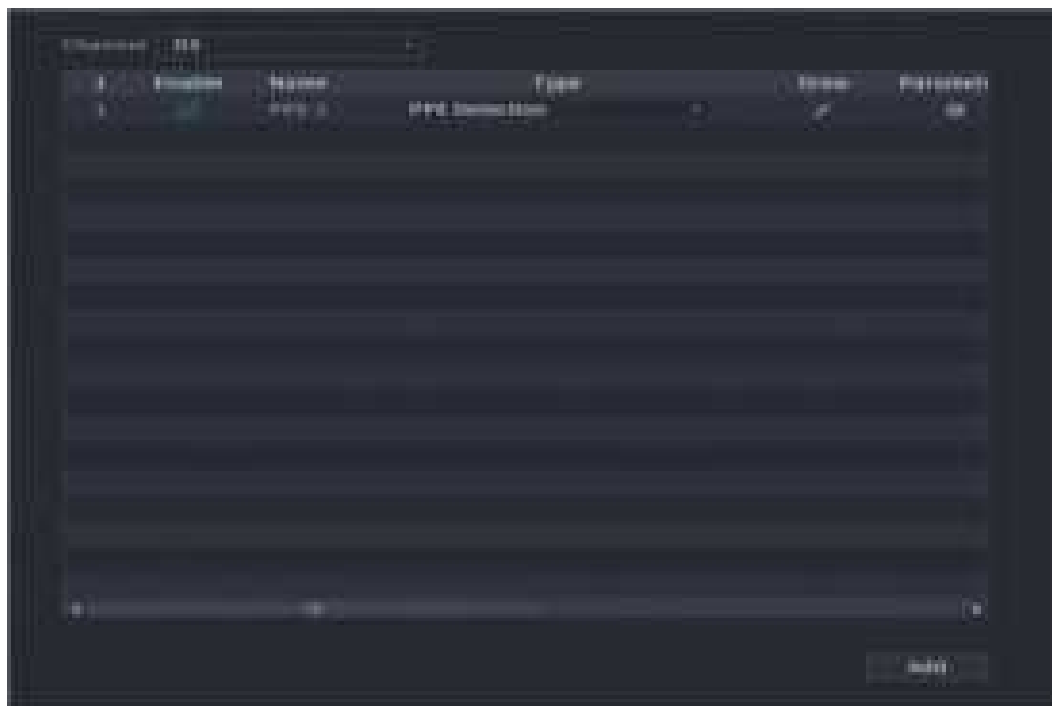
Prerequisites

The front-end camera has AI function for PPE detection.

Procedure

- Step 1** Select **AI > Parameters > PPE Detection**.
- Step 2** Select channel, click **Add**, and then add a PPE detection rule.
- Step 3** Click **Enable**.

Figure 5-198 PPE detection



Step 4 Click to draw a detection zone on the live page.
After drawing the rule, supports the following operations.

- Modify the name of the rule.
- Click to delete the drawn rule.
- Click to redraw the rule.

Step 5 Click under **Parameters**, set parameters, and then click **OK**.

Figure 5-199 Parameters (Detect by attributes)



Figure 5-200 Parameters (Registration mode)



Table 5-55 Parameters description

Parameter	Description
Alarm Trigger Condition	Receive an alarm event according to the set rule and display it on the live page. - Match attributes alarm: When the detected workwear matches the set attributes, an alarm is triggered. - Mismatch attributes alarm: When the detected workwear does not match the set attributes, an alarm is triggered.
Min Duration	Set the minimum time for the person wearing the workwear to appear in the detection area until an alarm is triggered.
Repeat Alarm Time	Set the repeat alarm time. If the alarm state persists, when reaching the repeat alarm time, the alarm is triggered again.
Workwear	Select Detection Mode. - Detect by attribute: You need to set the detection range. - Registration mode: You need to link the workwear database that has been set for the front-end camera. Receive an alarm event based on the linked workwear database and display it. - Click Settings next to Linked Workwear Database. - Select workwear database1, and then click OK.
Hat	Select Detect for Attributes , Detection Range , and Color .
Face Mask	

Parameter	Description
Apron	Select Detect for Attributes .
Gloves	
Shoe Covers	
Boots	
Seatbelt	
Safety Vest	

Step 6 Configure alarm schedule and linkage.

Figure 5-201 Schedule and alarm linkage



- 1) Click .
- 2) Click **Setting** next to **Schedule** to configure the alarm period.
The system performs linkage actions only for alarms during the arming period.
 - On the time line, drag to set the period.
 - You can also click  to set the period.
- 3) Configure alarm linkage. For details, see Table 5-50.
- 4) Click **Apply**.

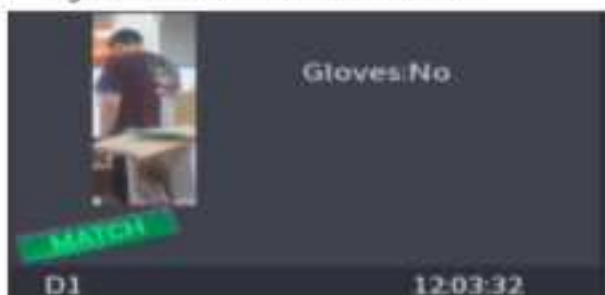
Step 7 Click **Apply**.

Related Operations

View alarm images on the page of **Live**.

- Match attributes alarm.
For example, when setting parameters for the PPE detection, select **Gloves** > **Detect for Attributes** > **No**, a match attributes alarm is triggered when it is detected that a person is not wearing a mask.

Figure 5-202 Match attributes alarm



- Mismatch attributes alarm.

For example, when setting parameters for the PPE detection, select **Apron > Detect for Attributes > Yes**, a mismatch attributes alarm is triggered when it is detected that a person is not wearing an apron.

Figure 5-203 Match attributes alarm



5.10 Alarm Settings

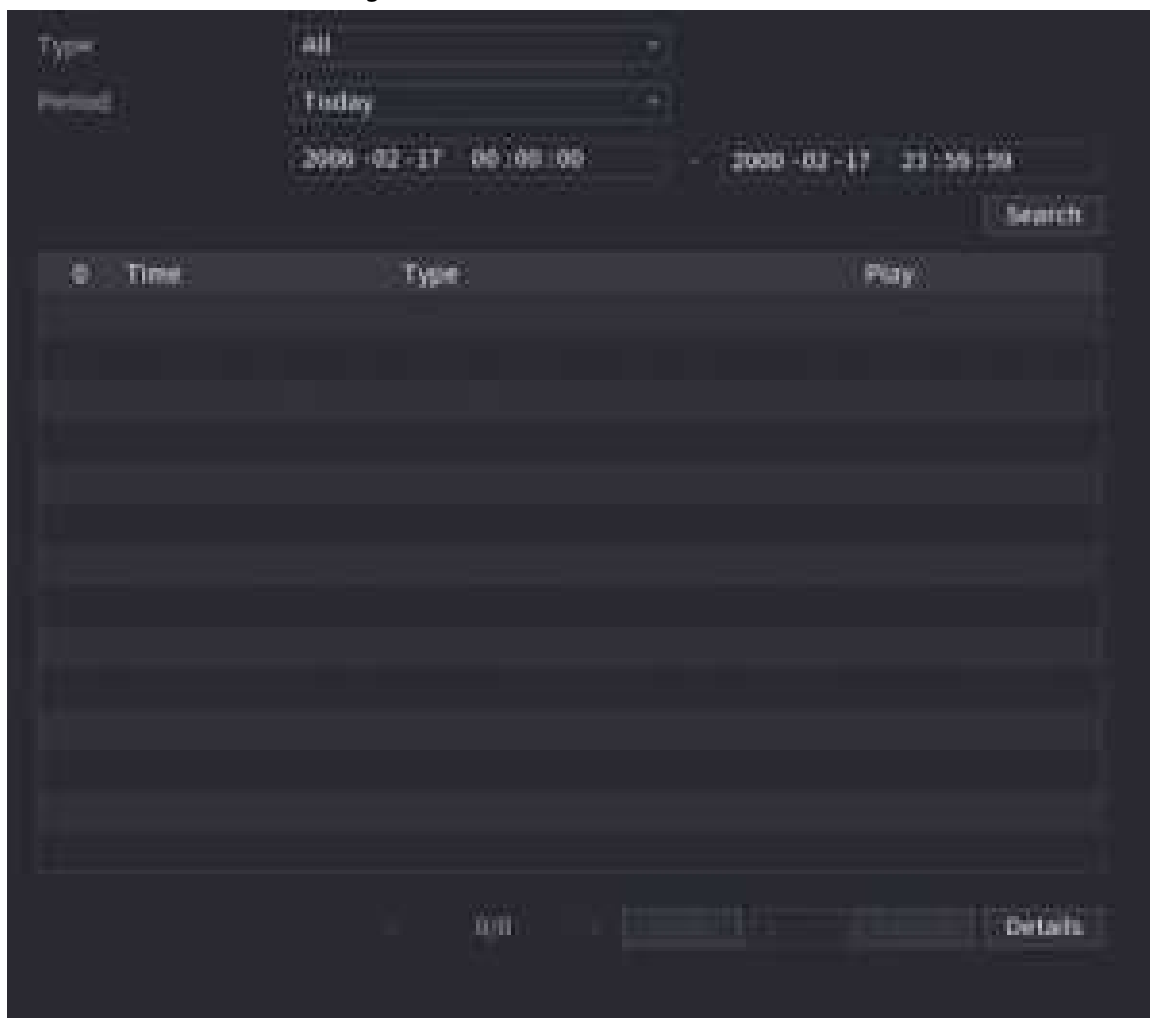
5.10.1 Alarm Information

You can search for, view and back up the alarm information.

Procedure

Step 1 Select **Main Menu > ALARM > Alarm Info**.

Figure 5-204 Alarm information



Step 2 Select the event type, and then set the search period.

Step 3 Click **Search**.

The search results are displayed.

Related Operations

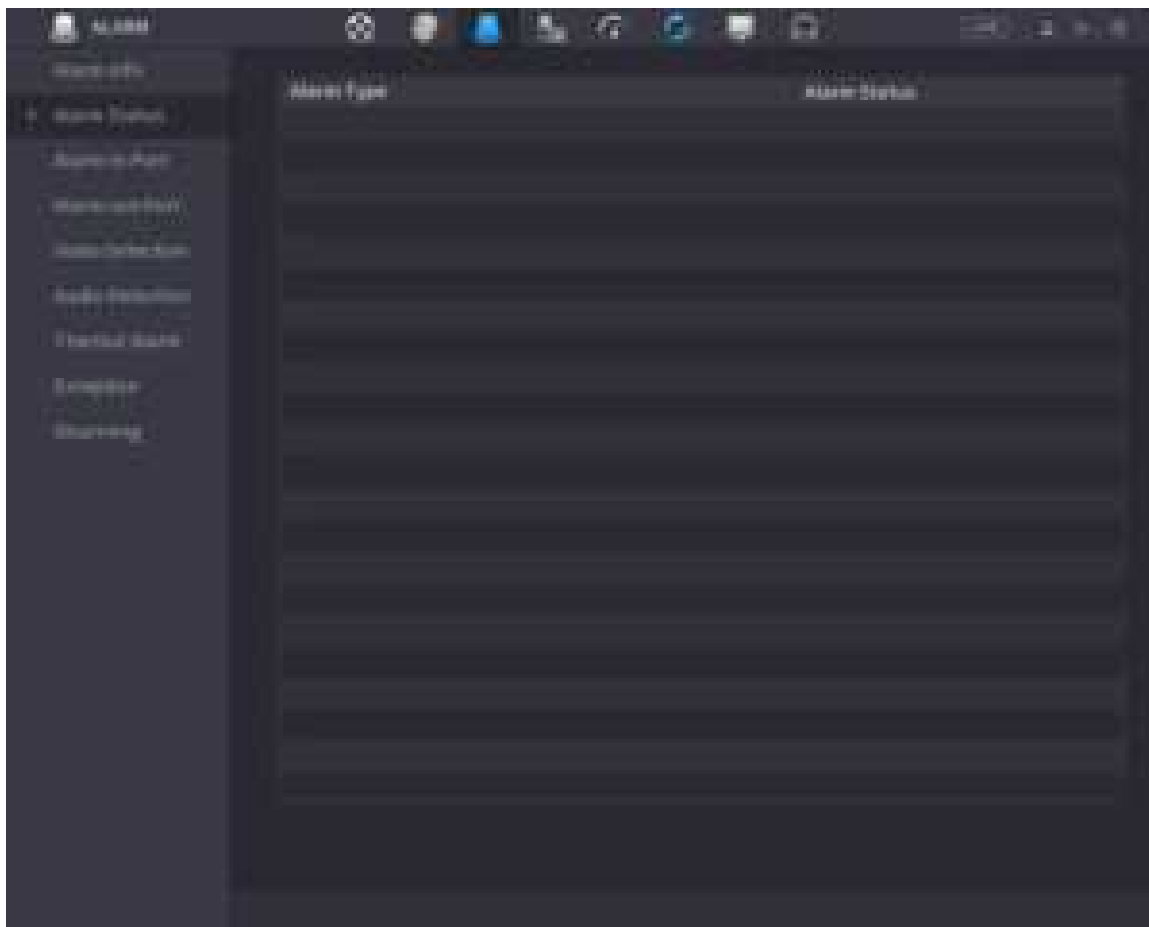
- Play back alarm videos.
Select an alarm event log, click  to play the recorded video of alarm event.
- Back up.
Select an alarm event log and then click **Backup** to back up it to peripheral USB device.
- View alarm details.
Double-click a log or click **Details** to view the detailed information of the event.

5.10.2 Alarm Status

You can view NVR alarm event, and remote channel alarm event.

Select **Main Menu > ALARM > Alarm Status**.

Figure 5-205 Alarm status



5.10.3 Alarm Input

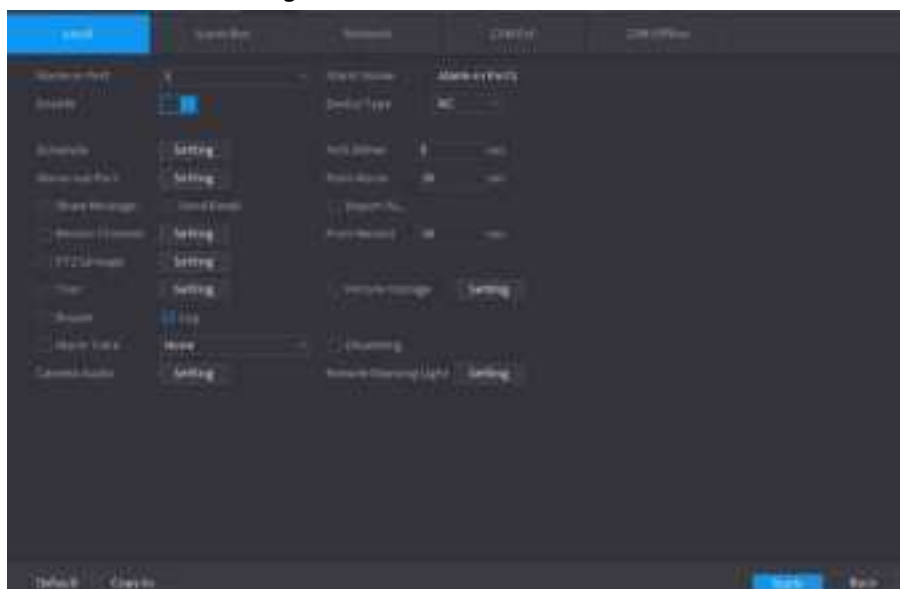
Procedure

Step 1 Select **Main menu > ALARM > Alarm-in Port**.

Step 2 Click each tab to configure alarm input settings.

- Local alarm: After connect the alarm device to the NVR alarm input port, the system performs alarm linkage actions when there is an alarm signal from the alarm input port to the NVR.
- Alarm box: You can connect the alarm box to the RS-485 port of the Device. When the alarm is detected by the alarm box, the alarm information will be uploaded to the Device, and then the Device performs alarm linkage actions.
- Network alarm: NVR performs alarm linkage actions when it receives the alarm signal via the network transmission.
- IPC external alarm: When the peripheral device connected to the camera has triggered an alarm, the camera uploads the alarm signal to the NVR via the network transmission. The system performs the corresponding alarm linkage actions.
- IPC offline alarm: When the network connection between the NVR and the network camera is off, the system performs alarm linkage actions.

Figure 5-206 Local alarm



Step 3 Click **Setting** next to **Schedule** to configure the alarm schedule.

Step 4 Configure the anti-dither period.

If multiple alarms occur during the anti-dither period, the system only record the event once.

Step 5 Configure alarm linkage. For details, see Table 5-50.

Step 6 Enable **Disarming** so that you can connect a switch to the alarm input port for disarming control.

Step 7 Click **Setting** next to **Camera Audio** to configure the camera audio.

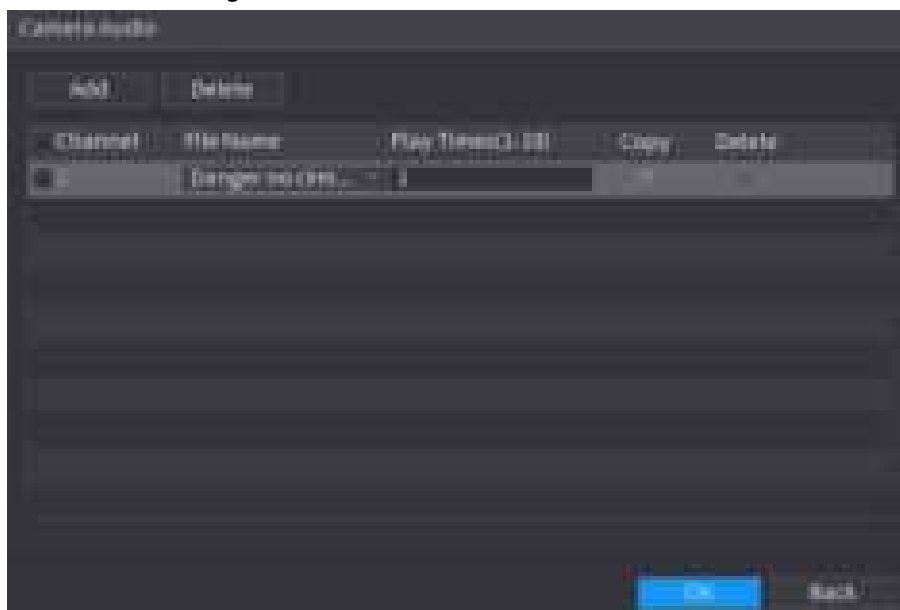
1. Click **Add**, and the page displays all channels that have successfully connected and support the camera audio configuration.



If a certain channel is selected in **Alarm-in Port** and supports the camera audio configuration, the camera audio configuration of this channel will be displayed by default, and you cannot delete or reset play times.

- Select the audio file under the **File Name** drop-down list.
- Configure **Play Times**, supports a maximum of 10 times.
- Click **Copy** to copy the camera audio configuration of the current channel to other channels.
- Click  to delete one channel. Select multiple channels, and then click **Delete** to delete multiple channels.

Figure 5-207 Set the camera audio



2. Select the channel to add the camera audio, and then click **OK**.

If the camera audio configuration of multiple channels has been configured, when an alarm event is triggered, the multiple channels can link to the corresponding camera audio.

Step 8 Click **Setting** next to **Remote Warning Light** to configure the remote warning light.

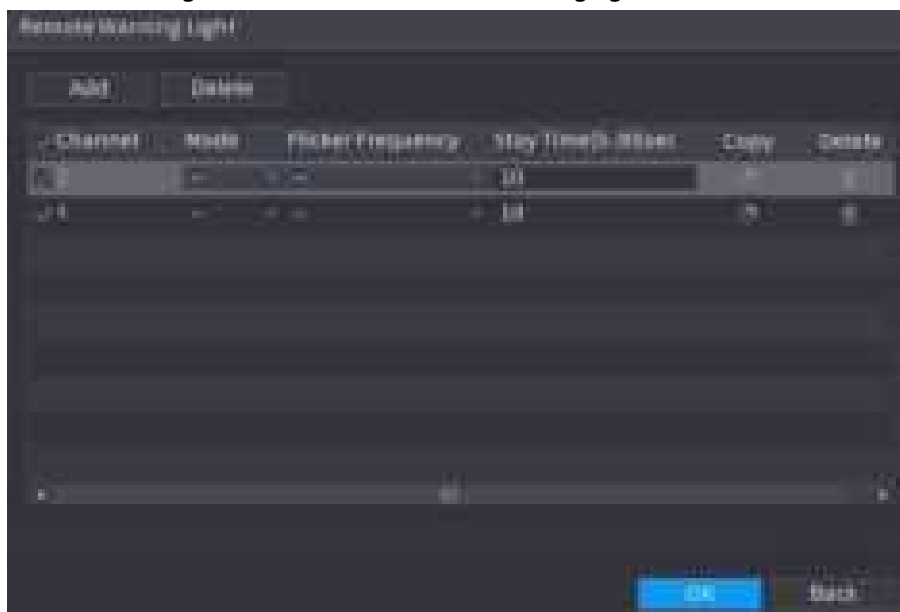
1. Click **Add**, and the page displays all channels that have successfully connected and support the remote warning light configuration.



If a certain channel is selected in **Alarm-in Port** and supports the remote warning light configuration, the remote warning light configuration of this channel will be displayed by default, and you cannot delete it.

- a. Select **Mode** and **Flicker Frequency** of the remote warning light.
- b. Configure **Stay Time**, supports a maximum of 30 seconds.
- c. Click **Copy** to copy the remote warning light configuration of the current channel to other channels.
- d. Click  to delete one channel. Select multiple channels, and then click **Delete** to delete multiple channels.

Figure 5-208 Set the remote warning light



2. Select the channel to add the remote warning light, and then click **OK**.
If the remote warning light configuration of multiple channels has been configured, when an alarm event is triggered, the multiple channels can link the corresponding remote warning light.

Step 9 Click **Apply**.

5.10.4 Alarm Output

Background Information

You can set proper alarm output mode to auto, manual or off. After you connect the alarm device to the alarm output port of NVR, and set the mode to auto, the system performs alarm linkage actions when an alarm occurs.

- Auto: Once an alarm event occurs, the system generates an alarm.
- Manual: Alarm device is always on the alarming mode.
- Off: Disable alarm output function.

Procedure

Step 1 Select **Main Menu > ALARM > Alarm-out Port**.

- 3) Select one region, for example, click .
- 4) Drag on the screen to select the region that you want to detect.
- 5) Configure the parameters.

Table 5-56 Detection region parameters

Parameter	Description
Name	Enter a name for the region.
Sensitivity	Every region has an individual sensitivity value. The bigger the value is, the easier to trigger an alarm.
Threshold	Adjust the threshold for motion detection. Every region of every channel has an individual threshold.



You can configure up to four detection regions. When any one of the four regions activates motion detection alarm, the channel where this region belongs to will activate motion detection alarm.

- 6) Right-click the page to exit.

Step 4 Click **Setting** next to **Schedule** to configure the alarm schedule.

Step 5 Configure the anti-dither period.

If multiple alarms occur during the anti-dither period, the system only record the event once.

Step 6 Configure alarm linkage. For details, see Table 5-50. This section uses associating siren as an example.

Enable **Alarm Hub**, select the alarm hub as needed, and then select siren as needed.

Step 7 Click **Apply**.

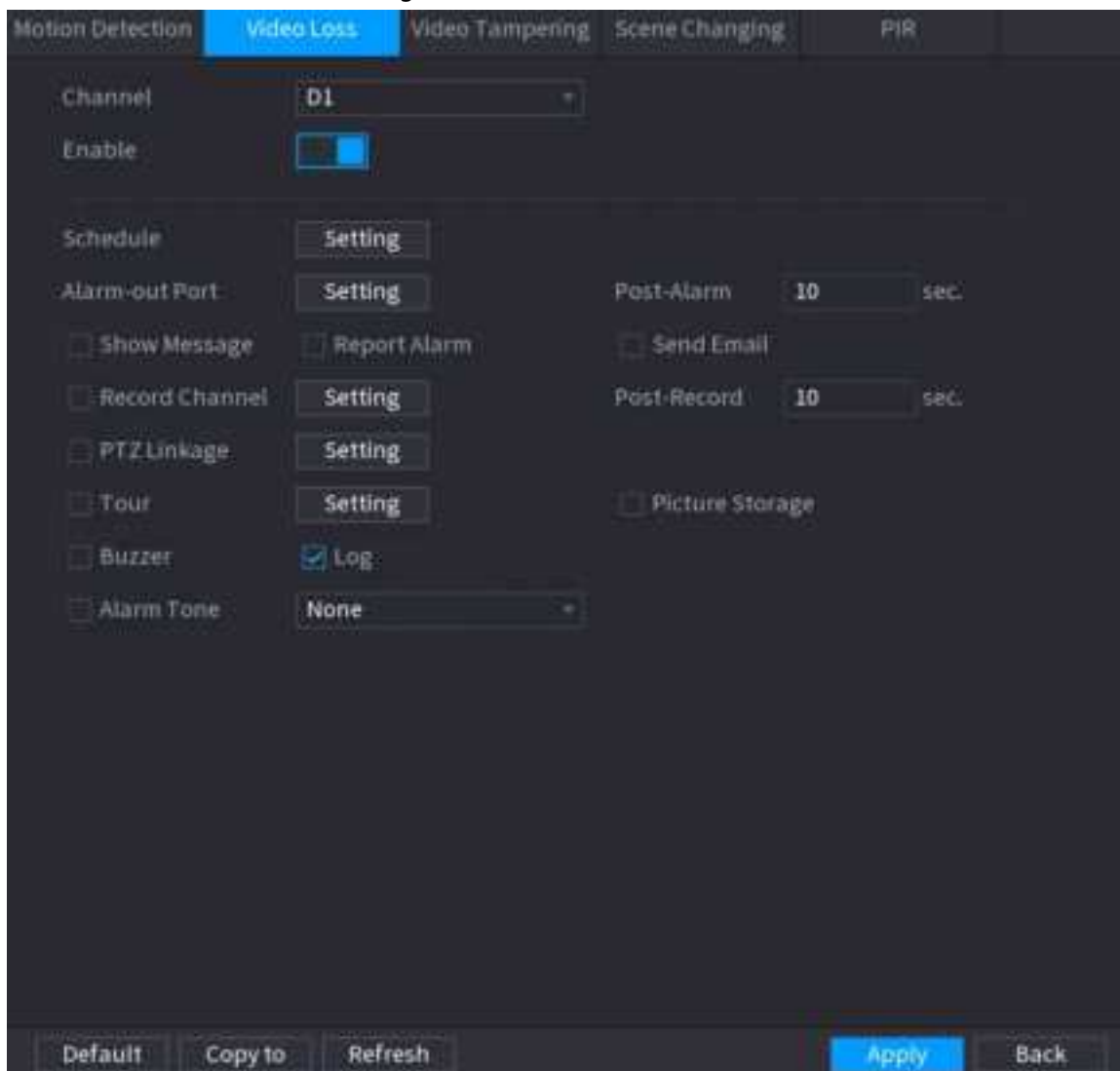
5.10.5.2 Video Loss

When the video loss occurs, the system performs alarm linkage actions.

Procedure

Step 1 Select **Main Menu > ALARM > Video Detection > Video Loss**.

Figure 5-210 Video Loss



Step 2 Select a channel and then click  to enable the function.

Step 3 Click **Setting** next to **Schedule** to configure the alarm schedule.

Step 4 Configure alarm linkage. For details, see Table 5-50.

Step 5 Click **Apply**.

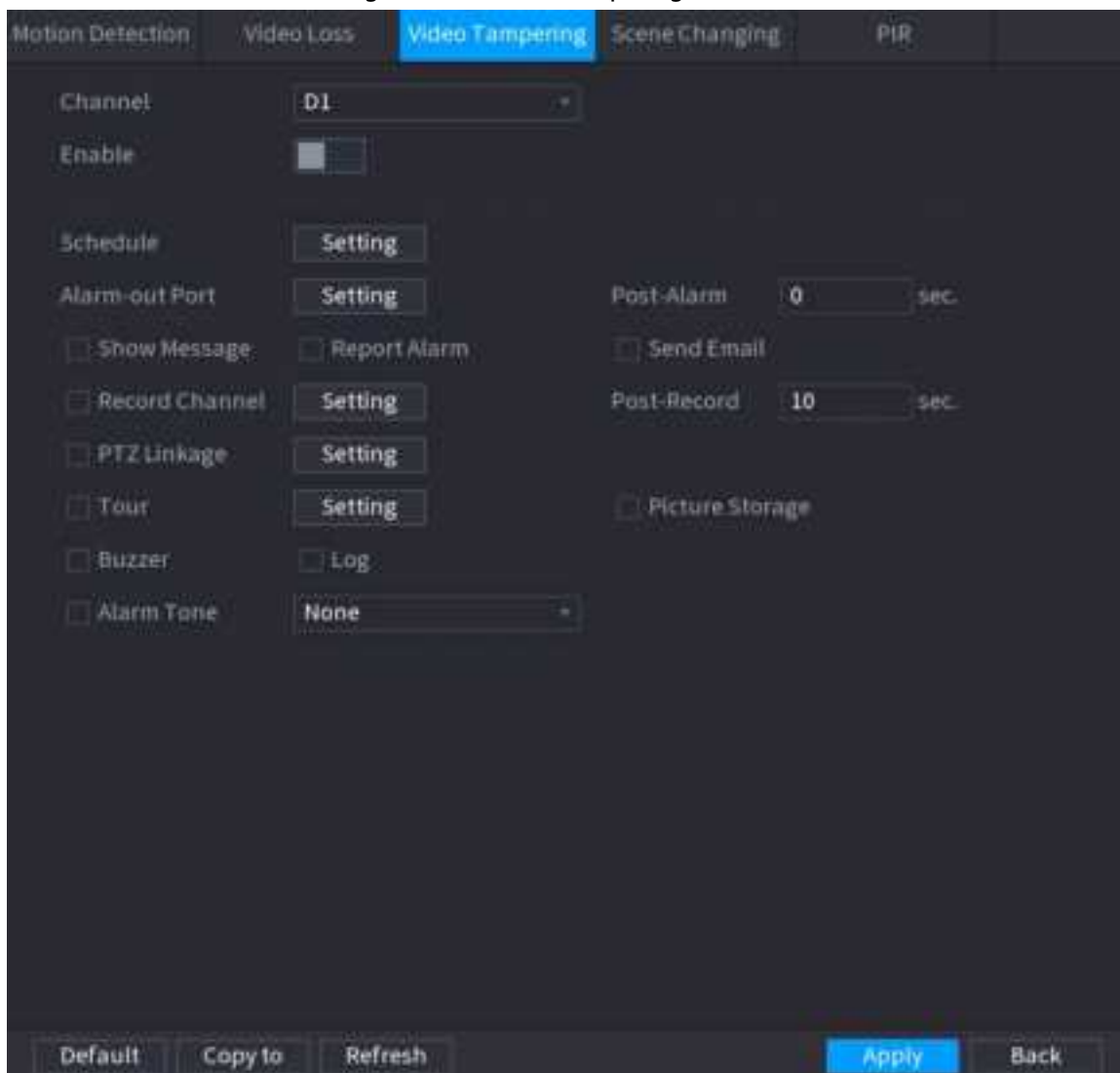
5.10.5.3 Video Tampering

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

Procedure

Step 1 Select **Main Menu > ALARM > Video Detection > Video Tampering**.

Figure 5-211 Video tampering



Step 2 Select a channel and then click ☐ to enable the function.

Step 3 Click **Setting** next to **Schedule** to configure the alarm schedule.

Step 4 Configure alarm linkage. For details, see Table 5-50.

Step 5 Click **Apply**.

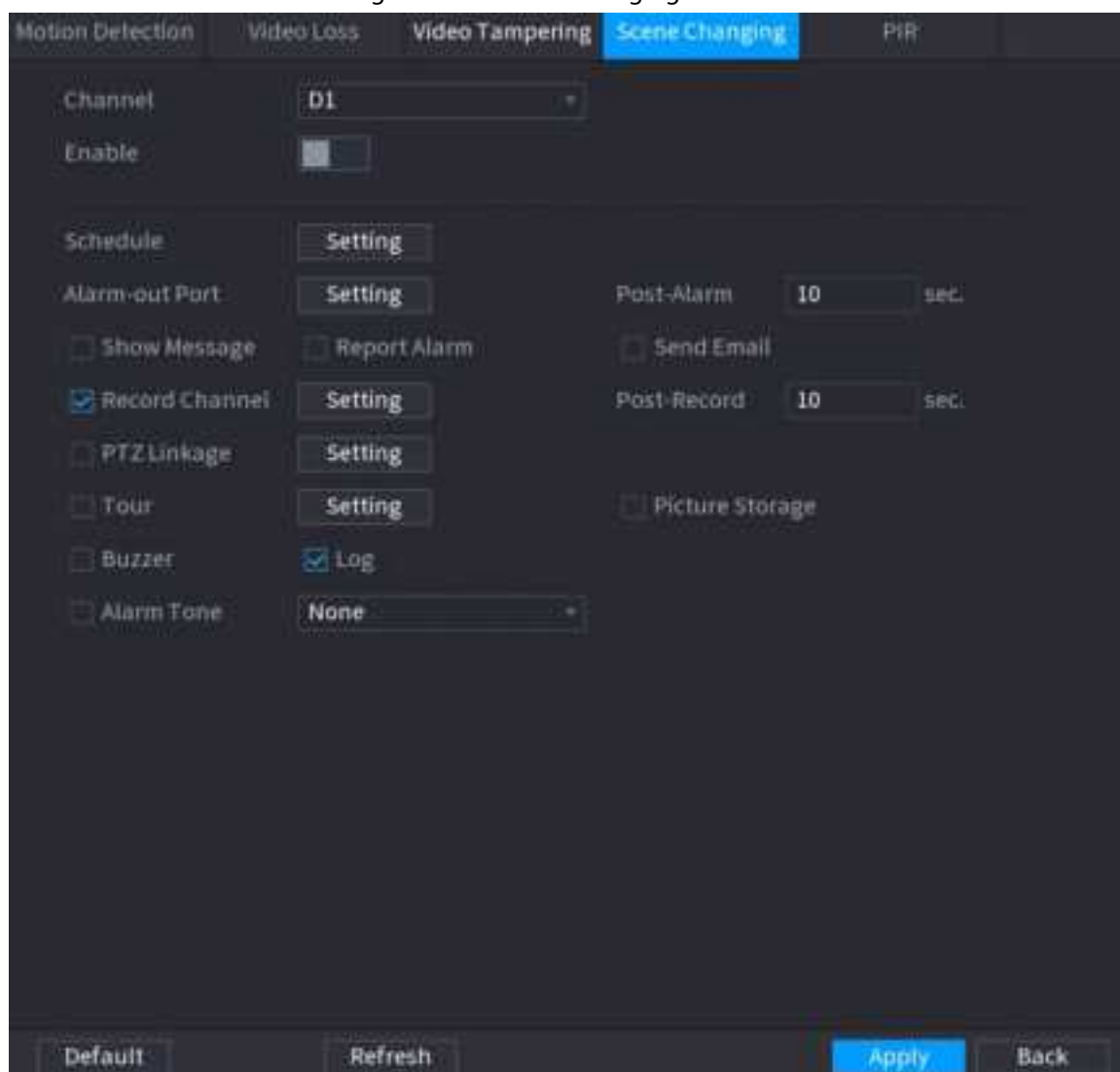
5.10.5.4 Scene Change

When the detected scene has changed, system performs alarm linkage actions.

Procedure

Step 1 Select **Main Menu > ALARM > Video Detection > Scene Changing**.

Figure 5-212 Scene changing



Step 2 Select a channel and then click ☐ to enable the function.

Step 3 Click **Setting** next to **Schedule** to configure the alarm schedule.

Step 4 Configure alarm linkage. For details, see Table 5-50.

Step 5 Click **Apply**.

5.10.5.5 PIR Alarm

PIR function helps enhancing the accuracy and validity of motion detect. It can filter the meaningless alarms that are activated by the objects such as falling leaves and flies. The detection range by PIR is smaller than the field angle.

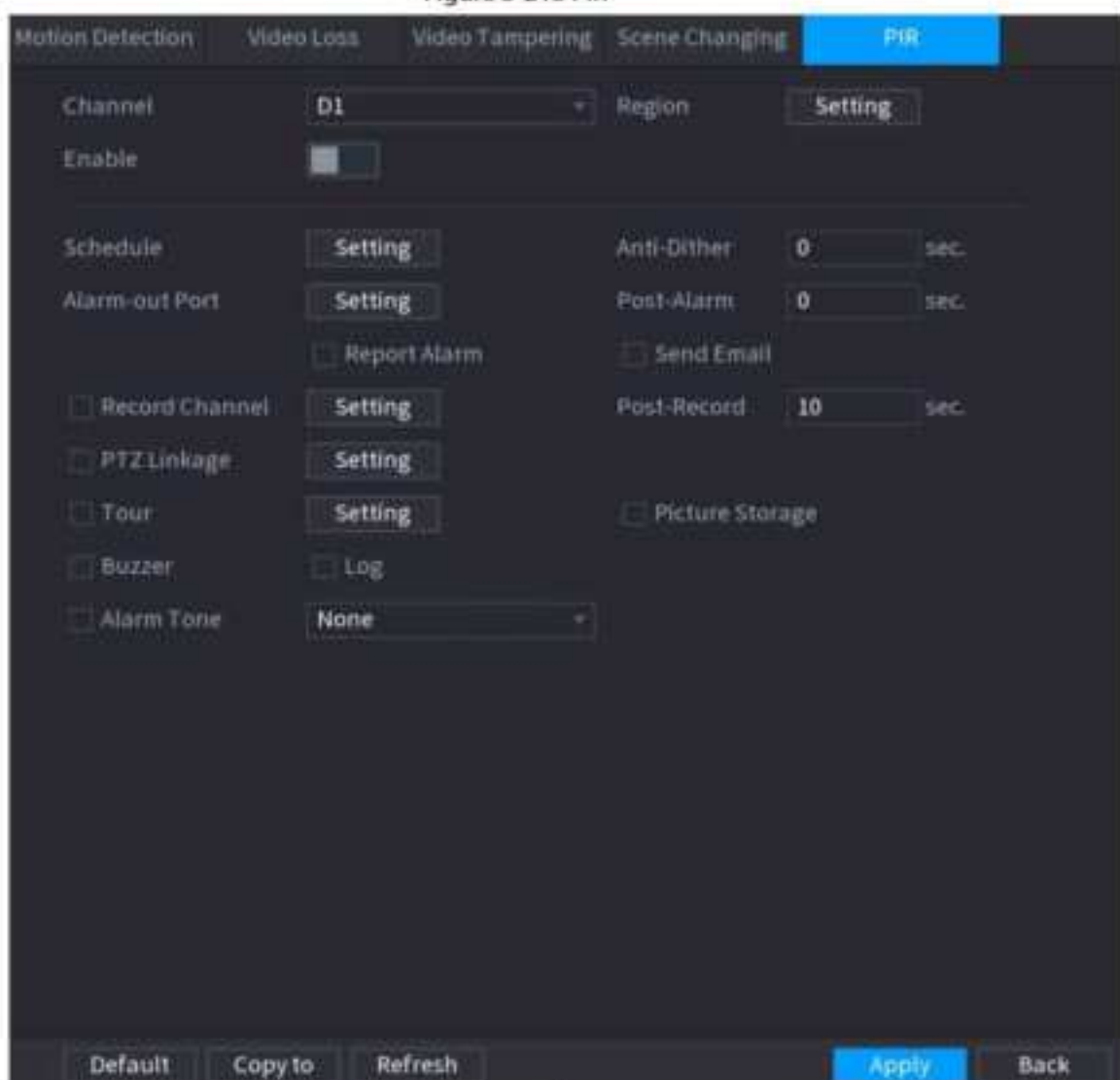
Background Information

PIR function is enabled by default if it is supported by the cameras. Enabling PIR function will get the motion detection to be enabled automatically to generate motion detection alarms.

Procedure

Step 1 Select **Main Menu > ALARM > Video Detection > PIR**.

Figure 5-213 PIR



Step 2 Select a channel and then click ☐ to enable the function.

Step 3 Configure the detection region.

- 1) Click **Setting** next to **Region**.
- 2) Point to the middle top of the page.
- 3) Select one region, for example, click .
- 4) Drag on the screen to select the region that you want to detect.
- 5) Configure the parameters.

Table 5-57 Detection region parameters

Parameter	Description
Name	Enter a name for the region.
Sensitivity	Every region of every channel has an individual sensitivity value. The bigger the value is, the easier to trigger an alarm.
Threshold	Adjust the threshold for motion detection. Every region of every channel has an individual threshold.



You can configure up to four detection regions. When any one of the four regions activates an alarm, the channel where this region belongs to will activate an alarm.

6) Right-click to exit the page.

Step 4 Click **Setting** next to **Schedule** to configure the alarm schedule.

Step 5 Configure the anti-dither period.

If multiple alarms occur during the anti-dither period, the system only record the event once.

Step 6 Configure alarm linkage. For details, see *Network Video Recorder_User's Manual*.

Step 7 Click **Apply**.

5.10.6 Audio Detection

The system can generate an alarm once it detects the audio is not clear, the tone color has changed or there is abnormal or audio volume change.

Procedure

Step 1 Select **Main Menu** > **ALARM** > **Audio Detection**.

Step 2 Select a channel and then click  to enable detection of audio exception and intensity change.

- **Audio Exception:** The system generates an alarm when the audio input is abnormal.
- **Intensity Change:** Set the sensitivity and threshold. An alarm is triggered when the change in sound intensity exceeds the defined threshold.

Step 3 Click **Setting** next to **Schedule** to configure the alarm schedule.

Step 4 Configure alarm linkage. For details, see Table 5-50.

Step 5 Click **Apply**.

5.10.7 Thermal Alarm

Background Information

After receiving the alarm signal from the connected thermal devices, the system can recognize the alarm type, and then trigger the corresponding alarm actions.

The system supports heat alarm, temperature (temperature difference) and cold/hot alarm.

- **Heat alarm:** The system generates an alarm once it detects there is a fire.
- **Temperature (temperature difference):** The system triggers an alarm once the temperature difference between two positions is higher or below the specified threshold.
- **Cold/hot alarm:** The system triggers an alarm once the detected position temperature is higher or below the specified threshold.



- Make sure that the connected camera supports temperature monitoring function.
- This function is available on select models.
- The thermal detection functions might vary depending on the connected camera. This section uses heat alarm as an example.

Procedure

Step 1 Select **Main Menu > ALARM > Thermal Alarm**.

Figure 5-214 Thermal alarm



Step 2 Select a channel and set alarm type to heat alarm, and then enable the function.

Step 3 Select fire mode. The system supports preset mode and zone excluded mode.

- Preset mode: Select a preset and then enable the function. The system generates an alarm once it detects there is a fire.
- Zone excluded mode: The system filters the specified high temperature zone. The system generates an alarm once the rest zone has fire.

Step 4 Configure alarm linkage. For details, see Table 5-50.

Step 5 Click **Apply**.

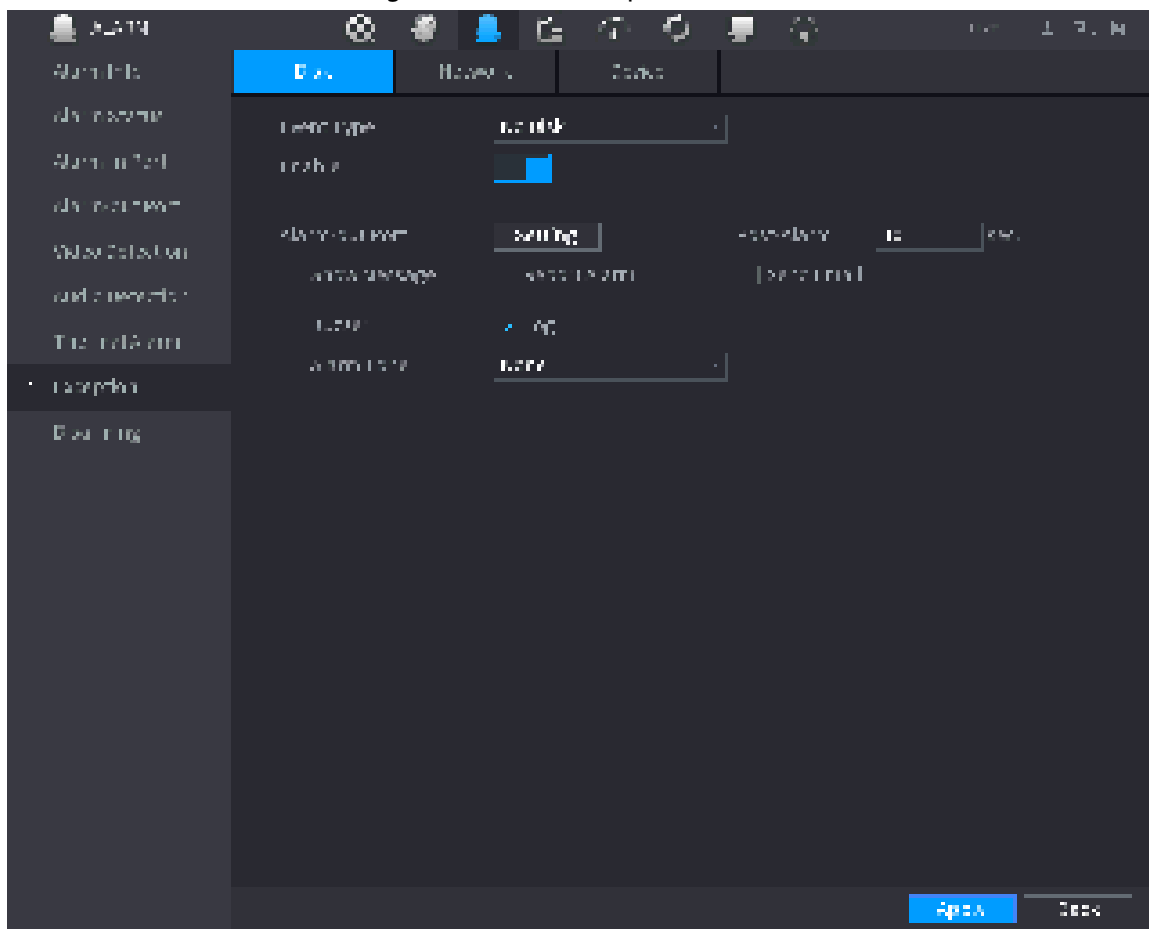
5.10.8 Exception

When an error in HDD, network, and device occurs, the system performs alarm linkage actions.

Procedure

Step 1 Select **Main Menu > ALARM > Exception**.

Figure 5-215 Disk exception



Step 2 Click each tab and then select an event type.

- **Disk:** The system detects HDD error, no HDD, no space, and other HDD events.
- **Network:** The system detects network errors such as disconnection, IP conflict, and MAC conflict.
- **Device:** The system detects device errors such as abnormal fan speed and network security error.

Step 3 Click ☒ to enable the function.

Step 4 (Optional) If the event type is **Low Space**, you need to configure the threshold of storage space.

When the storage space is lower than the threshold, an alarm is triggered.

Step 5 Configure alarm linkage. For details, see Table 5-50.

Step 6 Click **Apply**.

5.10.9 Disarming

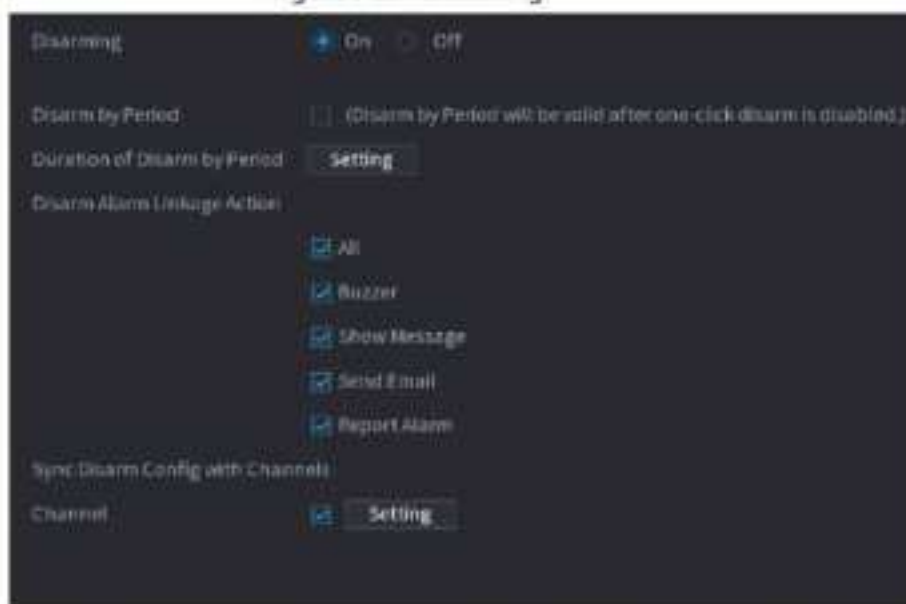
You can disarm all alarm linkage actions as needed through one click.

Procedure

Step 1 Select **Main Menu > ALARM > Disarming**.

Step 2 Select **On** for **Disarming** to enable disarming.

Figure 5-216 Disarming

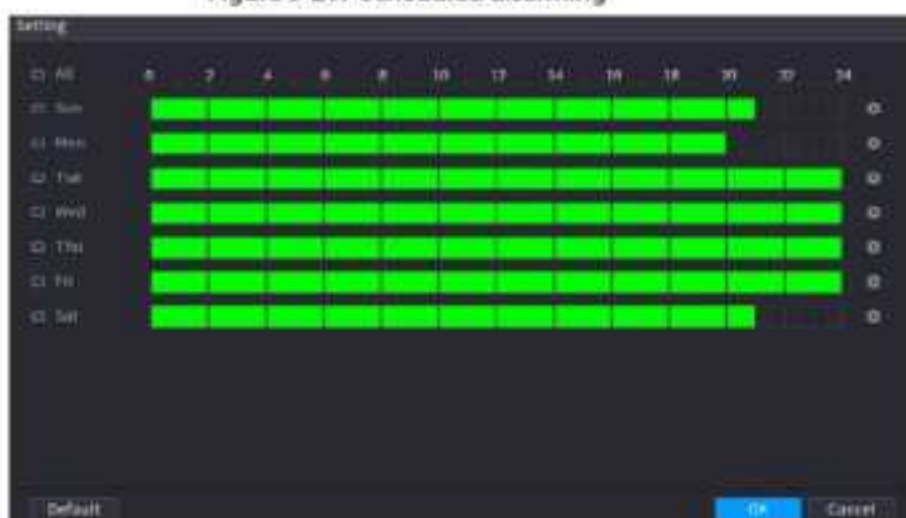


Step 3 (Optional) To enable scheduled disarming, click **Setting** next to **Duration of Disarm by Period**, and then set periods.



Scheduled disarming is only effective when **Disarming** is **Off**.

Figure 5-217 Scheduled disarming



- Drag your mouse to select time blocks.
- Green blocks indicates that disarming is enabled.
- You can also click  to set time periods. One day can have 6 periods at most.

Step 4 Select the alarm linkage actions to disarm.



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

Step 5 To disarm remote channels, select the checkbox at **Channel**, and then click **Setting** to select channels.



This function is only effective when the connected camera supports one-click disarming.

Step 6 Click **Apply**.

5.11 Network

Configure the network settings to ensure the Device can communicate with other devices on the same LAN.

5.11.1 TCP/IP

You can configure the settings for the Device such as IP address, DNS according to the networking plan.

Procedure

Step 1 Select **Main Menu > NETWORK > TCP/IP**.

Figure 5-218 TCP/IP

Step 2 Click  to configure the NIC card, and then click **OK**.

Figure 5-219 TCP/IP

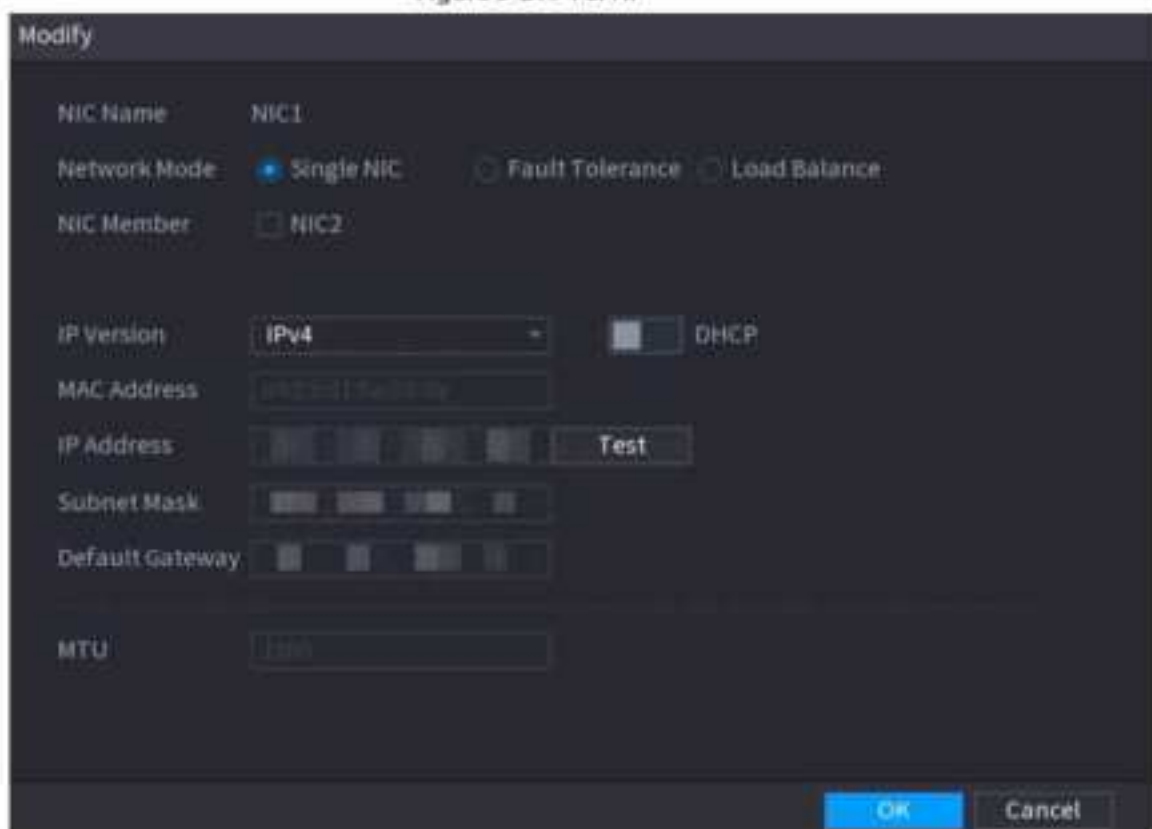


Table 5-58 TCP/IP parameters

Parameter	Description
Network Mode	• Single NIC: The current NIC card works independently. If the current NIC card is disconnected, the Device becomes offline. • Fault Tolerance: Two NIC cards share one IP address. Normally only one NIC card is working. When this card fails, the other NIC card will start working automatically to ensure the network connection. The Device is regarded as offline only when both NIC cards are disconnected. • Load Balance: Two NIC cards share one IP address and work at the same time to share the network load averagely. When one NIC card fails, the other card continues to work normally. The Device is regarded as offline only when both NIC cards are disconnected.  The Device with single Ethernet port does not support this function.

Parameter	Description
NIC Member	When the network mode is Fault Tolerance or Load Balance, you need to select the checkbox to bind NIC cards.  - Make sure that at least two NIC cards are installed. - NIC cards using different ports such as optical port and electrical port cannot be bound together. - After binding NIC cards, you need to restart the Device to make the change effective.
IP Version	Select IPv4 or IPv6. Both versions are supported for access.
MAC Address	Displays the MAC address of the Device.
DHCP	Enable the system to allocate a dynamic IP address to the Device. There is no need to set IP address manually.  - If you want to 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	Enter the IP address and configure the corresponding subnet mask and default gateway.  - The IP address and default gateway must be on the same network segment. - Click Test to check whether the IP address is available.
Subnet Mask	
Default Gateway	
MTU	Displays the MTU value of the NIC card.

Step 3 On the **TCP/IP** page, configure the DNS server.



This step is compulsive if you want to use the domain service.

- Obtain DNS server automatically.
When there is DHCP server on the network, you can enable **DHCP** so that the Device can automatically obtain a dynamic IP address.
- Configure DNS server manually.
Select the IP version, and then enter the IP addresses of preferred and alternate DNS server.

Step 4 Select a NIC card as the default card.

Step 5 Click **Apply**.

5.11.2 Routing Table

You can configure the routing table so that the system can automatically calculate the best path for data transmission.

Procedure

Step 1 Select **Main Menu > NETWORK > TCP/IP > Routing Table**.

Figure 5-220 Routing table



Step 2 Add the routing table.

- Auto add.

When you add a camera to the NVR and the IP address of the camera is not on the existing routing table, the system will add the routing information.

- Manual add.

Configure the parameters such as destination address, netmask, and gateway, and then click **Add**.



- ◇ The destination address and netmask must not be on the same LAN.
- ◇ The netmask must be valid and on the same LAN with the NIC card.
- ◇ You can configure up to eight pieces of routing information.

Step 3 Click **Apply**.

5.11.3 Port

You can configure the maximum connection for accessing the Device from web, platform, mobile phone or other clients at the same time, and configure each port number.

Procedure

Step 1 Select **Main Menu > NETWORK > Port**.

Figure 5-221 Port

Max Connection	128	(0 - 128)
TCP Port	37777	(1025 - 65535)
UDP Port	37778	(1025 - 65535)
HTTP Port	80	(1 - 65535)
HTTPS Port	443	(1 - 65535)
RTSP Port	554	(1 - 65535)
NTP Server Port	123	(1 - 65535)
POS Port	38800	(1025 - 65535)
Auto Registratio...	7000	(1025 - 65535)

Step 2 Configure the parameters.



The parameters except **Max Connection** take effect after the Device restarts.

Table 5-59 Port parameters

Parameter	Description
Max Connection	The allowable maximum clients accessing the Device at the same time, such as web client, platform, and mobile client.
TCP Port	Transmission control protocol port. Enter the value according to your actual situation.
UDP Port	User datagram protocol port. 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 change the HTTP port number to, for example, 70, then you need to enter 70 after the IP address when logging in to the Device through the browser.
HTTPS Port	HTTPS communication port. The default value is 443. You can enter the value according to your actual situation.
RTSP Port	The default value is 554. You can enter the value according to your actual situation.
POS Port	POS data transmission port. The value range from 1 through 65535. The default value is 38800.
Auto Registration Port	The auto registered port. Supports adding cameras through auto registration.

Step 3 Click **Apply**.

5.11.4 External Wi-Fi

The Device can be connected to wireless network with an external Wi-Fi module.

Prerequisites

Make sure that external Wi-Fi module is installed on the Device.

Background Information



This function is available on select models.

Procedure

Step 1 Select **Main Menu > NETWORK > Wi-Fi**.

Figure 5-222 Wi-Fi



Step 2 Configure the parameters.

Table 5-60 Wi-Fi parameters

Parameter	Description
Connect Automatically	After the function is enabled, the NVR will connect to the nearest site that was previously successfully connected after the Device starts.
Refresh	Search for the sites again.
Disconnect	Disconnect the current connection.

Parameter	Description
Connect	Select an available site and then click Connect .

Step 3 Click **Apply**.



- After the connection is successful, a Wi-Fi connection signal flag appears in the upper-right corner of the live view page.
- The Wi-Fi module models currently supported are D-LINK, dongle and EW-7811UTC wireless cards.

5.11.5 Wi-Fi AP

Background Information

You can configure Wi-Fi parameters for the NVR to ensure that a wireless IPC can connect to the NVR through Wi-Fi AP.



This function requires the built-in Wi-Fi module in the Device.

5.11.5.1 General Settings

Background Information

You can configure SSID, encryption type, password and channel of the device.



- This function is supported on select wireless models.
- When the wireless IPC and NVR are matched, the pairing will be completed in 120 seconds after they are powered on.

Procedure

Step 1 Select **Main Menu > NETWORK > Wi-Fi AP > General**.

Figure 5-223 General settings



Step 2 Select **Wi-Fi** to enable Wi-Fi.

Step 3 Configure parameters.

Table 5-61 Parameters of general settings

Parameter	Description
SSID	Wi-Fi name for the device.
Hide SSID	Hide the Wi-Fi name.
Encryption Type	Select an encryption mode from WPA2 PSK and WPA PSK.
Password	Set the Wi-Fi password for the Device.
Select Channel	Select the channel for device communication.
Network Proxy	Enable the external network access through the Device for a wireless IPC.

Step 4 Click **Apply**.

5.11.5.2 Advanced Settings

Background Information



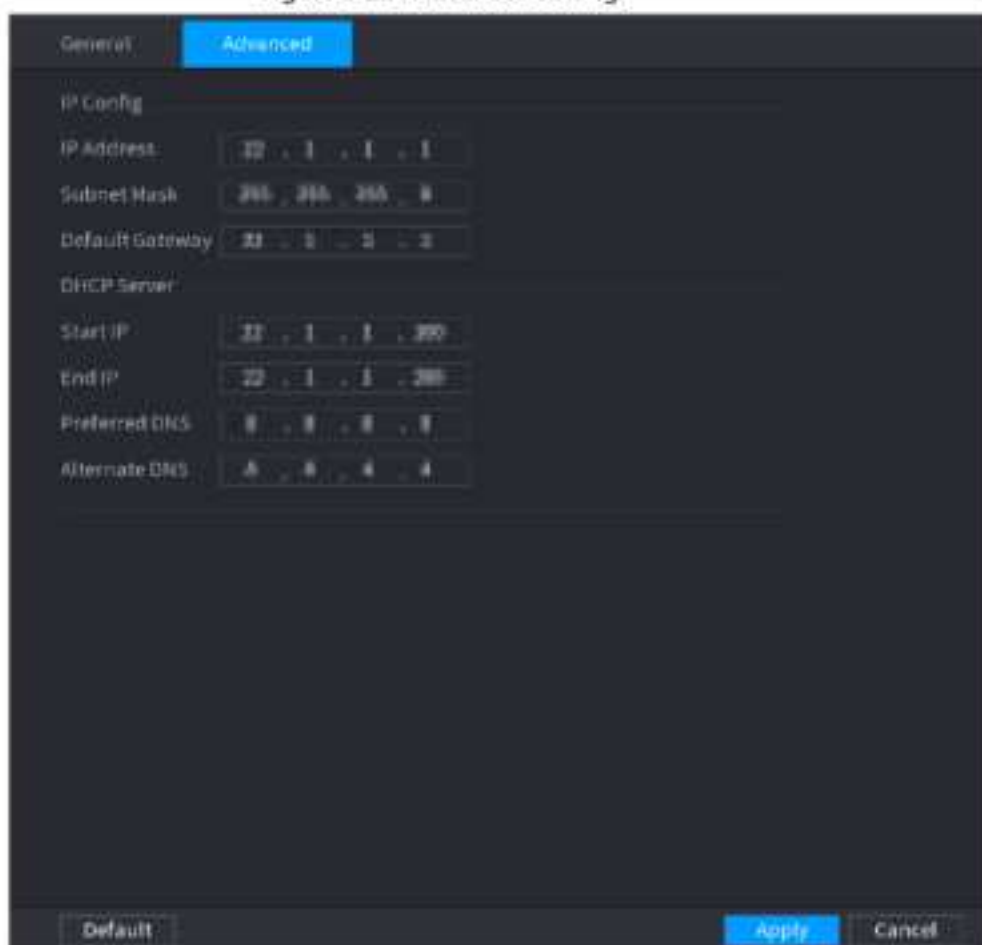
This function is supported on select wireless models.

You can configure IP address, subnet mask, default gateway, DHCP server of the Device.

Procedure

Step 1 Select **Main Menu > NETWORK > Wi-Fi AP > Advanced**.

Figure 5-224 Advanced settings



Step 2 Configure parameters.

Table 5-62 Parameters of advanced settings

Parameter	Description
IP Address	Set IP address, subnet mask and default gateway for the Wi-Fi of NVR.  IP address and default gateway must be on the same network segment.
Subnet Mask	
Default Gateway	
Start IP	Set the start IP address and end IP address of the DHCP server.
End IP	
Preferred DNS	Set preferred and alternate DNS server address.
Alternate DNS	

Step 3 Click **Apply**.

5.11.6 3G/4G

Prerequisites

Make sure that 3G/4G module is installed on the device.

Background Information

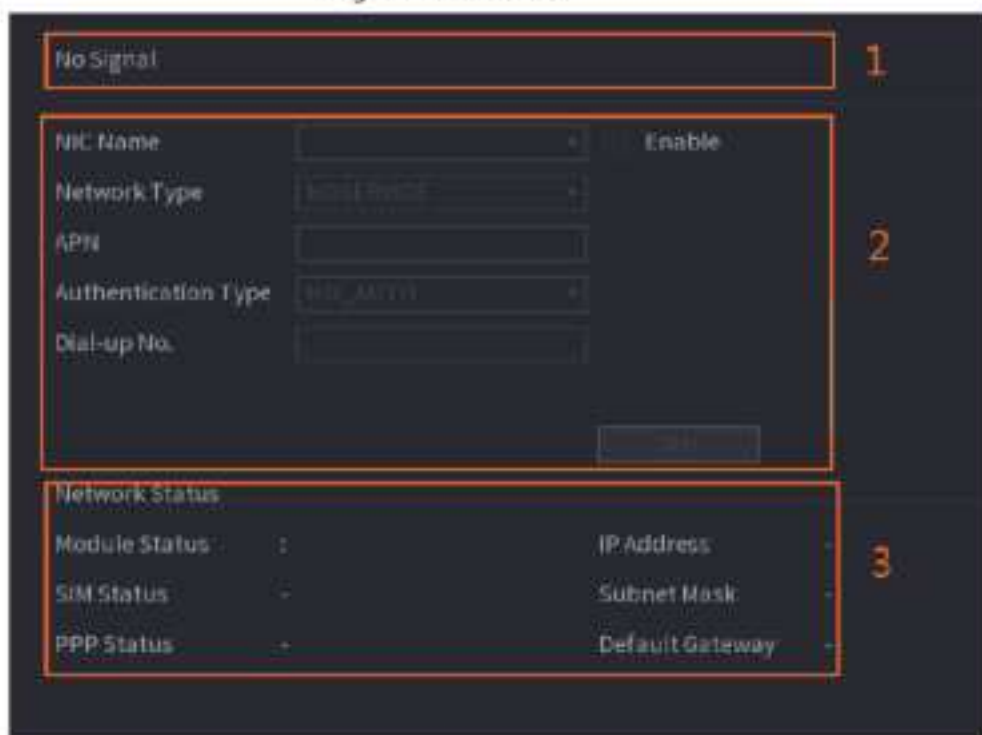


This function is available on select models.

Procedure

Step 1 Select **Main Menu > NETWORK > 3G/4G**.

Figure 5-225 3G/4G



The page is divided into three main areas:

- Zone 1 displays a 3G/4G signal indication.
- Zone 2 displays 3G/4G module configuration information.
- Zone 3 displays the status information of the 3G/4G module.



Zone 2 displays the corresponding information when the 3G/4G module is connected, while Zone 1 and Zone 3 will only display the corresponding content when the 3G/4G is enabled.

Step 2 Configure parameters.

Table 5-63 3G/4G parameters

Parameter	Description
NIC Name	Select a NIC name.

Parameter	Description
Network Type	Select a 3G/4G network type to distinguish between 3G/4G modules from different vendors.
APN, Dial-up No.	Main parameters of PPP dial.
Authentication Type	Select PAP, CHAP or NO_AUTH. NO_AUTH represents no authentication for 3G/4G.

Step 3 Click **Apply**.

5.11.7 Cellular Network

Connect the Device to mobile network and view network status and traffic of the cellular network.

Prerequisites

A SIM card is inserted in the recorder.

Background Information



This function is available on select models.

Procedure

Step 1 Select **Main Menu > NETWORK > Cellular Network > Cellular Network**.

Step 2 Enable cellular network and configure parameters.

Figure 5-226 Configuring cellular network

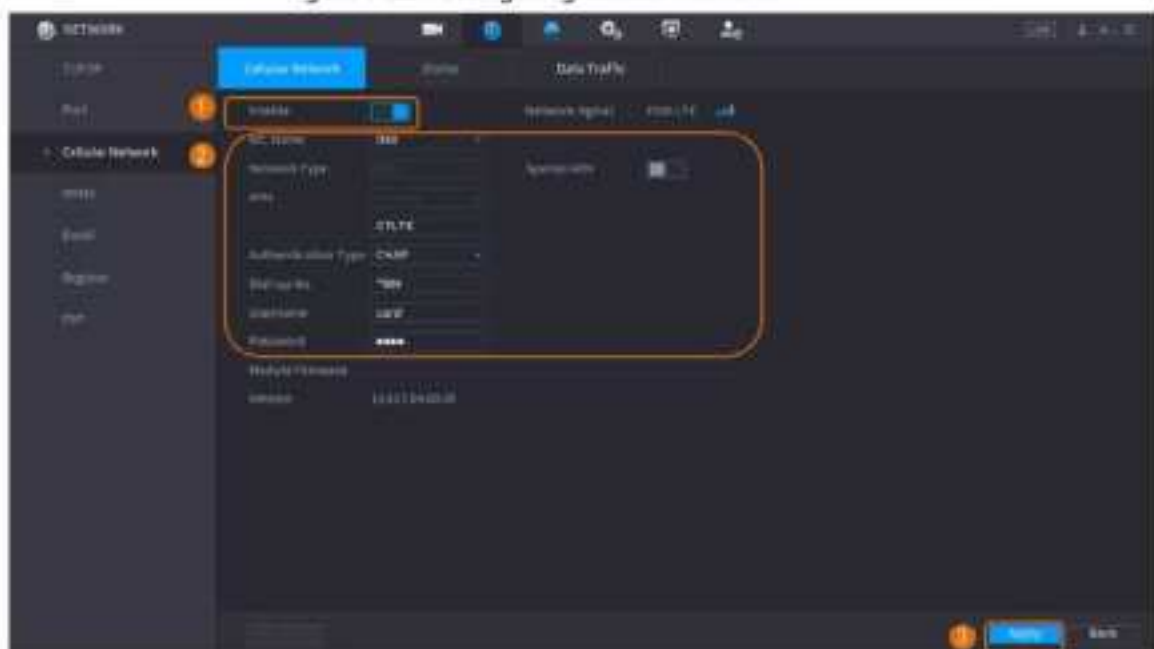


Table 5-64 4G cellular network parameters

Parameter	Description
NIC Name	Select a NIC.
Network Type	Select a network from the SIM card provider.

Parameter	Description
APN, Dial-up No.	The two main parameters of PPP dial-up connection.
Authentication Type	Select PAP , CHAP or NO-AUTH .
Username	The username for dial-up connection.
Password	The password for dial-up connection.

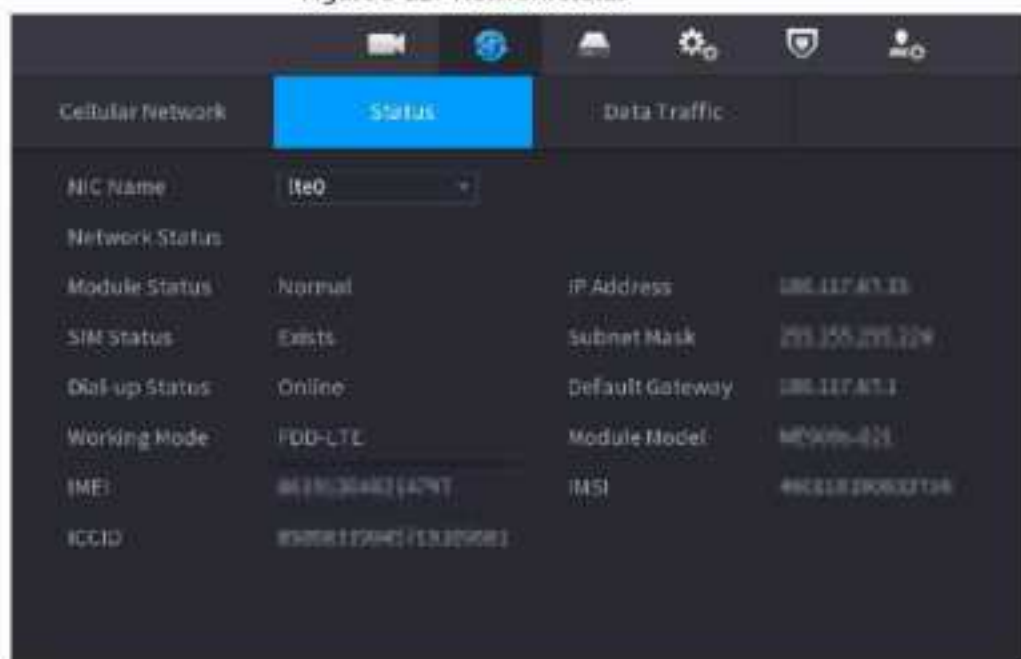
Step 3 Click **Apply**.

Related Operations

- View network status.

Click the **Status** tab to check cellular network status such as IP address, SIM card status and dial-up status.

Figure 5-227 Network status



- View data traffic.

Click the **Data Traffic** tab to view the daily and monthly data usage.

Figure 5-228 Cellular data usage



5.11.8 Repeater

The Device supports settings for the wireless repeater IPC to extend video transmission distance and range.

Prerequisites

- The Device has the built-in Wi-Fi module.
- The IPC has wireless repeater module.

Background Information



This function is available on select models.

Procedure

- Step 1 Power on the NVR and wireless repeater IPC, and connect all IPCs to the NVR through Wi-Fi.
- Step 2 Select **Main Menu** > **NETWORK** > **REPEATER**.



- Green connection line represents the successful connection between channel and wireless IPC.
- Auto cascade: After selecting auto cascade, the IPC can cascade to NVR automatically.

Figure 5-229 Repeater

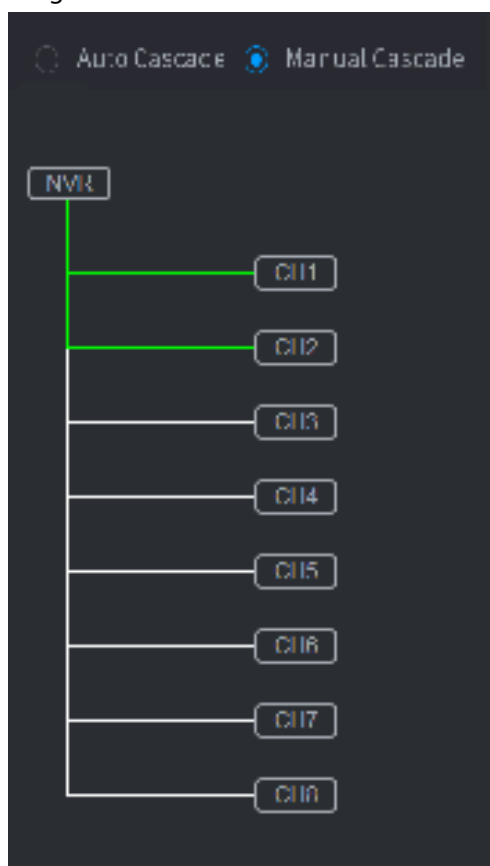


Step 3 Select **Manual Cascade**.



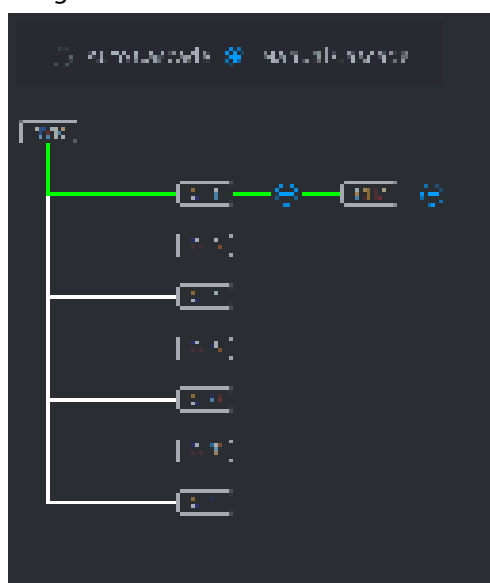
You can use manual cascade when there are at least two IPCs on the network.

Figure 5-230 Manual cascade



Step 4 Click and select the channel to be added.

Figure 5-231 Added channel



Step 5 Click **Apply**.

5.11.9 PPPoE

PPPoE is another way for the Device to access the network. You can establish network connection by configuring PPPoE settings to give the Device a dynamic IP address on the WAN.

Prerequisites

To use this function, firstly you need to obtain the username and password from the Internet Service Provider.

Procedure

Step 1 Select **Main Menu > NETWORK > PPPoE**.

Figure 5-232 PPPoE

Step 2 Enable the PPPoE function.

Step 3 Enter the username and password provided by the Internet Service Provider.

Step 4 Click **Apply**.

The IP address appears on the PPPoE page. You can use this IP address to access the Device.



When the PPPoE function is enabled, the IP address on the **TCP/IP** page cannot be modified.

5.11.10 DDNS

When the IP address of the Device changes frequently, the DDNS function can dynamically refresh the correspondence between the domain on DNS and the IP address. You can access the Device by using the domain.

Prerequisites

Check the type of DDNS that the Device supports and then log in to the website provided by the DDNS service provider to register domain and other information.



After registration, you can log in to the DDNS website to view the information of all the connected devices under the registered account.

Procedure

Step 1 Select **Main Menu > NETWORK > DDNS**.

Figure 5-233 DDNS



Step 2 Enable DDNS and then configure the parameters.



After you enable DDNS function, the third-party server might collect your device information.

Table 5-65 DDNS parameters

Parameter	Description
Type	Displays the type and address of DDNS service provider.
Server Address	- For Dyndns DDNS, the default address is members.dyndns.org. - For NO-IP DDNS, the default address is dynupdate.no-ip.com. - For CN99 DDNS, the default address is members.3322.org.
Domain Name	Enter the domain name that you have registered on the website of DDNS service provider.
Username	Enter the username and password obtained from DDNS service provider. You need to register the username, password and other information on the website of DDNS service provider.
Password	
Interval	Enter the interval at which you want to update the DDNS.

Step 3 Click **Apply**.

Enter the domain name in the browser on your computer, and then press the Enter key. If the web page of the Device is displayed, the configuration is successful. If not, the configuration failed.

5.11.11 UPnP

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.

5.11.11.1 Configuring Router

Procedure

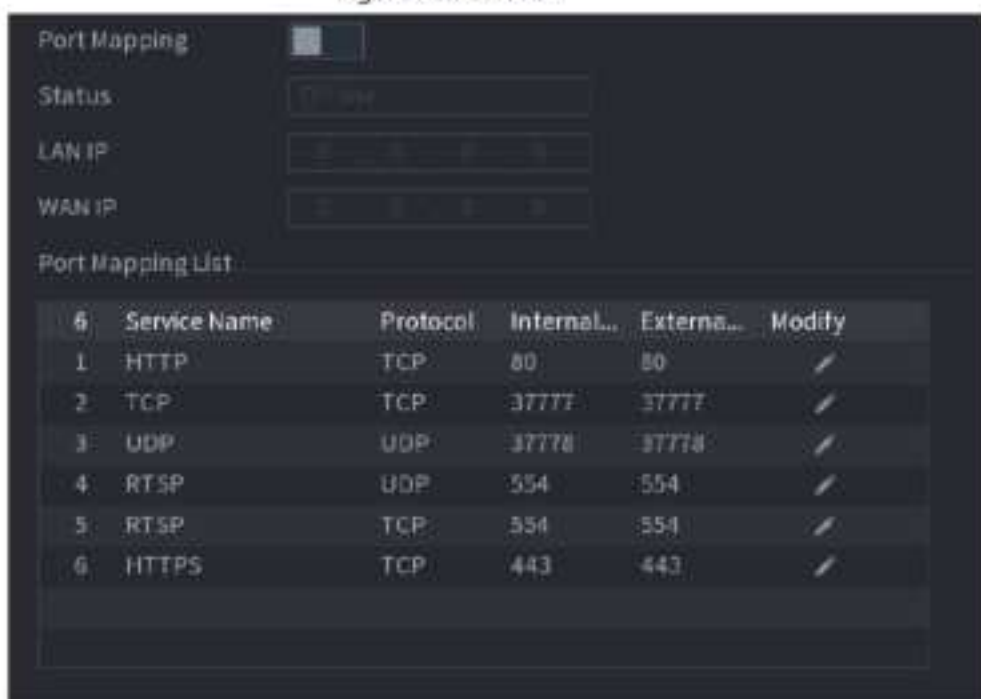
- Step 1** Log in to the router to set the WAN port to enable the IP address to connect into the WAN.
- Step 2** Enable the UPnP function on the router.
- Step 3** Connect the Device with the LAN port on the router to connect into the LAN.
- Step 4** Select **Main Menu > NETWORK > TCP/IP**, configure the IP address into the router IP address range, or enable the DHCP function to obtain an IP address automatically.

5.11.11.2 Configuring UPnP

Procedure

- Step 1** Select **Main Menu > NETWORK > UPnP**.

Figure 5-234 UPnP



#	Service Name	Protocol	Internal...	Externa...	Modify
1	HTTP	TCP	80	80	/
2	TCP	TCP	37777	37777	/
3	UDP	UDP	37778	37778	/
4	RTSP	UDP	554	554	/
5	RTSP	TCP	554	554	/
6	HTTPS	TCP	443	443	/

- Step 2** Configure the settings for the UPnP parameters.

Table 5-66 UPnP parameters

Parameter	Description
Port Mapping	Enable the UPnP function.

Parameter	Description
Status	Indicates the status of UPnP function. - Offline: Failed. - Online: Succeeded.
LAN IP	Enter IP address of router on the LAN.  After mapping succeeded, the system obtains IP address automatically.
WAN IP	Enter IP address of router on the WAN.  After mapping succeeded, the system obtains IP address automatically.
Port Mapping List	The settings on port mapping list correspond to the UPnP port mapping list on the router. - Service Name: Name of network server. - Protocol: Type of protocol. - Internal Port: Internal port that is mapped on the Device. - External Port: External port that is mapped on the router.  - To avoid 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 on the LAN, properly arrange the ports mapping relations 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 3 Click **Apply** to complete the settings.

In the browser, enter http://WAN IP: External IP port. You can visit the Device on the LAN.

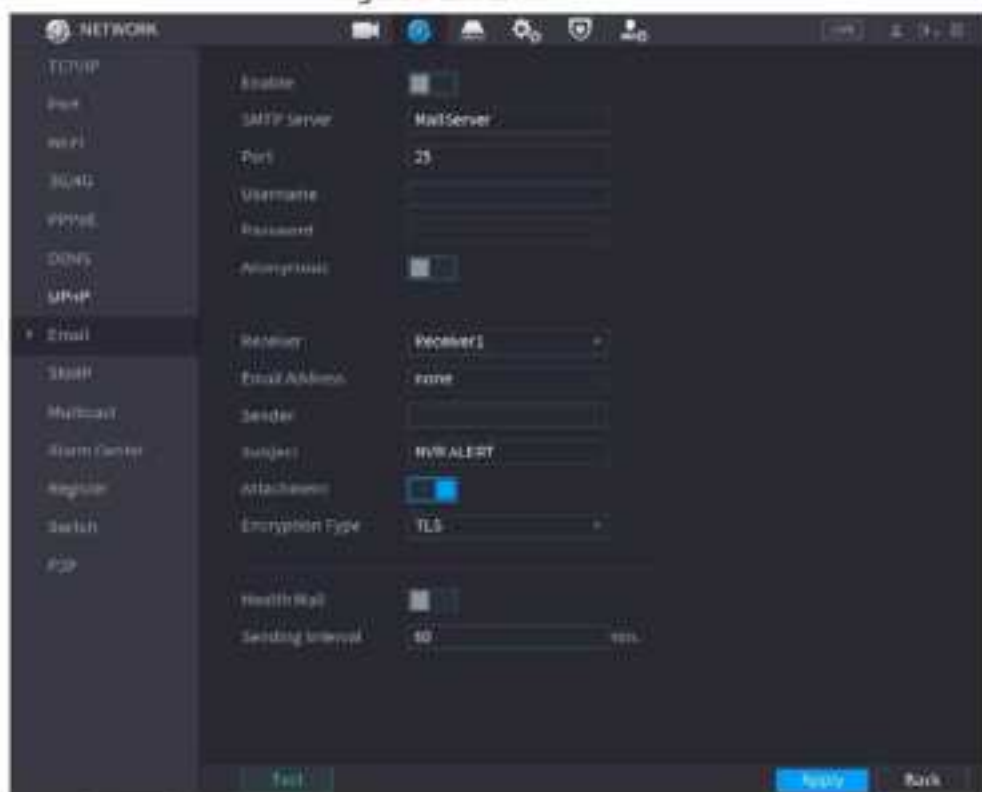
5.11.12 Email

You can configure the email settings to enable the system to send the email as a notification when an alarm event occurs.

Procedure

Step 1 Select **Main Menu > NETWORK > Email**.

Figure 5-235 Email



Step 2 Click ☐ to enable the function.

Step 3 Configure the email parameters.

Table 5-67 Email parameters

Parameter	Description
SMTP Server	Enter the address of SMTP server of sender's email account.
Port	Enter the port of SMTP server. The default value is 25.
Username	Enter the username and password of sender's email account.
Password	
Anonymous	Enable anonymous login.
Receiver	Select the receiver to receive the notification. You can select up to three receivers.
Email Address	Enter the email address of mail receivers.
Sender	Enter the sender's email address. You can enter up to three senders separated by comma.
Subject	Enter the email subject. You can enter Chinese, English and numerals with the length limited to 64 characters.
Attachment	Enable the attachment function. When there is an alarm event, the system can attach snapshots as an attachment to the email.

Parameter	Description
Encryption Type	Select the encryption type from NONE, SSL, or TLS.  For SMTP server, the default encryption type is TLS.
Interval (Sec.)	Set the interval at which the system sends an email for the same type of alarm event to avoid excessive pileup 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.
Sending Interval	Set the interval at which the system sends a health test email. The value ranges from 30 to 1440. 0 means that there is no interval.
Test	Click Test to test the email sending function. If the configuration is correct, the receiver's email account will receive the email.  Before testing, click Apply to save the settings.

Step 4 Click **Apply**.

5.11.13 SNMP

You can connect the Device with some software such as MIB Builder and MG-SOFT MIB Browser to manage and control the Device from the software.

Prerequisites

- 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.



This function is available on select models.

Procedure

Step 1 Select **Main Menu > NETWORK > SNMP**.

Figure 5-236 SNMP

Step 2 Click to enable the function.

Step 3 Configure the parameters.

Table 5-68 SNMP parameters

Parameter	Description
Version	Select the checkbox of SNMP version that you are using. The default version is V3 . There is a risk if you use V1 or V2.
SNMP Port	Enter the monitoring port on the agent program.
Read Community	Enter the read and write strings supported by the agent program.
Write Community	
Trap Address	Enter the destination address for the agent program to send the Trap information.
Trap Port	Enter the destination port for the agent program to send the Trap information.
Read-Only Username	Enter the username that is allowed to access the Device and has the read-only permission.
Read/Write Username	Enter the username that is allowed to access the Device and has the read and write permission.

Parameter	Description
Authentication Type	Select MD5 or SHA. The system recognizes the type automatically.
Authentication Password	Enter the password for authentication. The password should be no less than eight characters.
Encryption Type	Select an encryption type. The default setting is CBC-DES.
Encryption Password	Enter the encryption password.

Step 4 Click **Apply**.

Step 5 Compile the two MIB files by MIB Builder.

Step 6 Run MG-SOFT MIB Browser to load in the module from compilation.

Step 7 On the MG-SOFT MIB Browser, enter the device IP that you want to manage, and then select the version number to query.

Step 8 On the MG-SOFT MIB Browser, unfold the tree-structured directory to obtain the configurations of the Device, such as the channels quantity and software version.

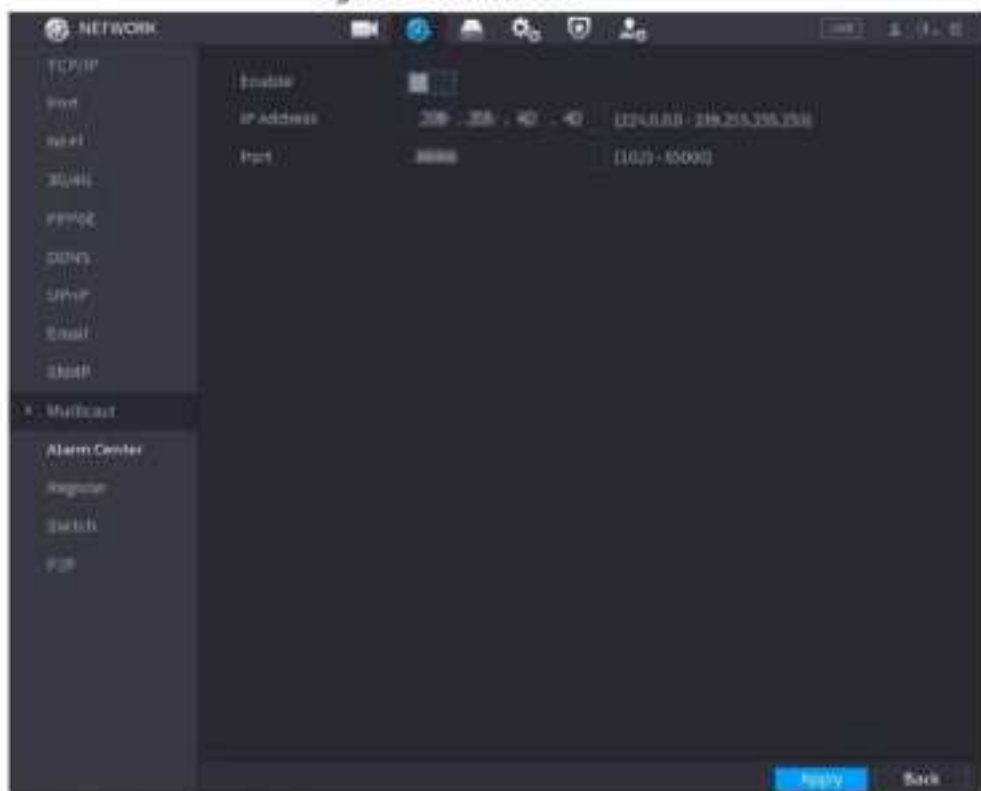
5.11.14 Multicast

When you access the Device from the network to view the video, if the access is exceeded, the video will not display. You can use the multicast function to group the IP to solve the problem.

Procedure

Step 1 Select **Main Menu > NETWORK > Multicast**.

Figure 5-237 Multicast



Step 2 Configure the parameters.

Table 5-69 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**.

You can log in to the web page via multicast.

On the web login page, on the **Type** list, select **Multicast**. The web will automatically obtain the multicast IP address and join the multicast group. Then you can view the video through multicast function.

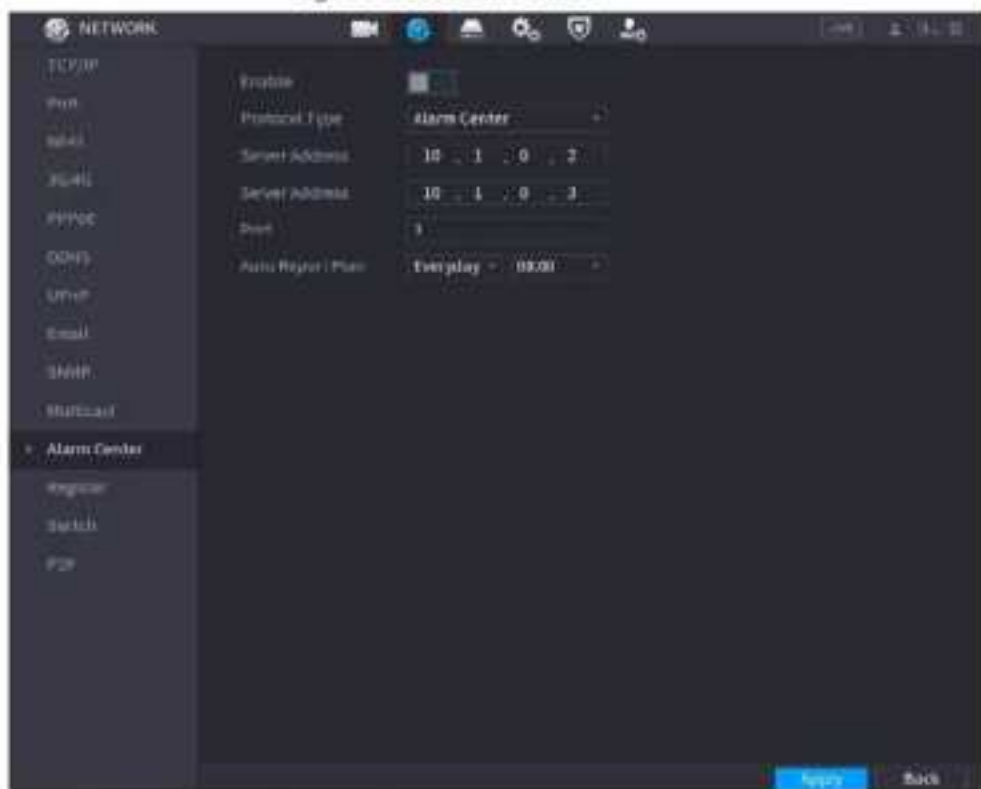
5.11.15 Alarm Center

You can configure the alarm center server to receive the uploaded alarm information.

Procedure

Step 1 Select **Main Menu > NETWORK > Alarm Center**.

Figure 5-238 Alarm center



Step 2 Click ☒ to enable the function.

Step 3 Configure the parameters.

Table 5-70 Alarm center parameters

Parameter	Description
Protocol Type	Select a protocol type.
Server Address	The IP address and communication port of the PC installed with alarm client.
Port	
Auto Report Plan	Select time cycle and specific time for uploading alarm.

Step 4 Click **Apply**.

5.11.16 Register

You can register the Device into the specified proxy server which acts as the transit to enable the client software to access the Device.

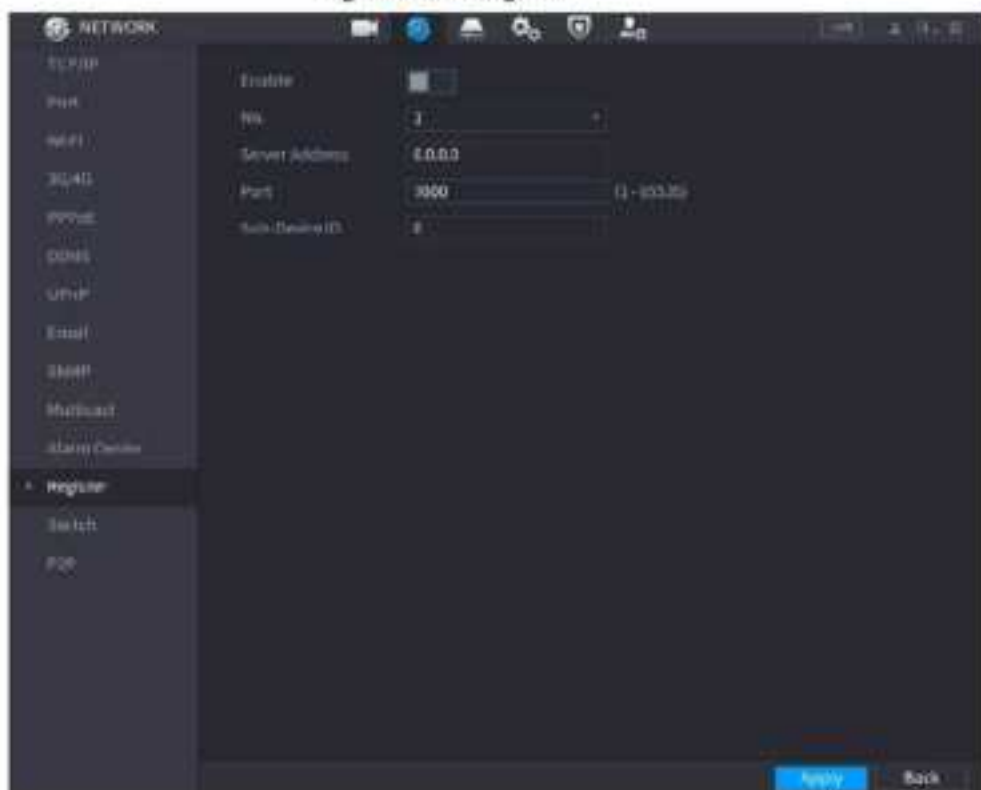
Prerequisites

- The proxy server has been deployed.
- The Device, the proxy server and the device running the client software are on the same network.

Procedure

Step 1 Select **Main Menu > NETWORK > Register**.

Figure 5-239 Register



Step 2 Click ☐ to enable the function.

Step 3 Configure the parameters.

Table 5-71 Register parameters

Function	Description
Server Address	Enter the IP address or domain name of the server that you want to register to.
Port	Enter the port of the server.
Sub-Device ID	Enter the ID allocated by the server.

Step 4 Click **Apply**.

5.11.17 Switch

Background Information

After setting **Switch**, when an IPC is connected to the PoE port, the system automatically assigns the IP address to the IPC according to the defined IP segment, and the NVR will automatically connect to the IPC.

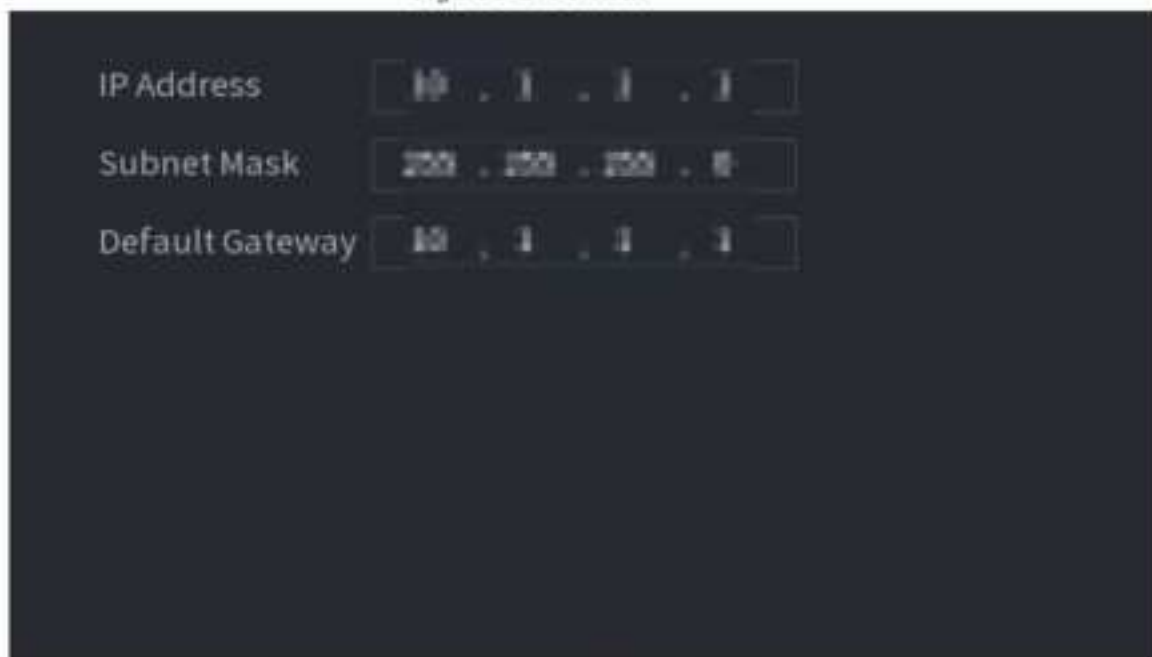


- Only models with PoE ports support this function.
- Do not connect the PoE port with a switch, otherwise it will cause connection failure.
- This function is enabled by default, and the IP segment start from 10.1.1.1. We recommend you use the default setting.
- When connecting to a third-party IPC, make sure that the IPC supports ONVIF protocol and DHCP is enabled.

Procedure

Step 1 Select **Main Menu > NETWORK > Switch**.

Figure 5-240 Switch



The screenshot shows a dark-themed configuration window for the 'Switch' function. It contains three rows of input fields:

- IP Address:** A field with the value '10.1.1.1' entered.
- Subnet Mask:** A field with the value '255.255.255.0' entered.
- Default Gateway:** A field with the value '10.1.1.1' entered.

Step 2 Configure IP address, subnet mask, and default gateway.



Do not set the IP address to the same network segment with the NVR. We recommend you use the default setting.

Step 3 Click **Apply**.

Related Operations



When connecting IP camera to PoE port, if all the channels are occupied, the system prompts you whether to take place of one channel.

Table 5-72 PoE operation

PoE operation	Description
Connect to PoE port	When an IPC is connected to the PoE port, the system automatically assigns the IP address to the IPC according to the set IP segment. The NVR will try the method of arp ping to assign the IP address. If DHCP is enabled on the NVR, the NVR will use DHCP to assign the IP address. - When IP address is successfully set, the system will broadcast through the switch function. If there is a response from the IPC, it means the connection is successful, and the NVR will log in to the IPC. You can find the corresponding channel occupied and there is a PoE icon at the upper-left corner. - You can also view PoE status such as channel number and PoE port number on the Added Device list in Main Menu > CAMERA > Camera List.
Disconnect PoE port	When an IPC is disconnected from PoE port, you will find the information of Failed to find network host on the live channel window.
PoE connection mapping	The PoE ports are bound to corresponding channels. When an IPC is connected to PoE port 1, the corresponding channel is Channel 1.

5.11.18 P2P

P2P is a kind of convenient private network penetration technology. Instead of applying for dynamic domain name, mapping ports or deploying transit server, you can add NVR devices to the app for remote management.

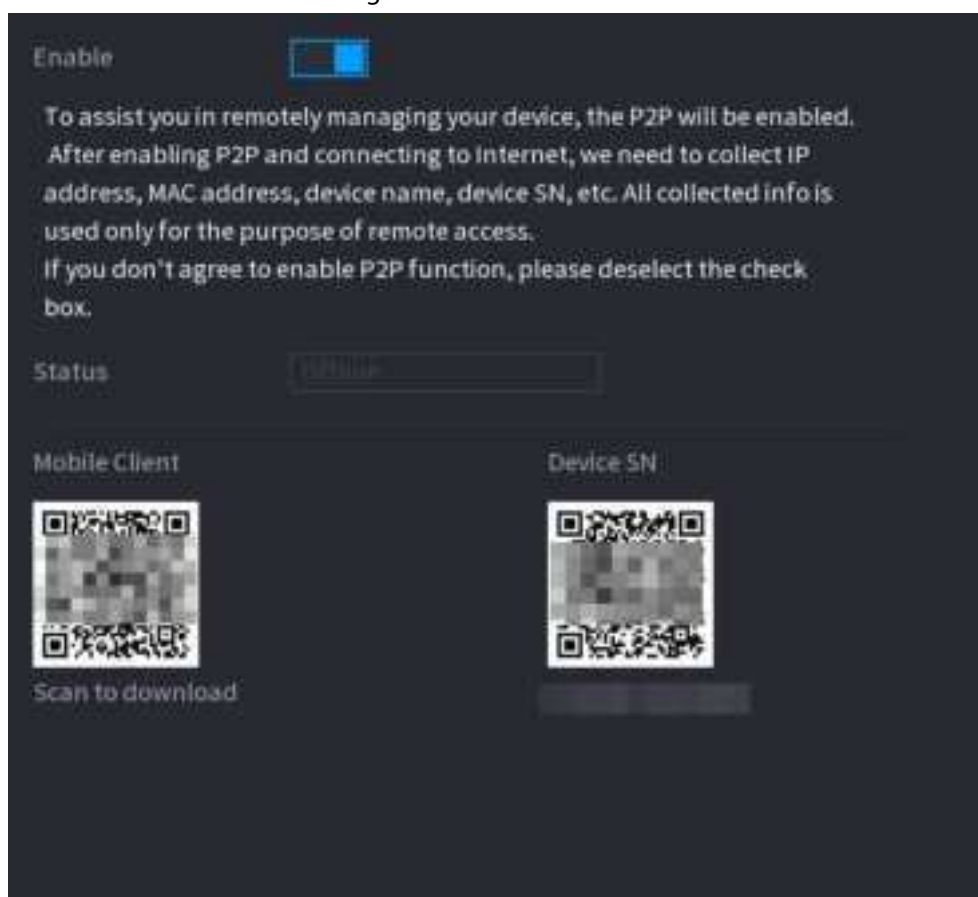


This function will consume the device traffic when the device is online.

Procedure

Step 1 Select **Main Menu > NETWORK > P2P**.

Figure 5-241 P2P



Step 2 Enable the P2P function.



After you enable the P2P function and connect to the Internet, the system will collect the information such as email address and MAC address for remote access.

Step 3 Click **Apply**.

The P2P function is enabled. You can use your phone to scan the QR code under **Mobile Client** to download and install the mobile client. After that, you can use the mobile client to scan the QR code under **Device SN** to add the Device for remote management. For details on the app operation, see the user's manual of the app.

5.12 Storage

You can manage the storage resources (such as record file) and storage space. So that it is easy for you to use and enhance storage space usage.

5.12.1 Basic

You can set basic storage parameters.

Procedure

Step 1 Select **Main Menu > STORAGE > Basic**.

Figure 5-242 Basic storage



Disk Full: Overwrite

Create Video Files: Time Length: 60 min

Delete Expired Files: Never

Sleep Strategy: ☒ Auto ☐ Never

Step 2 Set parameters.

Table 5-73 Basic storage parameters

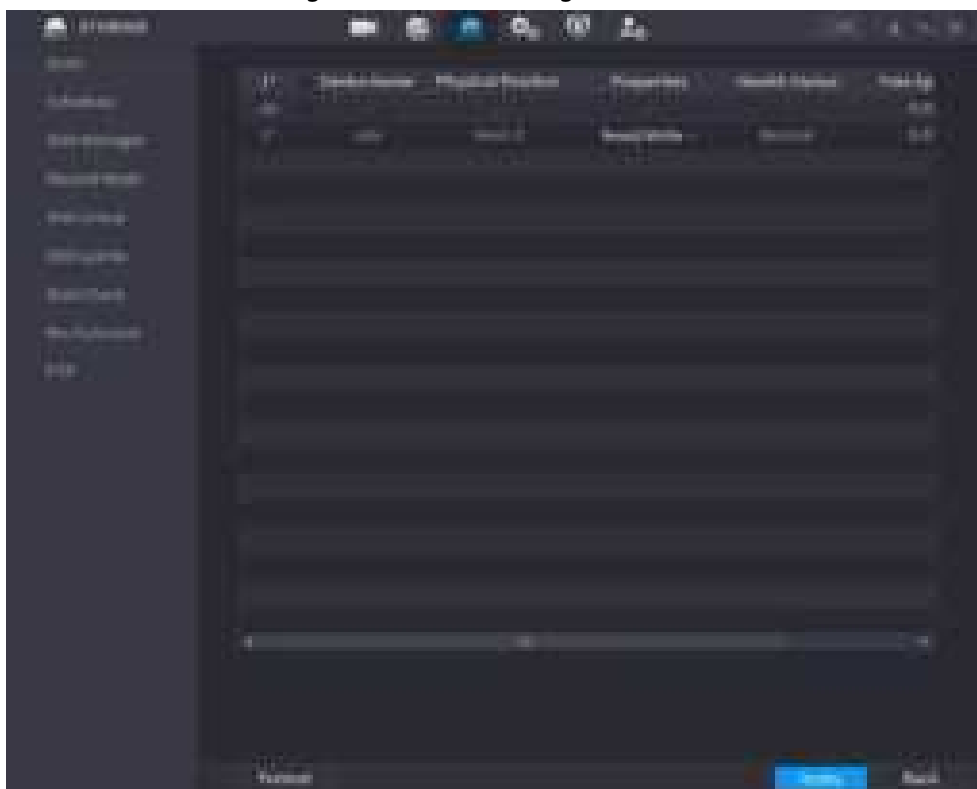
Parameter	Description
Disk Full	Configure the storage strategy to be used when no more storage space is available. • Stop: Stop recording. • Overwrite: The newest files overwrite the oldest ones.
Create Video Files	Configure the time length and file length for each recorded video.
Delete Expired Files	Configure whether to delete the old files. • Select Auto and then configure how long you want to keep the old files. • Select Never if you do not want to use this function.  Deleted files cannot be recovered.
Sleep Strategy	• Auto: The system sleeps automatically after idling for a period of time. • Never: The system keeps running all the time.

Step 3 Click **Apply**.

5.12.2 Disk Manager

Select **Main Menu > STORAGE > Disk Manager**, and then you can set HDD properties and format HDD.

Figure 5-243 Disk manager



View HDD Information

You can view the physical position, properties, status and storage capacity of each HDD.

Configure HDD Properties

In the **Properties** column, you can set read and write, read-only and redundant HDD.



When there are two or more HDDs installed on the Device, you can set one HDD as redundant disk to back up recorded files.

Format HDD

Select an HDD, click **Format**, and then follow the on-screen prompts to format the HDD.



- Formatting will erase all data in the HDD, proceed with caution.
- You can select whether to erase the HDD database. If the HDD database is erased, the AI search data and the uploaded audio files will be deleted.

5.12.3 RAID

RAID (redundant array of independent disks) is a data storage virtualization technology that combines multiple physical HDD components into a single logical unit for the purposes of data redundancy, performance improvement, or both.



RAID function is available on select models.

Table 5-74 Disk quantity for different RAID types

RAID type	Required disk quantity
RAID 0	At least 2.
RAID 1	Only 2.
RAID 5	At least 3. We recommend using 4 disks to 6 disks.
RAID 6	At least 4.
RAID 10	

5.12.3.1 Creating RAID

RAID has different levels, such as RAID 5 and RAID 6. Each level has different data protection, data availability, and performance grade. You can create different types of RAID as needed.

Background Information

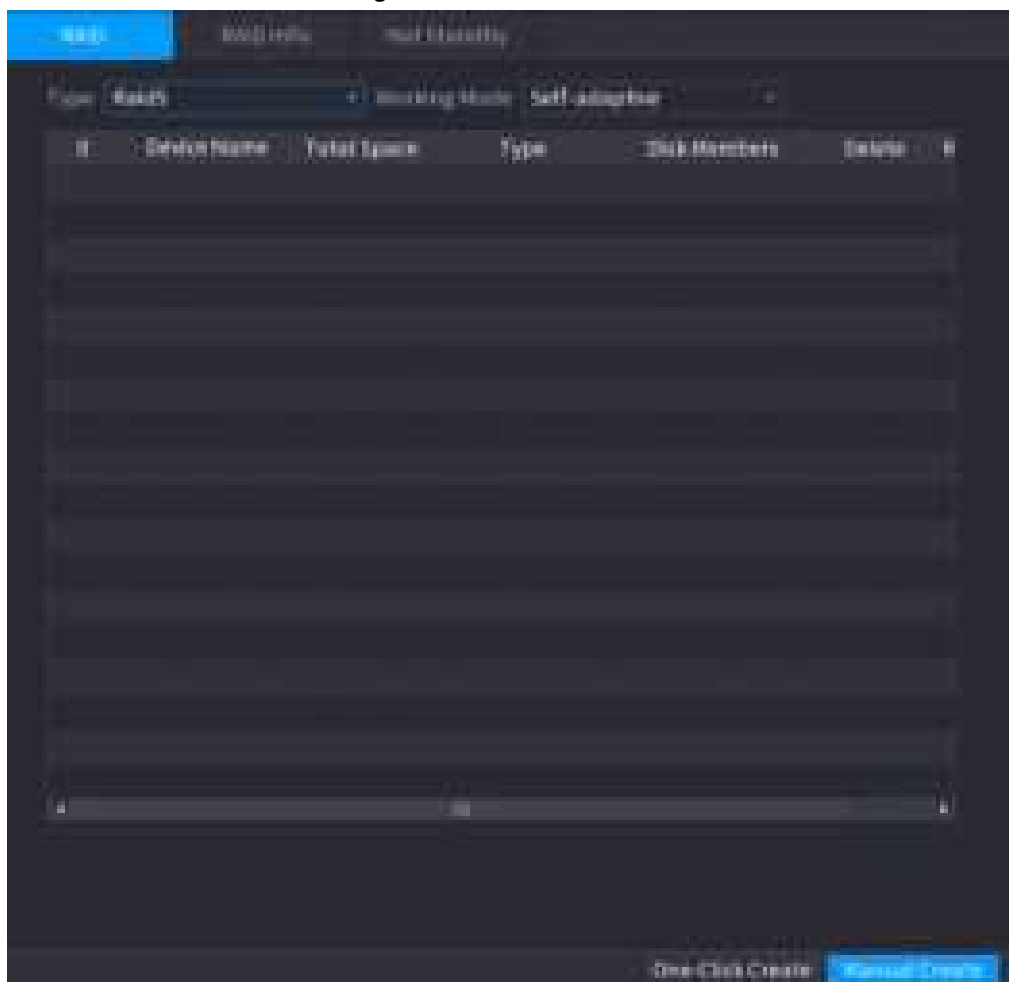


When you create RAID, the disks in the RAID group will be formatted. Back up data in time. You can create different types of RAID as needed.

Procedure

Step 1 Select **Main Menu > STORAGE > RAID > RAID**.

Figure 5-244 RAID



Step 2 Select RAID type and working mode.

The working mode determines how the system allocate resources.

- **Self-Adaptive:** Automatically adjust the RAID synchronization speed according to the business status.
 - ◇ When there is no business running, synchronization is performed at a high speed.
 - ◇ When there is business running, synchronization is performed at a low speed.
- **Sync First:** Resource priority is assigned to RAID synchronization.
- **Business First:** Resource priority is assigned to business operations.
- **Balance:** Resource is evenly distributed to RAID synchronization and business operations.

Step 3 Create RAID.

- Automatic creation.
Select disks, and then click **Create RAID**. The system will create RAID 5 automatically.



Automatic creation of RAID is available only when the RAID type is **Raid5**.

- Manual creation.
Select disks, click **Create Manually** and then follow the on-screen instructions to create RAID.

Related Operations

- Change working mode.
Click to change the working mode of the RAID group.
- Delete RAID.
Click to delete the RAID group.



When you delete a RAID group, the disks in the RAID group will be formatted.

5.12.3.2 Viewing RAID Information

Select **Main Menu > STORAGE > RAID > RAID Info**. You can view the RAID information, including type, disk space, hot spare, and status.

5.12.3.3 Creating Hot Spare Disk

You can create a hot spare disk. When a disk of the RAID group malfunctions, the hot spare disk can replace the malfunctioning disk.

Procedure

Step 1 Select **Main Menu > STORAGE > RAID > Hotspare Disk**.

Figure 5-245 Hotspare disk

Name	Capacity	Type	Hot Spare	# of RAID
1 Disk 1	800 GB	General HDD	✓	1
2 Disk 2	2TB TB	General HDD	✓	
3 Disk 3	700 GB	General HDD	✓	

Step 2 Click .

Figure 5-246 Local hotspare

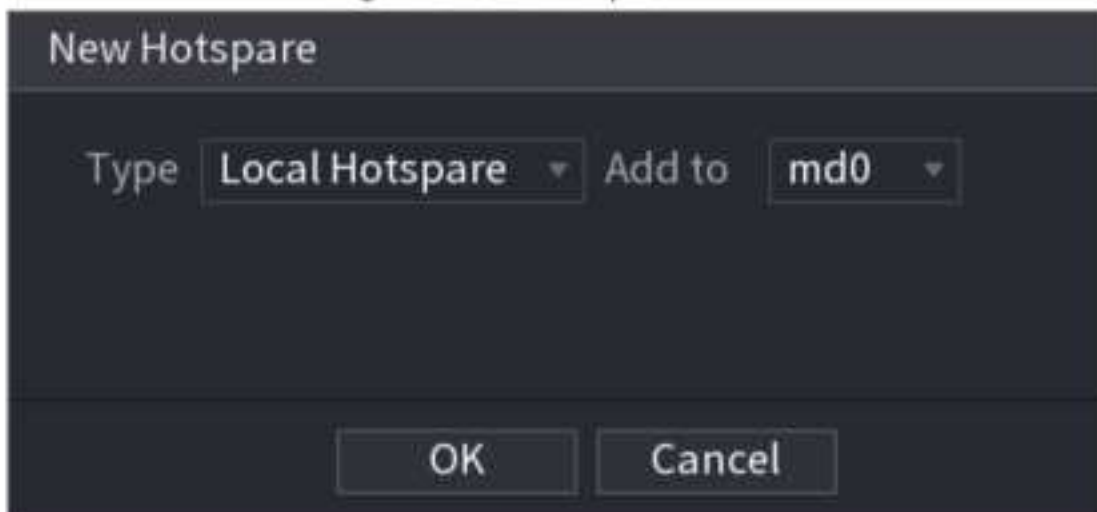
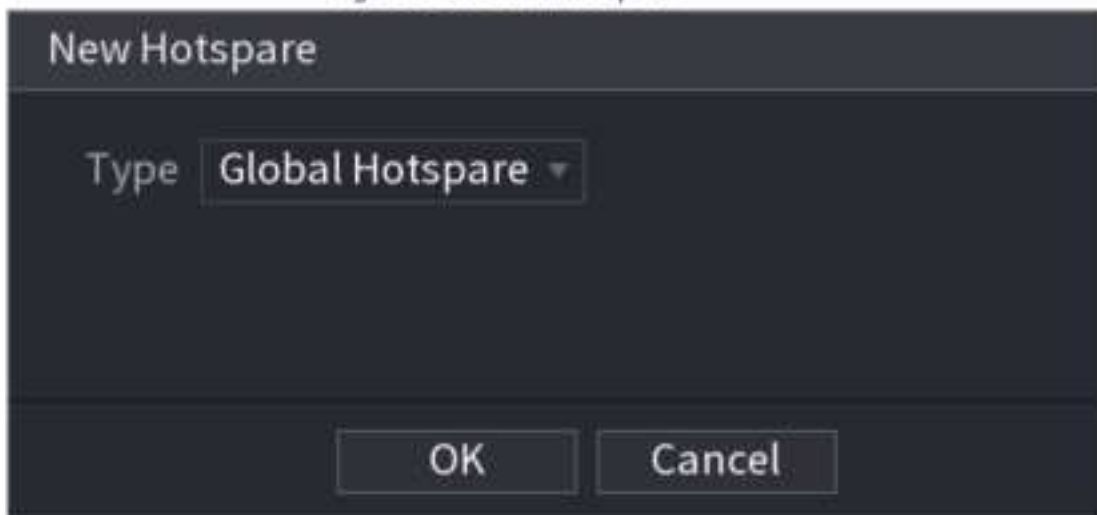


Figure 5-247 Global hotspare



Step 3 You can select **Local Hotspare** or **Global Hotspare**.

- **Local Hotspare:** Select the target disk, and the current disk will serve as the hot spare disk for the selected target disk.
- **Global Hotspare:** The current disk will serve as the hot spare disk of the entire RAID.

Step 4 Click **OK**.



Click  to delete a hot spare disk.

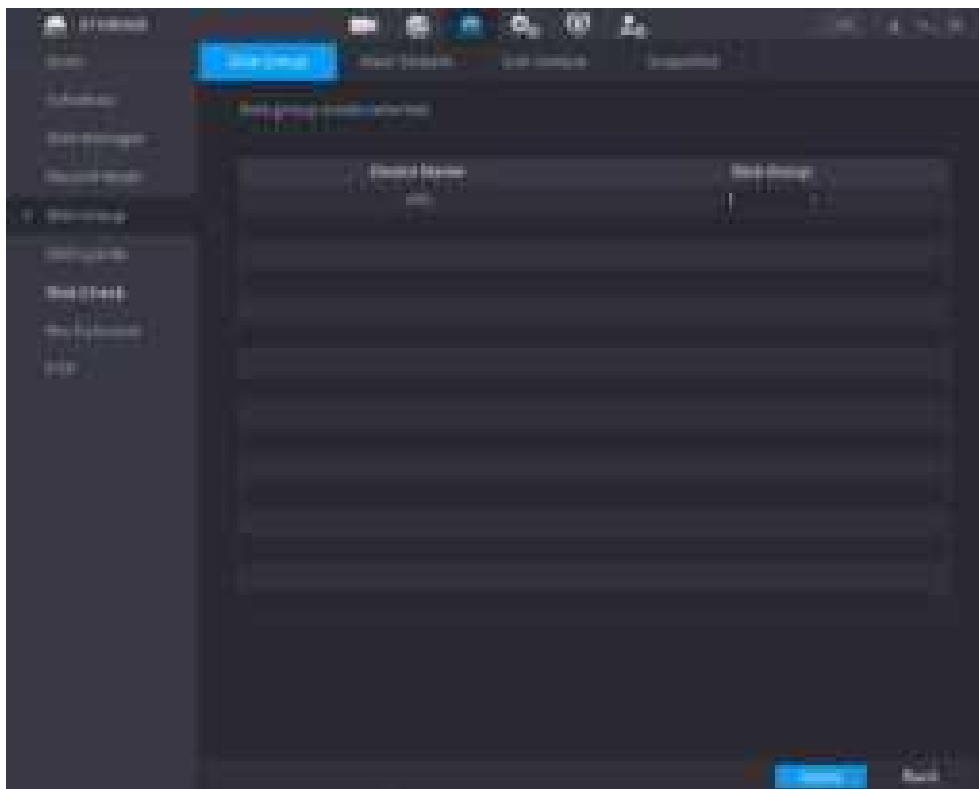
5.12.4 Disk Group

By default, the installed HDD and created RAID are in Disk Group 1. You can set HDD group, and HDD group setup for main stream, sub stream and snapshot operation.

Procedure

Step 1 Select **Main Menu > STORAGE > Disk Group**.

Figure 5-248 Disk group



Step 2 (Optional) If **Disk Quota is selected** is shown on the page, click **Switch to Disk Group Mode** and then follow the on-screen instructions to format disks.

Step 3 Select the group for each HDD, and then click **Apply**.
After configuring HDD group, under the **Main Stream** tab, **Sub Stream** tab and **Snapshot** tab, configure settings to save the main stream, sub stream and snapshot to different disk groups.

5.12.5 Disk Quota

You can allocate a certain storage capacity for each channel to manage the storage space properly.

Background Information



- If **Disk group mode selected.** is shown in the page, click **Switch to Quota Mode.**
- Disk quota mode and disk group mode cannot be selected at the same time.

Procedure

Step 1 Select **Main Menu > STORAGE > Disk Quota.**

Figure 5-249 Disk Quota

Disk group mode selected.
Switch to Quota Mode

Channel	D1
Record Duration(Days)	0
Bit Rate(Kb/S)	4096
Estimated Capacity of...	0
Storage Capacity of Pi...	0
Used Capacity of Reco...	0
Used Capacity of Pict...	0
HDD Capacity (GB)	2777.85
Quota Capacity (GB)	2777.85

Step 2 (Optional) If **Disk group mode selected** is shown on the page, click **Switch to Quota Mode** and then follow the on-screen instructions to format disks.

Step 3 Select a channel and set the record duration, bit rate and storage capacity of picture.

Step 4 Click **Apply**.

5.12.6 Disk Check

The system can detect HDD status so that you can clearly understand the HDD performance and replace the malfunctioning HDD.

5.12.6.1 Manual Check

Procedure

Step 1 Select **Main Menu > STORAGE > Disk Check > Manual Check**.

Figure 5-250 Manual check



Step 2 Select the detection type.

- Key area detect: The system detects the used space of the HDD through the built-in file system. This type of detection is efficient.
- Global detection: The system detects the entire HDD through Window. This type of detection takes time and might affect the HDD that is recording.

Step 3 Select the HDD that you want to detect.

Step 4 Click **Start Check**.

The system starts detecting the HDD and displays the detection information.



When system is detecting HDD, click **Stop Check** to stop current detection. Click **Start Check** to detect again.

5.12.6.2 Detection Report

After the detection, you can view the detection report.

Procedure

Step 1 Select **Main Menu > STORAGE > Disk Check > Check Report**.

Figure 5-253 S.M.A.R.T

Details						
Overview	S.M.A.R.T					
Model	S.M.A.R.T					
Model	S.M.A.R.T					
Model	S.M.A.R.T					
Model	S.M.A.R.T					
Model	S.M.A.R.T					
ID	Attribute	Threshold	Value	Warning	Current Value	Health
1	Reallocated Sectors Count	10	10	10	1	OK
2	Throughput Performance	10	10	10	10	OK
3	Spin Up Time	20	20	20	20	OK
4	Start Up Error Count	0	0	0	0	OK
5	Reallocated Sectors Count	10	10	10	10	OK

5.12.6.3 Disk Health Monitoring

Monitor health status of disks, and repair if any exceptions are found so as to avoid data loss.

Select **Main Menu** > **STORAGE** > **Disk Check** > **Health Monitoring**.

Click  to show disk details page. Then select **Check Type**, set time period, and then click **Search**.

The system shows the details of disk monitoring status.

Figure 5-254 Disk details



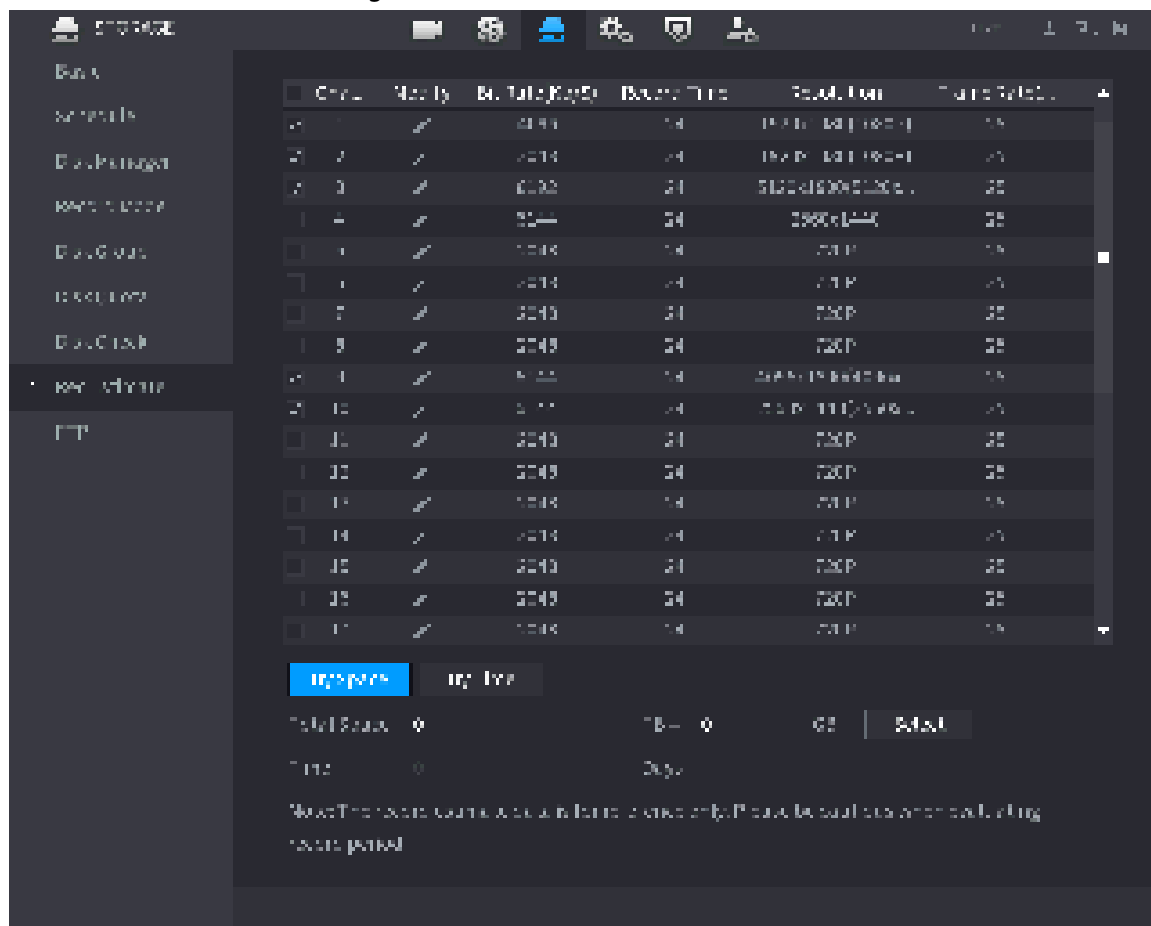
5.12.7 Record Estimate

Record estimate function can calculate how long you can record video according to the HDD capacity, and calculate the required HDD capacity according to the record period.

Procedure

Step 1 Select Main Menu > **STORAGE** > **Rec Estimate**.

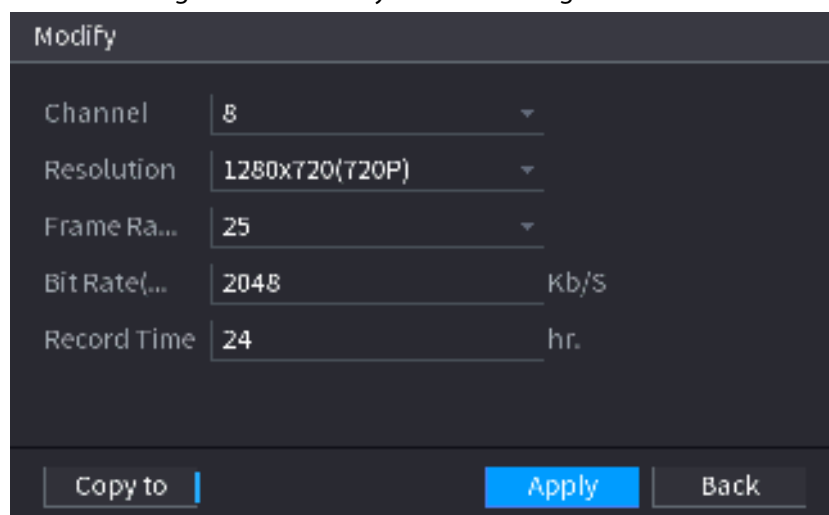
Figure 5-255 Record estimation



Step 2 Click .

You can configure the **Resolution**, **Frame Rate**, **Bit Rate** and **Record Time** for the selected channel.

Figure 5-256 Modify channel settings



Step 3 Click **Apply**.

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.

5.12.7.1 Calculating Recording Time

Procedure

Step 1 On the **Rec Estimate** page, click the **By Space** tab.

Figure 5-257 By space

Step 2 Click **Select**.

Step 3 Select the checkbox of the HDD that you want to calculate.

Figure 5-258 Recording time

5.12.7.2 Calculating HDD Capacity for Storage

Procedure

Step 1 On the **Rec Estimate** page, click the **By Time** tab.

Figure 5-259 By time

Step 2 In the **Time** box, enter the time period that you want to record.

In the **Total Space** box, the required HDD capacity is displayed.

5.12.8 FTP

You can store and view the recorded videos and snapshots on the FTP server.

Prerequisites

Purchase or download a FTP (File Transfer Protocol) server and install it on your PC.

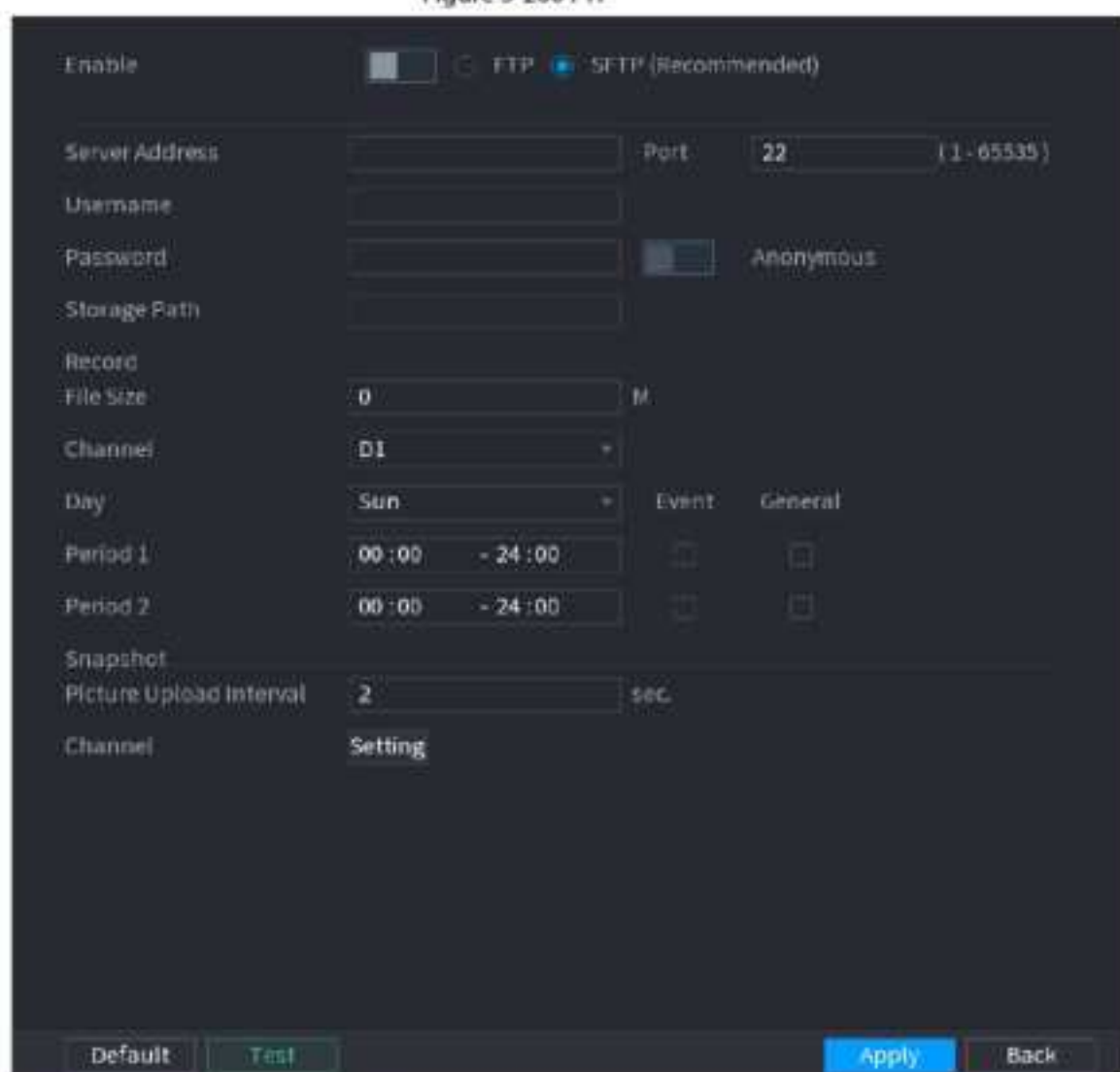


For the created FTP user, you need to set the write permission; otherwise the upload of recorded videos and snapshots will be failed.

Procedure

Step 1 Select **Main Menu > STORAGE > FTP**.

Figure 5-260 FTP



Step 2 Configure the parameters.

Table 5-75 FTP parameters

Parameter	Description
Enable	Enable the FTP upload function.

Parameter	Description
FTP type	Select FTP type. - FTP: Plaintext transmission. - SFTP: Encrypted transmission (recommended).
Server Address	IP address of FTP server.
Port	Enter the port of the FTP server. - FTP: The default is 21. - SFTP: The default is 22.
Username	Enter the username and password to log in to the FTP server. If you enable the anonymity function, you can log in anonymously without entering the username and password.
Password	
Anonymous	
Storage Path	Create folder on FTP server. - If you do not enter the name of remote directory, the system automatically creates the folders according to the IP and time. - If you enter the name of remote directory, the system creates the folder with the entered name under the FTP root directory first, and then automatically creates the folders according to the IP and time.
File Size	Enter the length of the uploaded recorded video. - 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.
Picture Upload Interval	- 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, 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, go to Main Menu > CAMERA > Encode > Snapshot.
Channel	Select the channel that you want to apply the FTP settings.
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** to validate the FTP connection.

If FTP connection failed, check the network and FTP settings.

Step 4 Click **Apply**.

5.12.9 iSCSI

Background Information

Internet Small Computer Systems Page (iSCSI) is a transport layer protocol that works on top of the Transport Control Protocol (TCP), and enables block-level SCSI data transport between the iSCSI initiator and the storage target over TCP/IP networks. After the network disk is mapped to the NVR device through iSCSI, the data can be stored on the network disk.

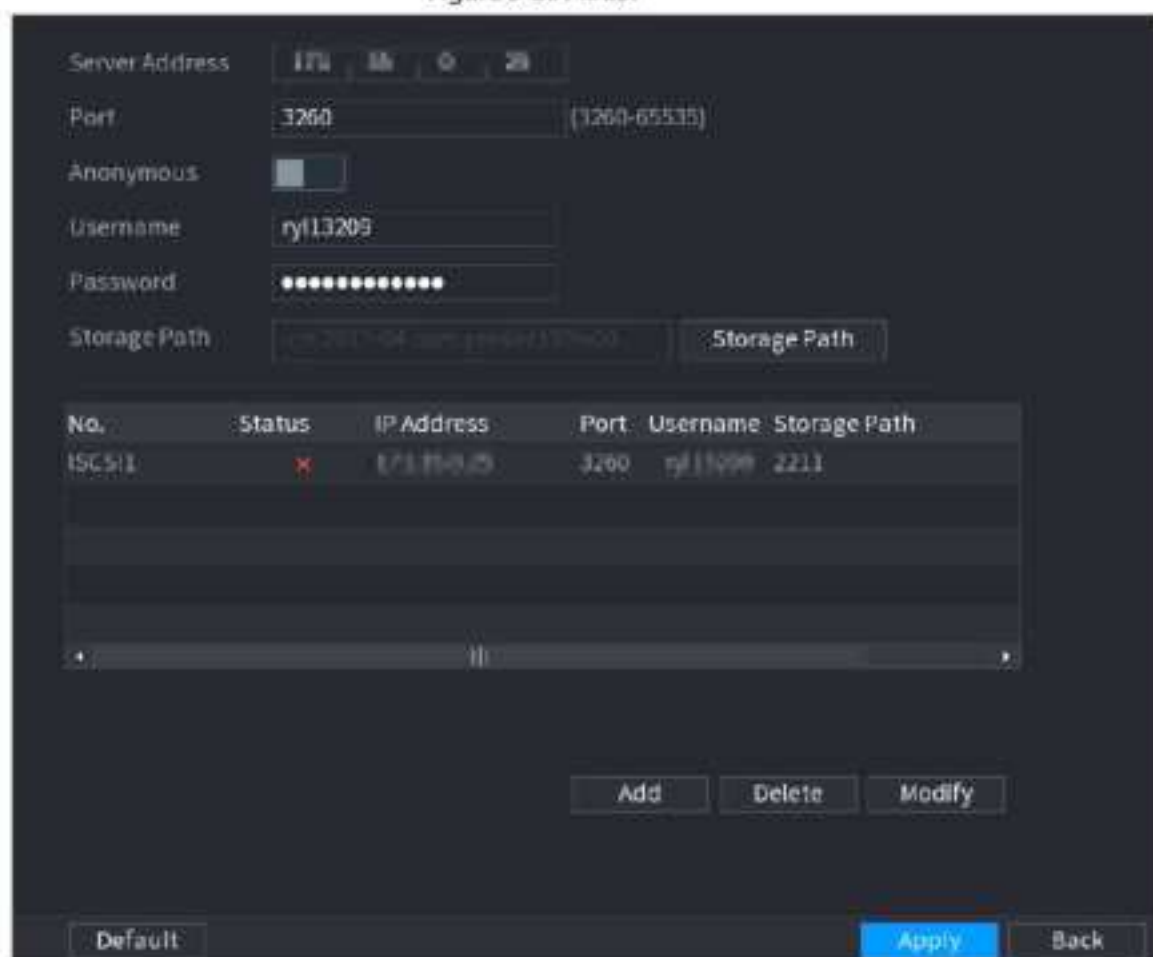


This function is available on select models.

Procedure

Step 1 Select **Main Menu > STORAGE > iSCSI**.

Figure 5-261 iSCSI



Server Address: 172.16.0.5

Port: 3260 (3260-65535)

Anonymous: ☐

Username: ryl13209

Password:

Storage Path: 172.16.0.5:221

No.	Status	IP Address	Port	Username	Storage Path
iSCSI1	×	172.16.0.5	3260	ryl13209	221

Buttons: Add, Delete, Modify, Default, Apply, Back

Step 2 Set parameters.

Table 5-76 iSCSI parameters

Parameter	Description
Server Address	Enter the server address of iSCSI server.
Port	Enter the port of iSCSI server, and the default value is 3260.

Parameter	Description
Storage Path	Click Storage Path to select a remote storage path. Each path represents an iSCSI shared disk and these paths are generated when created on the server.
Username, Password	Enter the username and password of iSCSI server.  If anonymous login is supported by iSCSI server, you can enable Anonymous to log in as an anonymous user.

Step 3 Click **Apply**.

5.13 Account

You can manage users, user group and ONVIF user, and set admin security questions.

5.13.1 Group

The accounts of the Device adopt two-level management mode: user and user group. Every user must belong to a group, and one user only belongs to one group.

Background Information

The **admin** and **user** group are two default user groups that cannot be deleted. You can add more groups and define corresponding permissions.

Procedure

Step 1 Select **Main Menu > ACCOUNT > Group**.



Click  to modify the corresponding group information, click  to delete the group.

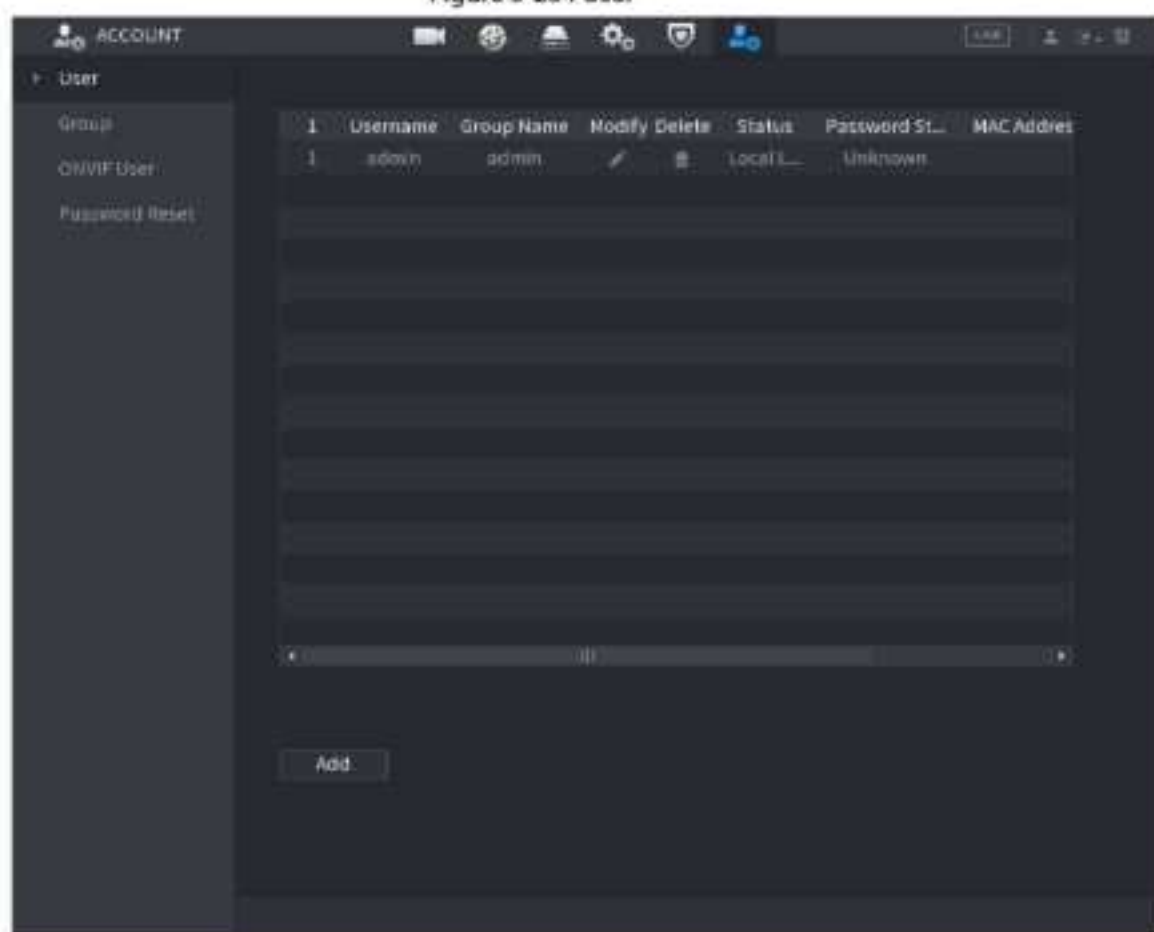
5.13.2 User

5.13.2.1 Adding User

Procedure

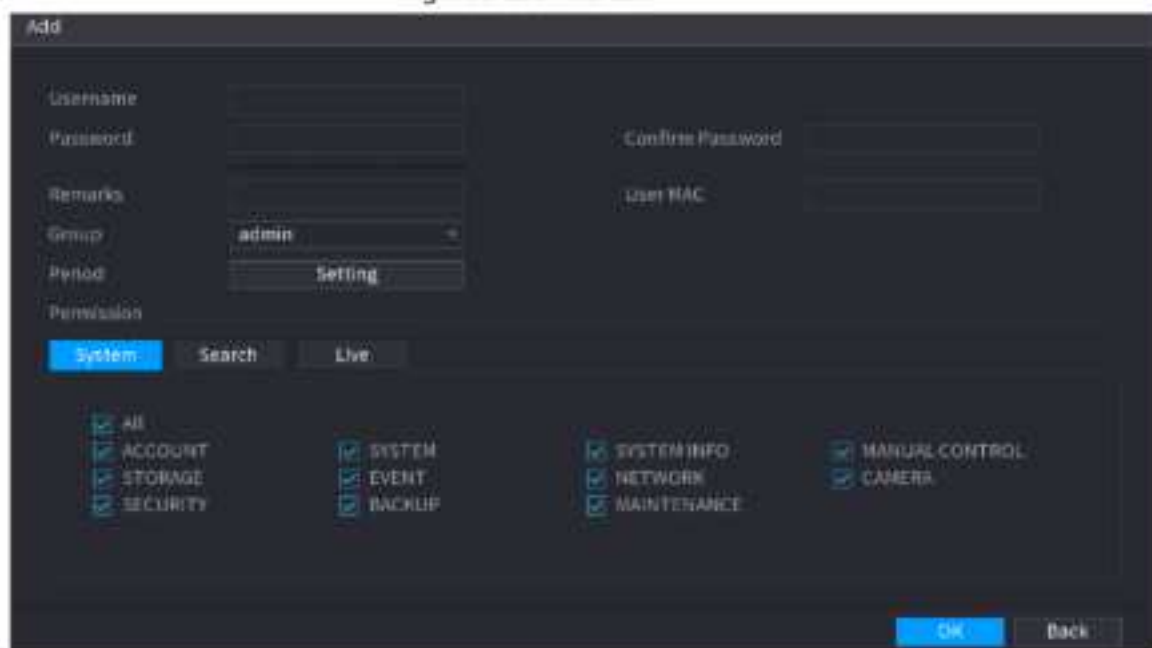
Step 1 Select **Main Menu > ACCOUNT > User**.

Figure 5-264 User



Step 2 Click **Add**.

Figure 5-265 Add user



Step 3 Configure the parameters.

Table 5-77 Parameters of adding user

Parameter	Description
Username	Enter a username and password for the account.
Password	
Confirm Password	Enter the password again to confirm it.
Remarks	Optional. Enter a description of the account.
User MAC	Enter user MAC address
Group	Select a group for the account.  The user rights must be within the group permissions.
Period	Click Setting to define a period during which the new account can log in to the Device. The new account cannot access the device during other periods.
Permission	Select the checkboxes to grant permissions to the user.  To manage the user account easily, when defining the user account permission, do not give the authority to the common user account higher than the advanced user account.

Step 4 Click **OK**.



Click  to modify the corresponding user information, click  to delete the user.

5.13.2.2 Changing Password

Background Information

We recommend you change the password regularly to enhance device security.



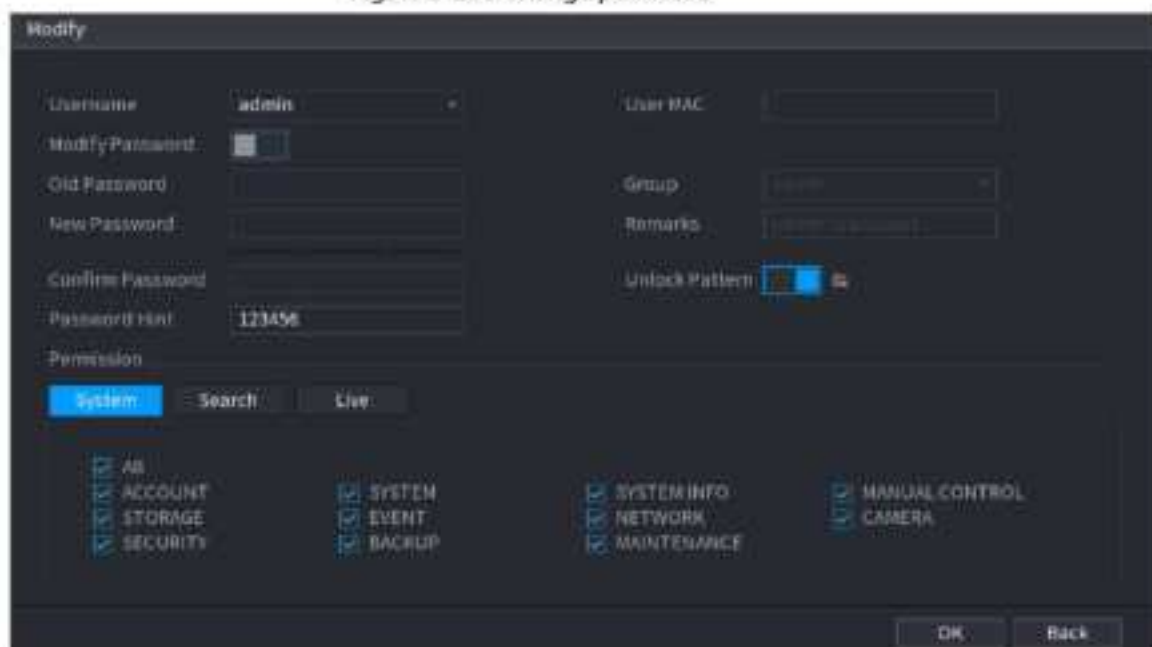
Users with account permissions can change the password of other users.

Procedure

Step 1 Select **Main Menu > ACCOUNT > User**.

Step 2 Click  of the corresponding user.

Figure 5-266 Change password



Step 3 Click  to enable the **Modify Password** function.

Step 4 Enter old password and then enter new password twice.



- The password must consist of 8–32 non-blank characters and contain at least two types of the following characters: uppercase, lowercase, numbers, and special characters (excluding * ; : &).
- For your device security, create a strong password.
- Check the box to enable Unlock Pattern function, click .

Step 5 Click  to enable **Unlock Pattern** and then click  to draw the pattern.

Step 6 Click **OK**.

5.13.3 Resetting Password

You can reset the password when you forget the password.

5.13.3.1 Enabling Password Reset

Enable the password reset function and configure the linked email address and security questions that are used to reset the password.

Procedure

Step 1 Select **Main Menu** > **ACCOUNT** > **Password Reset**.

Step 2 Click ☐ to enable the password reset function.



This function is enabled by default.

Step 3 Enter an email address to receive the security code used to reset the password.

Step 4 Configure security questions and answers.

Step 5 (Optional) Follow the on-screen instructions to bind the Device to DMSS app.

Figure 5-267 Bind device



Step 6 Click **OK**.

5.13.3.2 Resetting Password on Local Page

Procedure

Step 1 Right-click the live page and then select any item on the shortcut menu.

- If you have configured unlock pattern, the unlock pattern login window is displayed. Click **Forgot Pattern** to switch to password login.
- If you did not configure unlock pattern, the password login window is displayed.

Figure 5-268 Pattern login

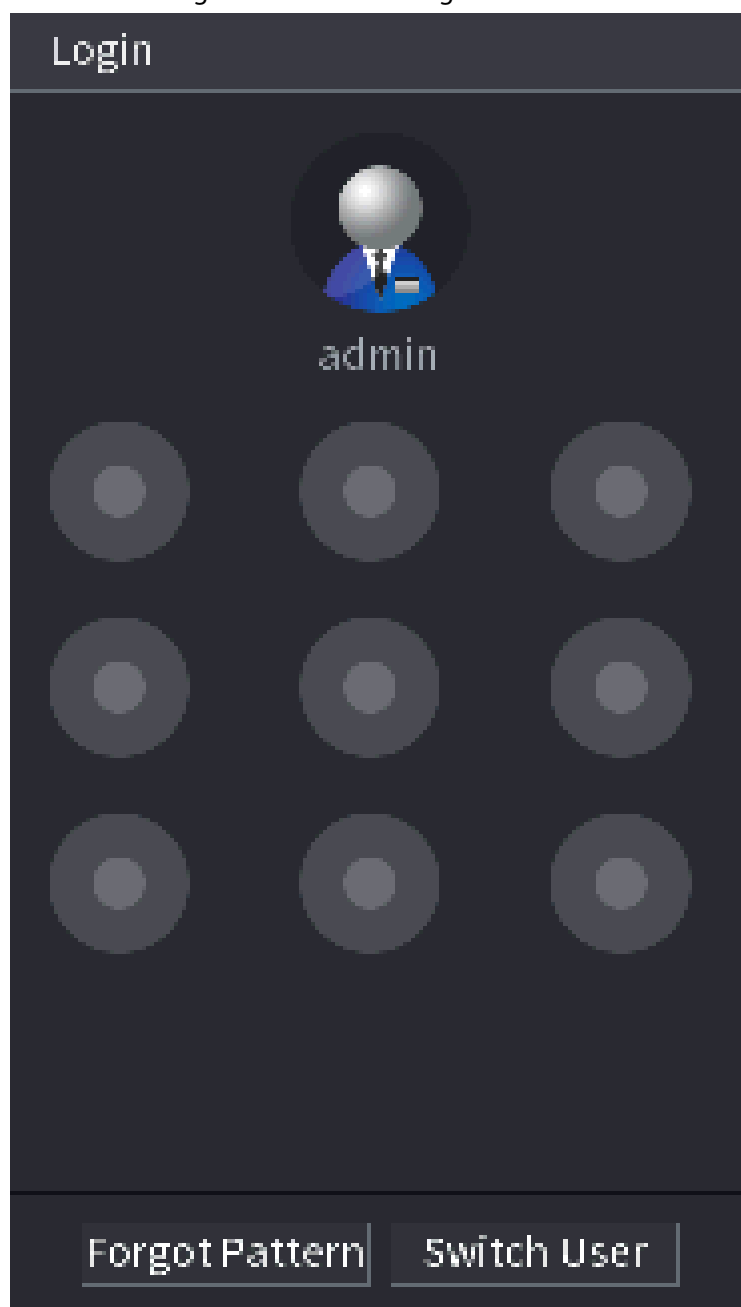
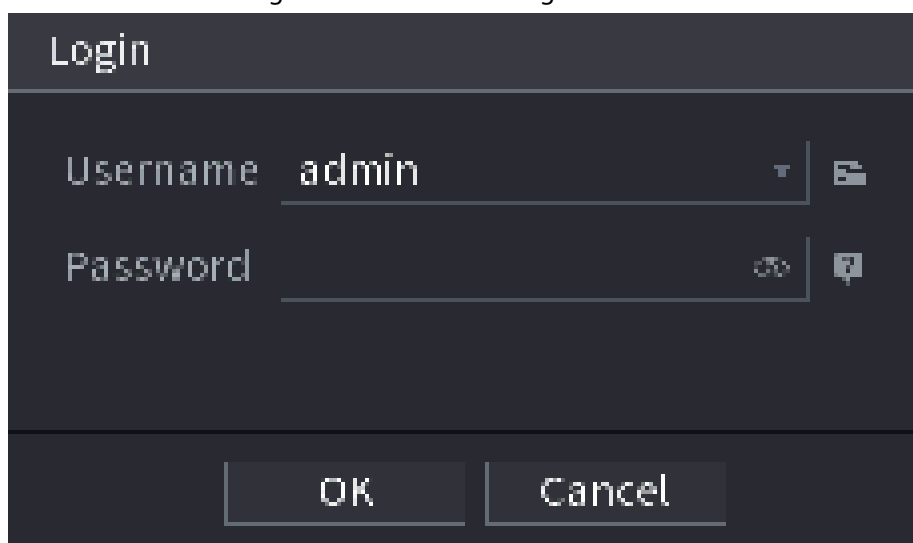


Figure 5-269 Password login

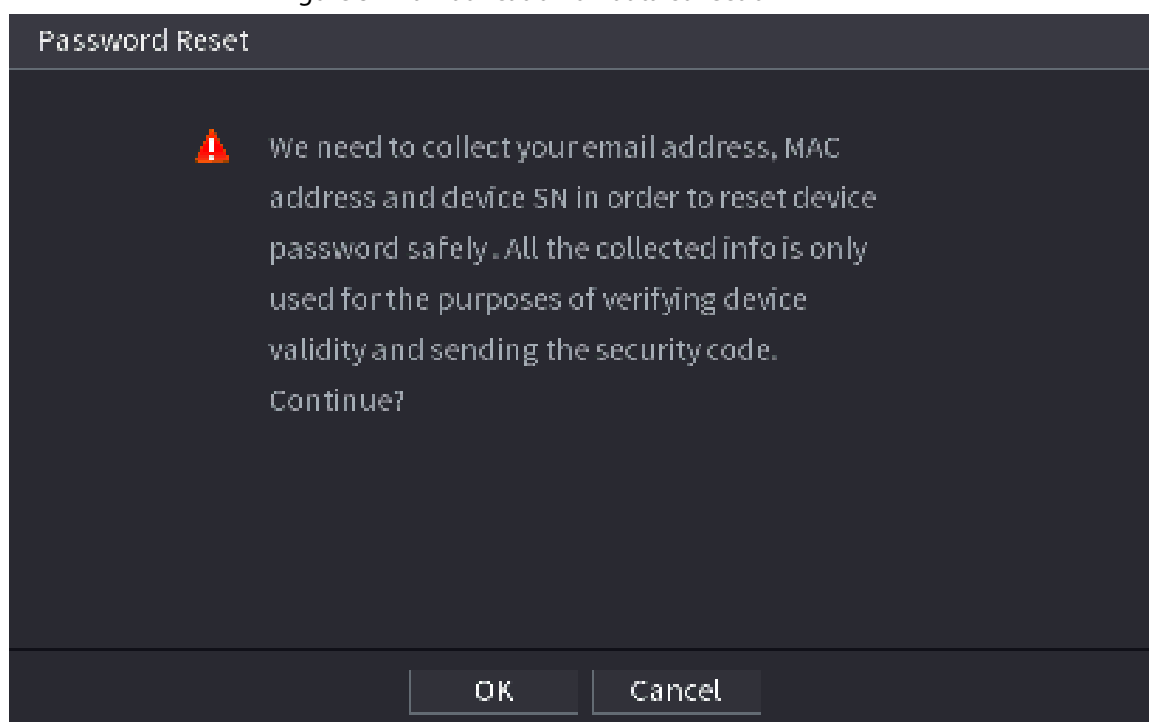


The dialog box is titled "Login". It contains two input fields: "Username" with the text "admin" and a dropdown arrow, and "Password" with a password icon and a dropdown arrow. At the bottom, there are two buttons: "OK" and "Cancel".

Step 2 Click .

- If you have set the linked email address, the system will notify you of data collection required for resetting password. Click **OK**.
- If you did not set the linked email address, the system prompts you to enter an email address. Enter the email address and then click **Next**. Then the system will notify you of data collection required for resetting password.

Figure 5-270 Notification on data collection



The dialog box is titled "Password Reset". It contains a warning icon (exclamation mark in a triangle) and the following text: "We need to collect your email address, MAC address and device SN in order to reset device password safely. All the collected info is only used for the purposes of verifying device validity and sending the security code. Continue?". At the bottom, there are two buttons: "OK" and "Cancel".

Step 3 Read the prompt and then click **OK**.

Step 4 Click **Next**.



After clicking **Next**, the system will collect your information for password reset, purpose and the information includes but not limited to email address, MAC address, and device serial number. Read the prompt carefully before clicking **Next**.

Step 5 Reset the password.

- Email.

Select **Email** as the reset mode, and then follow the on-screen instructions to get the security code in your linked email address. After that, enter the security code in the **Security Code** box.

Figure 5-271 Reset mode (email)



- App.
Select **QR Code for Binding Device** as the reset mode, and then follow the on-screen instructions to get the security code on the DMSS app. After that, enter the security code in the **Security Code** box.

Figure 5-272 Reset mode (app)



- Security question.
Select **Security Question** as reset mode and then answer the security questions.

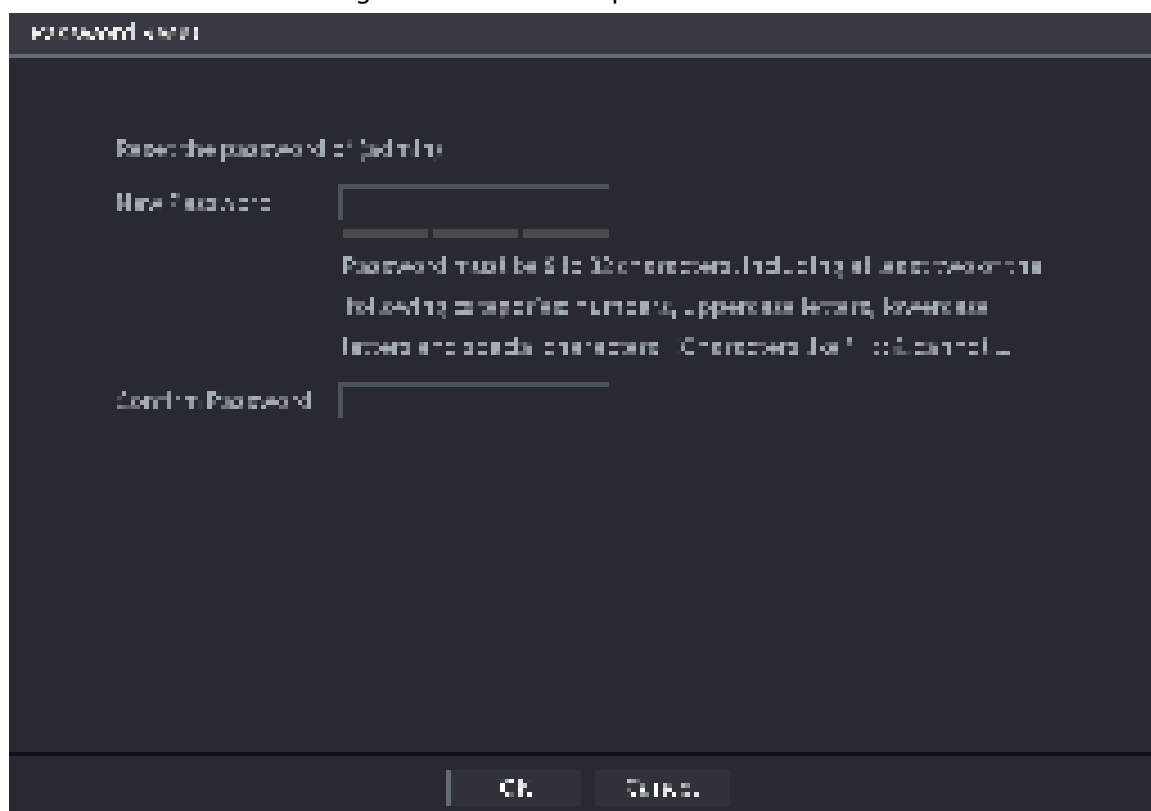


If you did not configure the security questions in advance, **Security Question** is not available on the **Reset Mode** list.

Step 6 Click **Next**.

Step 7 Enter the new password and then enter the password again to confirm it.

Figure 5-273 Enter new password



Step 8 Click **OK**.

The password is reset.

- Step 9** (Optional) When the system prompts whether to synchronize the password with the remote devices accessed through the private protocol, click **OK** to synchronize the password.

5.13.4 ONVIF User

Background Information

To connect the camera from the third party to the NVR via the ONVIF protocol, you need to use a verified ONVIF account.

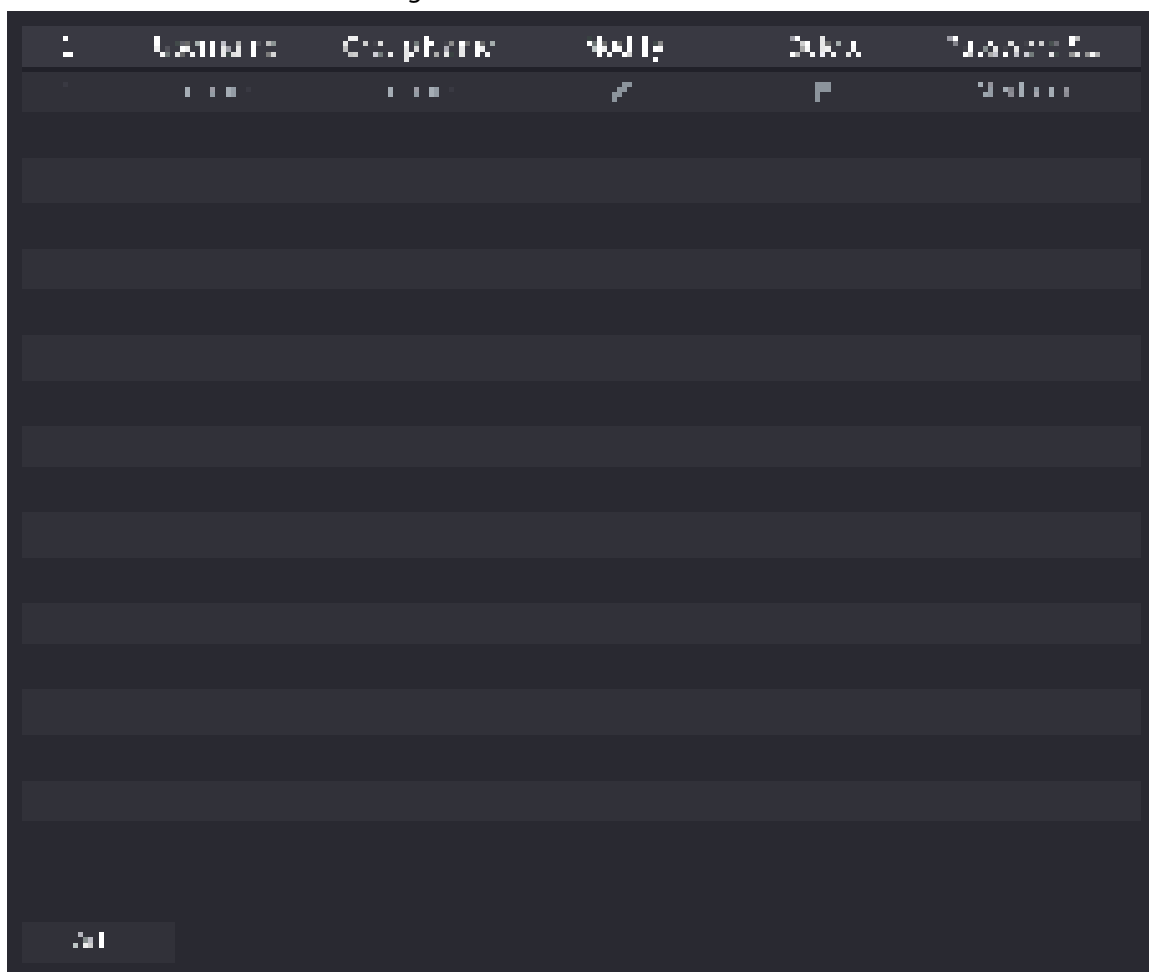


The default ONVIF user is **admin**. It is created after you initialize the NVR and cannot be deleted.

Procedure

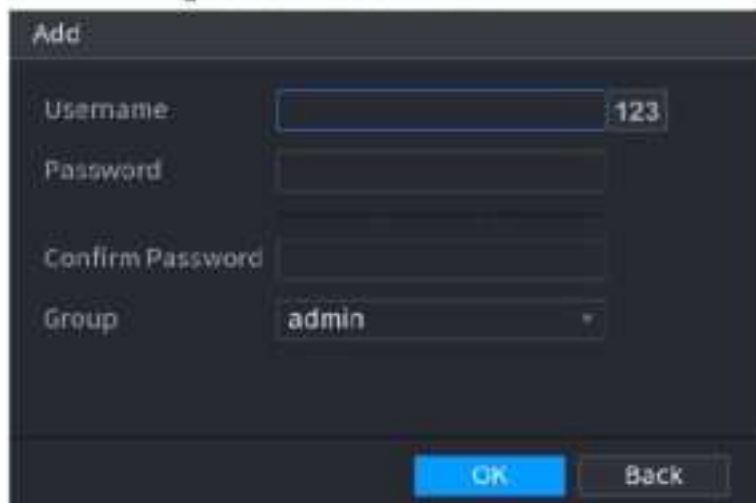
- Step 1** Select **Main Menu > ACCOUNT > ONVIF User**.

Figure 5-274 ONVIF user



- Step 2** Click **Add**.

Figure 5-275 Add ONVIF user



Step 3 Configure username, password and user group.

Step 4 Click **OK**.



Click  to modify the corresponding user information, click  to delete current user.

5.14 Security

5.14.1 Security Status

Security scanning helps get a whole picture of device security status. You can scan user, service and security module status for detailed information on the security status of the device.

Detecting User and Service



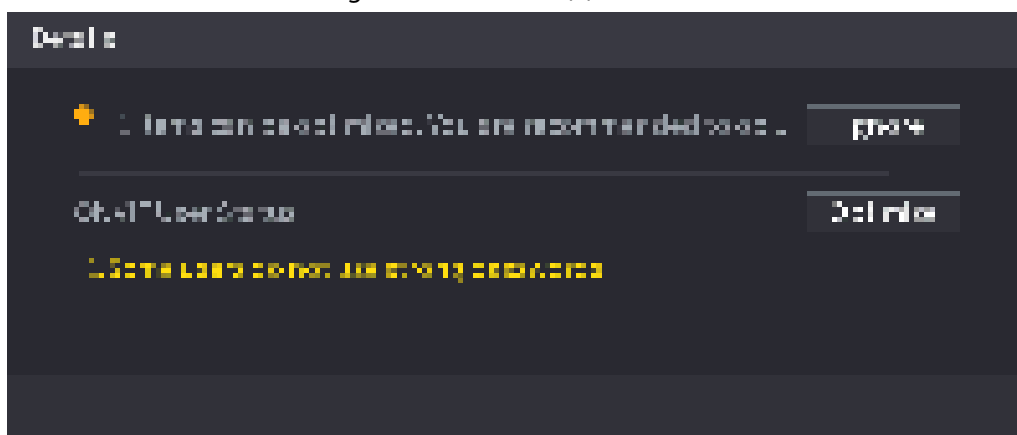
Green icon represents a healthy status of the scanned item, and orange icon represents a risky status.

- Login authentication: 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.
- User Status: When one of device users or ONVIF users uses weak password, the icon will be in orange to warn risk. You can click **Details** to optimize or ignore the risk warning.

Figure 5-276 Security status

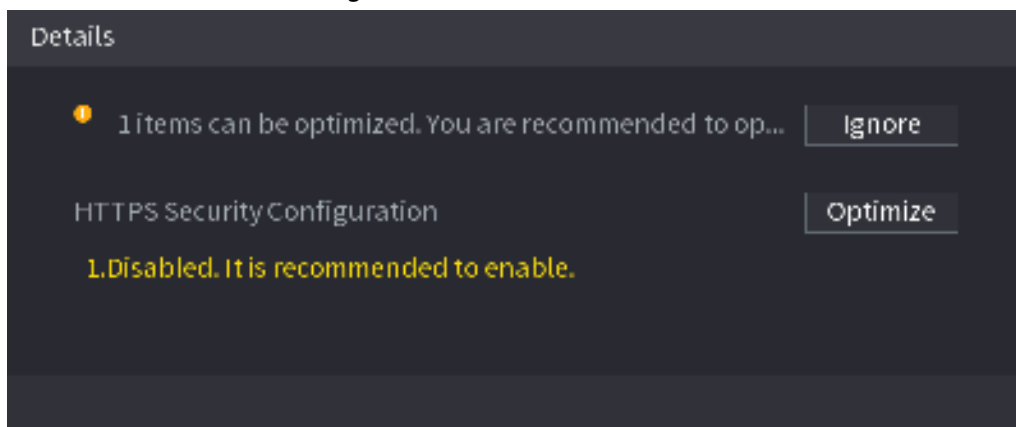


Figure 5-277 Details (1)



- 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.

Figure 5-278 Details (2)



Scanning Security Modules

This area shows the running status of security modules. For details about the security modules, point to the icon to see the on-screen instructions.

Re-scanning Security Status

You can click **Rescan** to scan security status.

5.14.2 System Service

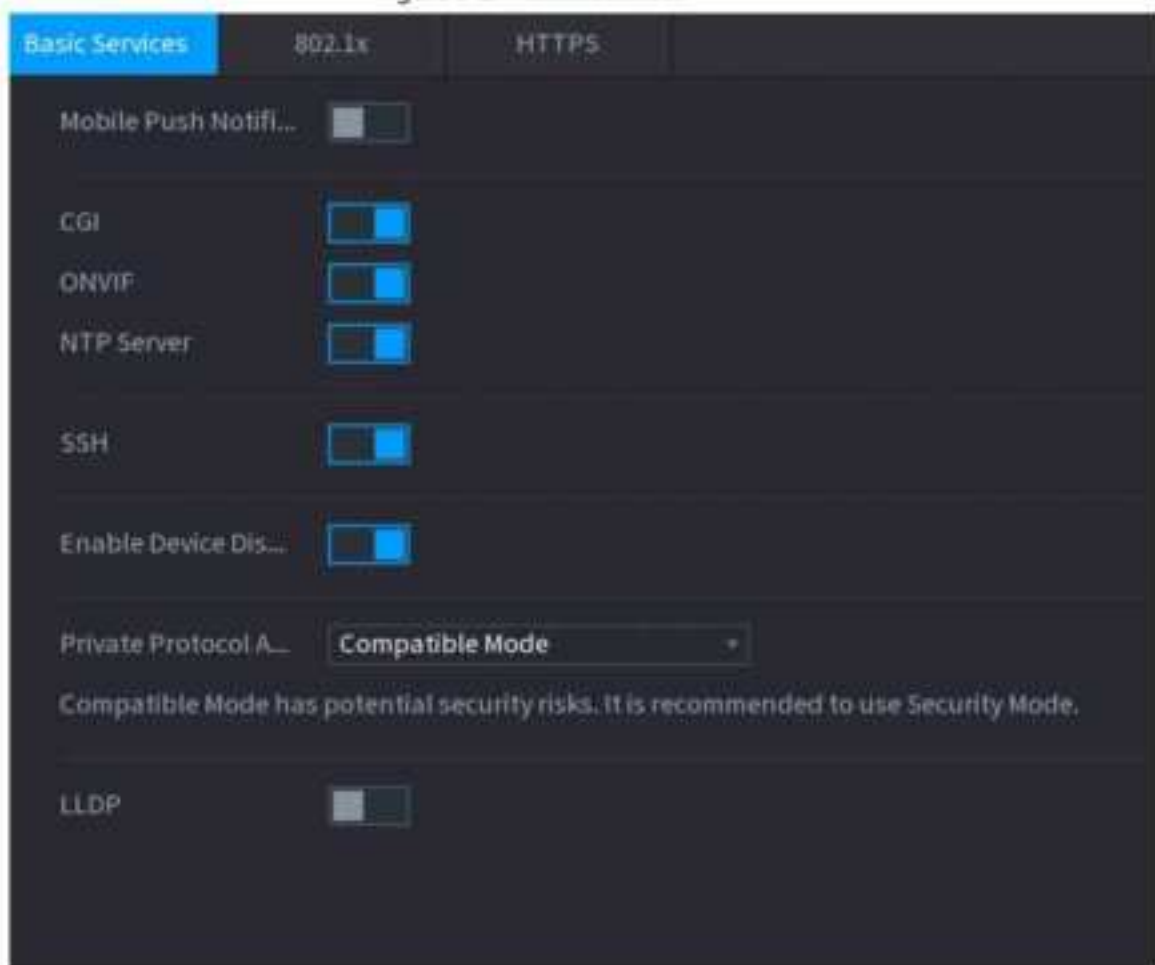
You can set NVR basic information such as basic services, 802.1x and HTTPS.

5.14.2.1 Basic Services

Procedure

Step 1 Select **Main Menu > SECURITY > System Service > Basic Services**.

Figure 5-279 Basic services



Step 2 Enable the system services.



There might be safety risk when **Mobile Push Notifications**, **CGI**, **ONVIF**, **SSH** and **NTP Server** is enabled. Disable these functions when they are not needed.

Table 5-78 Basic service parameters

Parameter	Description
Mobile Push Notifications	After enabling this function, the alarm triggered by the NVR can be pushed to a mobile phone. This function is enabled by default.
CGI	If this function is enabled, the remote devices can be added through the CGI protocol. This function is enabled by default.
ONVIF	If this function is enabled, the remote devices can be added through the ONVIF protocol. This function is enabled by default.
NTP Server	After enabling this function, a NTP server can be used for time synchronization. This function is enabled by default.
SSH	After enabling this function, you can use SSH service. This function is disabled by default.
Enable Device Discovery	After enabling this function, the NVR can be found by other devices through searching.

Parameter	Description
Private Protocol Authentication Mode	- Security Mode (Recommended): Uses Digest access authentication when connecting to NVR. - Compatible Mode: Select this mode when the client does not support Digest access authentication.
LLDP	Enable the LLDP service. The Link Layer Discovery Protocol (LLDP) allows two different devices to collect hardware and protocol information about neighboring devices, which is useful in troubleshooting the network.

Step 3 Click **Apply**.

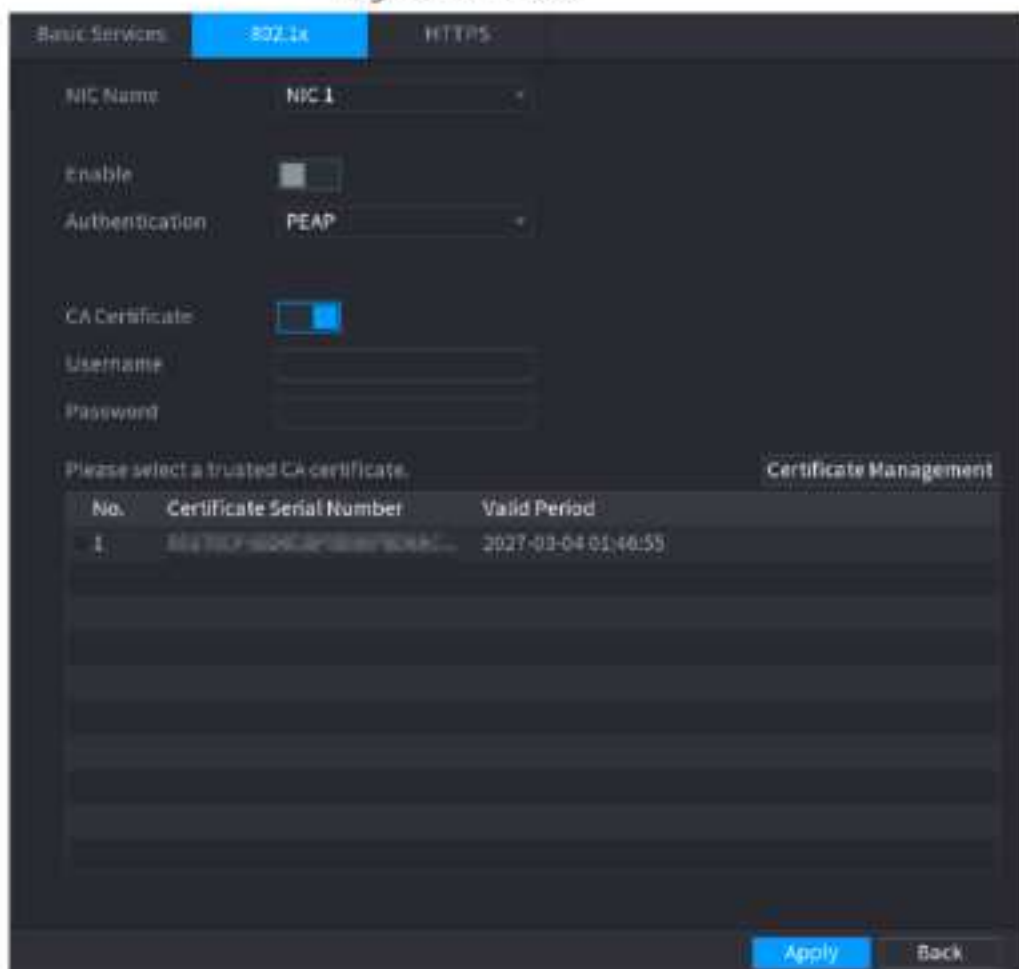
5.14.2.2 802.1x

The Device needs to pass 802.1x certification to enter the LAN.

Procedure

Step 1 Select **Main Menu > SECURITY > System Service > 802.1x**.

Figure 5-280 802.1x



Basic Services **802.1x** HTTPS

NIC Name: NIC 1

Enable: ☐

Authentication: PEAP

CA Certificate: ☒

Username:

Password:

Please select a trusted CA certificate. [Certificate Management](#)

No.	Certificate Serial Number	Valid Period
1	88270F980C2B8878C8C...	2027-03-04 01:46:55

Apply **Back**

Step 2 Select the Ethernet card you want to certify.

Step 3 Select **Enable** and configure parameters.

Table 5-79 802.1x parameters

Parameter	Description
Authentication	• 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 "5.14.4 CA Certificate".
Username	The username shall be authorized at server.
Password	Password of the corresponding username.

Step 4 Click **Apply**.

5.14.2.3 HTTPS

We recommend you enable HTTPS function to enhance system security.

Procedure

Step 1 Select **Main Menu > SECURITY > System Service > HTTPS**.

Figure 5-281 HTTPS



Step 2 Enable HTTPS function.

Step 3 (Optional) Enable **Compatible with TLSv1.1 and earlier versions** to allow protocol compatibility.

Step 4 Click **Certificate Management** to create or import a HTTPS certificate from USB drive. For details about importing or creating a CA certificate, see "5.14.4 CA Certificate".

Step 5 Select a HTTPS certificate.

Step 6 Click **Apply**.

5.14.3 Attack Defense

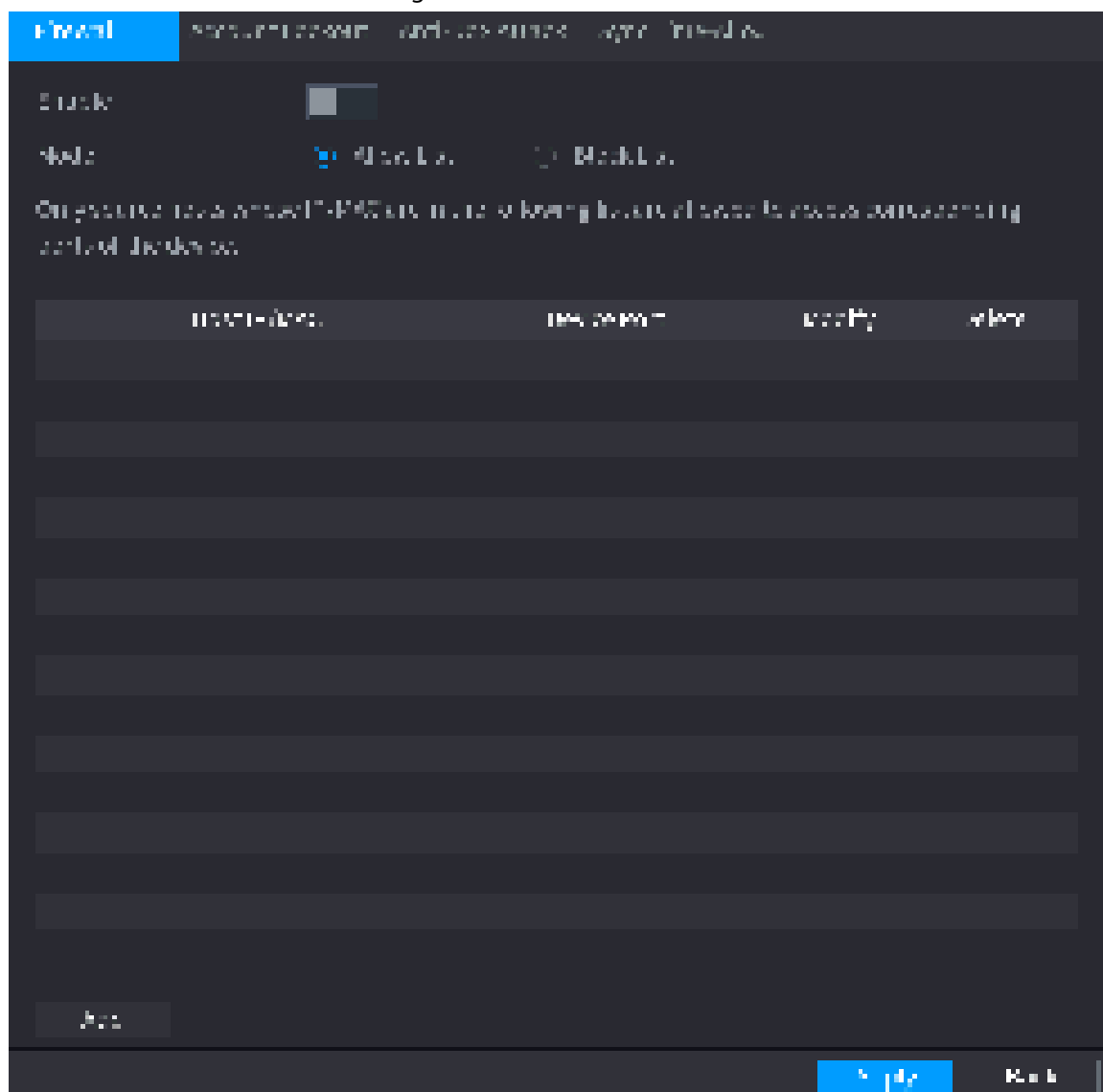
5.14.3.1 Firewall

You can configure the hosts that are allowed or prohibited to access the Device.

Procedure

Step 1 Select **Main Menu > SECURITY > Attack Defense > Firewall**.

Figure 5-282 Firewall



Step 2 Click ☐ to enable the firewall.

Step 3 Select a firewall mode.

- **Allow List:** The hosts on the allowlist can access the Device.
- **Block List:** The hosts on the blocklist are prohibited to access the Device.

Step 4 Click **Add** and then select a type for the allowlist or blocklist.

You can allow or prohibit hosts through a specific IP address, a network segment, or a MAC address.

- IP address.

Enter the IP address, start port and end port, and then click **OK**.

- IP segment.

Enter the start address and end address, starting port and ending port, and then click **OK**.

- MAC address.

Enter the MAC address, and then click **OK**.

Step 5 Click **Apply**.

5.14.3.2 Account Lockout

Procedure

Step 1 Select **Main Menu > SECURITY > Attack Defense > Account Lockout**.

Figure 5-283 Account lockout



Step 2 Set parameters.

Table 5-80 Account lockout parameters

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.
Lock Time	Set how long the account is locked for.

Step 3 Click **Apply**.

5.14.3.3 Anti-DoS Attack

You can enable **SYN Flood Attack Defense** and **ICMP Flood Attack Defense** to defend the Device against Dos attack.

Figure 5-284 Anti-Dos Attack



5.14.3.4 Sync Time-Allowlist

You can configure which hosts are allowed to synchronize time with the Device.

Procedure

Step 1 Select **Main Menu > SECURITY > Attack Defense > Sync Time-Allowlist**.

5.14.4 CA Certificate

5.14.4.1 Device Certificate

Create Certificate

1. Select **Main Menu > SECURITY > CA Certificate > Device Certificate**.Figure 5-286 Device certificate



2. Click **Create Certificate**.

Figure 5-287 Create certificate



The image shows a 'Create Certificate' dialog box with the following fields and buttons:

- Region:** Text input field
- Province:** Text input field
- City Name:** Text input field
- Validity Period:** Text input field
- Organization:** Text input field
- Organization Unit:** Text input field
- IP/Domain Name:** Text input field with a dropdown arrow on the right
- Create:** Blue button
- Cancel:** Grey button

3. Configure the parameters.
4. Click **Create**.

CA Application and Import

Click **CA Application and Import** and then follow the on-screen instructions to finish CA application and import.

Figure 5-288 CA application and import

CA Application and Import

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.

Type

Create Certificate ...

Import Certificate

Region

Province

City Name

Validity Period

Organization

Organization Unit

IP/Domain Name

10.35.243.108

Create

Cancel

Import Third-Party Certificate

1. Click **Import Third-Party Certificate**
2. Configure the parameters.

Table 5-81 Parameters for 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 private key password.

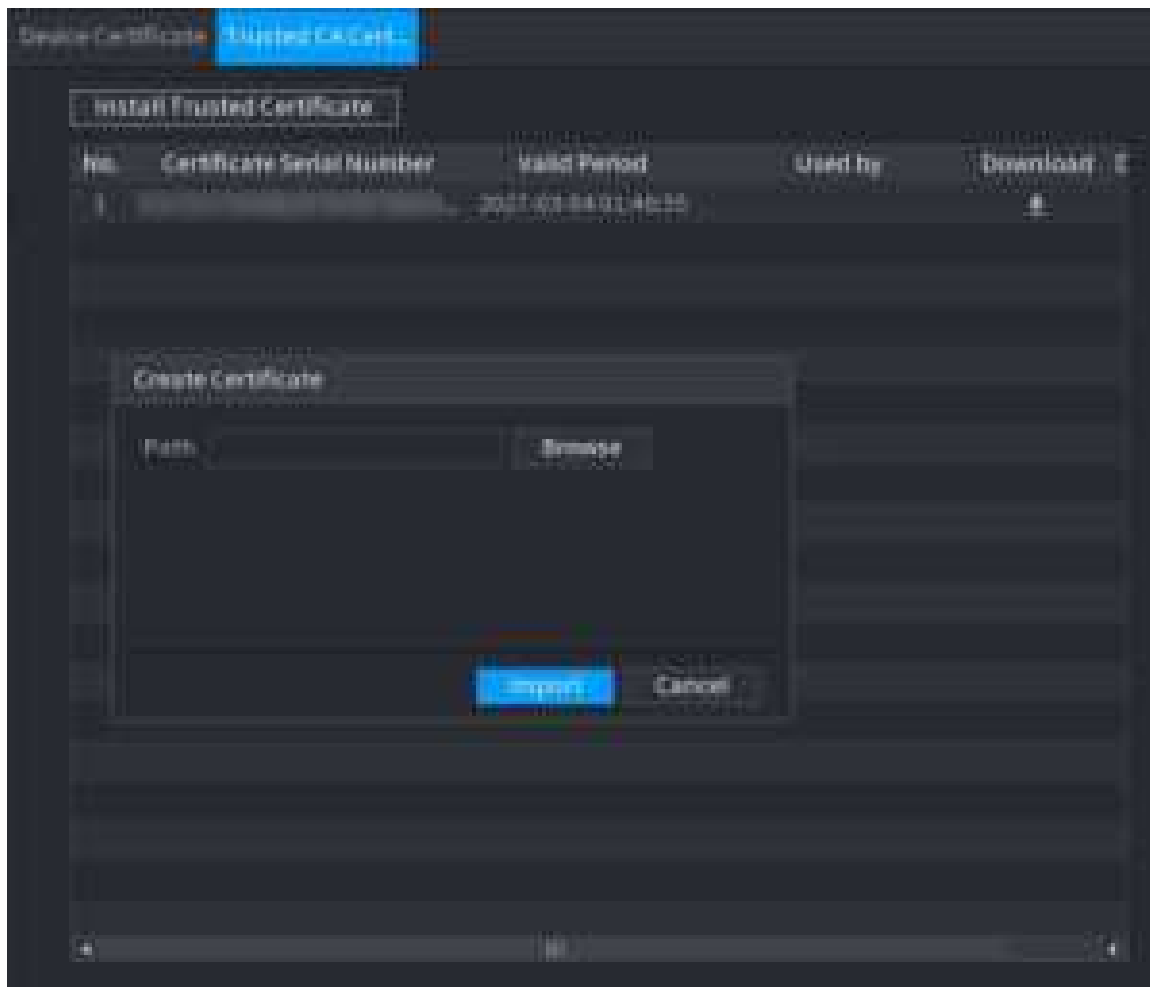
3. Click **Create**.

5.14.4.2 Trusted CA Certificate

Procedure

- Step 1 Select **Main Menu > SECURITY > CA Certificate > Trusted CA Certificate**.
- Step 2 Click **Install Trusted Certificate**.

Figure 5-289 Create certificate



Step 3 Click **Browse** to select the certificate that you want to install.

Step 4 Click **Import**.

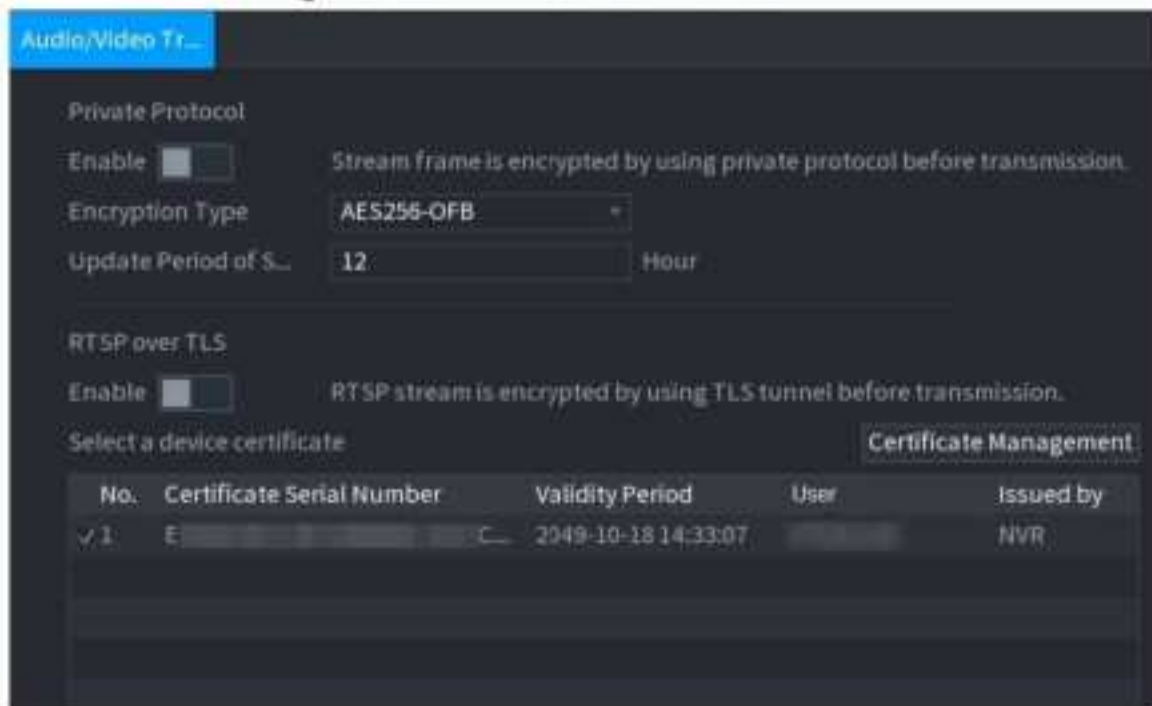
5.14.5 Audio/Video Encryption

The Device supports audio and video encryption during data transmission.

Procedure

Step 1 Select **Main Menu > SECURITY > AUDIO/VIDEO ENCRYPTION > Audio/Video Transmission**.

Figure 5-290 Audio and video transmission



Step 2 Configure parameters.

Table 5-82 Audio and video transmission parameters

Area	Parameter	Description
Private Protocol	Enable	Enables stream frame encryption by using private protocol.  There might be safety risk if this service is disabled.
	Encryption Type	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. Default value: 12.
RTSP over TLS	Enable	Enables RTSP stream encryption by using TLS.  There might be safety risk if this service is disabled.
	Select a device certificate	Select a device certificate for RTSP over TLS.
	Certificate Management	For details about certificate management, see "5.14.4.1 Device Certificate".

Step 3 Click **Apply**.

5.14.6 Security Warning

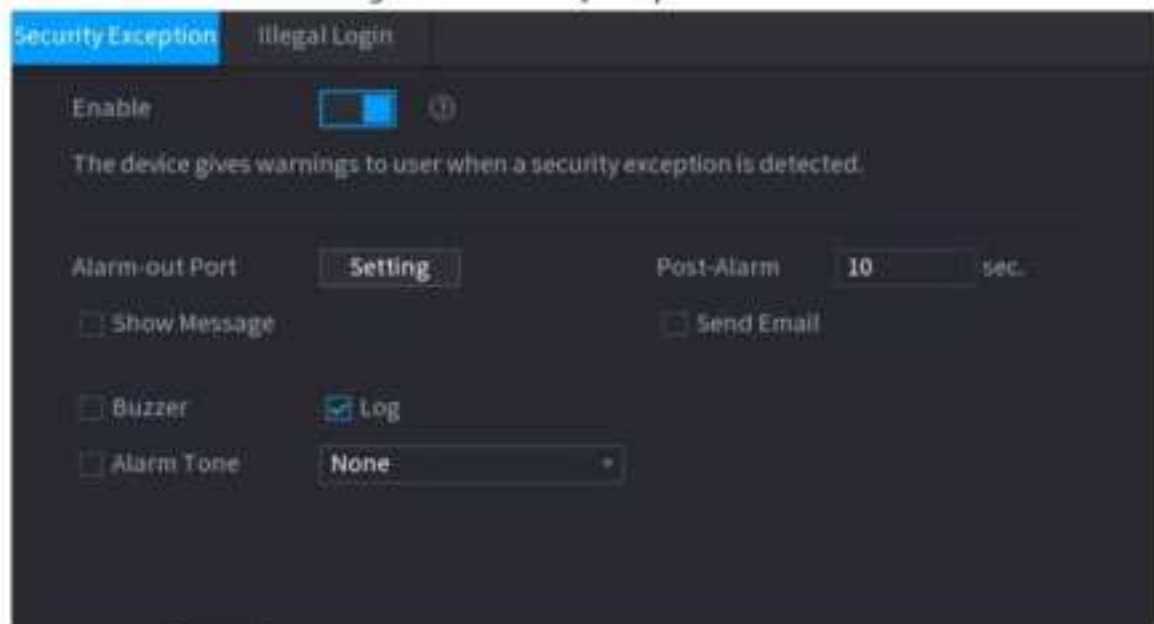
5.14.6.1 Security Exception

The Device gives warnings to the user when a security exception occurs.

Procedure

Step 1 Select **Main Menu > SECURITY > Security Warning > Security Exception**.

Figure 5-291 Security exception



Step 2 Click  to enable the function.



Click  to view the list of security exception events.

Step 3 Configure alarm linkage actions. For details, see [Step 7](#).

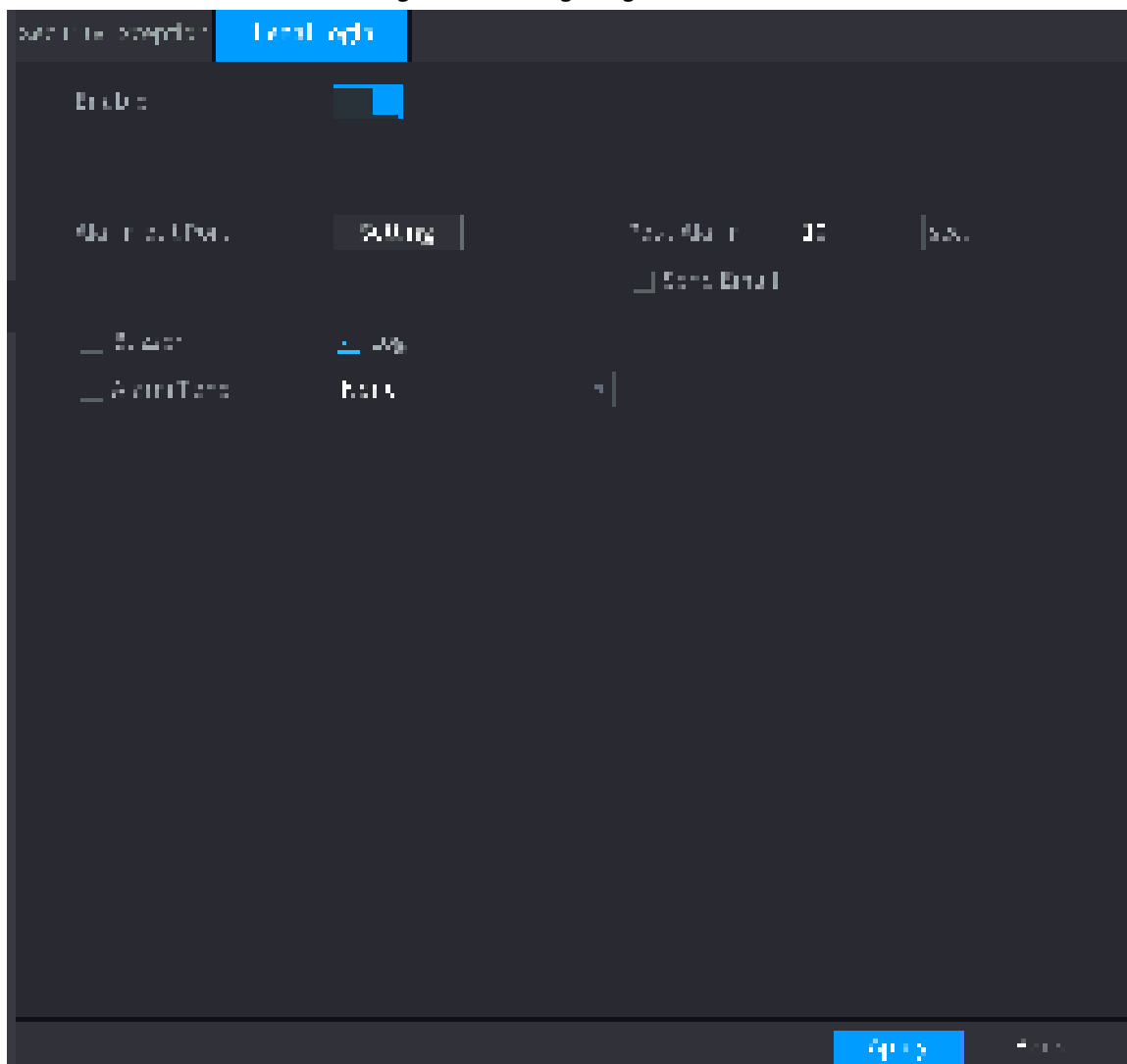
Step 4 Click **Apply**.

5.14.6.2 Illegal Login

Procedure

Step 1 Select **Main Menu > SECURITY > Security Warning > Illegal Login**.

Figure 5-292 Illegal login



Step 2 Click  to enable the function.

Step 3 Configure alarm linkage actions. For details, see [Step 7](#).

Step 4 Click **Apply**.

5.15 System

5.15.1 General Settings

You can set NVR basic information such as system date and holiday.

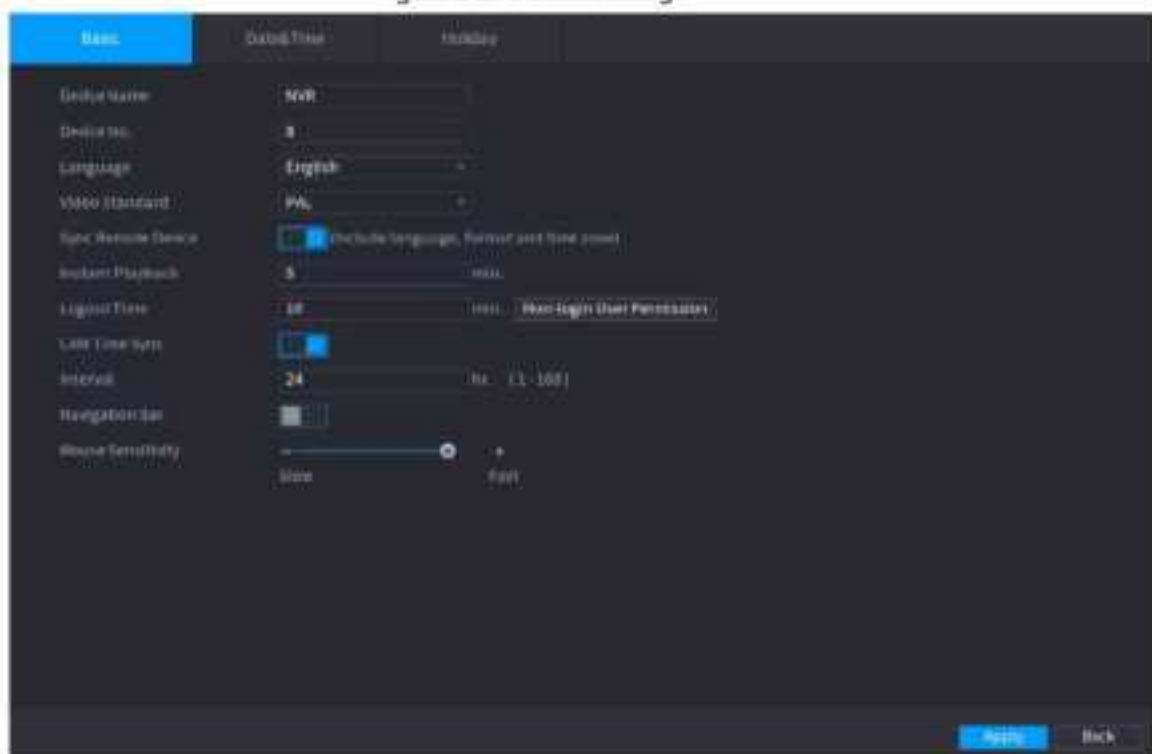
5.15.1.1 General

You can set device basic information such as device name, and serial number.

Procedure

Step 1 Select **Main Menu > SYSTEM > General > Basic**.

Figure 5-293 Basic settings



Step 2 Set parameters.

Table 5-83 Basic parameters

Parameter	Description
Device Name	Enter the Device name.
Device No.	Enter a number for the Device.
Language	Select a language for the Device system.
Video Standard	Select PAL or NTSC as needed.
Sync Remote Device	Enable this function; the NVR can synchronize information with the remote device such as Language, video standard and time zone.
Instant Playback	In the Instant Play 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	Enter the standby time for the Device. The Device automatically logs out when it is not working in the configured period. You need to login 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 . You can select the channels that you want to continue monitoring when you logged out.
CAM Time Sync	Syncs the Device time with IP camera.
Interval	Enter the interval for time sync.
Logout Time	You can set auto logout interval once login user remains inactive for a specified time. Value ranges from 0 to 60 minutes.

Parameter	Description
Navigation Bar	Enable the navigation bar. When you click on the live view screen, the navigation bar is displayed.
Mouse Sensitivity	Adjust the speed of double-click by moving the slider. The bigger the value is, the faster the speed is.

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

5.15.1.2 Date and Time

Background Information

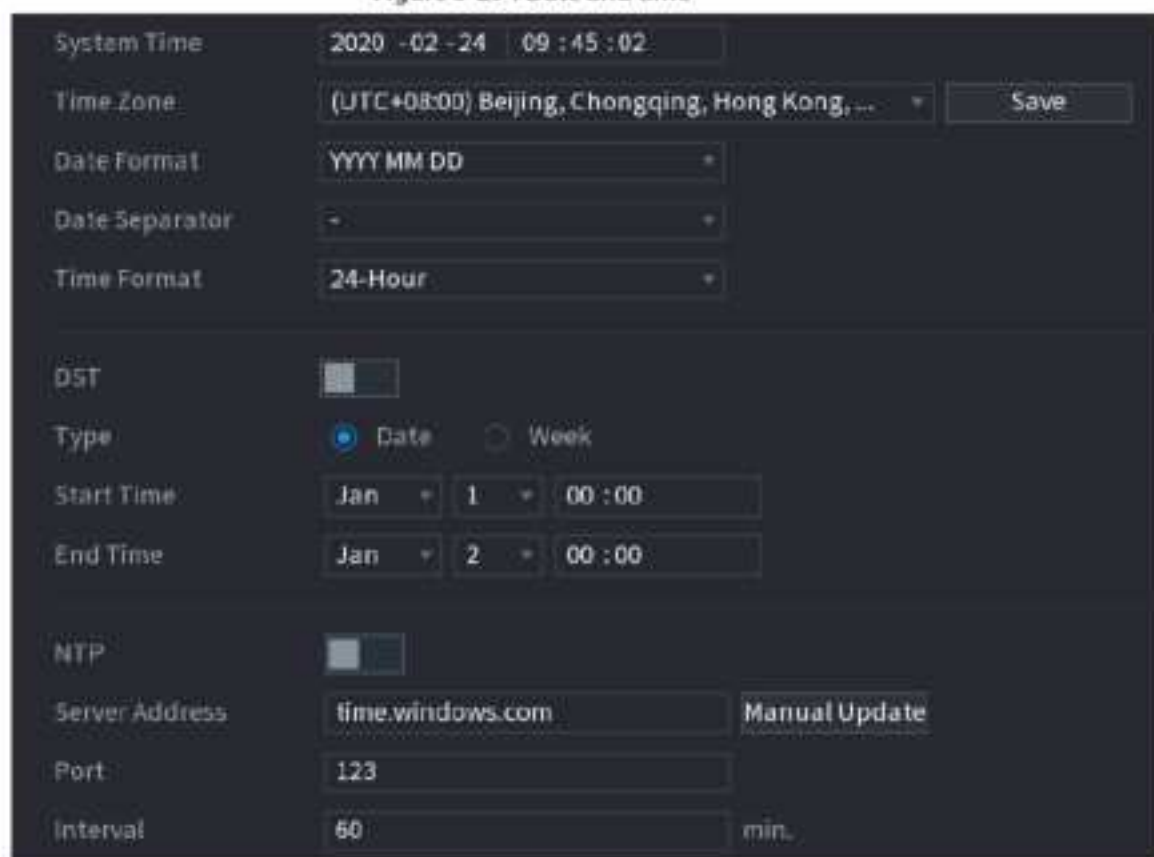
You can set device time. You can enable NTP (Network Time Protocol) function so that the device can sync time with the NTP server.

You can also configure date and time settings by selecting **Main Menu > SYSTEM > General > Date&Time**.

Procedure

Step 1 Click **Date&Time** tab.

Figure 5-294 Date and time



System Time: 2020-02-24 09:45:02

Time Zone: (UTC+08:00) Beijing, Chongqing, Hong Kong, ... Save

Date Format: YYYY MM DD

Date Separator: -

Time Format: 24-Hour

DST: ☐

Type: ☒ Date ☐ Week

Start Time: Jan 1 00:00

End Time: Jan 2 00:00

NTP: ☐

Server Address: time.windows.com Manual Update

Port: 123

Interval: 60 min.

Step 2 Configure the settings for date and time parameters.

Table 5-84 Data and time parameters

Parameter	Description
System Time	In the System Time box, enter time for the system. Click the time zone list, you can select a time zone for the system, and the time in adjust automatically.  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.
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 Date .
Start Time	Configure the start time and end time for the DST.
End Time	
NTP	Enable the NTP function to sync the Device time with the NTP server.  If NTP is enabled, device time will be automatically synchronized with server.
Server Address	In the Server Address box, enter the IP address or domain name of the corresponding NTP server. Click Manual Update, the Device starts syncing with the server immediately.
Port	The system supports TCP protocol only and the default setting is 123.
Interval	In the Interval box, enter the amount of time that you want the Device to sync time with the NTP server. The value ranges from 0 to 65535.

Step 3 Click **Next** to save settings.

5.15.1.3 Holiday

Background Information

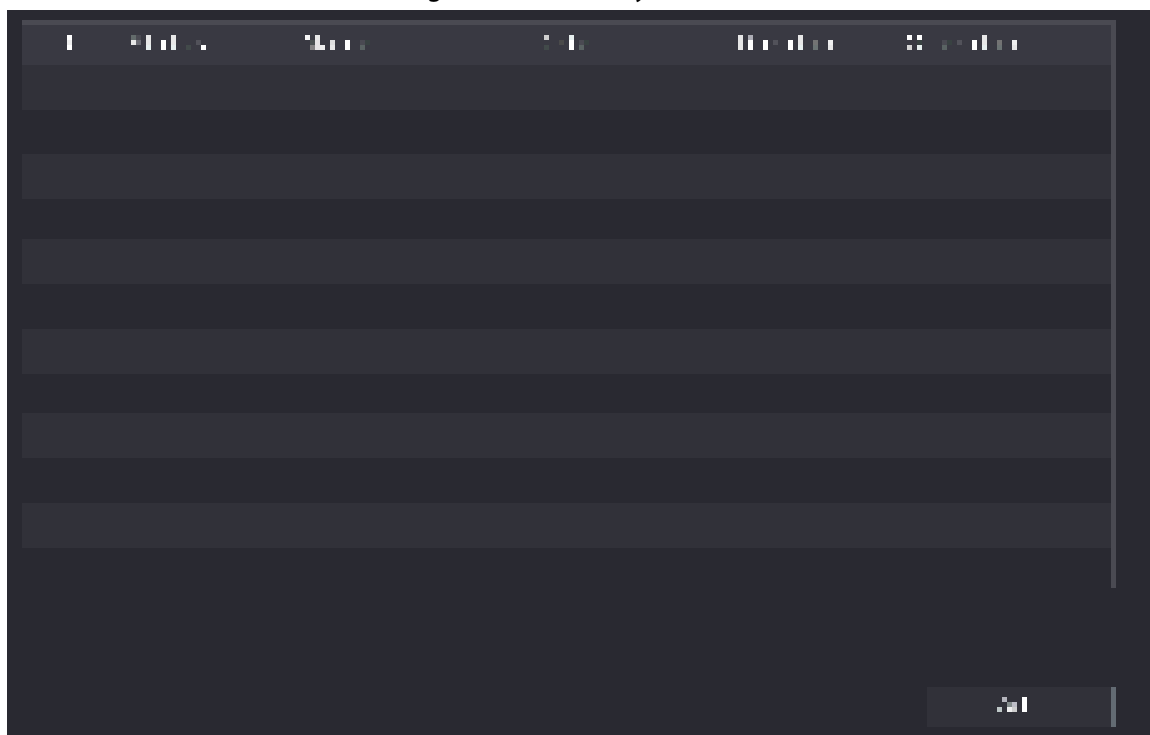
Here you can add, edit, and delete holiday. After you successfully set holiday information, you can view holiday item on the record and snapshot period.

You can also configure holiday settings by selecting **Main Menu > SYSTEM > General > Holiday**.

Procedure

Step 1 Click **Next**.

Figure 5-295 Holiday



Step 2 Click **Add Holidays**.

Figure 5-296 Add holidays

Add

Name

Effective Mode
☐ Once
☒ Always

Period
☒ Date
☐ Week

Start Time
2020 - 02 - 24

End Time
2020 - 02 - 24

Add More
☐

Add Cancel

Step 3 Set holiday name, repeat mode and holiday mode.



Click **Add more** to add new holiday information.

Step 4 Click **Add**, you can add current holiday to the list.



- Click the drop-down list of the state; you can enable/disable holiday date.
- Click  to change the holiday information. Click  to delete current date.

Step 5 Click **Next** to save settings.

5.15.2 Serial Port

After setting RS-232 parameters, the NVR can use the COM port to connect to other device to debug and operate.

Procedure

Step 1 Select **MAIN MENU > SYSTEM > Serial Port**.

Figure 5-297 Serial port



Function	Console
Baud Rate	115200
Data Bits	8
Stop Bits	1
Check	None

Step 2 Configure parameters.

Table 5-85 Serial port parameters

Parameter	Description
Function	Select serial port control protocol. • 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  Different series products support different RS-232 functions.
Baud Rate	Select baud rate, which is 115200 by default.

Parameter	Description
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.

Step 3 Click **Apply**.

5.16 Output and Display

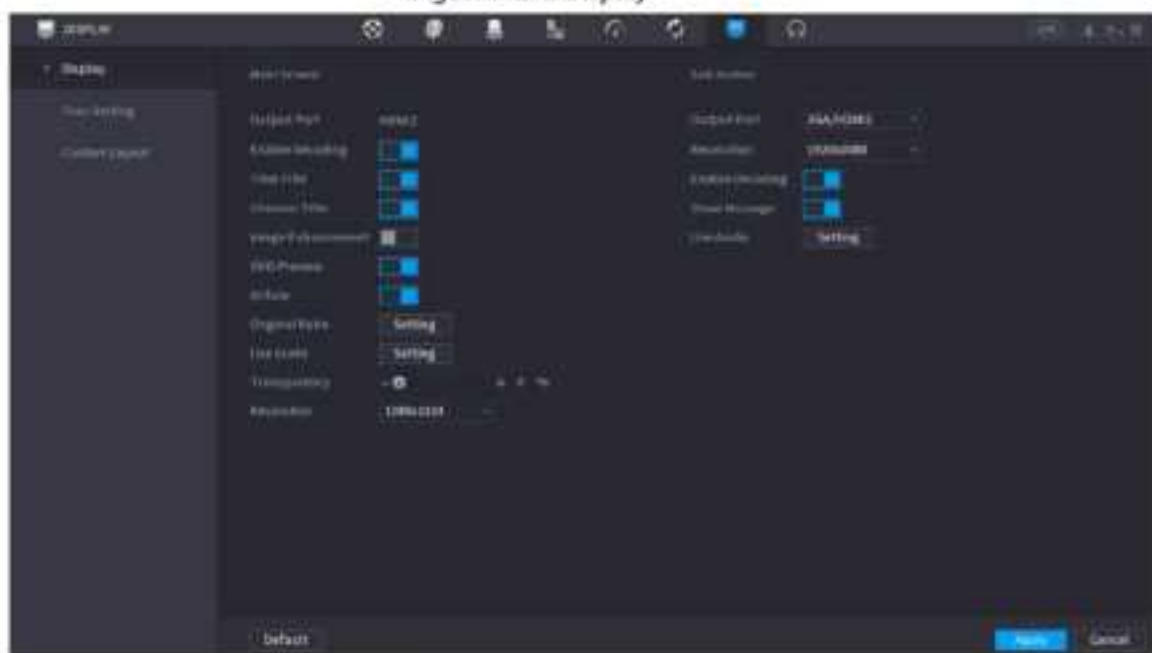
5.16.1 Display

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

Procedure

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

Figure 5-298 Display



Step 2 Configure the parameters.

Table 5-86 Display parameters

Parameter	Description
Main Screen/Sub Screen	Configure the output port format of both screens. - When sub screen is disabled, the format of main screen is HDMI/VGA simultaneous output. - When sub screen is enabled, the format of main screen and sub screen are non-simultaneous outputs. - When output port of sub screen is set to HDMI, the output port of main screen is set to VGA by the device. - When output port of sub screen is set to VGA, the output port of main screen is set to HDMI by the device.
Enable Decoding	After it is enabled, the device can normally decode.
Time Title/Channel Title	Select the checkbox and the date and time of the system will be displayed in the preview screen.
Transparency	Set the transparency of the local menu of the NVR device. The higher the transparency, the more transparent the local menu.
Time Title/Channel Title	Select the checkbox and the date and time of the system will be displayed in the preview screen.
Image Enhancement	Select the checkbox to optimize the preview image edges.
SMD Preview	Select the checkbox to display the SMD previews in the live view page.
AI Rule	Select the checkbox to display the AI rules in the live view page.  This function is for some series products only.
Original Ratio	Click Setting and select the channel to restore the corresponding channel image to the original scale.
Live Audio	Configure audio input on live view. You can select Audio 1 , Audio 2 , and Mixing . For example, if you select Audio 1 for D1 channel, the sound of audio input port 1 of camera is playing. If you select Mixing , the sound of all audio input ports are playing.
Resolution	Support 1920 × 1080, 1280 × 1024 (default), 1280 × 720.

Step 3 Click **Apply**.

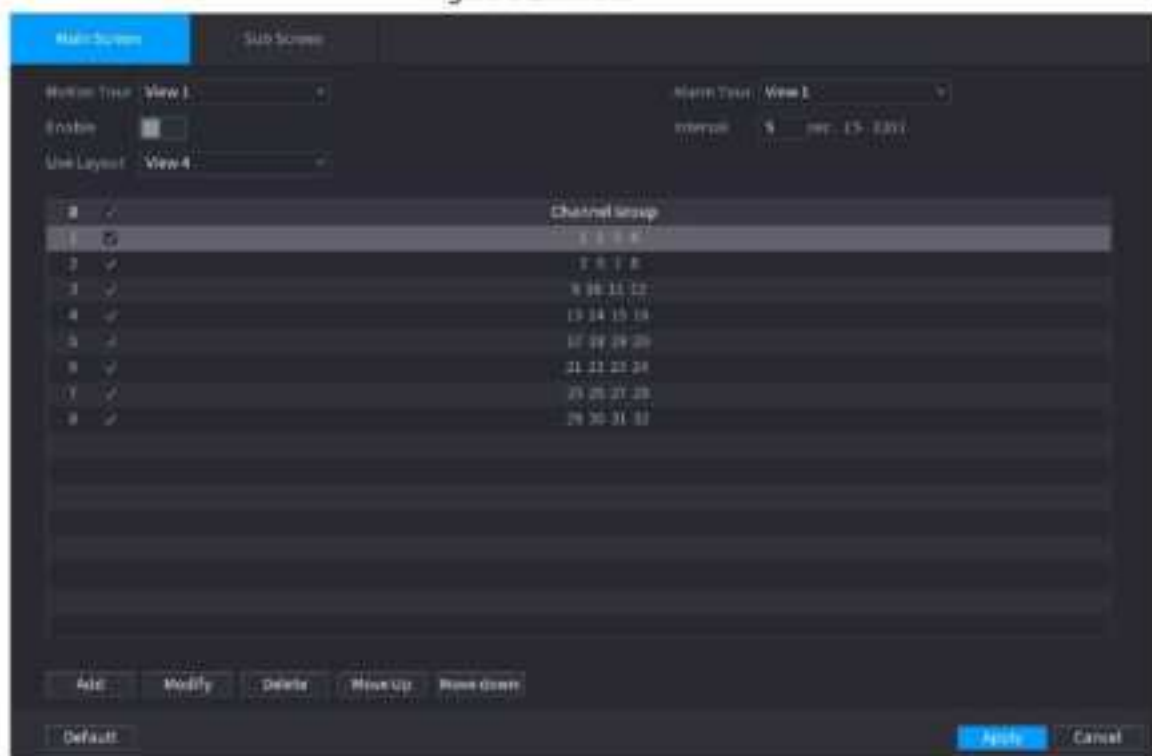
5.16.2 Tour

You can configure a tour of selected channels to repeat playing videos. The videos 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.

Procedure

Step 1 Select **DISPLAY > Tour Setting > Main Screen**.

Figure 5-299 Tour



- On the top right of the live view screen, use the left mouse button or press Shift to switch between  (image switching is allowed) and  (image switching is not allowed) to turn on/off the tour function.
- On the navigation bar, click  to enable the tour and click  to disable it.

Step 2 Configure the tour setting parameters.

Table 5-87 Tour parameters

Parameter	Description
Enable Tour	Enable tour function.
Interval	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.

Parameter	Description
Channel Group	Display all channel groups under the current Window Split setting. • 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 checkbox of any channel group, and then click Delete. • Edit a channel group: Select the checkbox of any channel group and then click Modify, or double-click on the group. The Modify Channel Group dialog box is 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.

5.16.3 Custom Layout

Background Information

You can set customized video split mode.

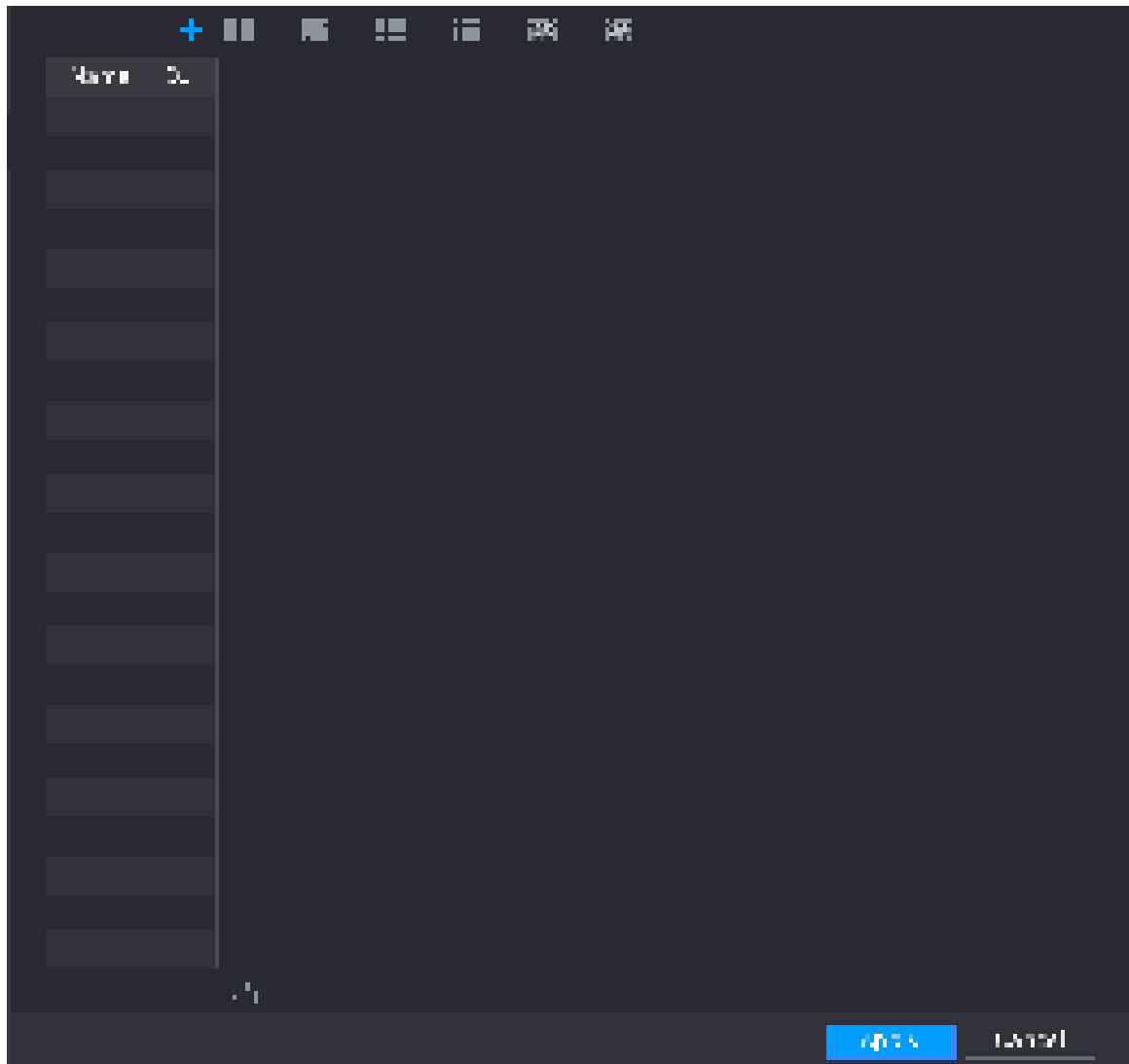


- This function is for some series products. See the actual product for detailed information.
- Device max. supports 5 customized videos.

Procedure

Step 1 Select **Main Menu > DISPLAY > Custom Split**.

Figure 5-300 Custom split

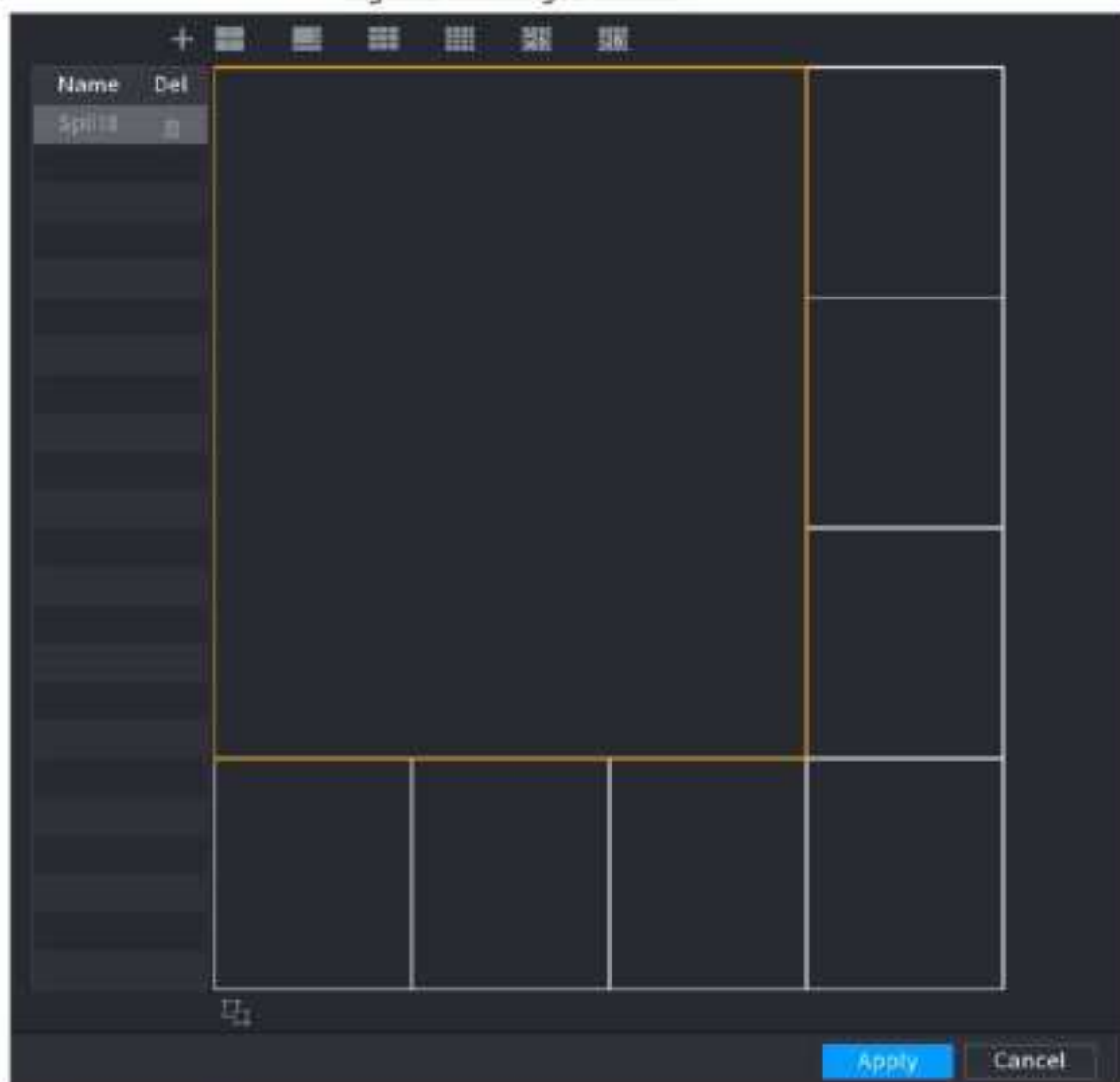


- Step 2** Click **+** and then click  to select basic mode. System adopts the basic window mode as the new window name. For example, if you select the 8 display mode, the default name is Split8. In regular mode, drag the mouse in the preview frame; you can merge several small windows to one window so that you can get you desired split mode.



- After merge the window, system adopts the remaining window amount as the new name such as Split6.
- Select the window you want to merge (red highlighted), click  to cancel the merge to restore the basic mode.
- Click  to delete the customized window mode.

Figure 5-301 Merged window



Step 3 Click **Apply** to exit.

After the setup, you can go to the preview window, right-click and then select **Live Layout** to select the custom split layout.

5.17 POS

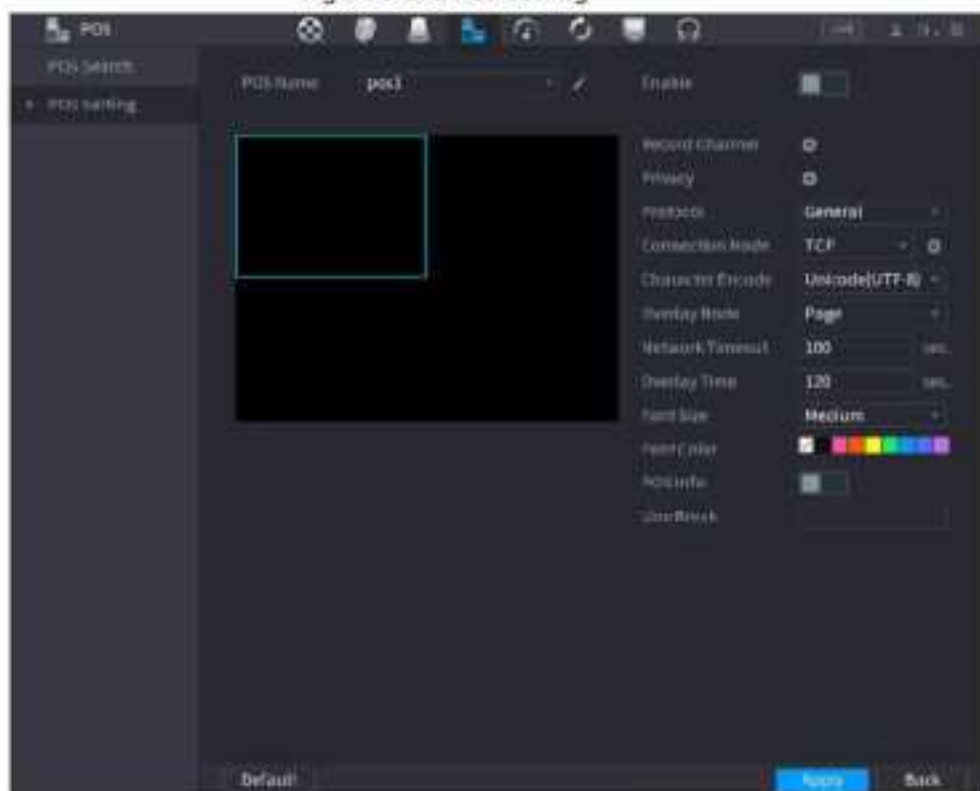
You can connect the Device to the POS (Point of Sale) machine and receive the information from it. This function applies to the scenarios such as supermarket POS machine. After connection is established, the Device can access the POS information and display the overlaid text in the channel window.

5.17.1 Settings

Procedure

Step 1 Select **Main Menu > POS > POS Setting**.

Figure 5-302 POS setting



Step 2 Configure the POS parameters.

Table 5-88 POS parameters

Parameter	Description
POS Name	In the POS Name list, select the POS machine that you want to configure settings for. Click  to modify the POS name.  - The POS name must be unique. - You can enter up to 21 Chinese characters or 63 English characters.
Enable	Enable the POS function.
Record Channel	Click  to select a channel to record.
Privacy	Enter the privacy contents.
Protocol	Select a protocol. Different machines correspond to different protocols.
Connection Mode	Select the connection protocol type. Click , the IP Address window is displayed. In the Source IP box, enter the IP address (the machine that is connected to the Device) that sends messages.

Parameter	Description
Character Encode	Select a character encoding mode.
Overlay Mode	In the Overlay Mode list, Select Turn or ROLL. • Turn: Once the information is at 16 lines, system displays the next page. • ROLL: Once the information is at 16 lines, system rolls one line after another to delete the first line.  When the local preview mode is in 4-split, the turn/ROLL function is based on 8 lines.
Network time out	When the network is not working correctly and cannot be recovered after the entered timeout limit, the POS information will not display normally. After the network is recovered, the latest POS information will be displayed.
Time Display	Enter the time that how long you want to keep the POS information displaying. For example, enter 5, the POS information disappear from the screen after 5 seconds.
Font Size	Select Small , Medium , or Big as the text size of POS information
Font Color	In the color bar, click to select the color for the text size of POS information.
POS Info	Enable the POS Info function, the POS information displays in the live view/WEB.
Line Break	There is no line delimiter by default. After you set the line delimiter (HEX), the overlay information after the delimiter is displayed in the new line. For example, the line delimiter is F and the overlay information is 123F6789, NVR displays overlay information on the local preview page and Web as: 123 6789

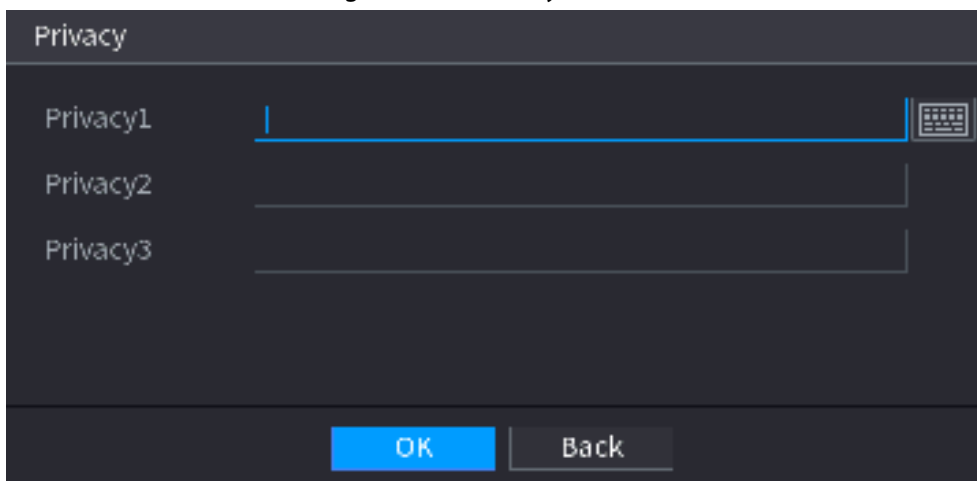
Step 3 Click **Apply**.

5.17.1.1 Privacy Setup

Procedure

Step 1 Click  next to **Privacy**.

Figure 5-303 Privacy



Step 2 Set privacy information.

Step 3 Click **OK**.

5.17.1.2 Connection Mode

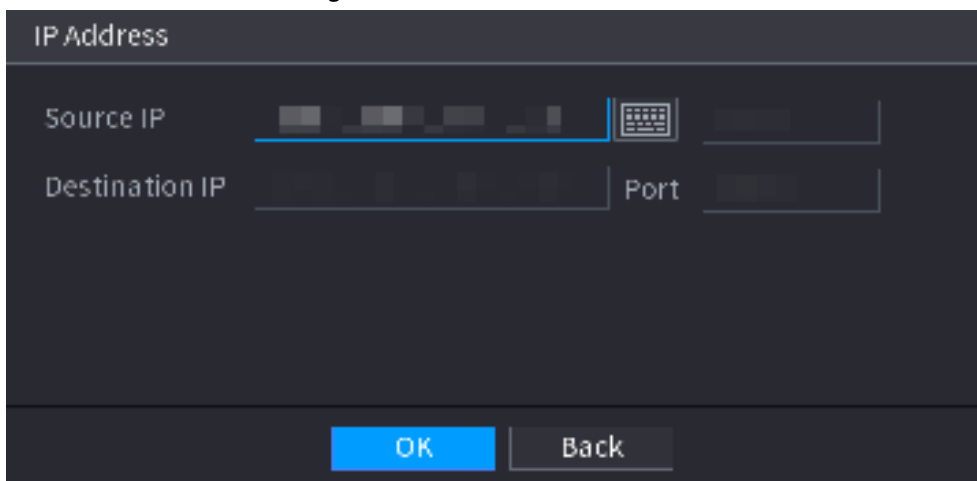
Connection type is UDP or TCP.

Procedure

Step 1 Select **Connection Mode** as **UDP**, **TCP_CLINET** or **TCP**.

Step 2 Click .

Figure 5-304 IP address



Step 3 For **Source IP** and **Port**, enter the POS IP address and port.

Step 4 Click **OK**.

5.17.2 Search

The system supports fuzzy search.

Procedure

Step 1 Select **Main Menu > POS > POS Search**.

Figure 5-305 POS search

- Step 2** In the **POS Search** box, enter the information such as transaction number on your receipt, amount, or product name.
- Step 3** In the **Start Time** box and **End Time** box, enter the time period that you want to search the POS transaction information.
- Step 4** Click **Search**.
The searched transaction results display in the table.

5.18 Audio

The audio function is to manage audio files and set schedule play function. It is to realize audio broadcast activation function.



This function is available on select models.

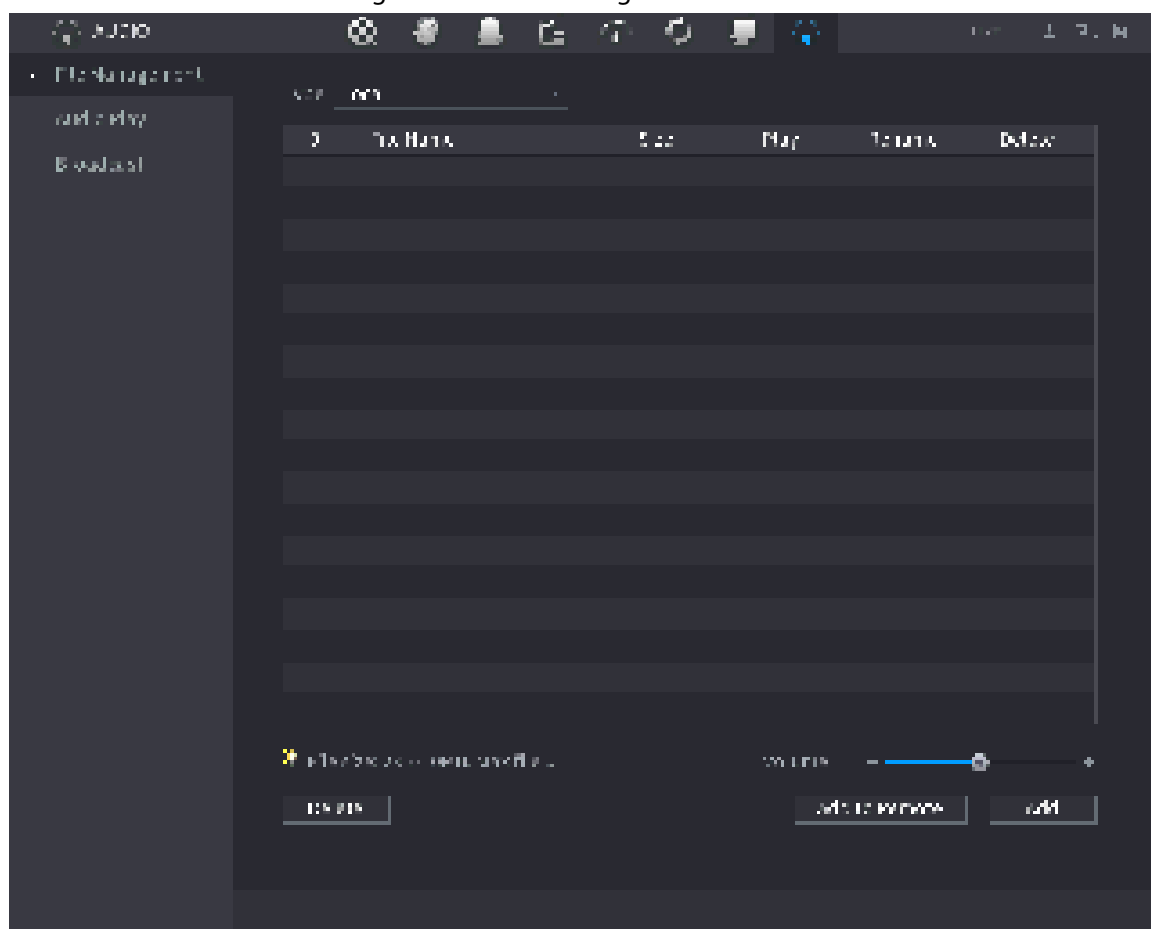
5.18.1 File Management

You can add audio files, listen to audio files, rename and delete audio files, and configure the audio volume.

Procedure

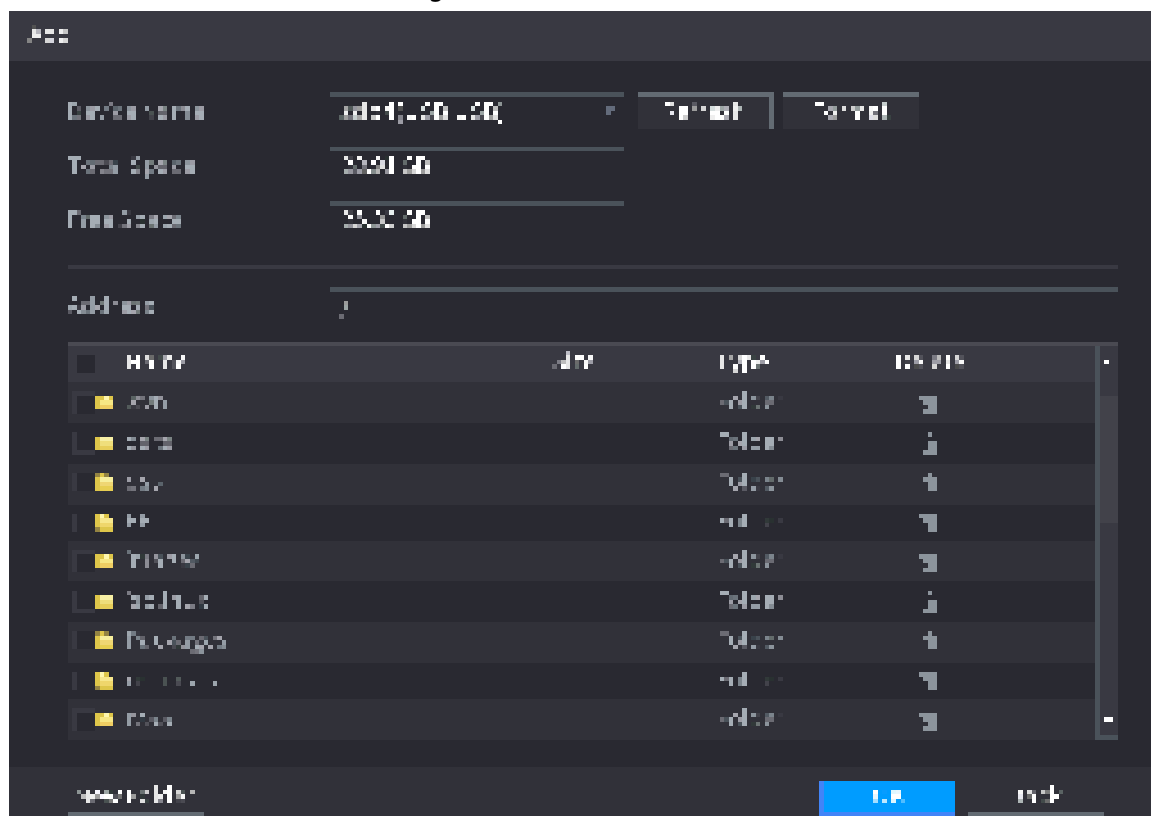
- Step 1** Select **Main Menu > AUDIO > File Management**.

Figure 5-306 File management



Step 2 Click **Add**.

Figure 5-307 Add file



- Step 3** Select the audio file and then click **Import**.
System supports MP3 and PCM audio format.
- 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** page.

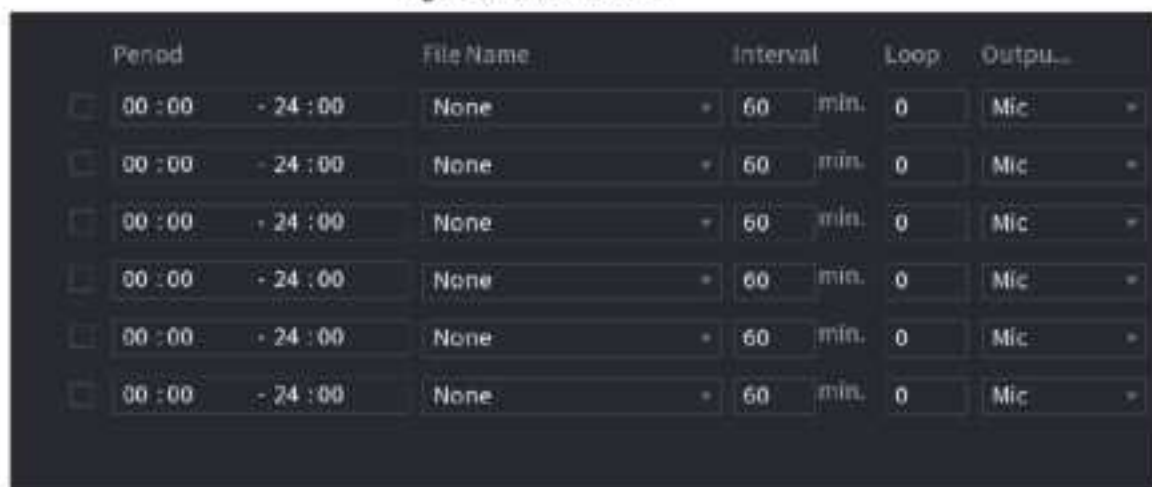
5.18.2 Audio Play

You can configure the settings to play the audio files during the defined time period.

Procedure

- Step 1** Select **Main Menu > AUDIO > Schedule**.

Figure 5-308 Schedule



	Period	File Name	Interval	Loop	Output
☐	00 : 00 - 24 : 00	None	60 min.	0	Mic
☐	00 : 00 - 24 : 00	None	60 min.	0	Mic
☐	00 : 00 - 24 : 00	None	60 min.	0	Mic
☐	00 : 00 - 24 : 00	None	60 min.	0	Mic
☐	00 : 00 - 24 : 00	None	60 min.	0	Mic
☐	00 : 00 - 24 : 00	None	60 min.	0	Mic

- Step 2** Configure the parameters.

Table 5-89 Schedule parameters

Parameter	Description
Period	In the Period box, enter the time. Select the checkbox 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 playing.
Loop	Configure how many times you want to repeat the playing in the defined period.
Output	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.  Some series products do not have audio port.



- The finish time for audio playing depends on audio file size and the configured interval.
- Playing priority: **Alarm event** > **Audio talk** > **Trial listening** > **Schedule audio file**.

Step 3 Click **Apply**.

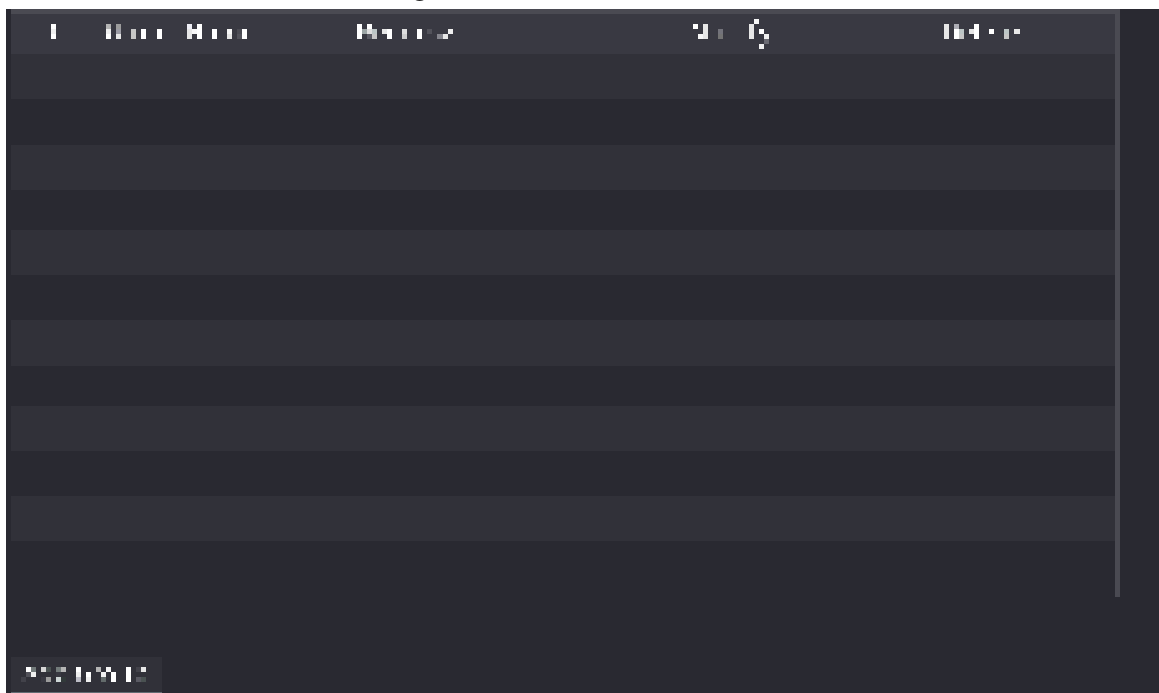
5.18.3 Broadcast

System can broadcast to the camera, or broadcast to a channel group.

Procedure

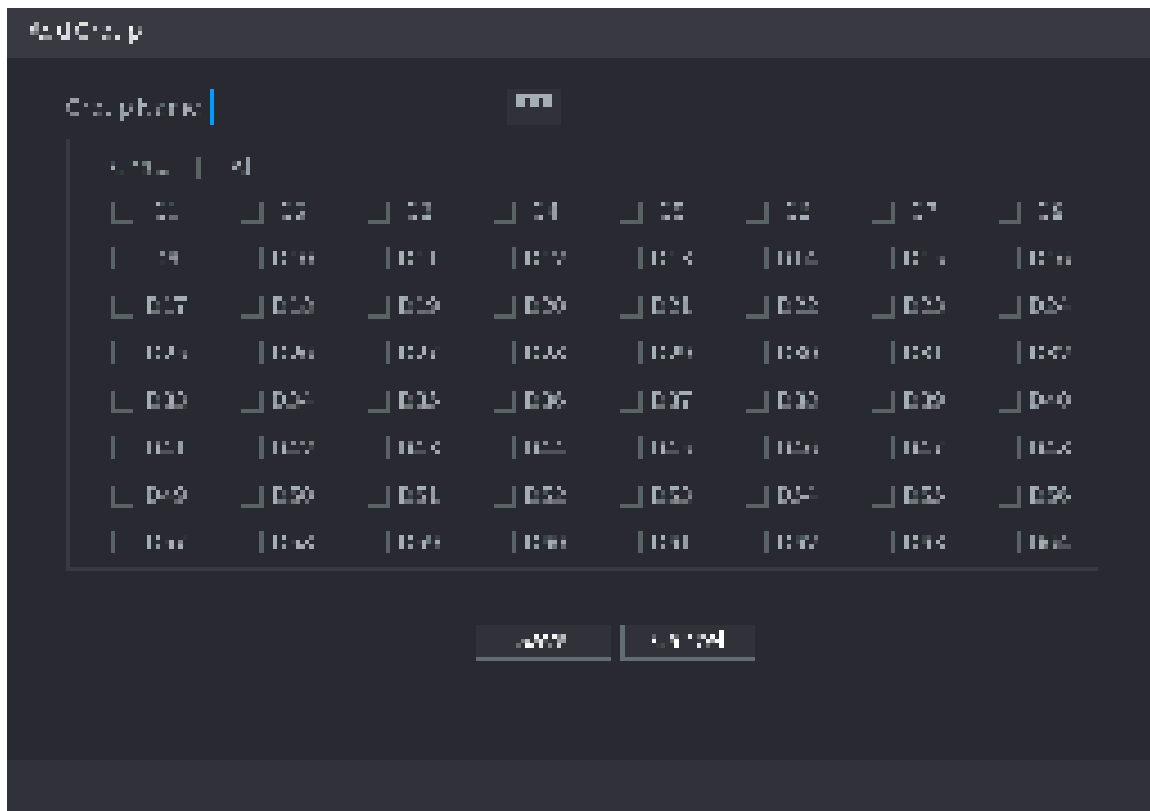
Step 1 Select **Mani Menu** > **AUDIO** > **Broadcast**.

Figure 5-309 Broadcast



Step 2 Click **Add Group**.

Figure 5-310 Add group (1)



Group Name: Save

☒ 001	☒ 002	☒ 003	☒ 004	☒ 005	☒ 006	☒ 007	☒ 008
☒ 009	☒ 010	☒ 011	☒ 012	☒ 013	☒ 014	☒ 015	☒ 016
☒ 017	☒ 018	☒ 019	☒ 020	☒ 021	☒ 022	☒ 023	☒ 024
☒ 025	☒ 026	☒ 027	☒ 028	☒ 029	☒ 030	☒ 031	☒ 032
☐ 033	☐ 034	☐ 035	☐ 036	☐ 037	☐ 038	☐ 039	☐ 040
☐ 041	☐ 042	☐ 043	☐ 044	☐ 045	☐ 046	☐ 047	☐ 048
☐ 049	☐ 050	☐ 051	☐ 052	☐ 053	☐ 054	☐ 055	☐ 056
☐ 057	☐ 058	☐ 059	☐ 060	☐ 061	☐ 062	☐ 063	☐ 064

Cancel Save

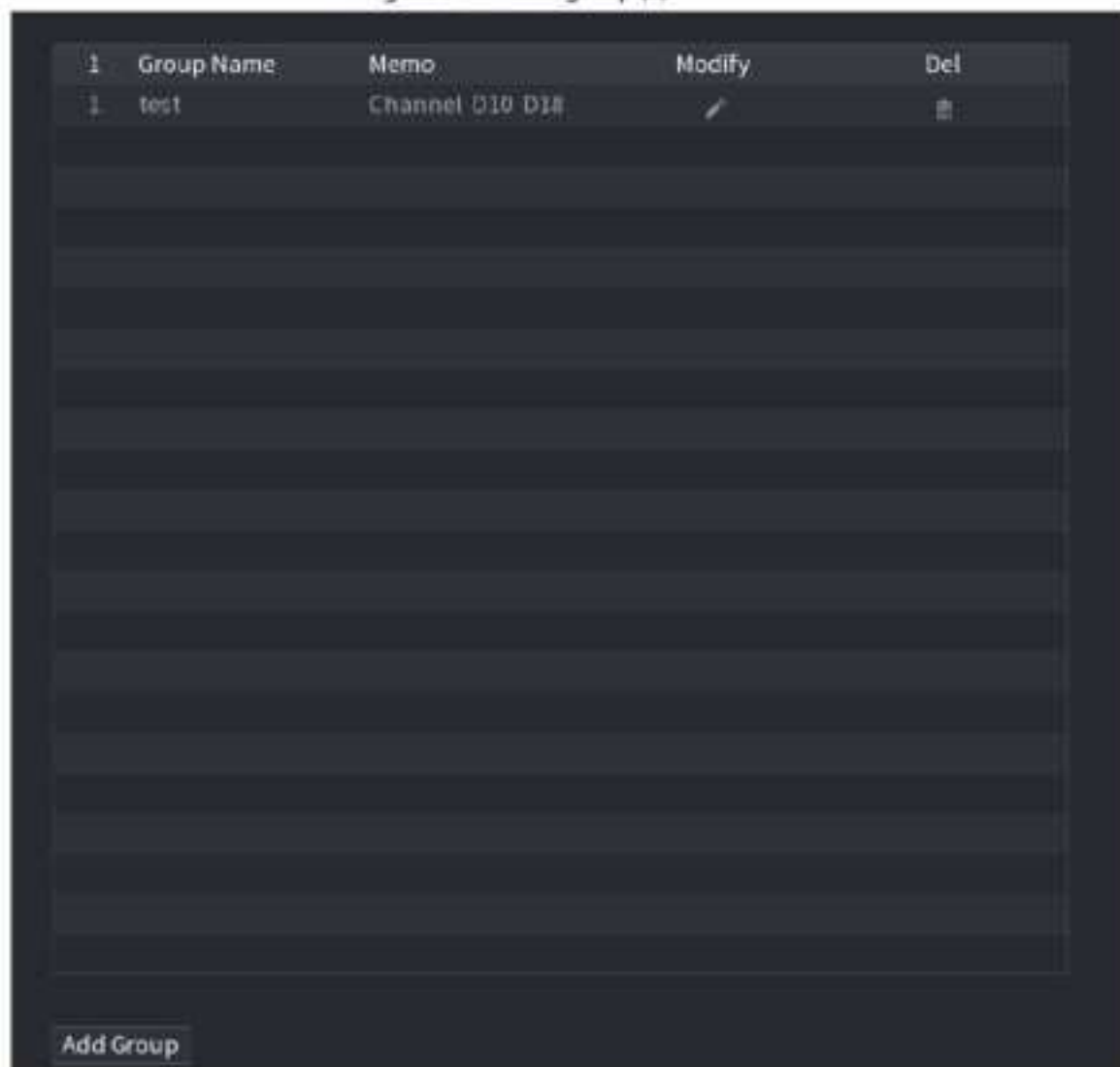
Step 3 Input group name and select one or more channels.

Step 4 Click **Save** to complete broadcast group setup.



- On the broadcast page, click  to change group setup, click  to delete group.
- After complete broadcast setup, on the preview page and then click  on the navigation bar, device pops up broadcast dialogue box. Select a group name and then click  to begin broadcast.

Figure 5-311 Add group (2)



5.19 Operation and Maintenance

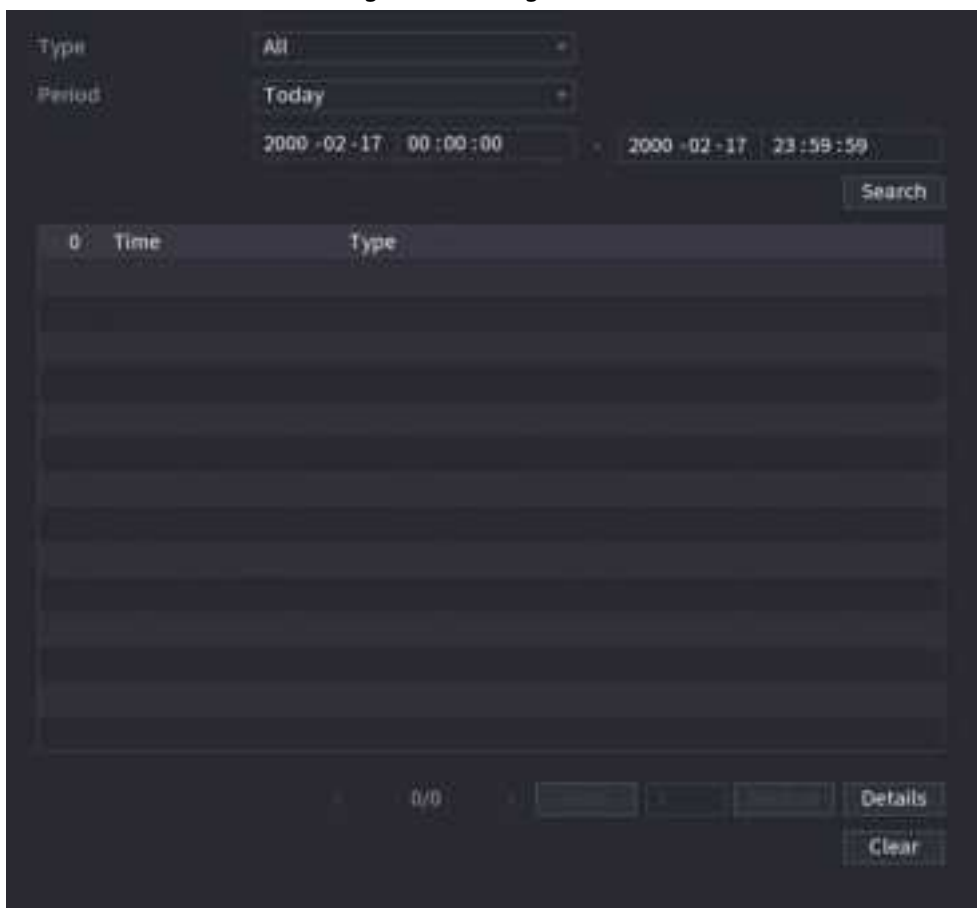
5.19.1 Log

You can view and search for the log information, or back up log to the USB device.

Procedure

Step 1 Select **Main Menu > Maintenance Center > Log**.

Figure 5-312 Log



The screenshot shows a web interface for viewing logs. At the top, there are filters for 'Type' (set to 'All'), 'Period' (set to 'Today'), and a date range from '2000-02-17 00:00:00' to '2000-02-17 23:59:59'. A 'Search' button is to the right. Below the filters is a table with columns '0', 'Time', and 'Type'. The table is currently empty. At the bottom, there are navigation buttons: '0/0', 'Previous', 'Next', 'Details', and 'Clear'.

- 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** Enter the time period to search, and then click **Search**.
The search results are displayed.

Related Operations

- Click **Details** or double-click the log to view details. Click **Next** or **Previous** to view more log information.
- Click **Backup** to back up the logs to the USB storage device.
- Click **Clear** to remove all logs.

5.19.2 System

5.19.2.1 System Version

Select **Main Menu > Maintenance Center > System Info > Version**.
You can view NVR version information.

5.19.2.2 AI Algorithm Version

Select **Main Menu > Maintenance Center > System Info > Intelligent Algorithm**.

You can view version information for AI functions such as face detection, face recognition, IVS, and video metadata.

Figure 5-313 Intelligent Algorithm



5.19.2.3 HDD Info

You can view the HDD quantity, HDD type, total space, free space, status, and S.M.A.R.T information. Select **Main Menu > Maintenance Center > System Info > Disk**.

Figure 5-314 Disk information

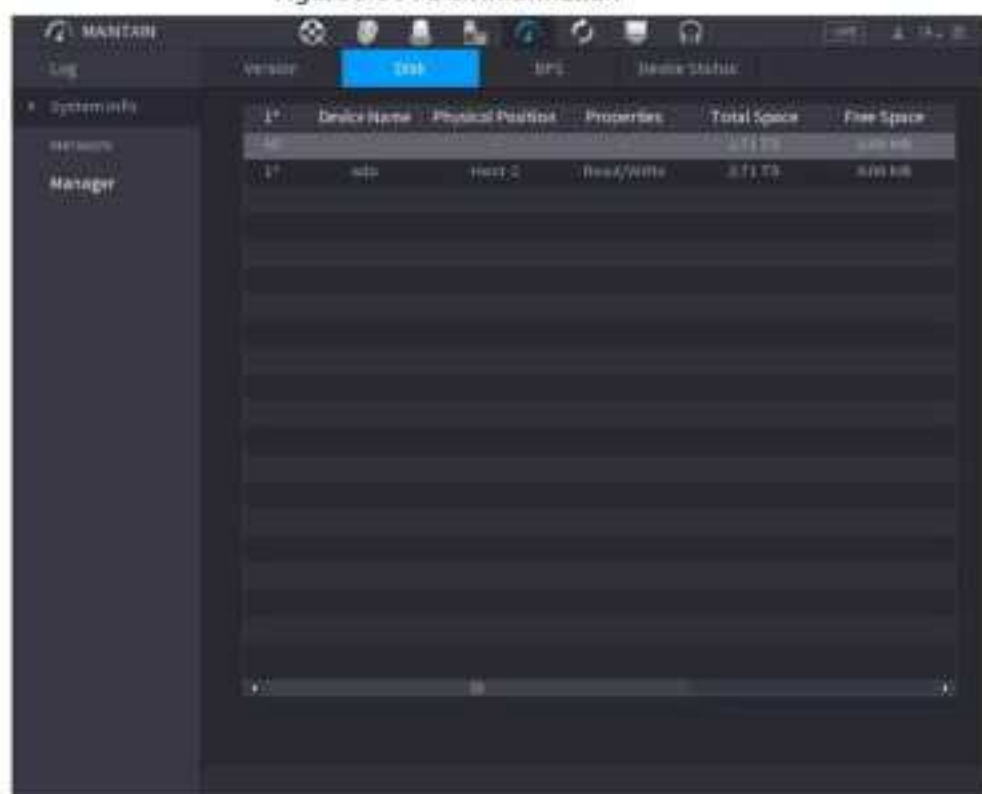


Table 5-90 Disk information

Parameter	Description
No.	Indicates the number of the currently connected HDD. The asterisk (*) means the current working HDD.
Device Name	Indicates name of HDD.
Physical Position	Indicates installation position of HDD.
Properties	Indicates HDD type.
Total Space	Indicates the total capacity of HDD.
Free Space	Indicates the usable capacity of HDD.

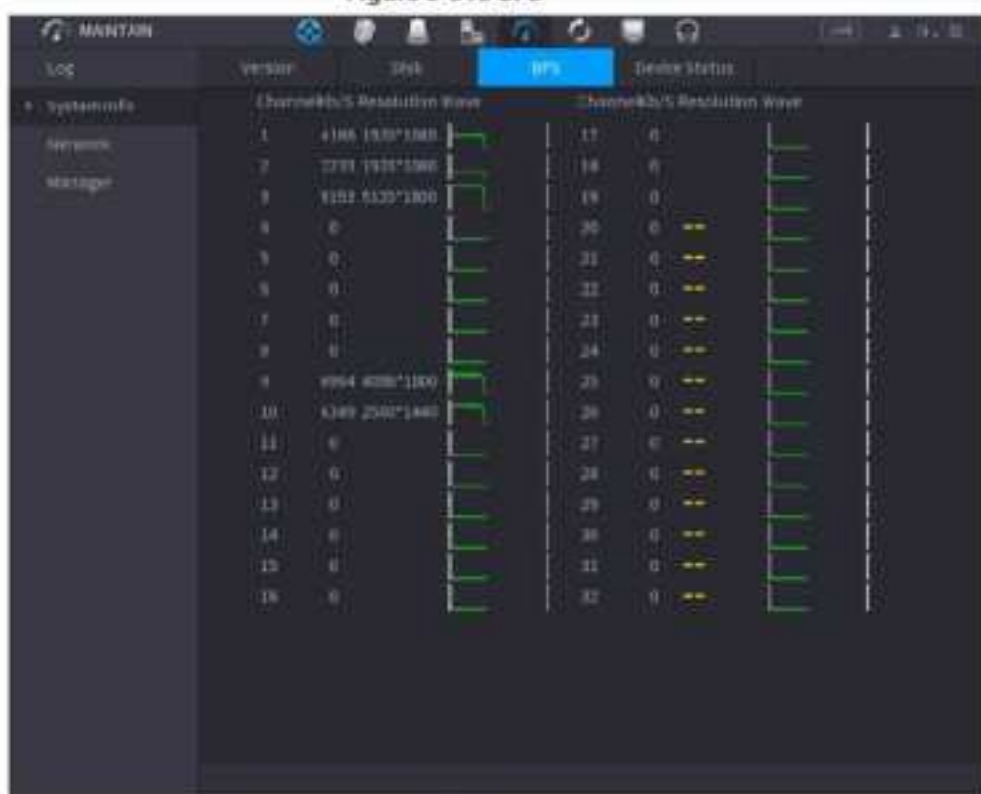
Parameter	Description
Health Status	Indicates the health status of the HDD.
S.M.A.R.T	View the S.M.A.R.T reports from HDD detecting.
Status	Indicates the status of the HDD to show if it is working normally.

5.19.2.4 BPS

You can view current video bit rate (kb/s) and resolution.

Select **Main Menu > Maintenance Center > System Info > BPS**.

Figure 5-315 BPS

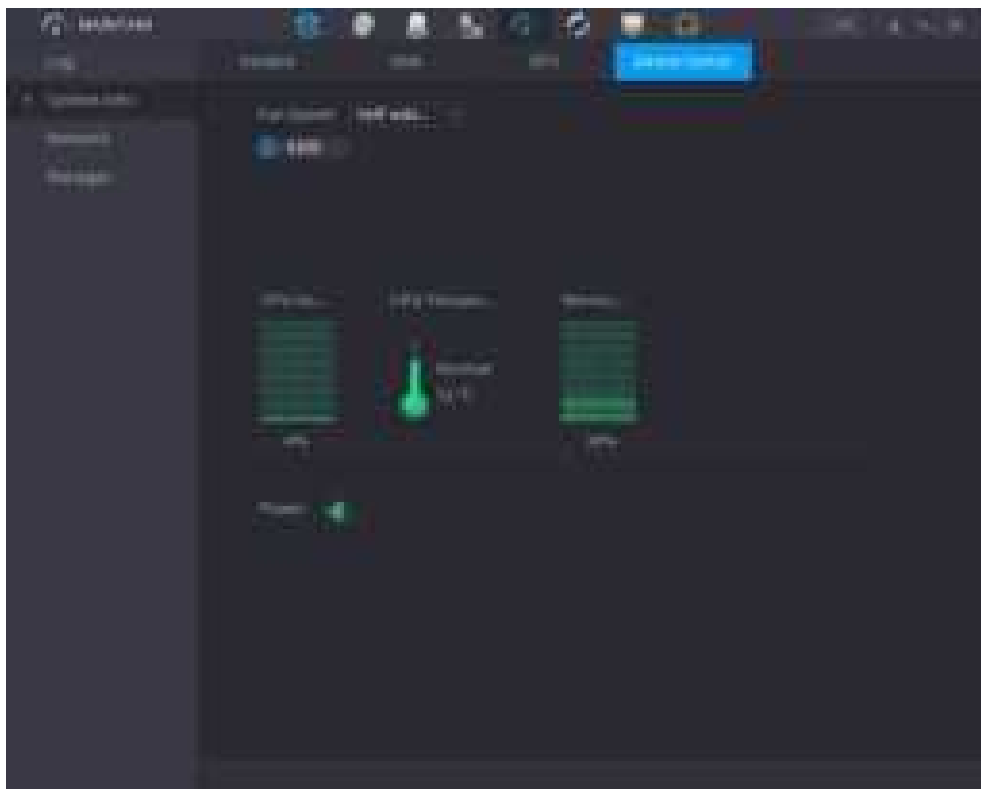


5.19.2.5 Device Status

You can view fan running status such as speed, CPU temperature, and memory.

Select **Main Menu > Maintenance Center > System Info > Device Status**.

Figure 5-316 Device status



5.19.3 Network

5.19.3.1 Online User

You can view the online user information or block any user for a period of time. 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.

Select **Main Menu > Maintenance Center > Network > Online User**.

Figure 5-318 Network load



- 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.



- System displays LAN1 load by default.
- Only one LAN load can be displayed at one time.

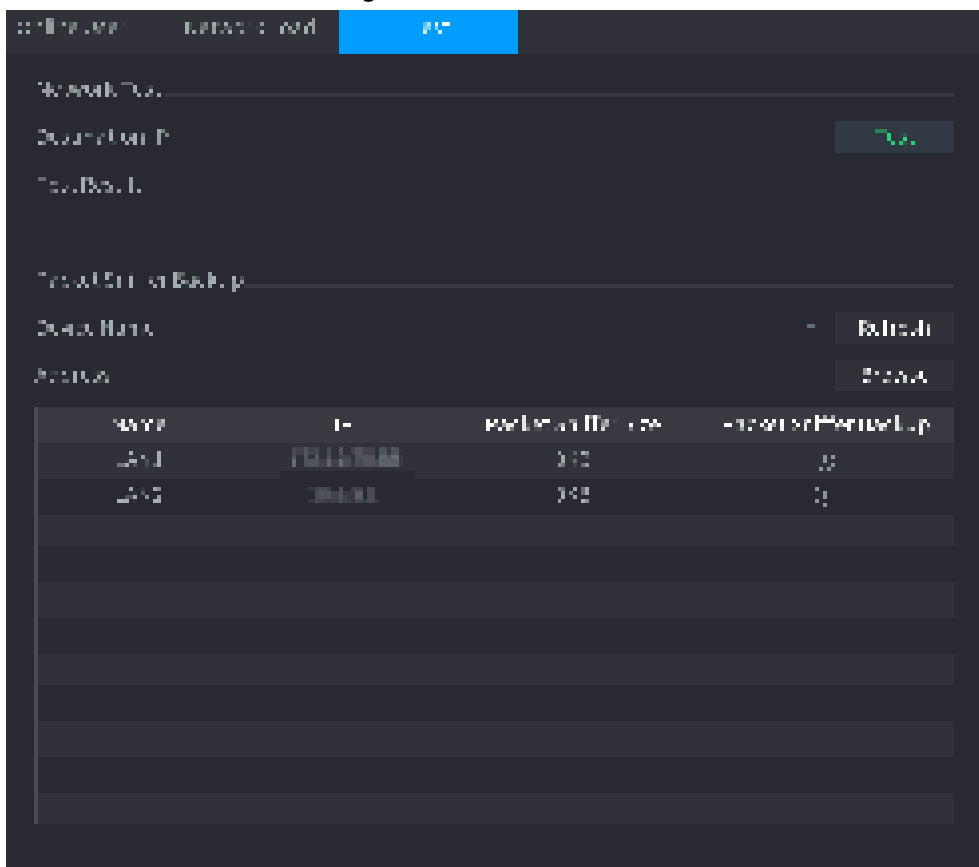
5.19.3.3 Network Test

You can test the network connection status between the Device and other devices.

Procedure

- Step 1** Select **Main Menu > Maintenance Center > Network > Test**.

Figure 5-319 Test



Name	IP	Status	Type	Action
LAN1	192.168.1.1	Online	LAN	Test
LAN2	192.168.1.2	Offline	LAN	Test

Step 2 In the **Destination IP** box, enter the IP address.

Step 3 Click **Test**.

After testing is completed, the test result is displayed. You can check the evaluation for average delay, packet loss, and network status.

5.19.4 Maintenance and Management

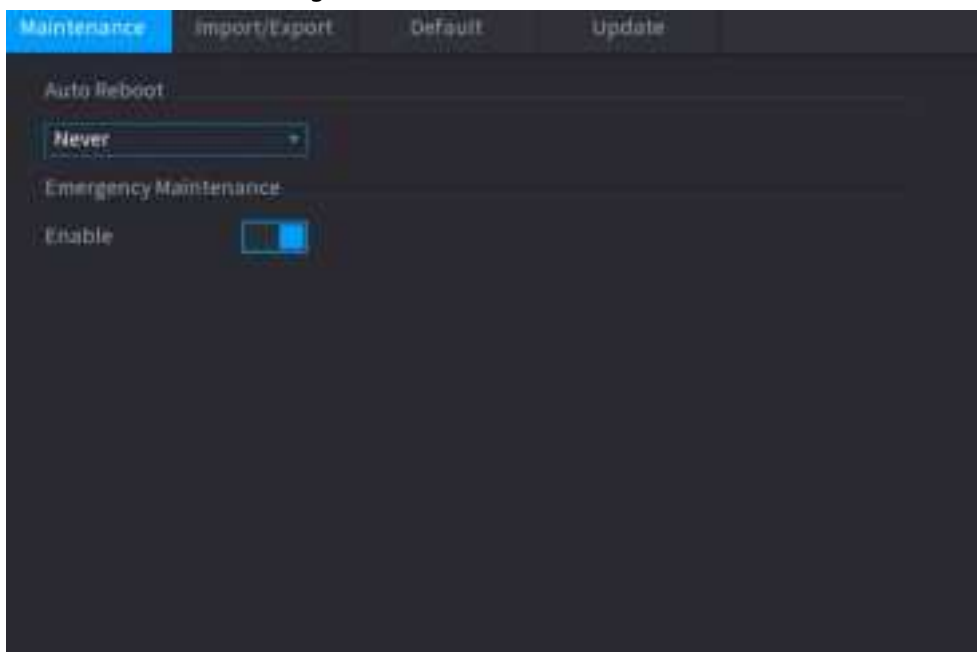
5.19.4.1 Device Maintenance

When the Device has been running for a long time, you can enable the Device to restart automatically at the idle time. You can also enable emergency maintenance.

Procedure

Step 1 Select **Main Menu > Maintenance Center > Manager > Maintenance**.

Figure 5-320 Maintenance



Step 2 Configure the parameters.

- **Auto Reboot:** Enable the Device to restart at the idle time.
- **Emergency Maintenance:** When the Device has an update power outage, running error and other problems, and you cannot log in, then you can use the emergency maintenance function to restart the Device, clear configuration, update the system, and more.

Step 3 Click **Apply**.

5.19.4.2 Exporting System Settings

Background Information

You can export or import the Device system settings if there are several Devices that require the same setup.

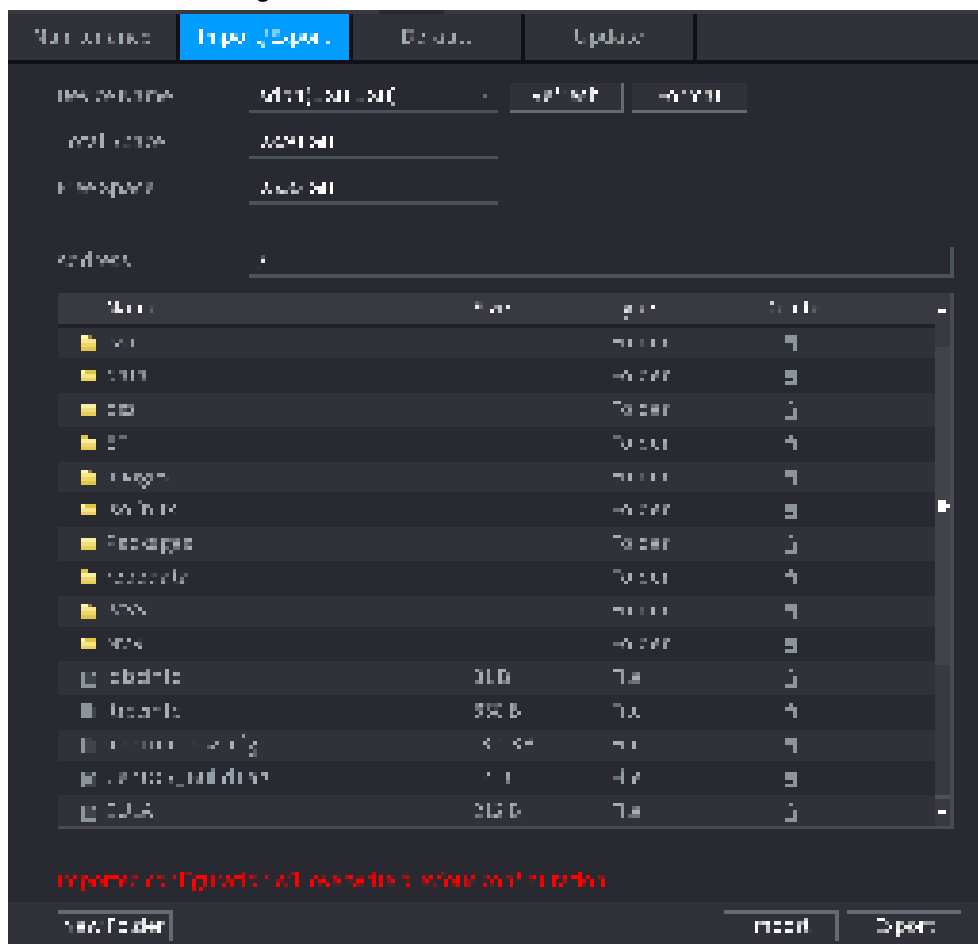


- The **Import/Export** page cannot be opened if the backup operation is ongoing on the other pages.
- When you open the **Import/Export** page, the system refreshes the devices and sets the current directory as the first root directory.
- Click **Format** to format the USB storage device.

Procedure

Step 1 Select **Main Menu > Maintenance Center > Manager > Import/Export**.

Figure 5-322 Connected USB device



Step 4 Click **Export**.

There is a folder under the name style of "Config_XXXX". Double-click this folder to view the backup files.

5.19.4.3 Restoring Defaults

5.19.4.3.1 Restoring Defaults on the Local Page

Background Information



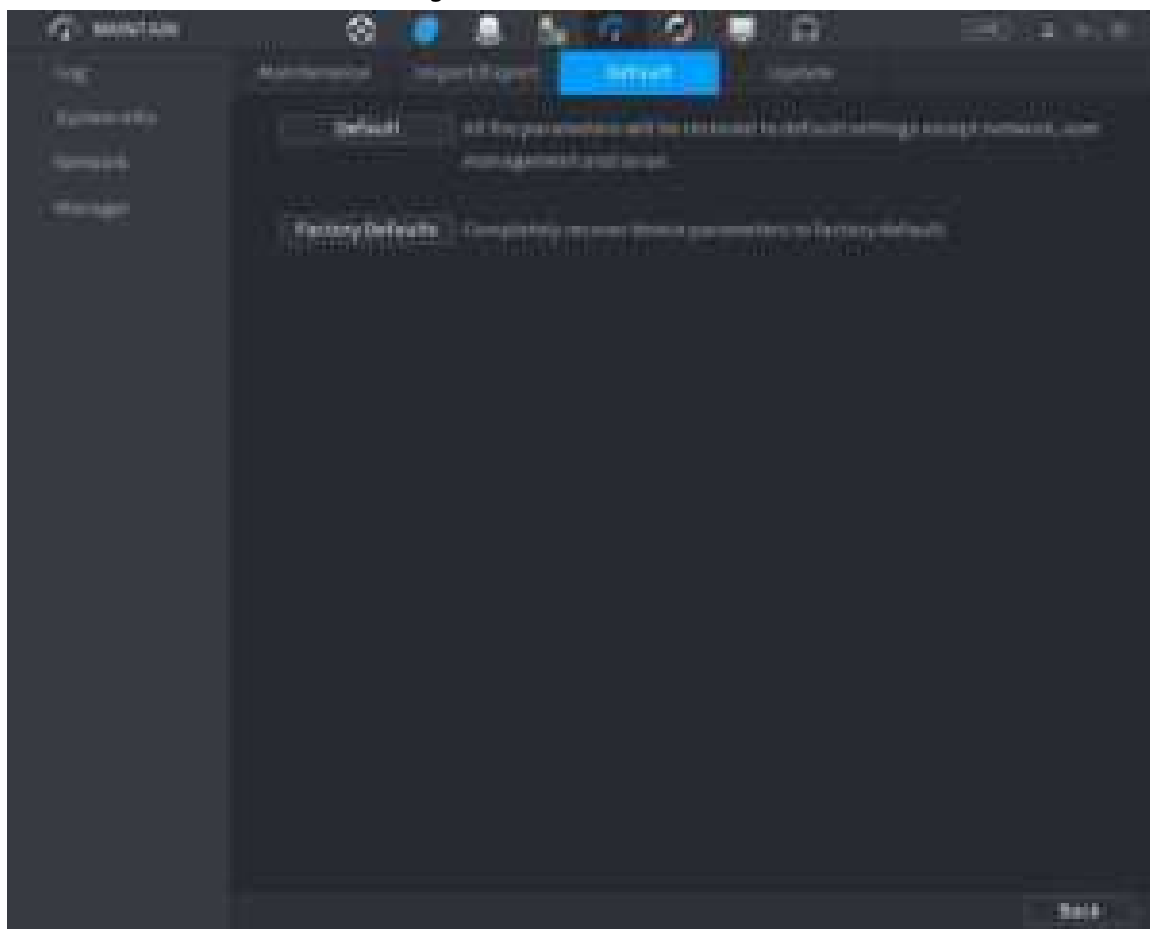
This function is for admin account only.

You can restore the Device to default settings on the local page.

Procedure

Step 1 Select **Main Menu > Maintenance Center > Manager > Default**.

Figure 5-323 Default



Step 2 Restore the settings.

- **Default:** Restore all the configurations except network settings and user management to the default.
- **Factory Default:** Restore all the configurations to the factory default settings.

5.19.4.3.2 Resetting Device through the Reset Button

Background Information

You can use the reset button on the mainboard to reset the Device to the factory default settings.



The reset button is available on select models.

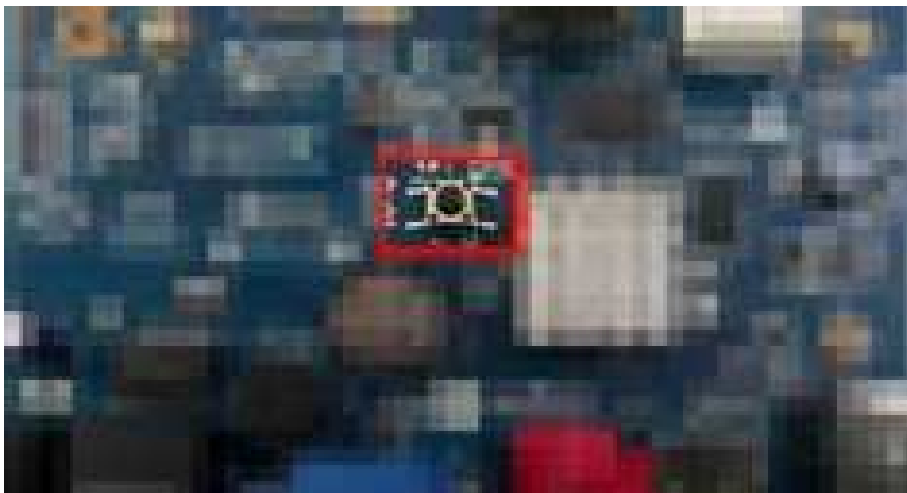


After resetting, all the configurations will be lost.

Procedure

- Step 1** Disconnect the Device from power source, and then remove the cover panel. For details about removing the cover panel, see "3.3 HDD Installation".
- Step 2** Find the reset button on the mainboard, and then connect the Device to the power source again.
- Step 3** Press and hold the reset button for 5 seconds to 10 seconds.

Figure 5-324 Reset button



- Step 4 Restart the Device.
After the Device restarts, the settings have been restored to the factory default.

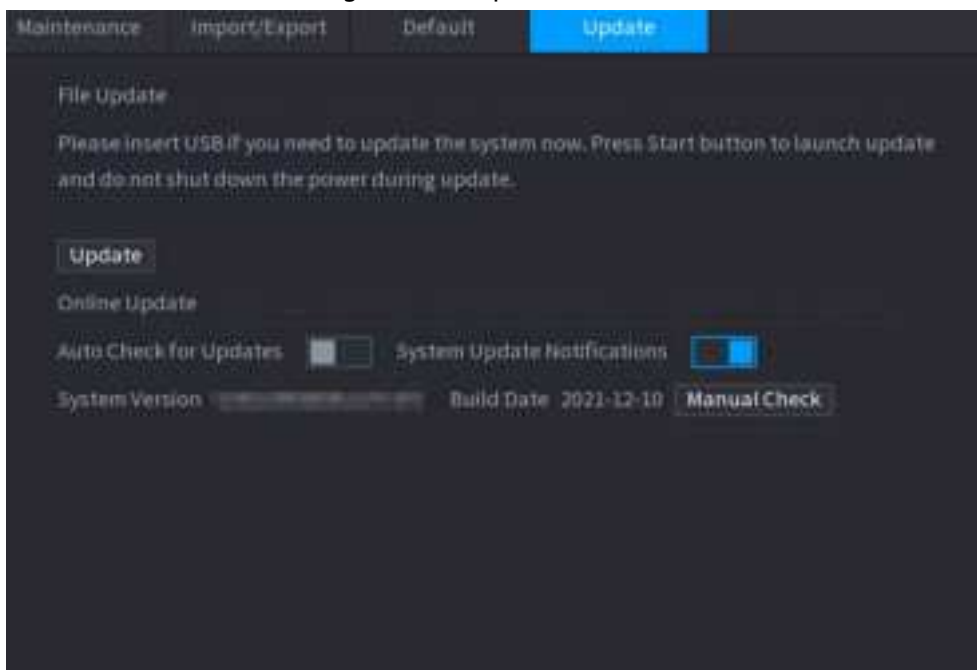
5.19.4.4 System Update

5.19.4.4.1 Upgrading File

Procedure

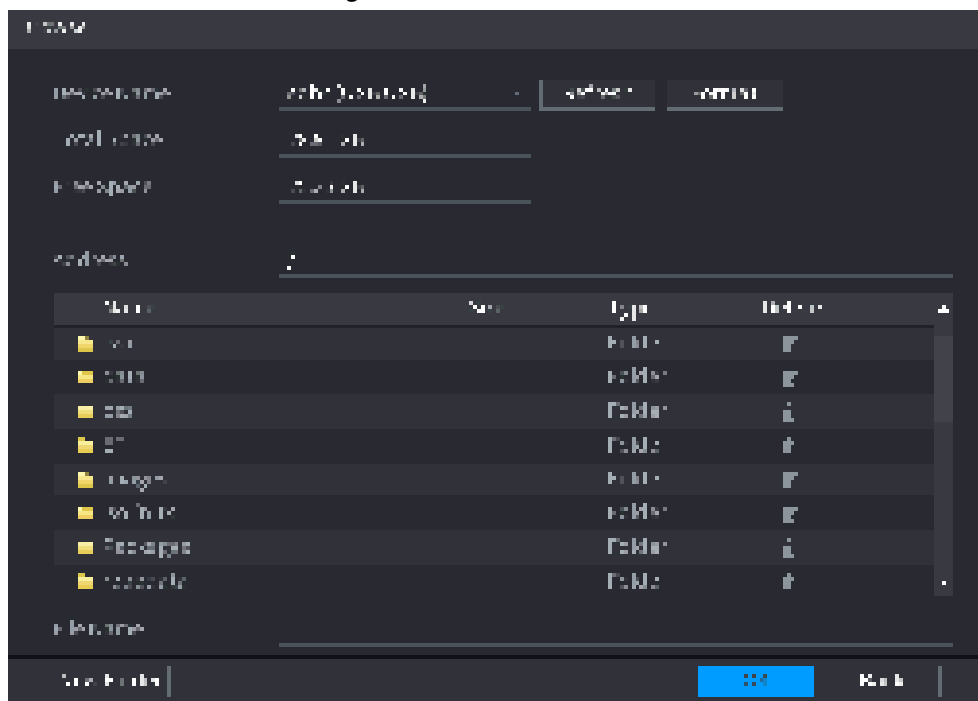
- Step 1 Insert a USB storage device containing the upgrade files into the USB port of the Device.
Step 2 Select **Main Menu > Maintenance Center > Manager > Update**

Figure 5-325 Update



- Step 3 Click **Update**.

Figure 5-326 Browse



- Step 4** Click the file that you want to upgrade.
- Step 5** The selected file is displayed in the **Update File** box.
- Step 6** Click **Start**.

5.19.4.4.2 Online Upgrade

Background Information

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 real-time check whether there is any new version available.



Ensure the correct power supply and network connection during upgrading; otherwise the upgrading might be failed.

Procedure

Step 1 Select **Main Menu > Maintenance Center > Manager > Update**.

Step 2 Check whether there is any new version available.

- Auto-check for updates: Enable Auto-check for updates.
- Manual check: Click **Manual Check**.

The system starts checking the new versions. After checking is completed, the check result is displayed.

- If the "It is the latest version" text is displayed, you do not need to upgrade.
- If the text indicating there is a new version, go to the step 3.

Step 3 Click **Update now** to update the system.

5.19.4.4.3 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.

When starting the Device, the system automatically checks whether there is a USB storage device connected and any upgrade file, and if yes 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.

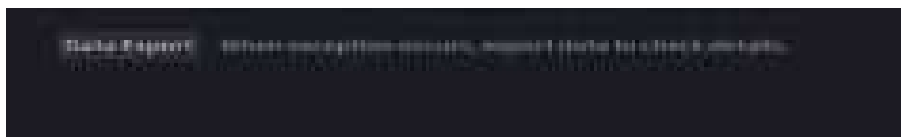
5.19.4.5 Intelligent Diagnosis

When exception occurs, export data to check details

Background Information

Select **Maintenance Center** > **Intelligent Diagnosis**.

Figure 5-327 Intelligent diagnosis



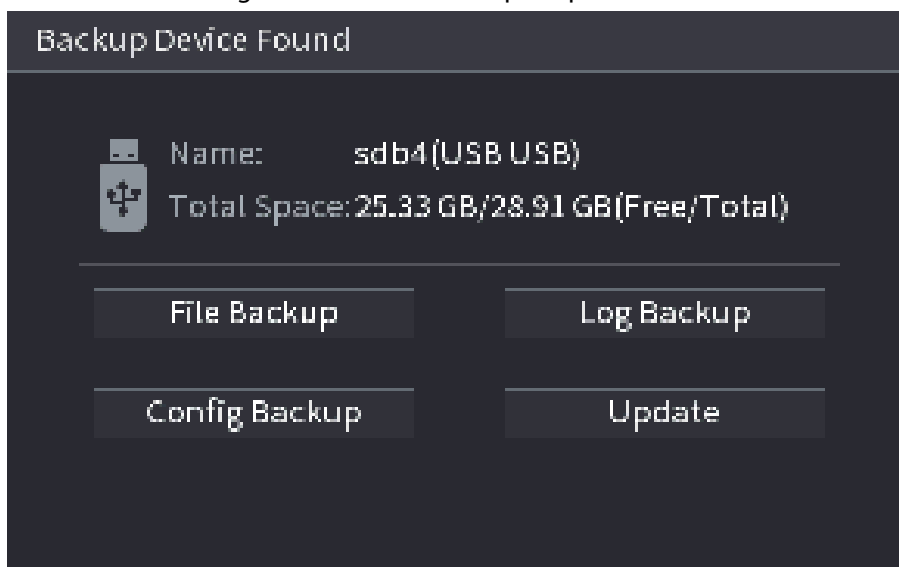
5.20 USB Device Auto Pop-up

After you inserted the USB device, system can auto detect it and pop up the following dialogue box. It allows you to conveniently backup file, log, configuration or update system.



You can add a USB keyboard through USB port, and it can input characters limited to soft keyboard.

Figure 5-328 USB device prompt



5.21 Shutdown



- When you see corresponding dialogue box "System is shutting down..." Do not click power on-off button directly.
- Do not unplug the power cable or click power on-off button to shutdown device directly when device is running (especially when it is recording.)
- Shut down the device and then unplug the power cable before you replace the HDD.

Procedure

- From the main menu (Recommended)
 1. Click  at the upper-right corner.

Figure 5-329 Shutdown (1)



2. Select **Shutdown**.
Draw the unlock pattern or input password first if you have no authority to shut down.

Figure 5-330 Shutdown (2)

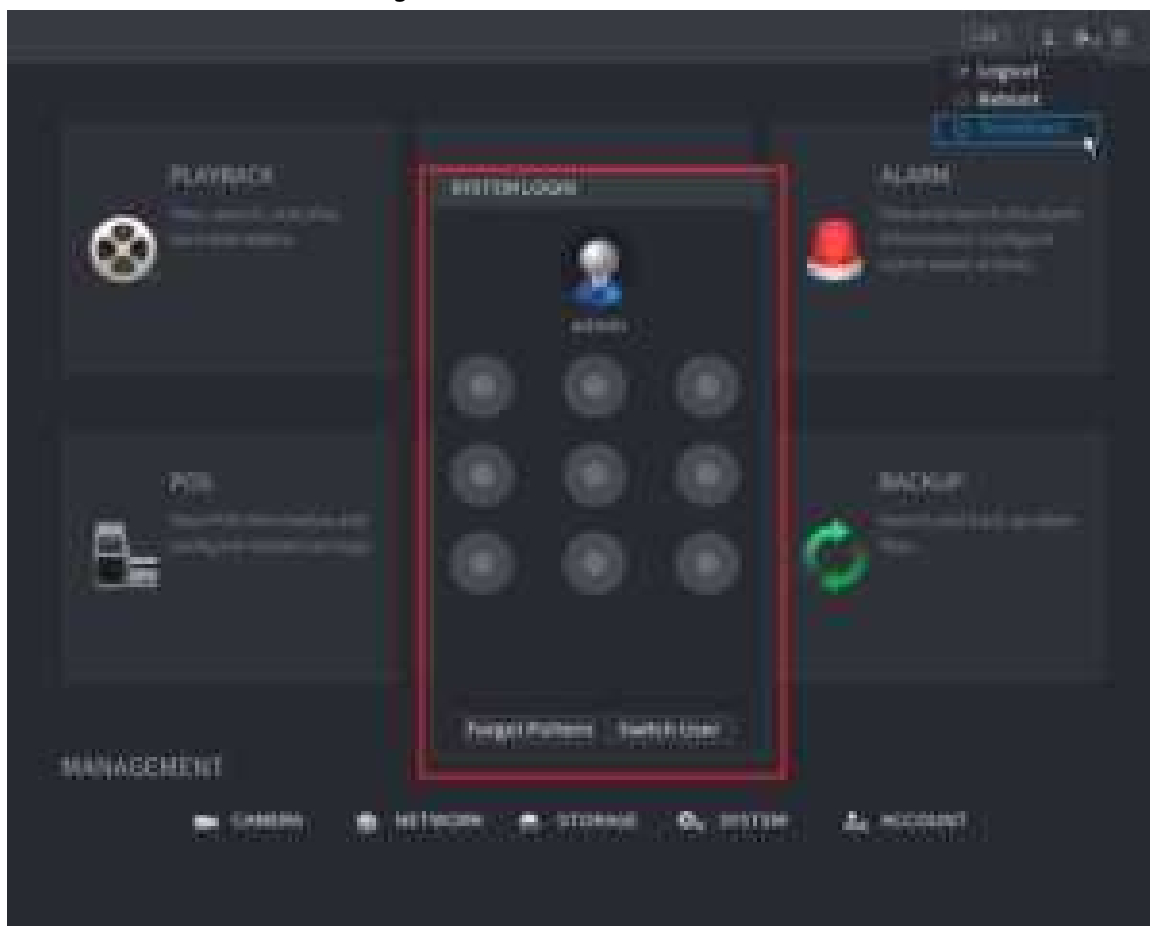
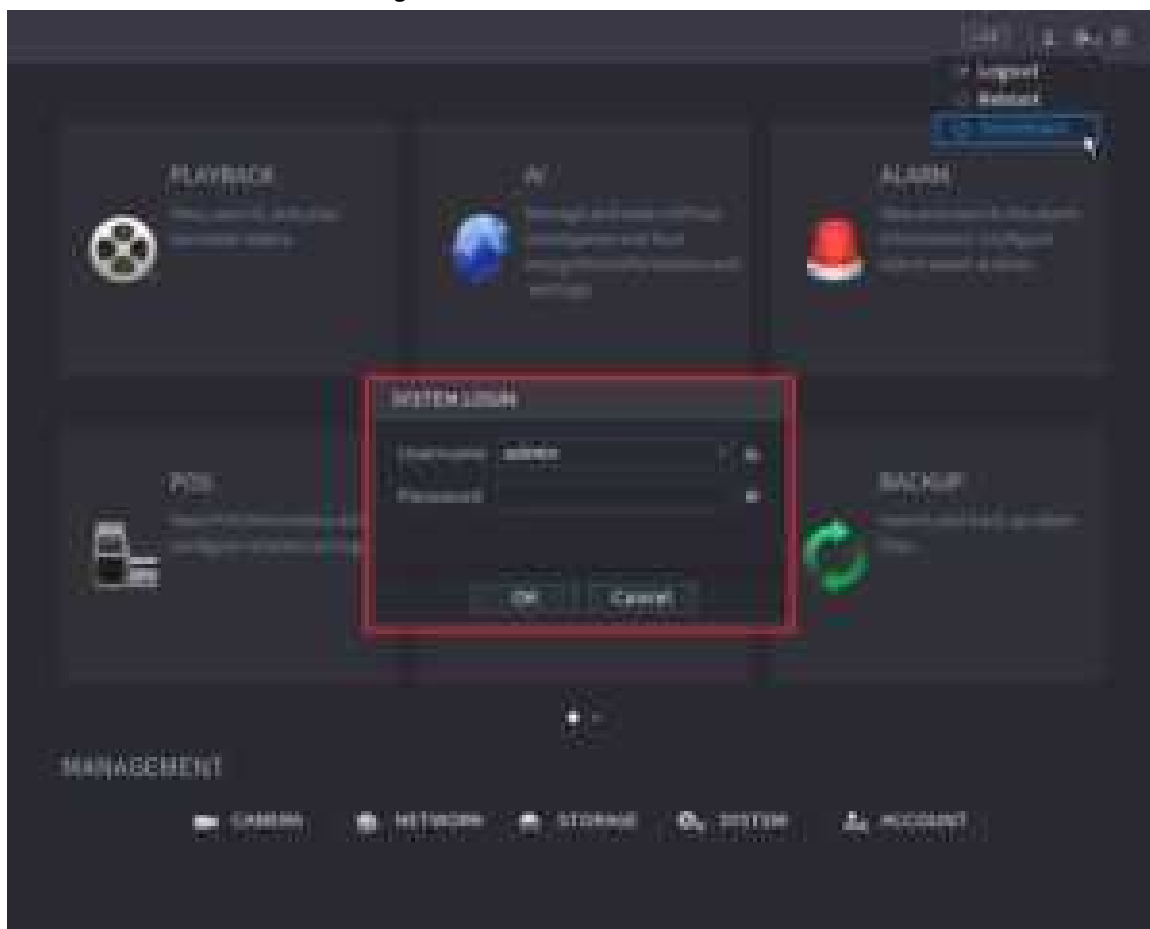


Figure 5-331 Shutdown (3)



- Remote Control
Press the power button on the remote for at least 3 seconds.
- Press the power button at the rear panel of the device.

Auto Resume after Power Failure

The system can automatically backup video file and resume previous working status after power failure.

6 Web Operation



- The figures in the Manual are used for introducing the operations and only for reference. The actual page might be different dependent on the model you purchased.
- The Manual is a general document for introducing the product, so there might be some functions described for the Device in the Manual not apply to the model you purchased.
- Besides Web, you can use our Smart PSS to login the device. For detailed information, see Smart PSS user's manual.

6.1 Network Connection

Background Information



- The factory default IP of the Device is 192.168.1.108.
- The Device supports monitoring on different browsers such as Safari, Firefox, Google to perform the functions such as multi-channel monitoring, PTZ control, and device parameters configurations.

Procedure

- Step 1 Check to make sure the Device has connected to the network.
- Step 2 Configure the IP address, subnet mask and gateway for the PC and the Device. For details about network configuration of the Device, see "5.19.3 Network".
- Step 3 On your PC, check the network connection of the Device by using "ping ***.***.***.***". Usually the return value of TTL is 255.

6.2 Web Login

Procedure

- Step 1 Open the browser, enter the IP address of the Device, and then press Enter.

Figure 6-1 Login



Step 2 Enter the username and password.



- The default administrator account is **admin**. The password is the one that was configured during initial settings. To ensure your account security, we recommend you keep the password properly and change it regularly.
- Click  to display the password.

Step 3 Click **Login**.

6.3 Web Main Menu

After you have logged in to the web, the main menu is displayed.
For detailed operations, see "5 Local Operations".

Figure 6-2 Main menu



Table 6-1 Main menu symbols

No.	Icon	Description
1		Includes configuration menu through which you can configure camera settings, network settings, storage settings, system settings, account settings, and view information.
2	None	Displays system date and time.
3		When you point to  , the current user account is displayed.
4		Click  , select Logout, Reboot, or Shutdown according to your actual situation.
5		Displays Cell Phone Client and Device SN QR Code. - Cell Phone Client: Use your mobile phone to scan the QR code to add the device into the Cell Phone Client, and then you can start accessing the Device from your cell phone. - Device SN: Obtain the Device SN by scanning the QR code. Go 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, see the P2P operation manual. You can also configure P2P function in the local configurations, see "5.11.18 P2P".
6		Displays the web main menu.

No.	Icon	Description
7	None	Includes eight function tiles: LIVE, PLAYBACK, AI, ALARM, POS, OPERATION, BACKUP, DISPLAY, and AUDIO. Click each tile to open the configuration page of the tile. • LIVE: You can perform the operations such as viewing real-time video, configuring channel layout, setting PTZ controls, and using smart talk and instant record functions if needed. • PLAYBACK: Search for and play back the recorded video saved on the Device. • ALARM: Search for alarm information and configure alarm event actions. • AI: Configure and manage artificial intelligent events. It includes smart search, parameters, and database. • POS: View POS information and configure related settings. • OPERATION: View system information, import/export system configuration files, or update system. • BACKUP: Search and back up the video files to the local PC or external storage device such as USB storage device. • DISPLAY: Configure the display effect such as displaying content, image transparency, and resolution, and enable the zero-channel function. • AUDIO: Manage audio files and configure the playing schedule. The audio file can be played in response to an alarm event if the voice prompts function is enabled.

6.4 Cluster Service

The cluster function, also known as cluster redundancy, is a kind of deployment method that can improve the reliability of the device. In the cluster system, there is a number of main devices and another number of sub devices (the N+M mode), and they have a virtual IP address (the cluster IP). When the main device fails, the corresponding sub device will take over the job automatically. When the main device recovers, the sub device will transmit the configuration data, cluster IP address and videos recorded during the failure to the main device which then takes over the job again.

In the N+M cluster system, there is a management server, the DCS (Dispatching Console) server, which is responsible for timely and correct scheduling management of the main and sub devices. When you create a cluster, the current device is used as the first sub device and the DCS server by default.



This function is available on select models.

6.4.1 Configuring Cluster IP

When the main device malfunctions, the sub device can use the main device configuration and

virtual IP address to replace the work (monitor or record) accordingly. When you use the virtual IP to access the device, you can still view the real-time video and there is no risk of record loss.

Procedure

- Step 1** Log in to the web as the admin user.
- Step 2** Select **SETTING > Cluster Service > CLUSTER IP**.
- Step 3** Select **Enable**.
- Step 4** Configure **IP Address**, **Subnet Mask** and **Default Gateway**.
- Step 5** Click **OK**.

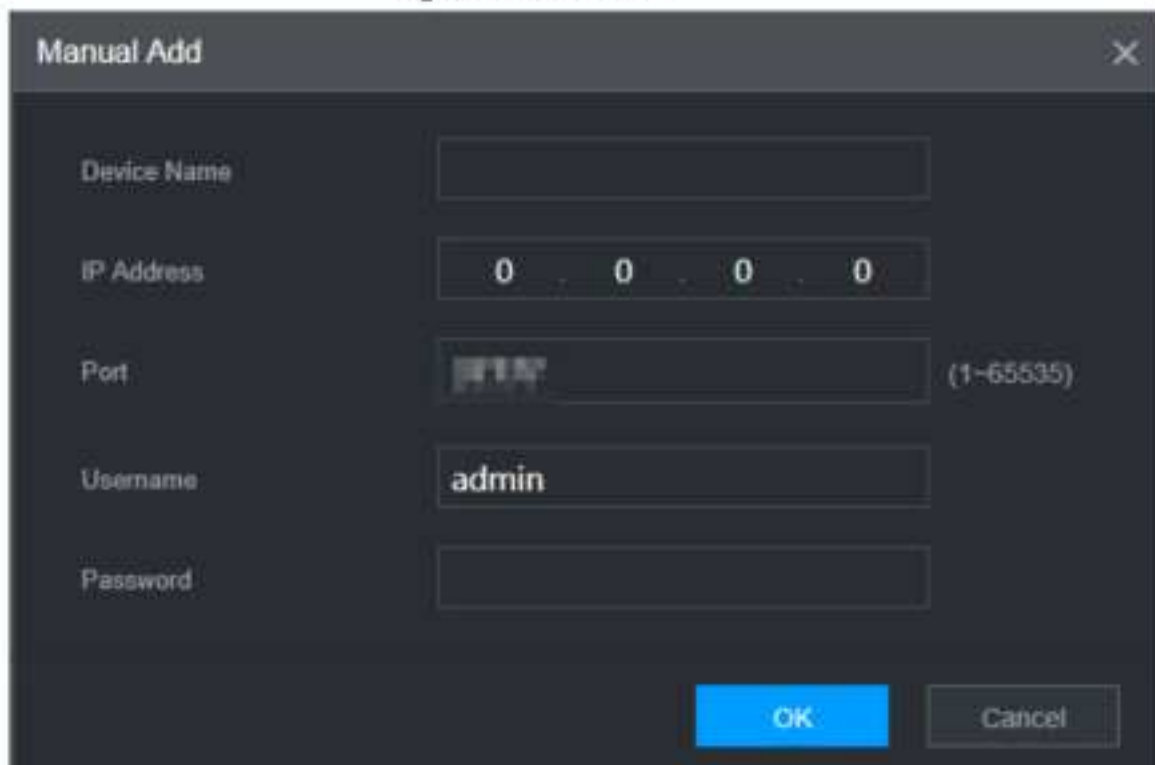
6.4.2 Main Device

You can add several main devices manually. After you enable the cluster function, you can view IP address, working status and connection log of the main device.

Procedure

- Step 1** Select **SETTING > Cluster Service > Main Device**.
- Step 2** Click **Manual Add**.

Figure 6-3 Manual add



- Step 3** Configure parameters.

Table 6-2 Parameters of adding main device

Parameter	Description
Device Name	Customize the device name.
IP Address	Enter the IP address of the NVR.

Parameter	Description
Port	Set the TCP port number of the server. The default value is 37777.  You can view the current TCP port number in SETTING > Network > Port.
Username/Password	Enter the username and password of the NVR.

Step 4 Click **OK**.

Step 5 (Optional) Click  to view event occurrence time, name, operation and reason.

6.4.3 Sub Device

Background Information

When you add the first sub device, the default IP is the device IP address that logs in on the web.

From **SETTING > Cluster Service > Sub Device**, you can add sub devices. For details, see "6.4.2 Main Device".



When adding the first sub device, you need not enter the IP address, because the first sub device is the current device by default.

After you added main device and sub device, you need to enable cluster function. See "6.4.5 Configuring Cluster Control" for more information.

6.4.4 Transferring Videos

After the main device has recovered, the videos recorded on the sub device during the failure period can be transferred to the main device.

Prerequisites

The main device works normally.

Procedure

Step 1 Select **SETTING > Cluster Service > Transfer Recorder**.

Step 2 Click **Add Task**.

Step 3 Configure parameters.

Step 4 Click **OK**.

You can click  to view details on the transferring task.

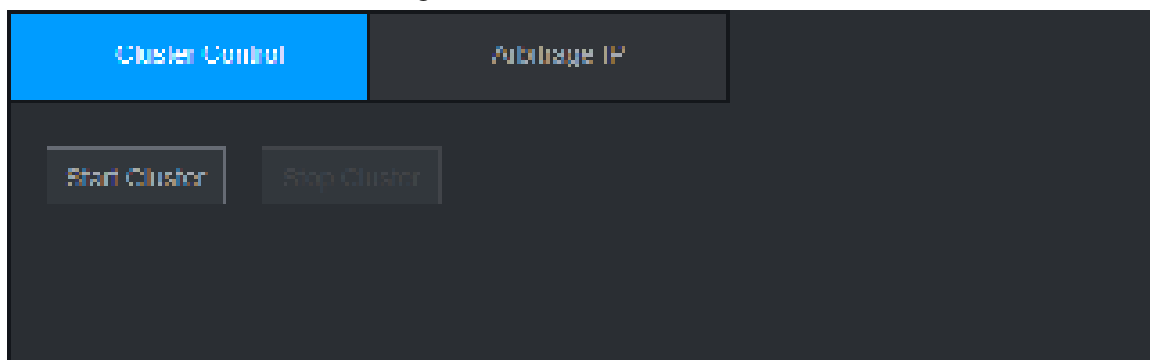
6.4.5 Configuring Cluster Control

6.4.5.1 Cluster Control

Background Information

From **SETTING > Cluster Service > Cluster Control**, you can enable or disable cluster.

Figure 6-4 Start cluster



You can see the corresponding prompt if you successfully enabled cluster service.

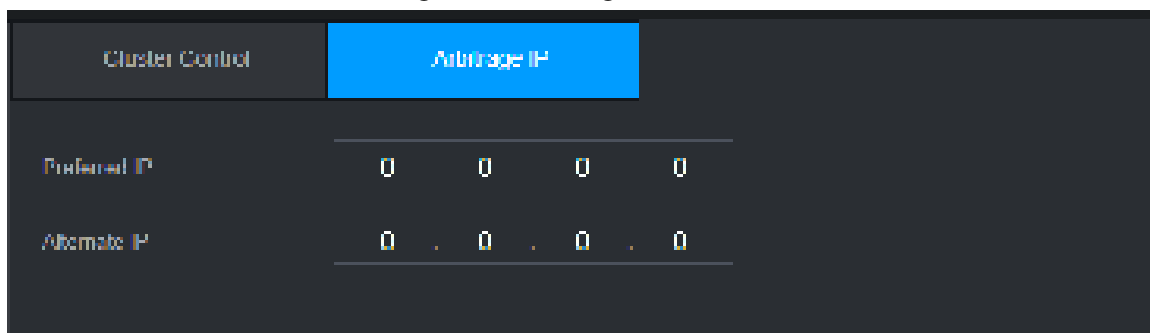
6.4.5.2 Arbitrage IP

When there are only 2 devices in the cluster, a third-party device is required to determine whether the main device is faulty, so arbitration IP must be set for the cluster to perform a normal replacement operation. The arbitration IP can be the IP address of another device, computer or gateway.

Procedure

Step 1 Select **SETTING > Cluster Service > Arbitrage IP**.

Figure 6-5 Arbitrage IP



Step 2 Configure the preferred and alternate IP.

Step 3 Click **OK**.

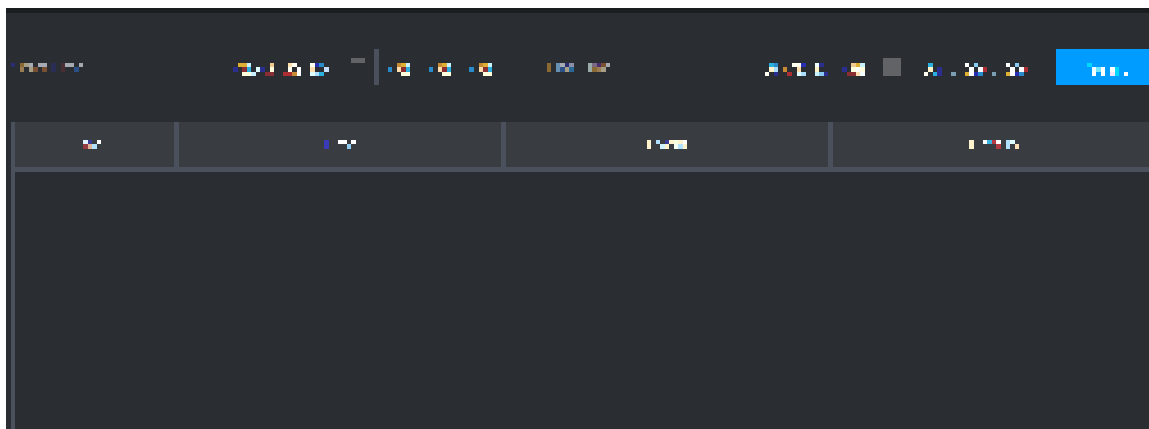
6.4.6 Cluster Log

You can search for and view cluster logs.

Procedure

Step 1 Select **SETTING** > **Cluster Service** > **Cluster Log**.

Figure 6-6 Cluster log



Step 2 Enter the start time and end time.

Step 3 Click **Search**.

7 Glossary

- **DHCP:** DHCP (Dynamic Host Configuration Protocol) is one of the TCP/IP protocol cluster. It is mainly used to assign temporary IP addresses to computers on a network.
- **DDNS:** DDNS (Dynamic Domain Name Server) is a service that maps Internet domain names to IP addresses. This service is useful to anyone who wants to operate a server (web server, mail server, ftp server and more.) connected to the internet with a dynamic IP or to someone who wants to connect to an office computer or server from a remote location with software.
- **eSATA:** eSATA (External Serial AT) is an page that provides fast data transfer for external storage devices. It is the extension specifications of a SATA page.
- **GPS:** GPS (Global Positioning System) is a satellite system, protected by the US, safely orbiting thousands of kilometers above the earth.
- **PPPoE:** PPPoE (Point to Point Protocol over Ethernet) is a specification for connecting multiple computer users on an Ethernet local area network to a remote site. Now the popular mode is ADSL and it adopts PPPoE protocol.
- **Wi-Fi:** Wi-Fi is the name of a popular wireless networking technology that uses radio waves to provide wireless high-speed Internet and network connections. The standard is for wireless local area networks (WLANs). It is like a common language that all the devices use to communicate to each other. It is actually IEEE802.11, a family of standard The IEEE (Institute of Electrical and Electronics Engineers Inc.)
- **3G:** 3G is the wireless network standard. It is called 3G because it is the third generation of cellular telecom standards. 3G is a faster network for phone and data transmission and speed is over several hundred kbps. Now there are four standards: CDMA2000, WCDMA, TD-SCDMA and WiMAX.
- **Dual-stream:** The dual-stream technology adopts high-rate bit stream for local HD storage such as QCIF/CIF/2CIF/DCIF/4CIF encode and one low-rate bit stream for network transmission such as QCIF/CIF encode. It can balance the local storage and remote network transmission. The dual-stream can meet the difference band width requirements of the local transmission and the remote transmission. In this way, the local transmission using high-bit stream can achieve HD storage and the network transmission adopting low bit stream suitable for the fluency requirements of the 3G network such as WCDMA, EVDO, TD-SCDMA.
- **On-off value:** It is the non-consecutive signal sampling and output. It includes remote sampling and remote output. It has two statuses: 1/0.

8 FAQ

Questions	Reasons
The Device failed to start properly.	• Incorrect input power. • Incorrect connection of the power cord. • Damaged power switch. • Wrong program. • Damaged HDD. • Damaged mainboard.
The Device automatically shuts down or stops running.	• Unstable or insufficient input voltage. • Insufficient button power. • Improper operating environment. • Hardware error.
The Device cannot detect HDD.	• Damaged HDD or HDD ribbon. • Loose connection of HDD cable. • Damaged SATA port.
There is no video output in all channels.	• Program version is not correct. • Brightness is 0. • Hardware error.
I cannot find local records.	• Damaged HDD or HDD ribbon. • Program version is not correct. • The recorded file has been overwritten. • The recording function has been disabled.
Distorted recorded videos.	• Video quality setup is too low. • Program read error, bit data is too small. There is mosaic in the full screen. Restart the NVR to solve this problem. • HDD data ribbon error. • HDD malfunction. • NVR hardware malfunctions.
Time display is not correct.	• Setup is not correct. • Battery contact is not correct or voltage is too low. • Crystal is broken.

Questions	Reasons
NVR cannot control PTZ.	• Front panel PTZ error. • PTZ decoder setup, connection or installation is not correct. • Cable connection is not correct. • PTZ setup is not correct. • PTZ decoder and NVR protocol is not compatible. • PTZ decoder and NVR address is not compatible. • When there are several decoders, 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 distance is too far.
I cannot log in client-end or web.	• For Windows 98 or Windows ME user, update your system to Windows 2000 sp4. Or you can install client-end software of lower version. Please note right now, our NVR is not compatible with Windows VISTA control. • ActiveX control has been disabled. • No dx8.1 or higher. Upgrade display card driver. • Network connection error. • Network setup error. • Password or username is invalid. • Client-end is not compatible with NVR program.
There is only mosaic no video when preview or playback video file remotely.	• Network fluency is not good. • Client-end resources are limit. • Current user has no right to monitor.
Network connection is not stable.	• Network is not stable. • IP address conflict. • MAC address conflict. • PC or device network card is not good.
Burn error /USB back error.	• Burner and NVR are in the same data cable. • System uses too much CPU resources. 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.
Keyboard cannot control NVR.	• NVR serial port setup is not correct. • Address is not correct. • When there are several switchers, power supply is not enough. • Transmission distance is too far.

Questions	Reasons
Alarm signal cannot be disarmed.	- Alarm setup is not correct. - Alarm output has been open manually. - Input device error or connection is not correct. - Some program versions might have this problem. Upgrade your system.
Alarm function is null.	- Alarm setup is not correct. - Alarm cable connection is not correct. - Alarm input signal is not correct. - There are two loops connect to one alarm device.
Record storage period is not enough.	- Camera quality is too low. Lens is dirty. Camera is installed against the light. Camera aperture setup is not correct. - HDD capacity is not enough. - HDD is damaged.
Cannot playback the downloaded file.	- 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.
Forgot local menu operation password or network password	Contact your local service engineer or our sales person for help. We can guide you to solve this problem.
There is no video. The screen is in black.	- IPC IP address is not right. - IPC port number is not right. - IPC account (username/password) is not right. - IPC is offline.
The displayed video is not full in the monitor.	Check current resolution setup. If the current setup is 1920*1080, then you need to set the monitor resolution as 1920*1080.
There is no HDMI output.	- Displayer is not in HDMI mode. - HDMI cable connection is not right.
The video is not fluent when I view in multiple-channel mode from the client-end.	- The network bandwidth is not sufficient. The multiple-channel monitor operation needs at least 100M or higher. - Your PC resources are not sufficient. For 16-ch remote monitor operation, the PC shall have the following environment: Quad Core, 2G or higher memory, independent displayer, display card memory 256M or higher.

Questions	Reasons
I cannot connect to the IPC	- Make sure that the IPC has booted up. - IPC network connection is right and it is online - IPC IP is in the blocklist. - The device has connected to the too many IPC. It cannot transmit the video. - Check the IPC port value and the time zone is the same as the NVR. - Make sure current network environment is stable.
After I set the NVR resolution as 1080P, my monitor cannot display.	Shut down the device and then reboot. When you reboot, press the Fn button at the same time and then release after 5 seconds. You can restore NVR resolution to the default setup.
My admin account has been changed and I cannot log in.	Use telnet and then input the following command: <pre>cd /mnt/mtd/Config/ rm -rf group rm -rf password</pre> Reboot the device to restore the default password.
After I login the Web, I cannot find the remote page to add the IPC.	Clear the Web controls and load again.
There is IP and gateway, I can access the internet via the router. But I cannot access the internet after I reboot the NVR.	Use command PING to check you can connect to the gateway or not. Use telnet to access and then use command "ifconfig-a" to check device IP address. If you see the subnet mask and the gateway has changed after the reboot. Upgrade the applications and set again.
I use the VGA monitor. I want to know if I use the multiple-window mode, I see the video from the main stream or the sub stream?	- For 32-channel series product, the 9/16-window is using the sub stream. - For 4/8/16 series product, system is using the main stream no matter you are in what display mode.

Daily Maintenance

- 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.
- 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. Use the shutdown function in the menu, or you can press the power button in the rear pane for at least three seconds to shut down the device. Otherwise it might result in HDD malfunction.
- Make sure the device is away from the direct sunlight or other heating sources. Keep the sound ventilation.
- Check and maintain the device regularly.

Appendix 1 HDD Capacity Calculation

Calculate the total capacity needed by each device according to video recording (video recording type and video file storage time).

1. According to Formula (1) to calculate storage capacity q_i that is the capacity of each channel needed for each hour, unit Mbyte.

$$q_i = d_i \div 8 \times 3600 \div 1024 \quad (1)$$

In the formula: d_i means the bit rate, unit Kbit/s

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 Mbyte.

$$m_i = q_i \times h_i \times D_i \quad (2)$$

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

3. According to Formula (3) to calculate total capacity (accumulation) q_T that is needed for all channels in the device during **scheduled video recording**

$$q_T = \sum_{i=1}^c m_i \quad (3)$$

In the formula:

c means total number of channels in one device

4. According to Formula (4) to calculate total capacity (accumulation) q_T that is needed for all channels in device during **alarm video recording (including motion detection)**

$$q_T = \sum_{i=1}^c m_i \times a\% \quad (4)$$

In the formula: $a\%$ means alarm occurrence rate

Appendix 2 Mouse Operation

Appendix Table 2-1 Mouse operation

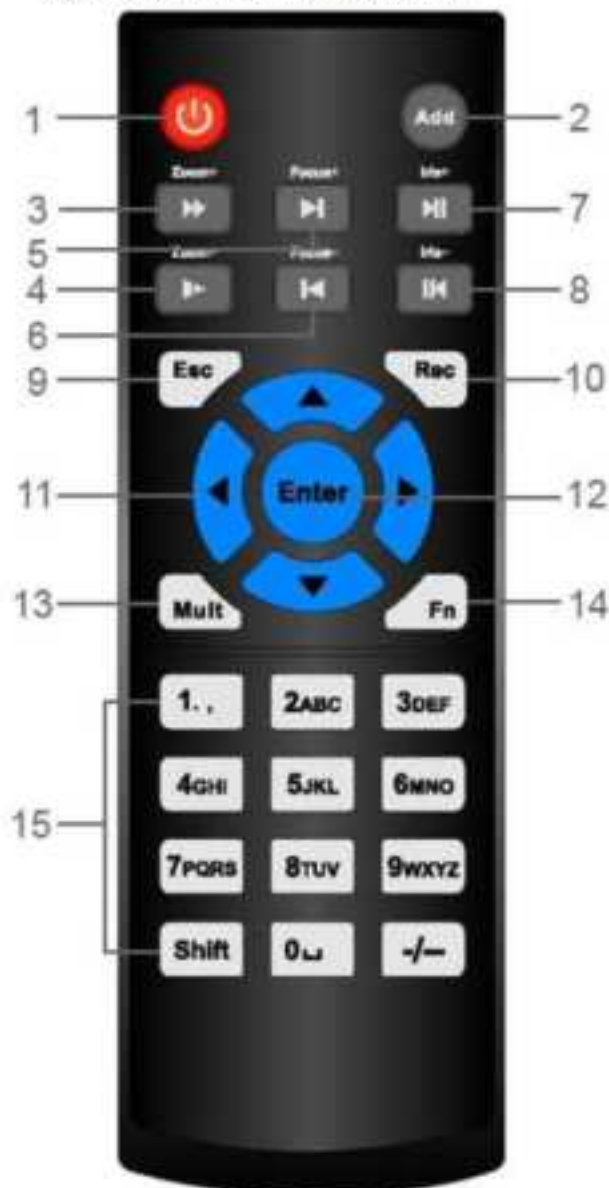
Operation	Description
Left click mouse	When you have selected one menu item, left click mouse to view menu content.
	Modify checkbox or motion detection status.
	Click combo box to pop up drop-down list
	In input box, you can select input methods. Left click the corresponding button on the panel you can input numeral/English character (lower case/upper case). Here  stands for backspace button.  stands for space button.
	In English input mode:  stands for input a backspace icon and  stands for deleting the previous character.
	
	In numeral input mode:  stands for clear and  stands for deleting the previous numeral.
Double left click mouse	Implement special control operation such as double click one item in the file list to playback the video.
	In multiple-window mode, double left click one channel to view in full-window.
	Double left click current video again to go back to previous multiple-window mode.
Right click mouse	In real-time monitor mode, pops up shortcut menu.
	Exit current menu without saving the modification.
Press middle button	In numeral input box: Increase or decrease numeral value.
	Switch the items in the checkbox.
	Page up or page down.
Move mouse	Select current control or move control.
Drag mouse	Select motion detection zone.
	Select privacy mask zone.

Appendix 3 Remote Control



Remote control is not our standard accessory and it is not included in the accessory package.

Appendix Figure 3-1 Remote control



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	- 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 page, 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 page or control).
10	Record	- Start or stop record manually. - In record page, use the direction buttons to select the channel that you want to record. - Press this button for at least 1.5 seconds, and the manual record page will be displayed.
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	- 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	- 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 page. - In motion detection page, 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.

No.	Name	Function
15	Alphanumeric keys	• Input password, numbers. • Switch channel. • Press Shift to switch the input method.

Appendix 4 Compatible Network Camera List

Please note all the models in the following list for reference only. For those products not included in the list, please contact your local retailer or technical supporting engineer for detailed information.

Appendix Table 4-1 Compatible network camera list

Manufacturer	Model	Version	Video Encode	Audio/Video	Protocol
AXIS	P1346	5.40.9.2	H264	√	ONVIF/Private
	P3344/P3344-E	5.40.9.2	H264	√	ONVIF/Private
	P5512	—	H264	√	ONVIF/Private
	Q1604	5.40.3.2	H264	√	ONVIF/Private
	Q1604-E	5.40.9	H264	√	ONVIF/Private
	Q6034E	—	H264	√	ONVIF/Private
	Q6035	5.40.9	H264	√	ONVIF/Private
	Q1755	—	H264	√	ONVIF/Private
	M7001	—	H264	√	Private
	M3204	5.40.9.2	H264	√	Private
	P3367	HEAD LFP4_0130220	H264	√	ONVIF
	P5532-P	HEAD LFP4_0130220	H264	√	ONVIF
ACTi	ACM-3511	A1D-220-V3.12.15-AC	MPEG4	√	Private
	ACM-8221	A1D-220-V3.13.16-AC	MPEG4	√	Private
Arecont	AV1115	65246	H264	√	Private
	AV10005DN	65197	H264	√	Private
	AV2115DN	65246	H264	√	Private
	AV2515DN	65199	H264	√	Private
	AV2815	65197	H264	√	Private
	AV5115DN	65246	H264	√	Private
	AV8185DN	65197	H264	√	Private
Bosch	NBN-921-P	—	H264	√	ONVIF
	NBC-455-12P	—	H264	√	ONVIF
	VG5-825	9500453	H264	√	ONVIF

Manufacturer	Model	Version	Video Encode	Audio/Video	Protocol
	NBN-832	66500500	H264	√	ONVIF
	VEZ-211-IWTEIVA	—	H264	√	ONVIF
	NBC-255-P	15500152	H264	√	ONVIF
	VIP-X1XF	—	H264	√	ONVIF
Brikcom	B0100	—	H264	√	ONVIF
	D100	—	H264	√	ONVIF
	GE-100-CB	—	H264	√	ONVIF
	FB-100A	v1.0.3.9	H264	√	ONVIF
	FD-100A	v1.0.3.3	H264	√	ONVIF
Cannon	VB-M400	—	H264	√	Private
CNB	MPix2.0DIR	XNETM1120111229	H264	√	ONVIF
	VIPBL1.3MIRVF	XNETM2100111229	H264	√	ONVIF
	IGC-2050F	XNETM2100111229	H264	√	ONVIF
CP PLUS	CP-NC9-K	6.E.2.7776	H264	√	ONVIF/Private
	CP-NC9W-K	6.E.2.7776	H264	√	Private
	CP-ND10-R	cp20111129ANS	H264	√	ONVIF
	CP-ND20-R	cp20111129ANS	H264	√	ONVIF
	CP-NS12W-CR	cp20110808NS	H264	√	ONVIF
	VS201	cp20111129NS	H264	√	ONVIF
	CP-NB20-R	cp20110808BNS	H264	√	ONVIF
	CP-NT20VL3-R	cp20110808BNS	H264	√	ONVIF
	CP-NS36W-AR	cp20110808NS	H264	√	ONVIF
	CP-ND20VL2-R	cp20110808BNS	H264	√	ONVIF
	CP-RNP-1820	cp20120821NSA	H264	√	Private
	CP-RNC-TP20FL3C	cp20120821NSA	H264	√	Private

Manufacturer	Model	Version	Video Encode	Audio/Video	Protocol
	CP-RNP-12D	cp20120828ANS	H264	√	Private
	CP-RNC-DV10	cp20120821NSA	H264	√	Private
	CP-RNC-DP20FL2C	cp20120821NSA	H264	√	Private
Dynacolor	ICS-13	d20120214NS	H264	√	ONVIF/Private
	ICS-20W	vt20111123NSA	H264	√	ONVIF/Private
	NA222	—	H264	√	ONVIF
	MPC-IPVD-0313	k20111208ANS	H264	√	ONVIF/Private
	MPC-IPVD-0313AF	k20111208BNS	H264	√	ONVIF/Private
Honeywell	HIDC-1100PT	h.2.2.1824	H264	√	ONVIF
	HIDC-1100P	h.2.2.1824	H264	√	ONVIF
	HIDC-0100P	h.2.2.1824	H264	√	ONVIF
	HIDC-1300V	2.0.0.21	H264	√	ONVIF
	HICC-1300W	2.0.1.7	H264	√	ONVIF
	HICC-2300	2.0.0.21	H264	√	ONVIF
	HDZ20HDX	H20130114NSA	H264	√	ONVIF
LG	LW342-FP	—	H264	√	Private
	LNBS100	—	H264	√	ONVIF
Imatek	KNC-B5000	—	H264	√	Private
	KNC-B5162	—	H264	√	Private
	KNC-B2161	—	H264	√	Private
Panasonic	NP240/CH	—	MPEG4	√	Private
	WV-NP502	—	MPEG4	√	Private
	WV-SP102H	1.41	H264	√	ONVIF/Private
	WV-SP105H	—	H264	√	ONVIF/Private

Manufacturer	Model	Version	Video Encode	Audio/Video	Protocol
	WV-SP302H	1.41	H264, MPEG4	√	ONVIF/Private
	WV-SP306H	1.4	H264, MPEG4	√	ONVIF/Private
	WV-SP508H	—	H264, MPEG4	√	ONVIF/Private
	WV-SP509H	—	H264, MPEG4	√	ONVIF/Private
	WV-SF332H	1.41	H264, MPEG4	√	ONVIF/Private
	WV-SW316H	1.41	H264, MPEG4	√	ONVIF/Private
	WV-SW355H	1.41	H264, MPEG4	√	ONVIF/Private
	WV-SW352H	—	H264, MPEG4	√	ONVIF/Private
	WV-SW152E	1.03	H264, MPEG4	√	ONVIF/Private
	WV-SW558H	—	H264, MPEG4	√	ONVIF/Private
	WV-SW559H	—	H264, MPEG4	√	ONVIF/Private
	WV-SP105H	1.03	H264, MPEG4	√	ONVIF/Private
	WV-SW155E	1.03	H264, MPEG4	√	ONVIF/Private
	WV-SF336H	1.44	H264, MPEG4	√	ONVIF/Private
	WV-SF332H	1.41	H264, MPEG4	√	ONVIF/Private
	WV-SF132E	1.03	H264, MPEG4	√	ONVIF/Private
	WV-SF135E	1.03	H264, MPEG4	√	ONVIF/Private
	WV-SF346H	1.41	H264, MPEG4	√	ONVIF/Private
	WV-SF342H	1.41	H264, MPEG4	√	ONVIF/Private
	WV-SC385H	1.08	H264, MPEG4	√	ONVIF/Private
	WV-SC386H	1.08	H264, MPEG4	√	ONVIF/Private

Manufacturer	Model	Version	Video Encode	Audio/Video	Protocol
	WV-SP539	1.66	H264, MPEG4	√	ONVIF
	DG-SC385	1.66	H264, MPEG4	√	ONVIF
PELCO	IXSOLW	1.8.1-20110912-1.9082-A1.6617	H264	√	Private
	IDE20DN	1.7.41.9111-03.6725	H264	√	Private
	D5118	1.7.8.9310-A1.5288	H264	√	Private
	IM10C10	1.6.13.9261-02.4657	H264	√	Private
	DD4N-X	01.02.0015	MPEG4	√	Private
	DD423-X	01.02.0006	MPEG4	√	Private
	D5220	1.8.3-FC2-20120614-1.9320-A1.8035	H264	√	Private
Samsung	SNB-3000P	2.41	H264, MPEG4	√	ONVIF/Private
	SNP-3120	1.22_110120_1	H264, MPEG4	√	ONVIF/Private
	SNP-3370	1.21_110318	MPEG4	√	Private
	SNB-5000	2.10_111227	H264, MPEG4	√	ONVIF/Private
	SND-5080	—	H264, MPEG4	√	Private
	SNZ-5200	1.02_110512	H264, MPEG4	√	ONVIF/Private
	SNP-5200	1.04_110825	H264, MPEG4	√	ONVIF/Private
	SNB-7000	1.10_110819	H264	√	ONVIF/Private
	SNB-6004	V1.0.0	H264	√	ONVIF
Sony	SNC-D H110	1.50.00	H264	√	ONVIF/Private
	SNC-CH120	1.50.00	H264	√	ONVIF/Private
	SNC-CH135	1.73.01	H264	√	ONVIF/Private
	SNC-CH140	1.50.00	H264	√	ONVIF/Private
	SNC-CH210	1.73.00	H264	√	ONVIF/Private

Manufacturer	Model	Version	Video Encode	Audio/Video	Protocol
	SNC-D H210	1.73.00	H264	√	ONVIF/Private
	SNC-D H240	1.50.00	H264	√	ONVIF/Private
	SNC-D H240-T	1.73.01	H264	√	ONVIF/Private
	SNC-CH260	1.74.01	H264	√	ONVIF/Private
	SNC-CH280	1.73.01	H264	√	ONVIF/Private
	SNC-RH-124	1.73.00	H264	√	ONVIF/Private
	SNC-RS46P	1.73.00	H264	√	ONVIF/Private
	SNC-ER550	1.74.01	H264	√	ONVIF/Private
	SNC-ER580	1.74.01	H264	√	ONVIF/Private
	SNC-ER580	1.78.00	H264	√	ONVIF
	SNC-VM631	1.4.0	H264	√	ONVIF
	WV-SP306	1.61.00	H264, MPEG4	√	SDK
	WV-SP306	1.61.00	H264	√	ONVIF
	SNC-VB600	1.5.0	H264	√	Private
	SNC-VM600	1.5.0	H264	√	Private
	SNC-VB630	1.5.0	H264	√	Private
	SNC-VM630	1.5.0	H264	√	Private
SANYO	VCC-HDN4000P C	—	H264	√	ONVIF

Appendix 5 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 from Dahua 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.

More information

Please visit Dahua official website security emergency response center for security announcements and the latest security recommendations.

ENABLING A SAFER SOCIETY AND SMARTER LIVING

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Network Camera Web 3.0

Operation Manual



Foreword

General

This manual introduces the functions, configuration, general operation, and system maintenance of network camera.

Safety Instructions

The following signal words might appear in the manual.

Signal Words	Meaning
 WARNING	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
 CAUTION	Indicates a potential risk which, if not avoided, could result in property damage, data loss, reductions in performance, or unpredictable result.
 NOTE	Provides additional information as a supplement to the text.

Revision History

Version	Revision Content	Release Time
V2.1.8	- Added product material information. - Updated the information of illuminator. - Updated the language. - Updated the information of audio.	October 2023
V2.1.7	Added the information of 4G.	April 2023
V2.1.6	Added the information of floodlight.	December 2022
V2.1.5	Updated the information of backlight.	October 2022
V2.1.4	Updated the information of alarm audio.	June 2022
V2.1.3	Updated the description of encode bar.	November 2021
V2.1.2	- Updated "4.2.4.1 Adjustment". - Updated "4.5.1.1.2 Picture". - Updated "4.5.1.1.11 Image Correction". - Updated "4.5.1.4 Splicing". - Updated "4.5.2.1 Video". - Updated "4.8.2 Date & Time".	September 2021
V2.1.1	- Updated "4.8.3.2 Adding User Group". - Updated "5.18 Setting Relay-in".	July 2021
V2.1.0	Updated "5.7 Setting Smart Plan"	July 2021
V2.0.9	Updated "4.5.2.1 Video".	May 2021

Version	Revision Content	Release Time
V2.0.8	- Updated the information of privacy masking. - Updated "4.7.3.3 FTP". - Updated "4.8.3.1 Adding a User" and "4.8.3.3 ONVIF User". - Updated "5.4.2 Setting Video Tampering". - Updated "5.11 Setting Face Detection". - Updated "5.15 Setting Stereo Analysis". - Updated "5.19.5 Setting Security Exception".	December 2020
V2.0.7	- Modify "5.1.1.7 Warning Light Linkage". - Add "4.6.13 5G". - Modify "4.7.3.2 Local".	July 2020
V2.0.6	- Added "4.5.2.3.11 Configuring GPS Position". - Updated "5.2 Setting Smart Track".	July 2020
V2.0.5	- Updated "4.5.1.1.8 Illuminator". - Updated "4.7.3.2 Local". - Added "5.19.6 Setting Disarming".	June 2020
V2.0.4	- Updated "4.5.1.4 Splicing". - Updated "5.14 Setting Vehicle Density". - Updated "5.12 Setting People Counting".	May 2020
V2.0.3	Added note in "4.7.3.2 Local".	May 2020
V2.0.2	- Modified the contents of "5.16 Setting ANPR". - Added modeling in "5.11 Setting Face Detection".	December 2019
V2.0.1	Added "5.5 Setting Smart Motion Detection".	August 2019
V2.0.0	- Consolidated the outline, and added baseline and safety contents, and some intelligent functions such as face recognition and ANPR. - Deleted some old function such as stereo vision.	July 2019
V1.0.4	- Updated the chapters of "5.12 Setting People Counting" and "5.13.1 Heat Map". - Add VR mode of Fisheye device. - Add video metadata function.	March 2019
V1.0.3	Added Stereo Analysis function.	November 2018
V1.0.2	- Added chapters of "3 Device Initialization" and "Stereo vision". - Updated the chapters of "4.8.3 Account" and "4.6.7 SNMP".	October 2017
V1.0.1	First release.	September 2016

Privacy Protection Notice

As the device user or data controller, you might collect the personal data of others such as their face, audio, fingerprints, and license plate number. You need to be in compliance with your local privacy protection laws and regulations to protect the legitimate rights and interests of other

people by implementing measures which 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 might 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 might be found between the electronic version and the paper version.
- All designs and software are subject to change without prior written notice. Product updates might result in some differences appearing between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.
- There might 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 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, 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 of final explanation.

Important Safeguards and Warnings

This section introduces content covering the proper handling of the device, hazard prevention, and prevention of property damage. Read carefully before using the device, comply with the guidelines when using it.

Transportation Requirements



- Transport the device under allowed humidity and temperature conditions.
- Pack the device with packaging provided by its manufacturer or packaging of the same quality before transporting it.
- Do not place heavy stress on the device, violently vibrate or immerse it in liquid during transportation.

Storage Requirements



- Store the device under allowed humidity and temperature conditions.
- Do not place the device in a humid, dusty, extremely hot or cold site that has strong electromagnetic radiation or unstable illumination.
- Do not place heavy stress on the device, violently vibrate or immerse it in liquid during storage.

Installation Requirements



- Strictly comply with the local electrical safety code and standards, and check whether the power supply is correct before operating the device.
- Please follow the electrical requirements to power the device.
 - ◇ When selecting the power adapter, the power supply must conform to the requirements of ES1 in IEC 62368-1 standard and be no higher than PS2. Please note that the power supply requirements are subject to the device label.
 - ◇ We recommend using the power adapter provided with the device.
- Do not connect the device to two or more kinds of power supplies, unless otherwise specified, to avoid damage to the device.
- The device must be installed in a location that only professionals can access, to avoid the risk of non-professionals becoming injured from accessing the area while the device is working. Professionals must have full knowledge of the safeguards and warnings of using the device.



- Do not place heavy stress on the device, violently vibrate or immerse it in liquid during installation.
- An emergency disconnect device must be installed during installation and wiring at a readily accessible location for emergency power cut-off.

- We recommend you use the device with a lightning protection device for stronger protection against lightning. For outdoor scenarios, strictly comply with the lightning protection regulations.
- Ground the function earthing portion  of the device to improve its reliability (certain models are not equipped with earthing holes). The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.
- The dome cover is an optical component. Do not directly touch or wipe the surface of the cover during installation.

Operation Requirements



- The cover must not be opened while the device is powered on.
- Do not touch the heat dissipation component of the device to avoid the risk of getting burnt.



- Use the device under allowed humidity and temperature conditions.
- Do not aim the device at strong light sources (such as lamplight, and sunlight) when focusing it, to avoid reducing the lifespan of the CMOS sensor, and causing overbrightness and flickering.
- When using a laser beam device, avoid exposing the device surface to laser beam radiation.
- Prevent liquid from flowing into the device to avoid damage to its internal components.
- Protect indoor devices from rain and dampness to avoid electric shocks and fires breaking out.
- Do not block the ventilation opening near the device to avoid heat accumulation.
- Protect the line cord and wires from being walked on or squeezed particularly at plugs, power sockets, and the point where they exit from the device.
- Do not directly touch the photosensitive CMOS. Use an air blower to clean the dust or dirt on the lens.
- The dome cover is an optical component. Do not directly touch or wipe the surface of the cover when using it.
- There might be a risk of electrostatic discharge on the dome cover. Power off the device when installing the cover after the camera finishes adjustment. Do not directly touch the cover and make sure the cover is not exposed to other equipment or human bodies
- Strengthen the protection of the network, device data and personal information. All necessary safety measures to ensure the network security of the device must be taken, such as using strong passwords, regularly changing your password, updating firmware to the latest version, and isolating computer networks. For the IPC firmware of some previous versions, the ONVIF password will not be automatically synchronized after the main password of the system has been changed. You need to update the firmware or change the password manually.

Maintenance Requirements



- Strictly follow the instructions to disassemble the device. Non-professionals dismantling the device can result in it leaking water or producing poor quality images. For a device that is required to be disassembled before use, make sure the seal ring is flat and in the seal groove when putting the cover back on. When you find condensed water forming on the lens or the desiccant becomes green after you disassembled the device, contact after-sales service to replace the desiccant. Desiccants might not be provided depending on the actual model.

- Use the accessories suggested by the manufacturer. Installation and maintenance must be performed by qualified professionals.
- Do not directly touch the photosensitive CMOS. Use an air blower to clean the dust or dirt on the lens. When it is necessary to clean the device, slightly wet a soft cloth with alcohol, and gently wipe away the dirt.
- Clean the device body with a soft dry cloth. If there are any stubborn stains, clean them away with a soft cloth dipped in a neutral detergent, and then wipe the surface dry. Do not use volatile solvents such as ethyl alcohol, benzene, diluent, or abrasive detergents on the device to avoid damaging the coating and degrading the performance of the device.
- The dome cover is an optical component. When it is contaminated with dust, grease, or fingerprints, use degreasing cotton moistened with a little ether or a clean soft cloth dipped in water to gently wipe it clean. An air gun is useful for blowing dust away.
- It is normal for a camera made of stainless steel to develop rust on its surface after being used in a strong corrosive environment (such as the seaside, and chemical plants). Use an abrasive soft cloth moistened with a little acid solution (vinegar is recommended) to gently wipe it away. Afterwards, wipe it dry.

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1 Overview

1.1 Introduction

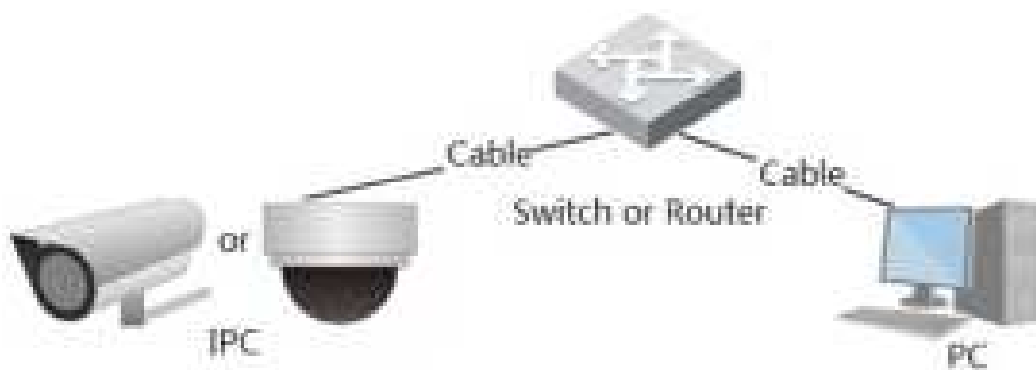
IP camera (Internet Protocol camera), is a type of digital video camera that receives control data and sends image data through internet. They are commonly used for surveillance, requiring no local recording device, but only a local area network.

IP camera is divided into single-channel camera and multi-channel camera according to the channel quantity. For multi-channel camera, you can set the parameters for each channel.

1.2 Network Connection

In the general IPC network topology, IPC is connected to PC through network switch or router.

Figure 1-1 General IPC network



Get IP address by searching on ConfigTool, and then you can start accessing IPC through network.

1.3 Function

Functions might vary with different devices.

1.3.1 Basic Function

Real-time Monitoring

- Live view.
- When live viewing the image, you can enable audio, voice talk and connect monitoring center for quick processing on the abnormality.
- Adjust the image to the proper position by PTZ.
- Snapshot and triple snapshot abnormality of the monitoring image for subsequent view and processing.
- Record abnormality of monitoring image for subsequent view and processing.
- Configure coding parameters, and adjust live view image.

Record

- Auto record as schedule.
- Play back recorded video and picture as needed.
- Download recorded video and picture.
- Alarm linked recording.

Account

- Add, modify and delete user group, and manage user authorities according to user group.
- Add, modify and delete user, and configure user authorities.
- Modify user password.

1.3.2 Intelligent Function

Alarm

- Set alarm prompt mode and tone according to alarm type.
- View alarm prompt message.

Smart Track

- Set calibration and parameters for smart track and enable alarm track.
- Switch between smart track and speed dome auto track.

Video Detection

- Motion detection, video tampering detection and scene changing detection.
- When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Smart Motion Detection

- Avoid the alarms triggered by the environment changes.
- When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Audio Detection

- Audio input abnormal detection and intensity change detection.
- When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

IVS

- Tripwire, intrusion, abandoned object, moving object, fast moving, parking detection, people gathering, and loitering detection.
- When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.

Crowd Map

- View crowd distribution in real time for the timely arm to avoid accidents like stampede.
- When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Face Detection

- Detect face and display the related attributes on the live page.
- When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Face Recognition

- After detecting face, make comparison between the detected face with the face in face database, and activates alarm output.
- Query the recognition result.

People Counting

- Count the people flow in/out the detection area, and generate report.
- When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Heat Map

- Count cumulative density of moving objects.
- View report of heat map.

Vehicle Density

- Supports traffic congestion detection and parking upper limit detection.
- View the statistic data on the live page.
- When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.

Stereo Analysis

- Include Activation Analysis, Back Detection, Fall Detection, Walking Detection, Blackboard Writing Detection, Violence Detection, People No. Error, Stand Detection, Running Detection, People Approaching Detection, and Strand Detection.
- When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

ANPR

- Recognize plate number in detection area, and display the related information on live page.
- When an alarm is triggered, the system links alarm output and snapshot.

Video Metadata

- Snap people, non-motor vehicle and vehicle, and display the related information on the live page.
- When an alarm is triggered, the system links alarm output.

Alarm Setting

- The alarm is triggered when an external alarm input device inputs alarm.
- When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, PTZ operation, and snapshot.

Abnormality

- SD card error, network disconnection, illegal access, voltage detection and security exception.
- When SD card error or illegal access is triggered, the system links alarm output and sending email.
- When network disconnection alarm is triggered, the system links recording and alarm output.
- When the input voltage is more or less than the rated voltage, the alarm is triggered and the system links sending email.

2 Configuration Flow

Figure 2-1 Configuration flow

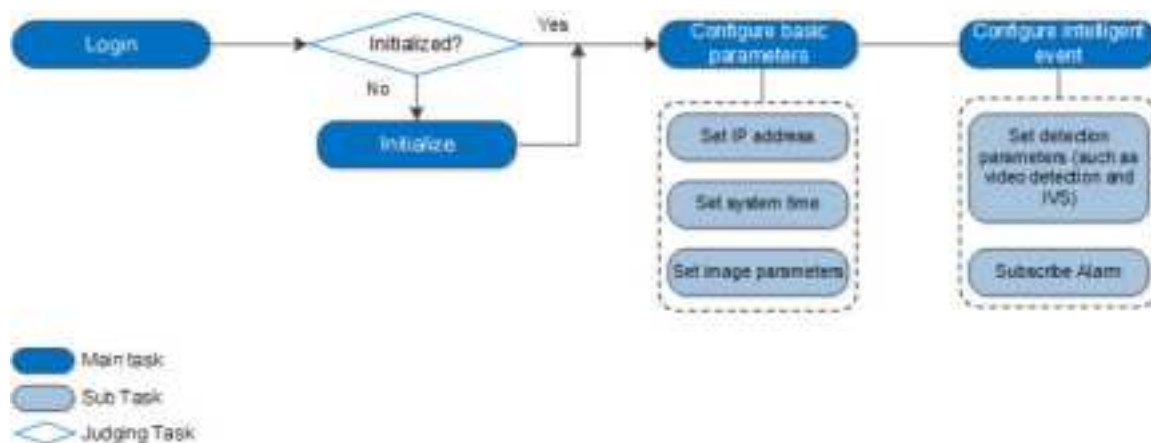


Table 2-1 Description of flow

Configuration		Description	Reference
Login		Open IE browser and enter IP address to log in to the web page, The camera IP address is 192.168.1.108 by default.	"4.1 Login"
Initialization		Initialize the camera when you use it for the first time.	"3 Device Initialization"
Basic parameters	IP address	Modify IP address according to network planning for the first use or during network adjustment.	"4.6.1 TCP/IP"
	Date & time	Set date and time to ensure the recording time is correct.	"4.8.2 Date & Time"
	Image parameters	Adjust image parameters according to the actual situation to ensure the image quality.	"4.5.1 Camera Conditions"
Intelligent event	Detection rules	Configure the necessary detection rules, such as video detection and IVS.	"5 Event"
	Subscribe alarm	Subscribe alarm event. When the subscribed alarm is triggered, the system will record the alarm on the alarm tab.	"5.1.2 Subscribing Alarm"

3 Device Initialization

Device initialization is required for the first use. This manual is based on the operation on the web page. You can also initialize device through ConfigTool, NVR, or platform devices.

⌋ ⌋

- To ensure the device safety, keep the password properly after initialization and change the password regularly.
- When initializing device, keep the PC IP and device IP in the same network.

Procedure

- Step 1** Open IE browser, enter the IP address of the device in the address bar, and then press Enter key.

⌋ ⌋

The IP is 192.168.1.108 by default.

Figure 3-1 Device initialization



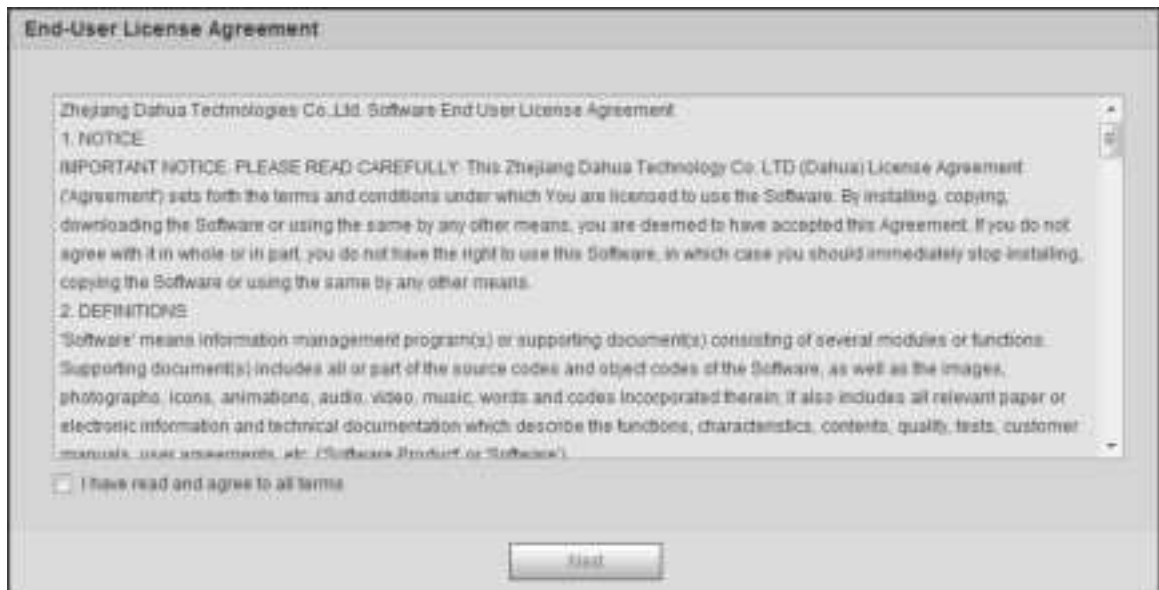
- Step 2** Set the password for admin account.

Table 3-1 Description of password configuration

Parameter	Description
Username	The default username is admin.
Password	The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &). Set a high security level password according to the password security notice.
Confirm password	
email	Enter an email address for password reset, and it is selected by default. When you need to reset the password of the admin account, a security code for password resetting will be sent to the reserved email address.

Step 3 Click **Save**.

Figure 3-2 End-user license agreement



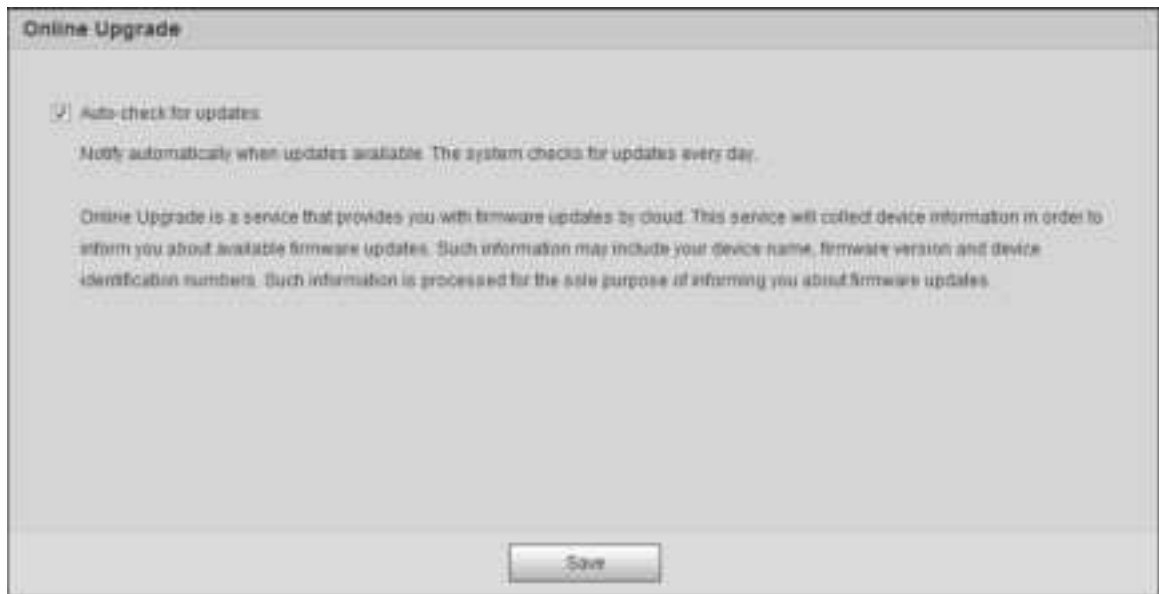
Step 4 Select the **I have read and agree to all terms** checkbox, and then click **Next**.

Figure 3-3 Easy4ip



Step 5 You can register the camera to Easy4ip, select the checkbox as needed, and then click **Next**.

Figure 3-4 Online upgrade



Step 6 Select the upgrading method as needed.

If you select **Auto-check for updates**, the system checks new version once a day automatically. There will be system notice on **Upgrade** page and **Version** page if any new version is available.



Select **Setting** > **System** > **Upgrade** > **Online Upgrade**, and you can enable the auto-check function.

Step 7 Click **Save**.

4 Basic Configuration

The chapter introduces the basic configuration, including login, live view, PTZ operation, playback, camera configuration, network configuration, storage configuration and system configuration.

4.1 Login

This section introduces how to log in to and log out of the web page. This section takes IE Explorer 9 as an example.



- You need to initialize the camera before logging in to the web page. For details, see "3 Device Initialization".
- When initializing the camera, keep the PC IP and device IP in the same network.
- Follow the instruction to download and install the plug-in for the first login.

Procedure

- Step 1** Open IE browser, enter the IP address of the camera (192.168.1.108 by default) in the address bar and press Enter.

Figure 4-1 Login



- Step 2** Enter the username and password.

The username is admin by default.



Click **Forget password?**, and you can reset the password through the email address that is set during the initialization. For details, see "6.3 Resetting Password".

- Step 3** Click **Login**.

Figure 4-2 Live



Related Operations

- Product material: Click **Product Material**, the system will pop up the QR code. Scan the QR code to check the materials.
- Live: Click **Live** to view the real-time monitoring image.
- Playback: Click **Playback** to play back or download recorded video or image files.
- Setting: Click **Setting** to configure the basic and intelligent functions of the camera.
- For the camera with multiple channels, through selecting channel numbers, you can set the parameters of the channels.
- Alarm: Click **Alarm** to subscribe and view alarm information.
- Logout: Click **Logout** to go to login page.
- The system will sleep automatically after idling for a period of time.

4.2 Live

This section introduces the layout of the page and function configuration.

4.2.1 Live View

This section introduces system menu, encode bar, live view function bar, and window adjustment bar.

Log in and click the **Live** tab.



The functions and pages of different models might vary.

Figure 4-3 Live



Table 4-1 Description of function bar

No.	Function	Description
1	Encode bar	Sets stream type and protocol.
2	Live view	Displays the real-time monitoring image.
3	Live view function bar	Functions and operations in live viewing.
4	Window adjustment bar	Adjustment operations in live viewing.

4.2.2 Encode Bar

Figure 4-4 Encode bar



- **Main Stream** : It has large bit stream value and image with high resolution, but also requires large bandwidth. This option can be used for storage and monitoring. For details, see "4.5.2.1 Video".
- **Sub Stream** : It has small bit stream value and smooth image, and requires less bandwidth. This option is normally used to replace main stream when bandwidth is not enough. For details, see "4.5.2.1 Video".
- **Protocol** : You can select the network transmission protocol as needed, and the options are **TCP**, **UDP** and **Multicast**.



Before selecting **Multicast** , make sure that you have set the **Multicast** parameters.

4.2.3 Live View Function Bar

Table 4-2 Description of live view function bar

Icon	Function	Description
	Manual Position	Manually position the tracking speed dome to the selected location of corresponding panoramic camera. Click the icon and click or select randomly on the image of panoramic camera channel, the tracking speed dome will automatically position the selected location.  - For multi-sensor panoramic network camera + PTZ camera, before enabling manual position, make sure that you have enabled alarm track and smart track calibration. For details, see "5.2 Setting Smart Track". - For panoramic network camera, before enabling manual position, make sure that you have enabled panoramic linkage. For details, see "5.3 Setting Panoramic Calibration".
	Regional Focus	Select channel image of the tracking speed dome, click the icon and click or select randomly on the channel image of the tracking speed dome, and then the speed dome can realize auto focus upon the selected region.
	Wiper	Controls the wiper of the camera. Click the icon to enable or disable wiper function.
	Ranging	Click the icon, select a point on the ground, and the distance between the camera and the selected point will be displayed.  Before using this function, you need to set the installation of device first. For details, see "4.5.2.3.12 Configuring Ranging".
	Gesture	Controls PTZ by operating the mouse on the live view of tracking speed dome. Select the live view of tracking speed dome, click the icon, press left-button and drag image to control PTZ. And you can zoom in or out the image through rolling mouse wheel.
	Manual Track	Click the icon, and select tracking target on the live view of tracking speed dome, the camera tracks the selected target automatically.

Icon	Function	Description
	Vehicle Density	Click the icon, and select an area on the live image, the camera will automatically count the number of the vehicles in the selected area, and display the number on the Live page.
	Relay-out	Displays alarm output state. Click the icon to force to enable or disable alarm output. Alarm output state description: ● Red: Alarm output enabled. ● Grey: Alarm output disabled.
	Warning Light	Displays the warning light state. Click the icon to enable or disable the warning light forcibly.
	Alarm	Displays alarm sound state. Click the icon to enable or disable the alarm sound forcibly.
	Crowd Map	Click the icon to display the crowd map on the Live page.  ● Only after enabling the function, can you see the icon on the Live page. ● The positions of the icon might vary depending on models.
	Digital Zoom	You can zoom in or out video image through two operations. ● Click the icon, and then select an area in the video image to zoom in; right-click on the image to resume the original size. In zoom in state, drag the image to check other area. ● Click the icon, and then scroll the mouse wheel in the video image to zoom in or out.
	Snapshot	Click the icon to capture one picture of the current image, and it will be saved to the configured storage path.  About viewing or configuring storage path, see "4.5.2.5 Path".
	Triple Snapshot	Click the icon to capture three pictures of the current image, and they will be saved to the configured storage path.  About viewing or configuring storage path, see "4.5.2.5 Path".

Icon	Function	Description
	Record	Click the icon to record video, and it will be saved to the configured storage path.  About viewing or configuring storage path, see "4.5.2.5 Path".
	Easy Focus	Click the icon, the AF Peak (focus eigenvalue) and AF Max (max focus eigenvalue) are displayed on the video image. ● AF Peak : The eigenvalue of image definition, it displays during focus. ● AF Max : The best eigenvalue of image definition. ● The smaller the difference between AF peak value and the AF max value, the better the focus is.  Easy focus closes automatically after five minutes.
	Audio	Click the icon to enable or disable audio output.
	Talk	Click the icon to enable or disable the audio talk.

4.2.4 Window Adjustment Bar

4.2.4.1 Adjustment

This section introduces the adjustment of image.

Table 4-3 Description of adjustment bar

Icon	Function	Description
	Image Adjustment	Click the icon, and then the Image Adjustment page is displayed at the right side of the Live page. You can adjust brightness, contrast, hue, and saturation.  The adjustment is only available on the web page, and it does not adjust the camera parameters.  (Brightness adjustment): Adjusts the overall image brightness, and change the value when the image is too bright or too dark. The bright and dark areas will have equal changes.  (Contrast adjustment): Change the value when the image brightness is proper but contrast is not enough.  (Hue adjustment): Makes the color deeper or lighter. The default value is made by the light sensor, and it is recommended.  (Saturation adjustment): Adjusts the image saturation. This value does not change image brightness.
	Original Size	Click the icon, and it changes to  , and then the video displays with original size; click  , and the video displays with adapted size.
	Full Screen	Click the icon to enter full screen mode; double-click or press Esc to exit.
	Width : Height	Click the icon to resume original ratio or change ratio.
	Fluency	Click the icon to select the fluency from Realtime, Fluency and Normal. Realtime: Guarantees the real-time display of the image. When the bandwidth is not enough, the image might not be smooth. Fluency: Guarantees the fluency of the image. There might be delay between live view image and real-time image. Normal: It is between Realtime and Fluency.

Icon	Function	Description
	Rule Info	Click the icon, and then select Enable to display smart rules and detection box; select Disable to stop the display. It is enabled by default.
	PTZ	Click the icon, and the PTZ control panel is displayed at the right side of the Live page. You can control and call PTZ function. For details, see "4.3.3 Calling PTZ".
	Zoom and Focus	Adjust focal length to zoom in and out video image. Click the icon, and the Zoom and Focus configuration page is displayed at the right side of the Live page. You can control and call PTZ function. For details, see "4.2.4.2 Zoom and Focus".
	Fisheye	Click the icon, and then the Fisheye configuration page is displayed at the right side of the Live page. For details, see "4.2.4.3 Fisheye".
	Face	- Click the icon, and the face detection or face recognition results are displayed on the Live page. - For face recognition, see "5.10.1 Setting Face Detection". - For face detection: see "5.11 Setting Face Detection".
	ANPR	Click the icon, and the ANPR results are displayed on the Live page. For details, see "5.16 Setting ANPR".
	Video Metadata	Click the icon, the video metadata results are displayed on the Live page. For details, see "5.17 Setting Video Metadata".
	Window Layout	When viewing the multi-channel image, you can select display layout. For Multi-Sensor Panoramic + PTZ Camera: - The live page will show Panorama 1 and Panorama 2 by default if you choose dual-channel mode. - If you switch from three-channel mode or dual-channel mode to single-channel mode, the live window will show Panorama 1 by default. Click   and select the camera you want to view.

Icon	Function	Description
	Crowd Map	Click the icon and select the Enable checkbox. The Crowd Map page is displayed. For details, see "5.9 Setting Crowd Map".

4.2.4.2 Zoom and Focus

You can adjust focal length to zoom in or out video image and the image clarity.



The focus would adjust automatically after zooming in or out.

Figure 4-5 Zoom and focus



Table 4-4 Description of zoom and focus

Parameter	Description
Zoom	Changes the focal length of the camera to zoom in or out the image. - Set the Speed value. The Speed is the adjustment range in one click. The larger the value is, the more the image would zoom in or out in one click. - Click or hold + or – button, or drag the slider to adjust zoom.
Focus	Adjusts the optical back focal length to make the image clearer. - Set the Speed value. The Speed is the adjustment range in one click. The larger the value is, the more the adjustment in one click. - Click or hold + or – button, or drag the slider to adjust focus.

Parameter	Description
Auto Focus	Adjusts image clarity automatically.  Do not make any other operation during auto focus process.
Restore All	Restores focus to default value and corrects errors.  You can restore the focus if the image has poor clarity or has been zoomed too frequently.
Regional Focus	Focus on the subject of a selected area. Click Regional Focus, and then select an area in the image, the camera performs auto focus in that area.
Refresh	Get the latest zoom setting of the device.

4.2.4.3 Fisheye

You can select the installation mode, display mode and VR mode of fisheye devices as needed.

- **Install Mode** : Select the installation mode according to the actual situation.
- **Display Mode** : Select the display mode of live view.
- **VR Mode** : Select VR mode to display images in stereo mode.

Figure 4-6 Fisheye



Table 4-5 Description of fisheye configuration

Parameter	Description
Installation mode	Includes ceiling mount, wall mount, and ground mount.

Parameter	Description	
Display mode	The display mode of the current image. There are different display modes for each installation mode. • Ceiling: 1P+1, 2P, 1+2, 1+3, 1+4, 1P+6, 1+8. • Wall: 1P, 1P+3, 1P+4, 1P+8. • Ground: 1P+1, 2P, 1+3, 1+4, 1P+6, 1+8.  The image will be on original size by default when switching installation mode.	
Ceiling/Wall/ Ground mount	 Original image	The original image before correction.
Ceiling/Ground mount	 1P+1	360° rectangular panoramic image screen + independent sub-screens. • You can zoom or drag the image in all the screens. • You can move the start point (left and right) on rectangular panoramic image screen.
	 2P	Two associated 180° rectangular image screens, and at any time, the two screens form a 360° panoramic image. It is also called dual-panoramic image. You can move the start point (left and right) on the two rectangular panoramic image screens, and the two screens link each other.
	 1+2	Original image screen + two independent sub-screens. Ground Mount does not support this display mode. • You can zoom or drag the image in all the screens. • You can rotate the image on the original image screen to change the start point.
	 1+3	Original image screen + three independent sub-screens. • You can zoom or drag the image in all the screens. • You can rotate the image on the original image screen to change the start point.

Parameter	Description	
	 1+4	Original image screen + four independent sub-screens. - You can zoom or drag the image in all the screens. - You can rotate the image on the original image screen to change the start point.
	 1P+6	360° rectangular panoramic screen + six independent sub-screens. - You can zoom or drag the image in all the screens. - You can move the start point (left and right) on rectangular panoramic image screen.
	 1P+8	Original image screen + eight independent sub-screens. - You can zoom or drag the image in all the screens. - You can rotate the image on the original image screen to change the start point.
Wall mount	 1P	180° rectangular panoramic image screen (from left to right). You can drag the image in all the screens (up and down) to adjust the vertical view.
	 1P+3	180° rectangular panoramic image screen + three independent sub-screens. - You can zoom or drag the image in all the screens. - You can drag the image in all the screens (upper and lower) to adjust the vertical view.
	 1P+4	180° rectangular panoramic image screen + four independent sub-screens. - You can zoom or drag the image in all the screens. - You can drag the image in all the screens (upper and lower) to adjust the vertical view.
	 1P+8	180° rectangular panoramic image screen + eight independent sub-screens. - You can zoom or drag the image in all the screens. - You can drag the image in all the screens (upper and lower) to adjust the vertical view.

Parameter	Description	
VR mode	 Panorama	Drag or cross the screen 360° to unfold the distortion panorama, and you can drag the image in left/right direction.
	 Semi-circle	- You can drag the image in upper/lower/left/right direction. Press I to display the panorama, and press O to resume the original size. - Press S to rotate the image in anticlockwise direction, and press E to stop the rotation. - Scroll the mouse wheel to zoom the image.
	 Cylinder	Display the distortion panorama in 360° circularity. - You can drag the image in upper/lower/left/right direction. Press I to display the panorama, and press O to return to the original size. - Press S to rotate the image in anticlockwise direction, and press E to stop the rotation. - Scroll the mouse wheel to zoom the image.
	 Asteroid	- You can drag the image in upper/lower/left/right direction. Press I to display the panorama, and press O to return to the original size. - Press the left mouse-button to slide down to display the image on the plane surface. - Scroll the mouse wheel to zoom the image.

4.3 PTZ Operation

This section introduces PTZ parameter configuration, PTZ control and PTZ function configuration.

4.3.1 Configuring External PTZ Protocol

You need to configure PTZ protocol when accessing external PTZ camera; otherwise the camera cannot control external PTZ camera.

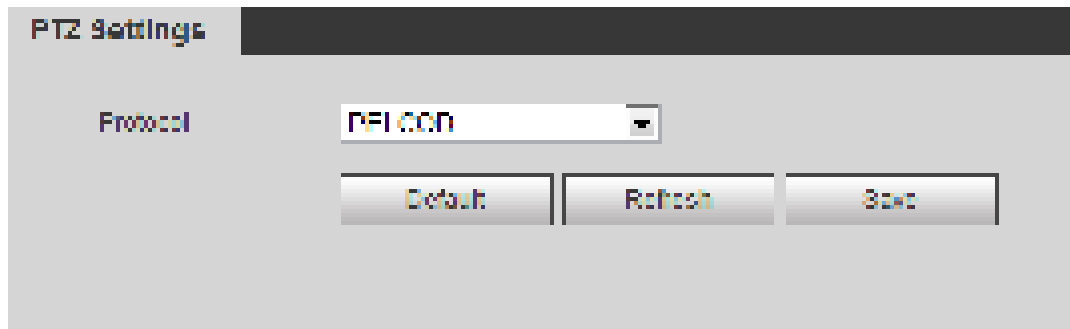
Prerequisites

- Access external PTZ through RS-485.
- You have configured the parameters of serial port. For details, see "4.8.5.1 Serial Port Settings".

Procedure

Step 1 Select **Setting** > **PTZ Setting** > **Protocol**.

Figure 4-7 PTZ setting



Step 2 Select the PTZ protocol.

Step 3 Click **Save**.

4.3.2 Configuring PTZ Function

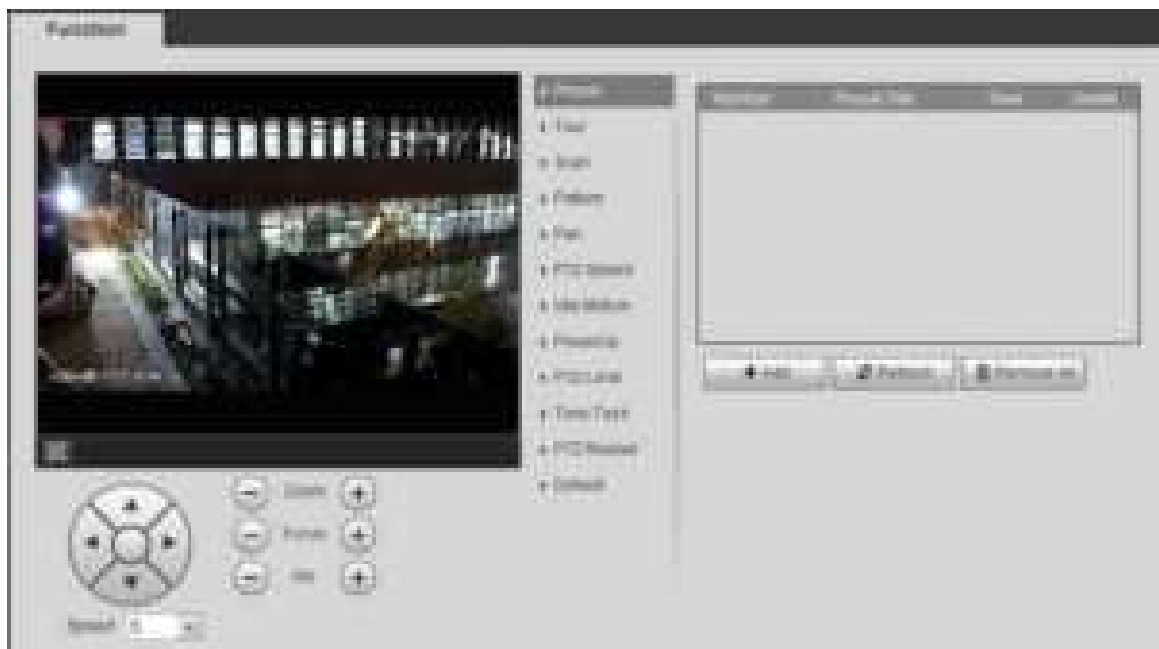
4.3.2.1 Preset

Preset means a certain position that the camera can make quick orientation to. It includes PTZ pan and tilt angles, camera focus, and location.

Procedure

Step 1 Select **Setting** > **PTZ Settings** > **Function** > **Preset**.

Figure 4-8 Preset



Step 2 Set the speed, and click , , and  to adjust the parameters of direction, zoom, focus and iris, to move the camera to the position you need.

Step 3 Click **Add** to add the current position to be a preset, and the preset is displayed in preset list.

Step 4 Double-click the preset title to edit it.

Step 5 Click  to save the preset.

Related Operations

- Click  to delete the preset.
- Click **Remove All** to remove all presets.

4.3.2.2 Tour

Tour means a series of movements that the camera makes along several presets.

Prerequisites

You have set several presets.

Procedure

Step 1 Select **Setting** > **PTZ settings** > **Function** > **Tour**.

Figure 4-9 Tour



Step 2 Click **Add** ① to add tour.

Double-click the tour name to edit the name.

Step 3 Click **Add** ② to add preset.

Double-click the duration to set the duration.

Step 4 Select the tour mode.

- Original path: The PTZ camera moves in the order of the selected presets.
- Shortest path: The PTZ camera ranks presets by distance, and moves in the optimal path.

Step 5 Click **Save**.

Step 6 Click **Start** to start touring.

]]

- If you operate PTZ during tour, the camera will stop tour.
- Click **Stop** to stop touring.

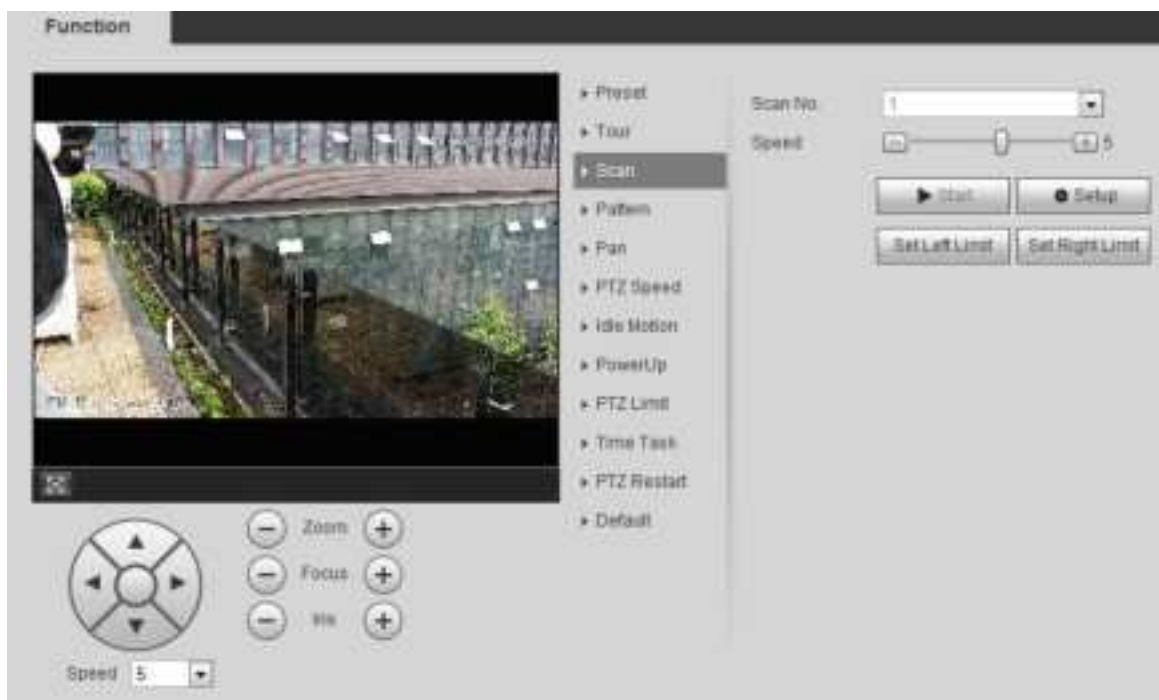
4.3.2.3 Scan

Scan means the camera moves horizontally at a certain speed between the configured left and right limits.

Procedure

Step 1 Select **Setting** > **PTZ settings** > **Function** > **Scan**.

Figure 4-10 Scan



Step 2 Select the scan number, and set the speed.

Step 3 Click **Setup** to set left limit and right limit.

1. Click **Set Left Limit** to set the current position to be the left limit.
2. Click **Set Right Limit** to set the current position to be the right limit.

Step 4 Click **Start** to start scanning.

Click **Stop** to stop scanning.

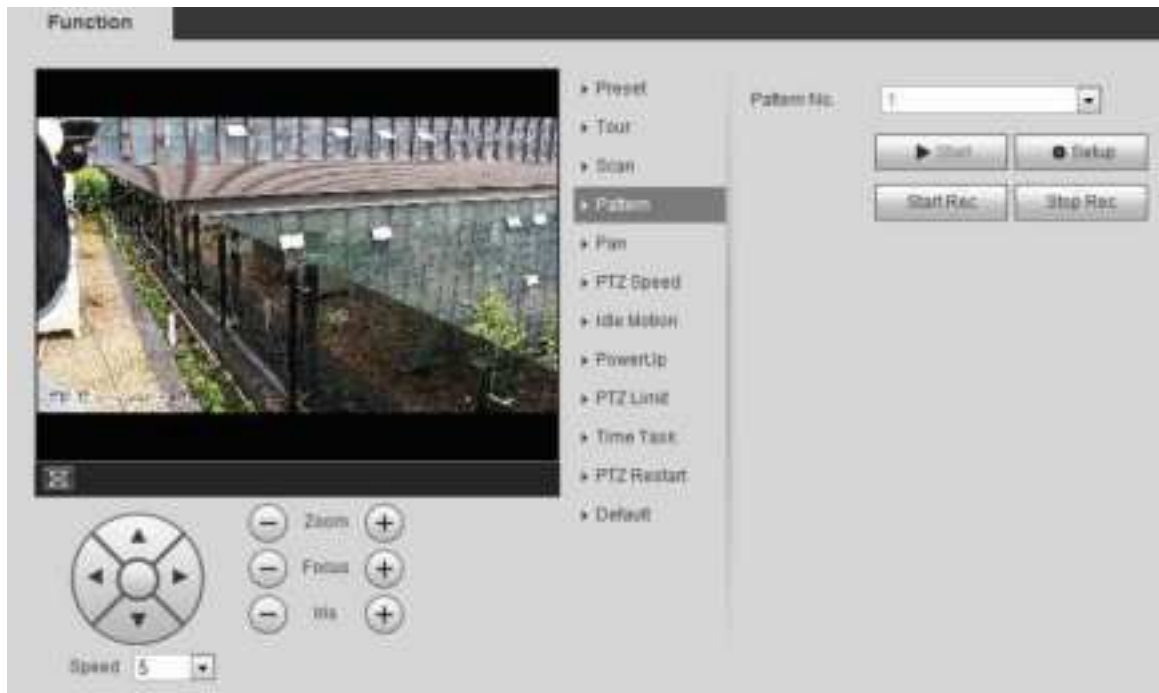
4.3.2.4 Pattern

Pattern means a recording of a series of operations that you make to the camera, and when pattern starts, the camera performs the operations repeatedly. The operations include horizontal and vertical movements, zoom and preset calling. Record and save the operations, and then you can call the pattern path directly.

Procedure

Step 1 Select **Setting** > **PTZ settings** > **Function** > **Pattern**.

Figure 4-11 Pattern



Step 2 Select the pattern number.

Step 3 Click **Setup**, and then click **Start Rec**. Adjust the parameters of direction, zoom, focus and iris according to the actual situation.

Step 4 Click **Stop Rec** to stop recording.

Step 5 Click **Start** to start patterning.

Step 6 Click **Stop** to stop patterning.

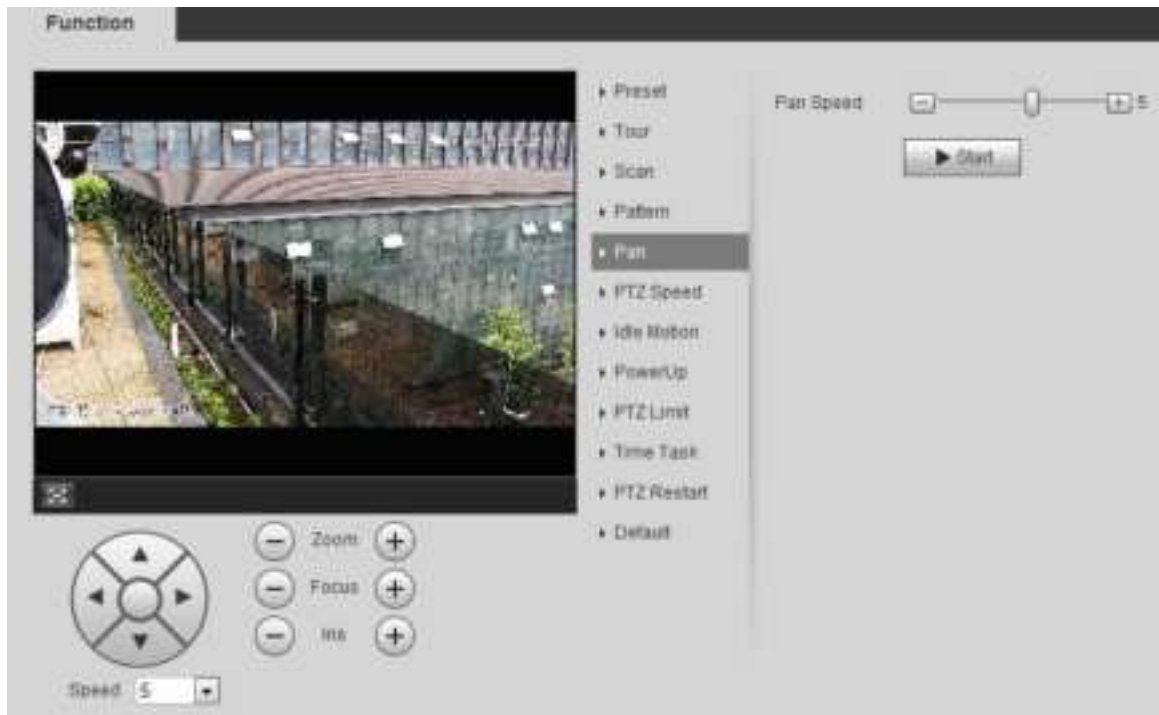
4.3.2.5 Pan

Enable Pan, the camera can realize continuous 360° horizontal rotation at a certain speed.

Procedure

Step 1 Select **Setting** > **PTZ settings** > **Function** > **Pan**.

Figure 4-12 Pan



- Step 2** Set the pan speed and click **Start**, and the camera starts horizontal rotation.
Click **Stop** to stop rotation.

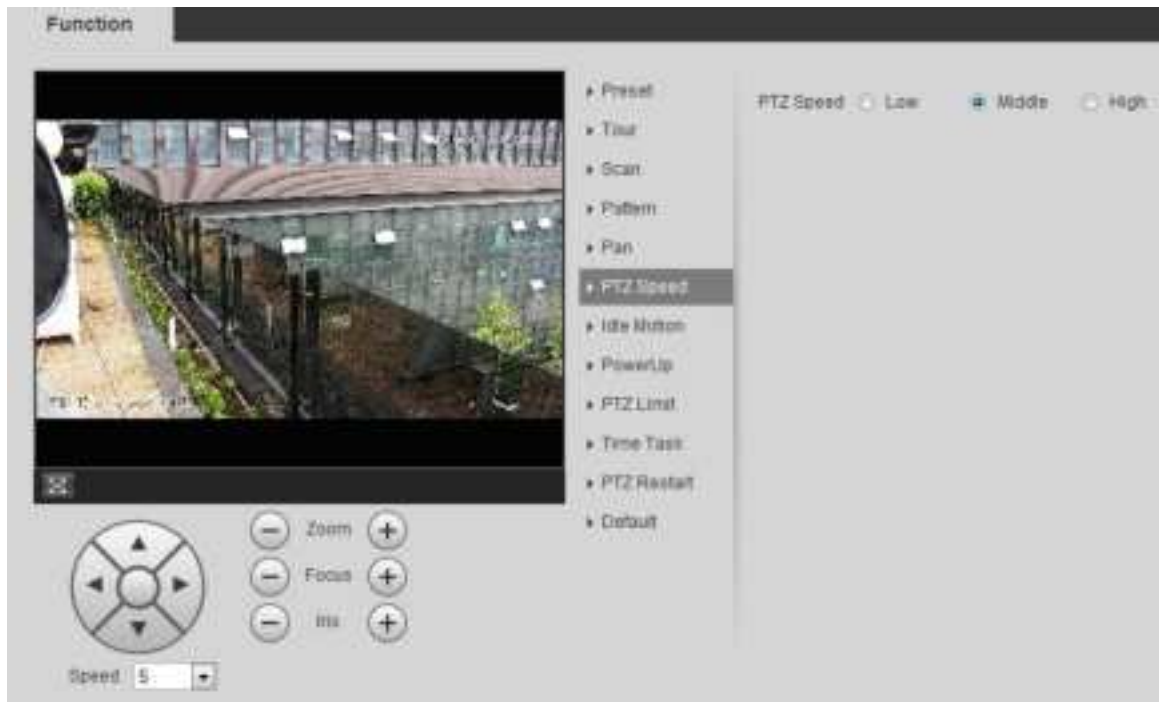
4.3.2.6 PTZ Speed

PTZ speed means the rotation speed of the PTZ camera during touring, pattern, or auto tracking.

Procedure

- Step 1** Select **Setting** > **PTZ settings** > **Function** > **PTZ Speed**.

Figure 4-13 PTZ speed



Step 2 Select the PTZ speed: **Low** , **Middle**, and **High**.



Speed under the direction buttons refers to the rotation angle of the PTZ camera for each press of the direction button.

4.3.2.7 Idle Motion

Idle motion means that the PTZ camera implements the operation which is configured in advance when it does not receive any valid command within the set time.

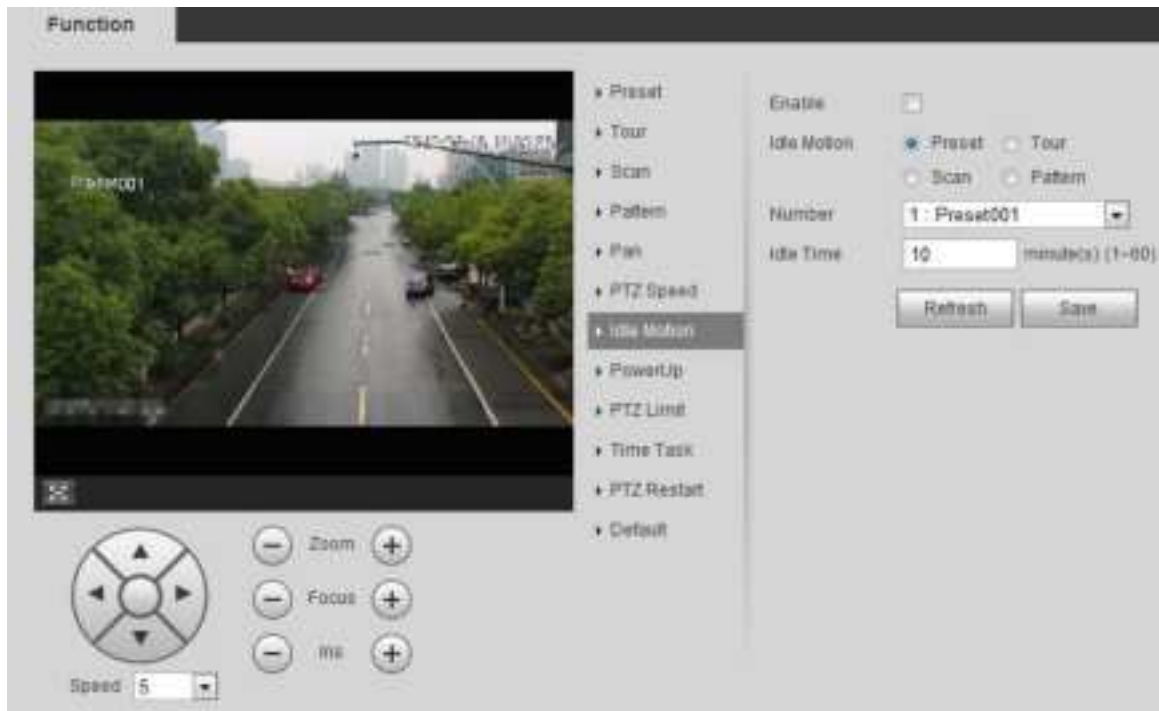
Prerequisites

You have configured the PTZ motions, including preset, scan, tour, or pattern.

Procedure

Step 1 Select **Setting** > **PTZ settings** > **Function** > **Idle Motion**.

Figure 4-14 Idle motion



Step 2 Select the **Enable** check box to enable the idle motion function.

Step 3 Select the idle motion and set the idle time.

You need to select the corresponding number for some selected idle motions, such as **Preset001**.

Step 4 Click **Save**.

4.3.2.8 PowerUp

After setting Powerup motion, the camera will perform the configured motion after it is powered on.

Procedure

Step 1 Select **Setting** > **PTZ settings** > **Function** > **PowerUp**.

Figure 4-15 PowerUp



Step 2 Select the **Enable** check box to enable the power up function.

Step 3 Select the power up motion.



When you select **Auto**, the system will perform the last motion that is executed for more than 20 s before power-off.

Step 4 Click **OK**.

4.3.2.9 PTZ Limit

After setting PTZ limit, the camera can only rotate within the configured area.

Procedure

Step 1 Select **Setting** > **PTZ settings** > **Function** > **PTZ Limit**.

Figure 4-16 PTZ limit



Step 2 Adjust the direction buttons, and then click **Setting ①** to set the up line; click **Setting ②** to set the down line.

Click **Live** to view the configured up line and down line.

Step 3 Select the **Enable** check box to enable the PTZ limit function.

4.3.2.10 Time Task

After setting time task, the camera performs the motions during the configured period.

Prerequisites

You have configured the PTZ motions, including preset, scan, tour, and pattern.

Procedure

Step 1 Select **Setting > PTZ settings > Function > Time Task**.

Figure 4-17 Time task



Step 2 Select the **Enable** check box to enable time task function.

Step 3 Select the time task number.

Step 4 Select the time task action.

You need to select the corresponding action number for some selected time task actions.

Step 5 Set the auto home time in **AutoHome**.

AutoHome : When you call PTZ, the time task will be interrupted. After setting **AutoHome** time, the camera will resume the time task automatically.

Step 6 Click **Period setting** to set the time of the task, and then click **Save**.

For setting arm time, see "5.1.1.1 Setting Period".

Step 7 Click **Save**.

Related Operations

You can copy the configurations of existing task number to other task number.

1. Select the existing task number in **Time Task num**.
2. Select the task number to be configured in **Copy To Task No**.
3. Click **Copy**.
4. Click **Save**.

4.3.2.11 PTZ Restart

Procedure

Step 1 Select **Setting** > **PTZ settings** > **Function** > **PTZ Restart**.

Figure 4-18 PTZ restart



Step 2 Click **PTZ Restart** to restart PTZ.

4.3.2.12 Default



Be careful when doing this operation. It will restore the camera to default configuration, and result in data loss.

Procedure

Step 1 Select **Setting** > **PTZ settings** > **Function** > **Default**.

Figure 4-19 Default



Step 2 Click **Default** and the PTZ function is restored to default.

4.3.3 Calling PTZ

Click  on **Live** page, and the PTZ configuration panel is displayed. You can control PTZ and call PTZ function.

4.3.3.1 PTZ Control

You can rotate device, zoom image, and adjust iris through PTZ control or virtual joystick. See Figure 4-20 and Figure 4-21 .

Figure 4-20 PTZ control



Figure 4-21 Joystick



- : Rotate PTZ direction through direction button. PTZ supports eight directions: left/right/up/down/upper left/upper right/bottom left/bottom right. Click , and draw a box in the image, PTZ will rotate, focus and quickly position the defined scene.
- : Rotate PTZ direction through joystick. Select and hold , and drag it to the direction that you need, then PTZ will move to the defined direction.
- Speed: Measure the rotation speed. The higher the speed value is, the faster the speed becomes.

- Zoom, focus and iris: Click  or  to adjust zoom, focus and iris.

4.3.3.2 PTZ Function

Select the PTZ function from the drop-down list to call the corresponding functions, including Scan, Preset, Tour, Pattern, Pan, Go to, Assistant and Light Wiper. See Figure 4-22 . For details, see Table 4-6 . Before calling PTZ function, see "4.3.2 Configuring PTZ Function" to configure PTZ function.

⌂

- If an external PTZ is connected to the camera, the configurations are valid only when the corresponding functions are available on the external PTZ.
- The range of PTZ function (such as preset and tour) depends on the PTZ protocol.

Figure 4-22 PTZ function

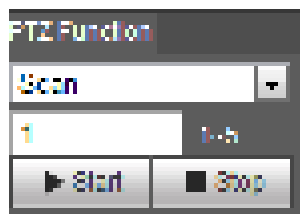


Table 4-6 Description of PTZ function

Parameter	Description
Scan	Set the scan number and click Start , the camera moves horizontally at a certain speed between the set left and right limit. Click Stop to stop scanning.
Preset	Set the preset number and click Go to , the camera quickly positions the corresponding preset.
Tour	Set the tour number and click Start , the camera moves in the order of the selected presets. Click Stop to stop touring.
Pattern	Set the pattern number and click Start , the camera moves continuously according to the operation recording. Click Stop to stop patterning. Operation recording includes the information of manual operation, focus and zoom.
Pan	Click Start , and the camera rotates 360° at a certain speed in horizontal direction.
Go to	Set the horizontal angle, vertical angle, and zoom. Click Go to to position a certain point accurately.
Assistant	Set the assistant number and click Aux On to enable the corresponding assistant function, and then you can adjust the camera. Click Aux Off to disable the corresponding assistant function.
Light/Wiper	Set the light or wiper of the camera. • Click Enable to enable light/wiper function. • Click Disable to disable light/wiper function.

4.4 Playback

This section introduces playback related functions and operations, including video playback and picture playback.



- Before playing back video, configure record time range, record storage method, record schedule and record control. For details, see "5.1.1.2.1 Setting Record Plan".
- Before playing back picture, configure snapshot time range, snapshot storage method, snapshot plan. For details, see "5.1.1.3.1 Setting Snapshot Plan".

4.4.1 Playback Page

Click the **Playback** tab, and the **Playback** page is displayed.

Figure 4-23 Video playback

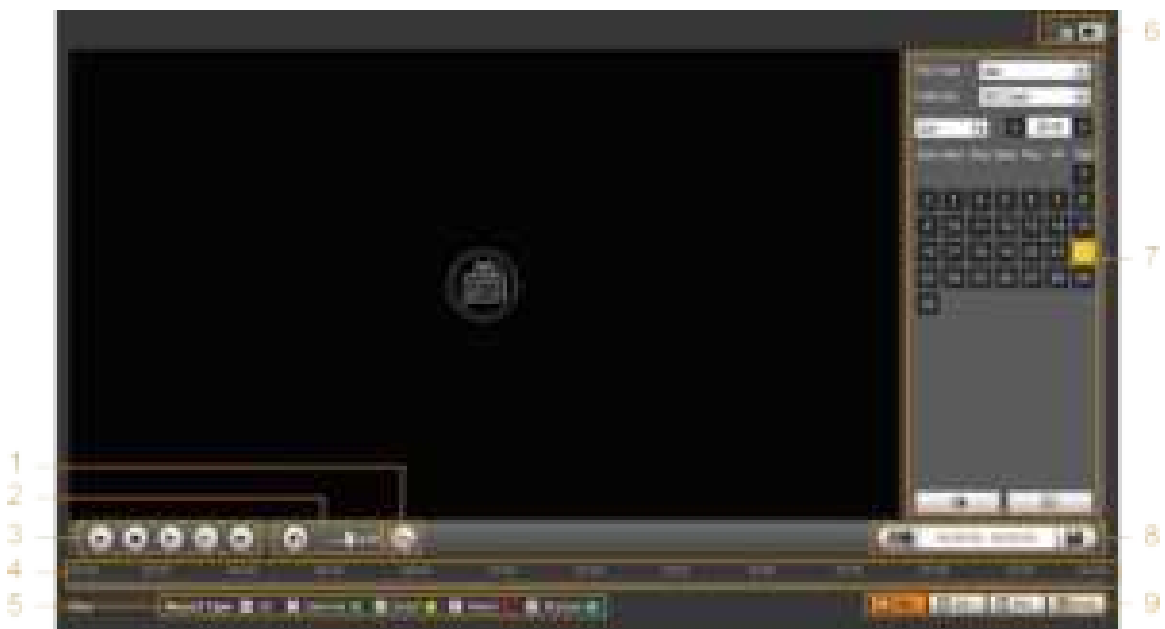


Figure 4-24 Picture playback

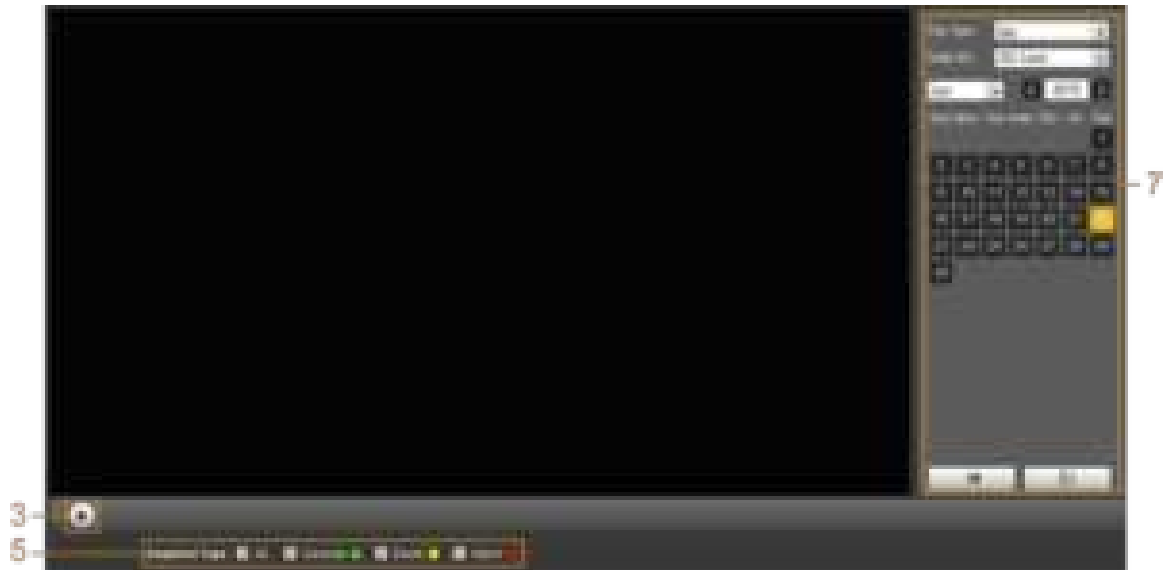


Table 4-7 Playback page description

No.	Function	Description
1	Fisheye	Click , you can select display mode according to the installation mode during playback.  This function is only available on fisheye cameras.
	Rules Info	Click , intelligent rules and object detection box are displayed. It is enabled by default.  Rules Info is valid only when you enabled the rule during recording.
2	Sound	Controls the sound during playback. • : Mute mode. • : Vocal state. You can adjust the sound.

No.	Function	Description
3	Play control bar	Controls playback. : Click the icon to play back recorded videos. : Click the icon to stop playing back recorded videos. : Click the icon to play the next frame. : Click the icon to slow down the playback. : Click the icon to speed up the playback.
4	Progress bar	Displays the record type and the corresponding period. - Click any point in the colored area, and the system will play back the recorded video from the selected moment. - Each record type has its own color, and you can see their relations in Record Type bar.
5	Record/Snapshot Type	Select the record type or snapshot type. - Record type includes General , Event, Alarm, Manual. - Snapshot type includes General , Event, Alarm.
6	Assistant	: You can zoom in or out video image of the selected area through two operations. : Click the icon to capture one picture of the current video, and it will be saved to the configured storage path.
7	Playback video	You can select the file type, data source, and record date.
8	Video clip	Clip a certain recorded video and save it. For details, see "4.4.3 Clipping Video".
9	Time format of progress bar	Includes 4 time formats: , , , . Take  as an example, the whole progress stands for 24 hours.

4.4.2 Playing back Video or Picture

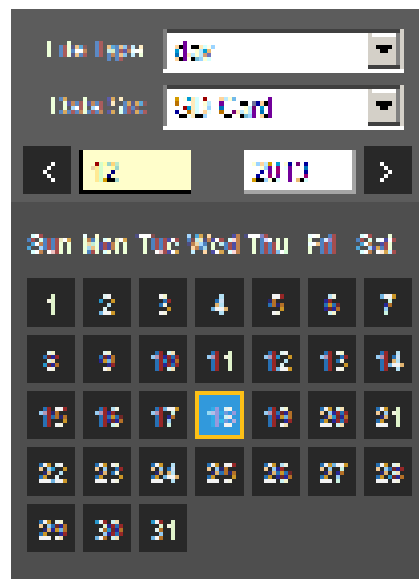
This section introduces the operation of video playback and picture playback. This section takes video playback as an example.

Procedure

Step 1 Select **dav** from the **Record Type** drop-down list and **SD card** from the **Data Src** drop-down list.

Select **jpg** from **Record Type** drop-down list when playing back pictures, and you do not need to select data source.

Figure 4-25 File type selection



Step 2 Select the record type in **Record Type**.

Figure 4-26 Record type selection



When selecting **Event** as the record type, you can select the specific event types from the playback file list, such as **Motion Detection**, **Video Tamper** and **Scene Changing**.

Figure 4-27 Specific event types



Step 3 Select the month and year of the video that you want to play.



Those dates with blue color indicate there were videos recorded in those days.

Step 4 Play video.

- Click  in the control bar.
The system plays the recorded video of the selected date (in the order of time).
- The system plays the recorded video of the selected date (in the order of time).
- Click any point in the colored area on the progress bar.
The playback starts from that moment.

Figure 4-28 Progress bar



- Click , the video files of the selected date would be listed. Enter the start time and end time, and then click  to search all files between the start time and end time. Double-click the file in the list, and the system plays the video and displays file size, starting time, and ending time.

Figure 4-29 Playback file list



4.4.3 Clipping Video

Procedure

- Step 1 Click , the video files of the selected date are listed.
- Step 2 Select **dav** or **mp4** in **Download Format**.
- Step 3 Click on the progress bar to select the start time of the target video, and then click .

Figure 4-30 Clipping video



Step 4 Click again on the progress bar to select the end time of the target video, and then click .

Step 5 Click  to download the video.

The system will prompt that it cannot play back and download at the same time.

Step 6 Click **OK**.

The playback stops and the clipped file is saved in the configured storage path. For the configuration of storage path, see "4.5.2.5 Path".

4.4.4 Downloading Video or Picture

Download video or picture to a defined path. You can download single video or picture file, or download them in batches. This section takes downloading video as an example.



- Playback and downloading at the same time is not supported.
- Operations might vary with different browsers.
- For details of viewing or setting storage path, see "4.5.2.5 Path".

4.4.4.1 Downloading a Single File

Procedure

Step 1 Select **dav** from the **Record Type** drop-down list and **SD card** from the **Data Src** drop-down list.

Select **jpg** from **Record Type** drop-down list when playing back pictures, and you do not need to select data source.

Step 2 Click , the video files of the selected date are listed. See Figure 4-29 .

Step 3 Select **dav** or **mp4** in **Download Format**. Click  next to the file to be download.

The system starts to download the file to the configured path. When downloading pictures, you do not need to select the download format.

4.4.4.2 Downloading Files in Batches

Procedure

Step 1 Click  on the playback page.

Figure 4-31 Batch download



Step 2 Select the record type, set the start time and end time, and then click **Search**.

The searched files are listed.

Step 3 Select the files to be downloaded, select **dav** or **mp4** from the **Format** drop-down list, and then set the storage path. Click **Download**.

The system starts to download the file to the configured path. When downloading picture, you do not need to select the download format.

4.5 Camera

This section introduces the camera setting, including conditions, video and audio.



Camera parameters of different devices might vary.

4.5.1 Camera Conditions

Configure camera parameters of the camera to ensure surveillance goes properly.

4.5.1.1 Conditions

Configure camera parameters according to the actual situation, including picture, exposure, backlight and white balance.

4.5.1.1.1 Interface Layout

Configure camera parameters to improve the scene clarity, and ensure that surveillance goes properly.

- Under profile, you can select between 9 different styles, such as normal, day, night or flowing light mode. Parameters (such as contrast and saturation) will change to match the style. You can also further modify the configurations for select modes (such as picture, exposure and backlight) after changing the main style. Flowing light is suitable for situations where there is slight light, and the panoramic function is unable to effectively detect targets.



- After switching to flowing light, the mode in the exposure menu is automatically set to manual. The shutter time is adaptive, working at a maximum speed of 333 ms.
- By default the backlight is off. The wide dynamic effect starts or not can be determined by identifying the overexposure in the picture. This gives you control over overexposure in the picture.
- Camera with PTZ function supports zoom, focus and iris operations. Configure speed, click direction button,  and  to adjust the direction, zoom, focus and iris and so on, to adjust the camera to the proper position.

Figure 4-32 Camera conditions

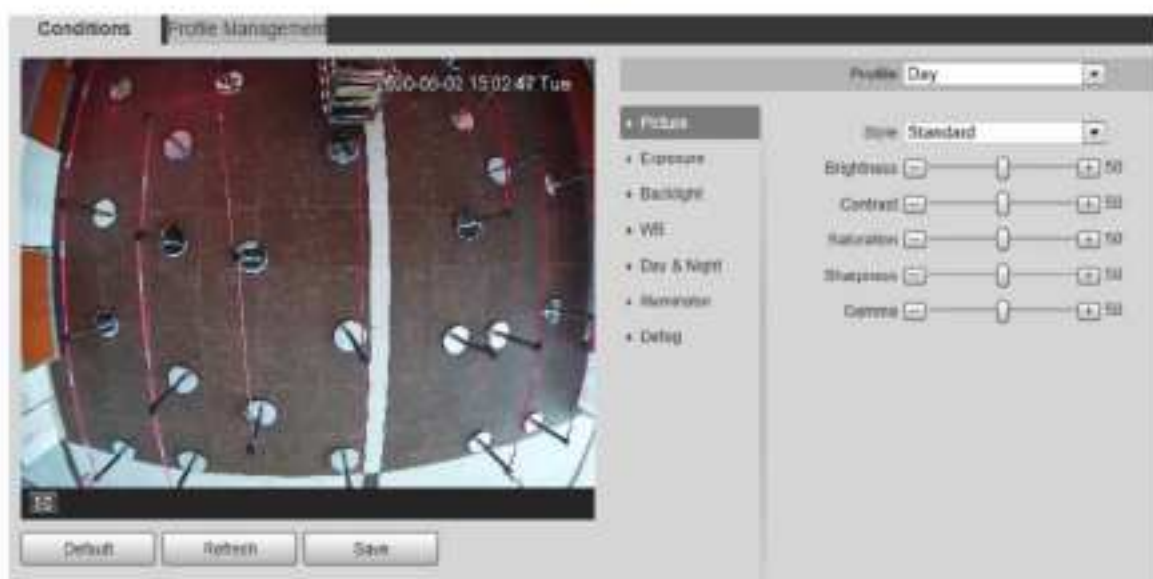
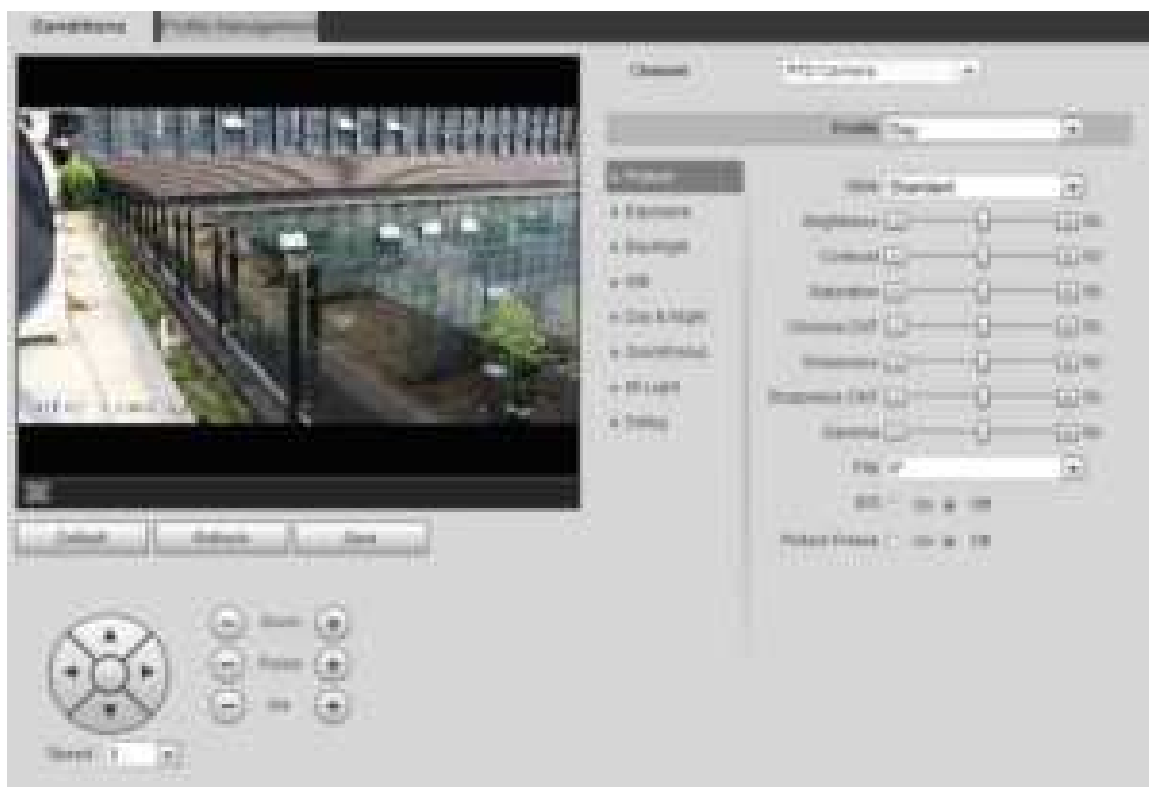


Figure 4-33 Camera conditions (PTZ camera)



4.5.1.1.2 Picture

You can configure picture parameters as needed.

Procedure

Step 1 Select **Setting** > **Camera** > **Conditions** > **Conditions** > **Picture**.

Figure 4-34 Picture



Step 2 Configure picture parameters.

Table 4-8 Description of picture parameters

Parameter	Description
Style	Select the picture style from soft, standard and vivid. • Soft: Default image style, displays the actual color of the image. • Standard: The hue of the image is weaker than the actual one, and contrast is smaller. • Vivid: The image is more vivid than the actual one.
Brightness	Change the value to adjust the picture brightness. The higher the value is, the brighter the picture will be, and the smaller the darker. The picture might be hazy if the value is configured too big.
Contrast	Change the contrast of the picture. The higher the value is, the more the contrast will be between bright and dark areas, and the smaller the less. If the value is set too big, the dark area would be too dark and bright area easier to get overexposed. The picture might be hazy if the value is set too small.
Saturation	Make the color deeper or lighter. The higher the value is, the deeper the color will be, and the lower the lighter. Saturation value does not change image brightness.
Sharpness	Changes the sharpness of picture edges. The higher the value is, the clearer the picture edges will be, and if the value is set too big, picture noises are more likely to appear.
Gamma	Changes the picture brightness and improves the picture dynamic range in a non-linear way. The higher the value is, the brighter the picture will be, and the smaller the darker.

Parameter	Description
Mirror	Select On , and the picture would display with left and right side reversed.
Flip	Changes the display direction of the picture, see the options below. 0°: Normal display. 90°: The picture rotates 90° clockwise. 180°: The picture rotates 90° counterclockwise. 270°: The picture flips upside down. For some models, please set the resolution to be 1080p or lower when using 90° and 180°. For details, see "4.5.2.1 Video".
EIS	Corrects the device shaking with difference comparison algorithm and improves the image clarity, effectively solves the picture shaking problem.
Optical Dejitering	The lens vibration is sensed by the gyroscope sensor, and the corresponding compensation is calculated using the intelligent anti-shake algorithm. The movable parts inside the lens are driven to offset the vibration, which greatly reduces blurring of the image caused by the vibration.
Picture Freeze	When you call a preset, the image displays the preset location, not the rotation image.

Step 3 Click **Save**.

4.5.1.1.3 Exposure

Configure iris and shutter to improve image clarity.

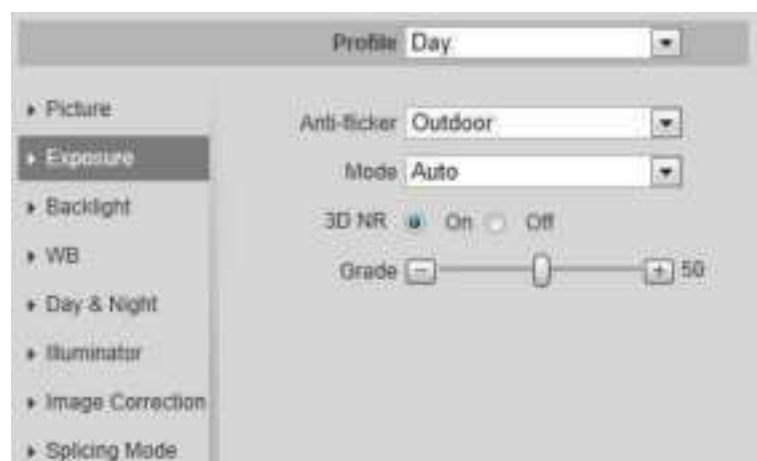


Cameras with true WDR do not support long exposure when WDR is enabled in **Backlight**.

Procedure

Step 1 Select **Setting** > **Camera** > **Conditions** > **Conditions** > **Exposure**.

Figure 4-35 Exposure



Step 2 Configure exposure parameters.

Table 4-9 Description of exposure parameters

Parameter	Description
Anti-flicker	You can select from 50 Hz, 60 Hz and Outdoor. 50 Hz: When the electric supply is 50 Hz, the system adjusts the exposure according to ambient light automatically to ensure that there is no stripe appears. 60 Hz: When the electric supply is 60 Hz, the system adjusts the exposure according to ambient light automatically to ensure that there is no stripe appears. - Outdoor: You can select any exposure mode as needed.
Mode	Device exposure modes. - Auto: Adjusts the image brightness according to the actual condition automatically. - Gain Priority: When the exposure range is normal, the system prefers the configured gain range when auto adjusting according to the ambient lighting condition. If the image brightness is not enough and the gain has reached upper or lower limit, the system adjusts shutter value automatically to ensure the image at ideal brightness. You can configure gain range to adjust gain level when using gain priority mode. - Shutter priority: When the exposure range is normal, the system prefers the configured shutter range when auto adjusting according to the ambient lighting condition. If the image brightness is not enough and the shutter value has reached upper or lower limit, the system adjusts gain value automatically to ensure the image at ideal brightness. - Iris priority: The iris value is set to a fixed value, and the device adjusts shutter value then. If the image brightness is not enough and the shutter value has reached upper or lower limit, the system adjusts gain value automatically to ensure the image at ideal brightness. - Manual: Configure gain and shutter value manually to adjust image brightness.  When the Anti-flicker is set to Outdoor, you can select Gain priority or Shutter priority in the Mode list.
Exposure Comp	Sets the value, and it ranges from 0 to 50. The higher the value is, the brighter the image will be.
Shutter	Set the effective exposure time. The smaller the value, the shorter the exposure time will be.
Shutter range	When selecting Shutter Priority or Manual in Mode , and setting Customized Range in Shutter , you can set shutter range, and the unit is ms.
Gain	When selecting Gain Priority or Manual in Mode , you can set shutter range. With minimum illumination, the camera increases Gain automatically to get clearer images.
Iris	When selecting Aperture Priority in Mode , you can set iris range.

Parameter	Description
Auto Iris	This configuration is available only when the camera is equipped with auto-iris lens. - When auto iris is enabled, the iris size changes automatically according to the ambient lighting condition, and the image brightness changes accordingly. - When auto iris is disabled, the iris stays at full size and does not change no matter how ambient lighting condition changes.
2D NR	Average single-frame dots and other dots around to reduce noise.
3D NR	Works with multi-frame (no less than 2 frames) images and reduces noise by using the frame information between previous and latter frames.
Grade	This configuration is available only when the 3D DNR is enabled. The higher the DNR level is, the better the result will be.

Step 3 Click **Save**.

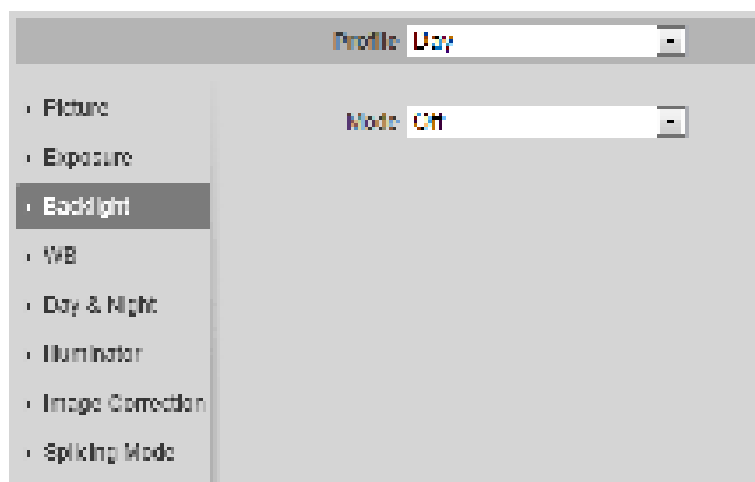
4.5.1.1.4 Backlight

You can select backlight mode from Auto, BLC, WDR, and HLC.

Procedure

Step 1 Select **Setting** > **Camera** > **Conditions** > **Conditions** > **Backlight**.

Figure 4-36 Backlight



Step 2 Configure backlight parameters.

Table 4-10 Description of backlight parameters

Backlight Mode	Description
Auto	The system adjusts image brightness according to ambient lighting condition automatically to ensure image clarity.

Backlight Mode	Description
BLC	Enable BLC, the camera can get clearer image of the dark areas on the target when shooting against light. You can select Default mode or Customized mode. - When in Default mode, the system adjusts exposure according to ambient lighting condition automatically to ensure the clarity of the darkest area. - When in Customized mode, the system auto adjusts exposure only to the set area according to ambient lighting condition to ensure the image of the set area at ideal brightness.
WDR	The system dims bright areas and compensates dark areas to ensure the clarity of all the area. The higher the value is, the brighter the dark will be, but the more the noise will be. L J There might be a few seconds of video loss when the device is switching to WDR mode from other mode.
HLC	Enable HLC when extreme strong light is in the environment (such as toll station or parking lot), the camera will dim strong light, and reduce the size of Halo zone to lower the brightness of the whole image, so that the camera can capture human face or car plate detail clearly. The higher the value is, the more obvious the HLC effect will be.

Step 3 Click **Save**.

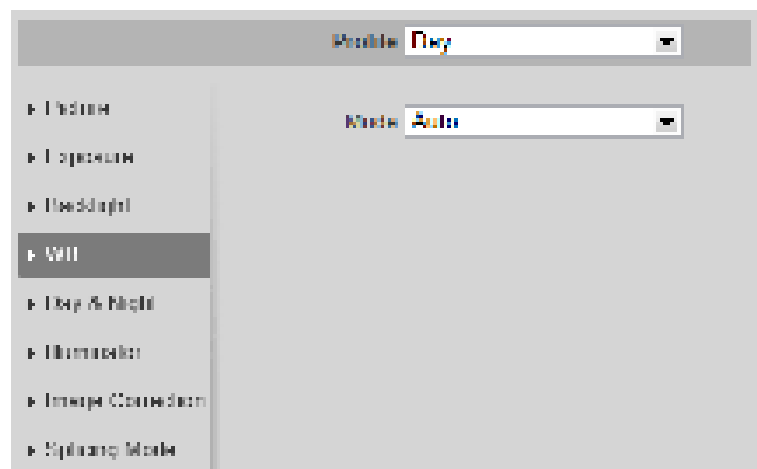
4.5.1.1.5 WB

WB function makes the image color display precisely as it is. When in WB mode, white objects would always display white color in different environments.

Procedure

Step 1 Select **Setting** > **Camera** > **Conditions** > **Conditions** > **WB**.

Figure 4-37 WB



Step 2 Configure WB parameters.

Table 4-11 Description of WB parameters

WB mode	Description
Auto	The system compensates WB according to color temperature to ensure color precision.
Natural	The system auto compensates WB to environments without artificial light to ensure color precision.
Street Lamp	The system compensates WB to outdoor night scene to ensure color precision.
Outdoor	The system auto compensates WB to most outdoor environments with natural or artificial light to ensure color precision.
Manual	Configure red and blue gain manually; the system auto compensates WB according to color temperature.
Regional Custom	The system compensates WB only to the set area according to color temperature to ensure color precision.

Step 3 Click **Save**.

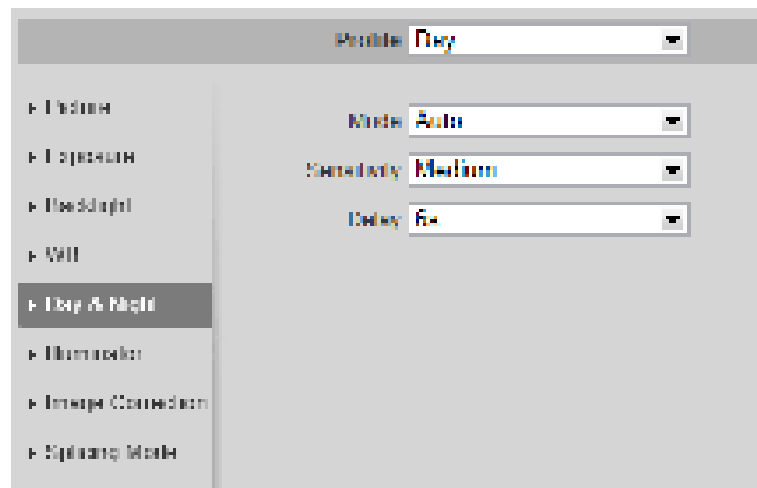
4.5.1.1.6 Day & Night

Configure the display mode of the image. The system switches between color and black-and-white mode according to the actual condition.

Procedure

Step 1 Select **Setting** > **Camera** > **Conditions** > **Conditions** > **Day & Night**.

Figure 4-38 Day and night



Step 2 Configure day and night parameters.

Table 4-12 Description of day and night parameters

Parameter	Description
Mode	You can select device display mode from Color , Auto, and B/W. Day & Night configuration is independent from profile management configuration. • Color : The system displays color image. • Auto : The system switches between color and black-and-white display according to the actual condition. • B/W : The system displays black-and-white image.
Sensitivity	This configuration is available only when you set Auto in Mode. You can configure camera sensitivity when switching between color and black-and-white mode.
Delay	This configuration is available only when you set Auto in Mode. You can configure the delay when camera switching between color and black-and-white mode. The lower the value is, the faster the camera switches between color and black-and-white mode.

Step 3 Click **Save**.

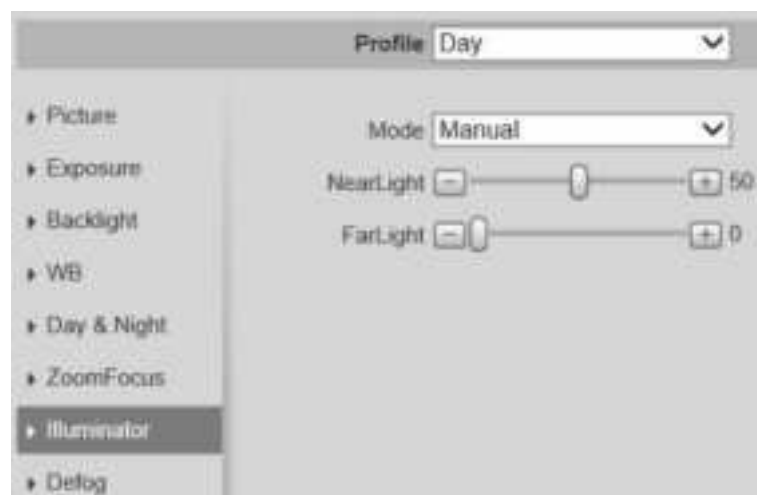
4.5.1.1.7 Zoom and Focus

Initialize lens to adjust zoom and focus. Only PTZ camera supports lens initialization.

Procedure

Step 1 Select **Setting** > **Camera** > **Conditions** > **Conditions** > **ZoomFocus**.

Figure 4-39 Zoom and focus



Step 2 Configure zoom and focus parameters.

Table 4-13 Description of zoom and focus parameters

Parameter	Description
Digital Zoom	Select On to enable digital zoom function. After the optical zoom reached the upper limit, enable digital zoom function, you still can do digital zoom operation.
Zoom Speed	Adjusts zoom speed. The higher the value is, the higher the speed will be.
Mode	Sets focus mode. • Auto : When image moves or object changes in the scene, the camera will focus automatically. • Semi Auto: Click or corresponding to Focus or Zoom, the camera will focus. Calling preset, positioning accurately or rotating PTZ also will trigger focus. • Manual : Click or corresponding to Focus to adjust the focus.
Focus Limit	When the focus length is too short, the camera will focus on the dome cover. Sets the shortest focus distance to avoid focusing on the dome cover. You can also change the focus speed by changing focus length.
Sensitivity	The sensitivity of triggering focus. The higher the value is, the easier the focus will be triggered.

Step 3 Click **Save**.



Click **Lens Initialization**, the lens will adjust the zoom and focus parameters.

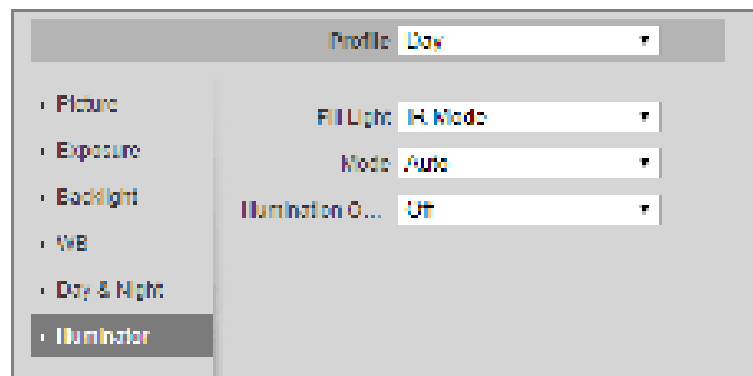
4.5.1.1.8 Illuminator

This configuration is available only when the device is equipped with illuminator.

Procedure

Step 1 Select **Setting** > **Camera** > **Conditions** > **Conditions** > **Illuminator**.

Figure 4-40 Illuminator



Step 2 Select the fill light for the camera.

- **IR Mode** : The system will link IR light in the dark environment.
- **Soft Light Mode** : The system will link IR light and warm light at the same time in the dark environment, and adjust the brightness of the 2 lights to get clear images.

- **Warm Light Mode** : The system will link the warm light in the dark environment.



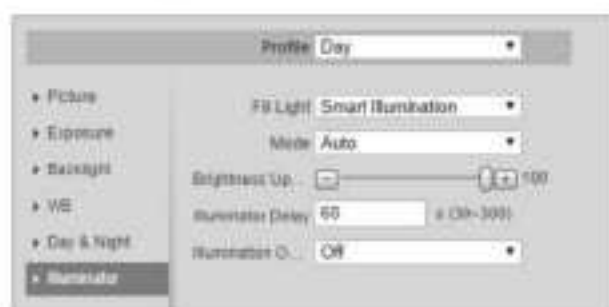
Brightness Upper Limit: Set the brightness upper limit to adjust the image.

- **Smart Illumination** : The system will link IR light in the dark environment. If the human body is detected, the warm light will be triggered.



- ◇ Illuminator Delay: Set the duration that the warm light remains on after the detection object left.
- ◇ Brightness Upper Limit: Set the brightness upper limit to adjust the image.

Figure 4-41 Smart illumination



- **Schedule** : Set different fill light modes at different times.

1. Click **Setting** next to **Period**.
2. Select the fill light mode, and then configure the time.
3. Click **Save**.

Figure 4-42 Time plan settings



Step 3 Select the mode.

- **Manual** : Adjust the brightness of illuminator manually, and then the system will supply illuminator to the image accordingly.
- **Auto /Smart IR**: The system adjusts the illuminator intensity according to the ambient lighting condition.
- **ZoomPrio** : The system adjusts the illuminator intensity automatically according to the change of the ambient light.

- ◇ When the ambient light turns darker, the system turns on the low beam lights first, if the brightness is still not enough, it turns on the high beam lights then.
- ◇ When the ambient light turns brighter, the system dims high beam lights until they are off, and then the low beam lights.
- ◇ When the focus reaches certain wide angle, the system will not turn on high beam light in order to avoid over-exposure in short distance. In the meantime, you can configure light compensation manually to fine-tune IR light intensity.
- **Off**: Illuminator is off.

Step 4 (Optional) Configure **Illumination Overexposure Remover**.



Only some fill light modes support this function.

Step 5 Click **Save**.

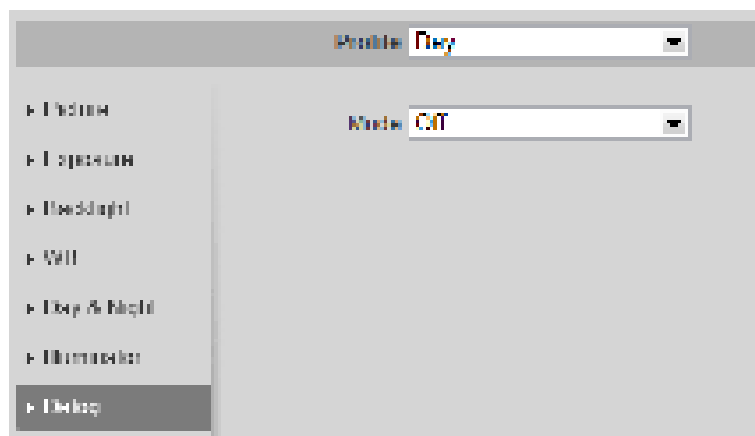
4.5.1.1.9 Defog

The image quality is compromised in foggy or hazy environment, and defog can be used to improve image clarity.

Procedure

Step 1 Select **Setting** > **Camera** > **Conditions** > **Conditions** > **Defog**.

Figure 4-43 Defog



Step 2 Configure defog parameters.

Table 4-14 Description of defog parameters

Defog	Description
Manual	Configure function intensity and atmospheric light mode manually, and then the system adjusts image clarity accordingly. Atmospheric light mode can be adjusted automatically or manually.
Auto	The system adjusts image clarity according to the actual condition.
Off	Defog function is disabled.

Step 3 Click **Save**.

4.5.1.1.10 Fisheye

Select install mode and record mode according to the actual installation scene. When the camera accesses the platform with corrective stream, the platform displays the corrective image.

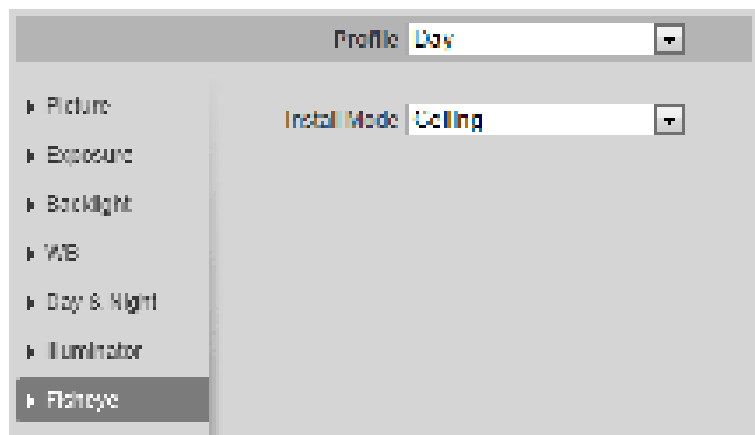


This function is only available on fisheye device.

Procedure

Step 1 Select **Setting** > **Camera** > **Conditions** > **Conditions** > **Fisheye**.

Figure 4-44 Fisheye



Step 2 Set install mode and record mode.

Table 4-15 Description of fisheye parameters

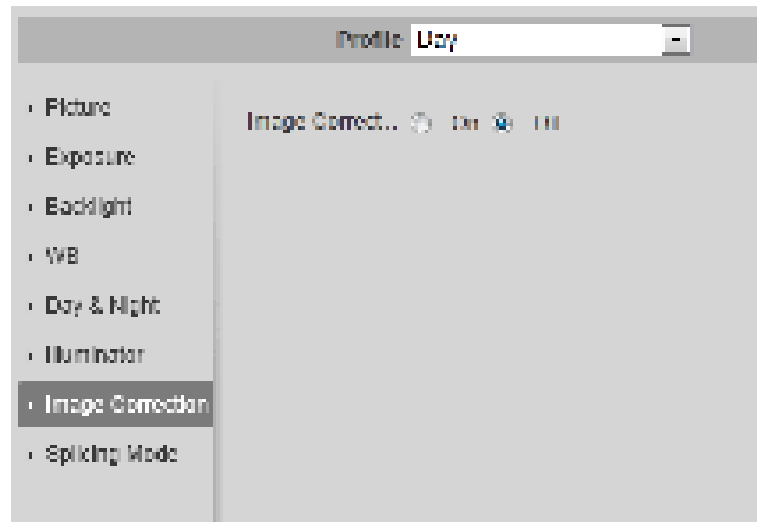
Parameter	Description
Install Mode	You can select Ceiling , Wall , or Ground .
Record Mode	1O: The original image before correction. 1P: 360°rectangular panoramic image. 2P: When the install mode is Ceiling or Ground, you can set this mode. Two associated 180° rectangular image screens, and at any time, the two screens form a 360° panoramic image. 1R: Original image screen + independent sub-screen. You can zoom or drag the image in all the screens. 2R: Original image screen + two independent sub-screens. You can zoom or drag the image in all the screens. 4R: Original image screen + four independent sub-screens. You can zoom or drag the image in all the screens. 1O + 3R: Original image screen + three independent sub-screens. You can zoom or drag the image in original image screen, and move the image (upper and lower) in sub-screens to adjust the vertical view.

Step 3 Click **Save**.

4.5.1.1.11 Image Correction

Enable the image correction function to correct some bent objects (such as roads) in the image of panoramic splicing cameras, but it will influence the field of view.

Figure 4-45 Image correction



⌋

- If the camera has multiple sensors, the image correction function will only be displayed when the number of splicing sensors is 4 or less.
- When the device enables image correction, intelligent event and sub stream 2 are closed automatically.

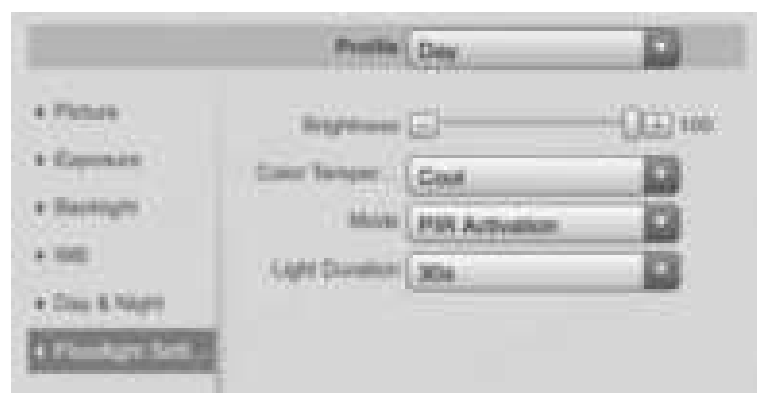
4.5.1.1.12 Floodlight Settings

Adjust the floodlight settings, such as detection mode, light duration and more.

Procedure

Step 1 Select **Settings** > **Camera** > **Conditions** > **Conditions** > **Floodlight Settings**.

Figure 4-46 Floodlight settings



Step 2 Configure the parameters.

Table 4-16 Description of floodlight settings parameters

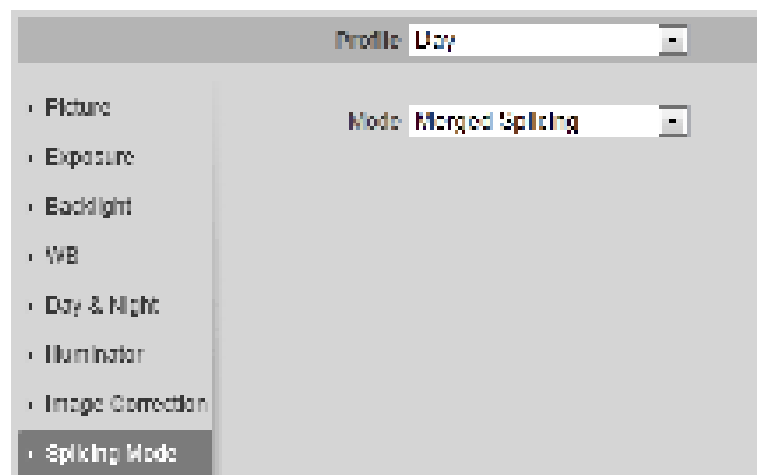
Parameter	Description
Brightness	Change the value to adjust the floodlight brightness. The higher the value is, the brighter the floodlight will be.
Color Temperature	You can adjust cool or warm color temperature here.
Mode	Floodlight detection modes. • Motion Activation: The light turns on when motion is activated. You can select light duration from 30 s, 60 s, 3 min, 5 min and 15 min. And it is 30 s by default. • Manual: The light is off by default. You need to turn it on by clicking  in the live page. And the light will remain on unless you click  again. • Schedule: The light turns on as scheduled. Click Settings next to Period to set the light schedule. • PIR Activation: The light turns on only when PIR is detected at night. You can select light duration from 30 s, 60 s, 3 min, 5 min and 15 min. And it is 30 s by default.

Step 3 Click **Save**.

4.5.1.1.13 Splicing Mode

Select the splicing mode to splice several images of different lens to a panoramic image. You can select **Merged Splicing** or **Splicing** for **Mode**.

Figure 4-47 Splicing mode



4.5.1.2 Profile Management

The surveillance system works in different ways as profile configured in different time.

Procedure

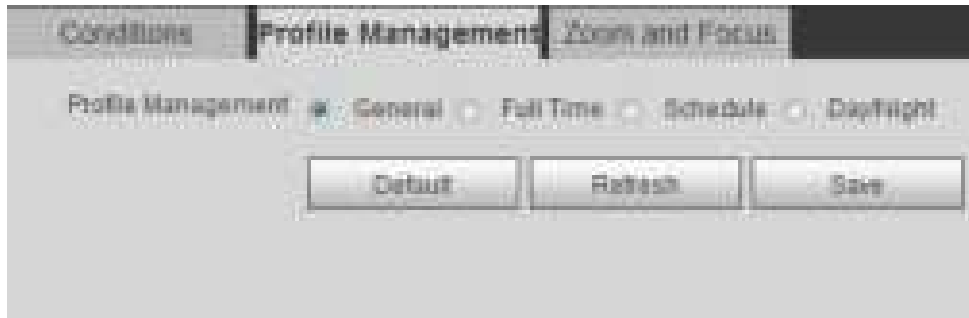
Step 1 Select **Setting** > **Camera** > **Conditions** > **Profile Management**.

The **Profile Management** page is displayed.

Step 2 Manage profile.

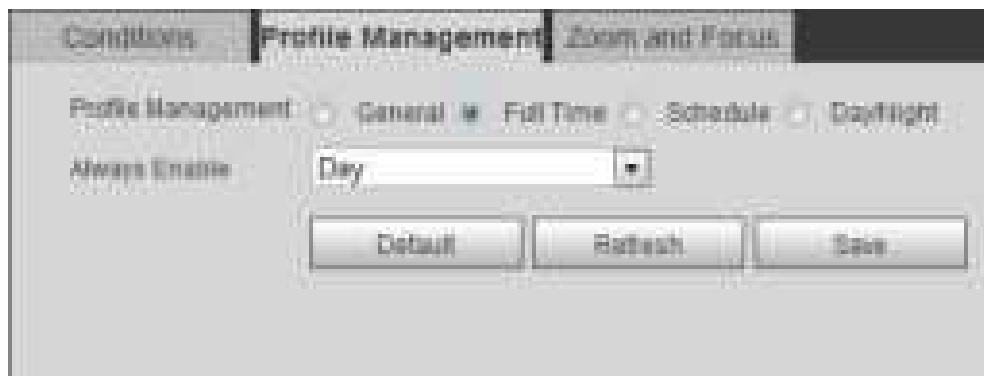
- When **Profile Management** is set as **General**, the surveillance system works under **General** configuration.

Figure 4-48 General



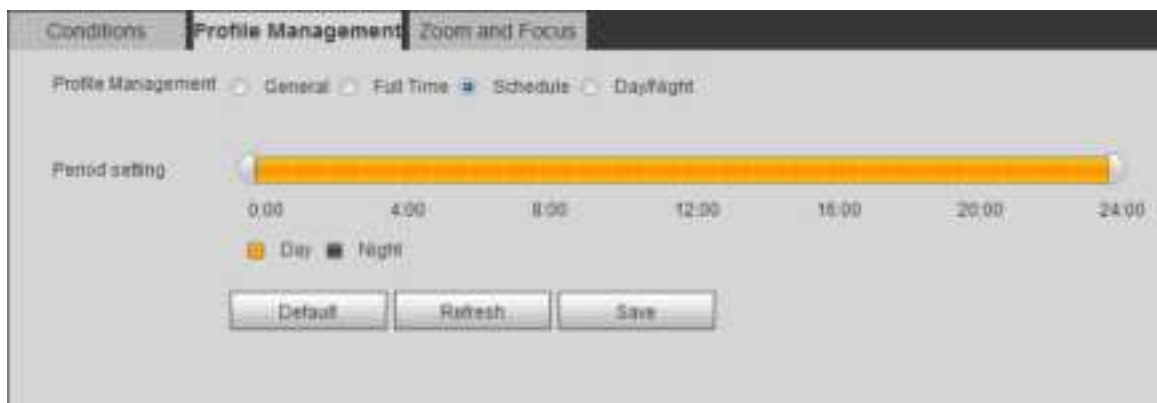
- When **Profile Management** is set as **Full Time**, you can select **Day** or **Night** in the **Always Enable** list, the surveillance system works under **Always Enable** configuration.

Figure 4-49 Full time



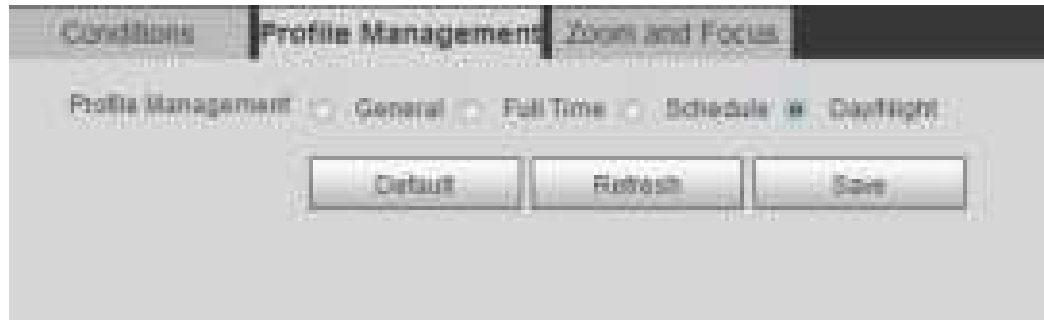
- When **Profile Management** is set as **Schedule**, you can drag the slide block to set certain time as **Day** or **Night**. For example, set 8:00–18:00 as day, and 0:00–8:00 and 18:00–24:00 as night.

Figure 4-50 Schedule



- When **Profile Management** is set as **Day & Night**, the surveillance system works under **Day & Night** configuration.

Figure 4-51 Day/Night



Step 3 Click **Save**.

4.5.1.3 Zoom and Focus

You can adjust image clarity through auto or manual focus; and adjust the image size through zoom. For details, see "4.2.4.2 Zoom and Focus".

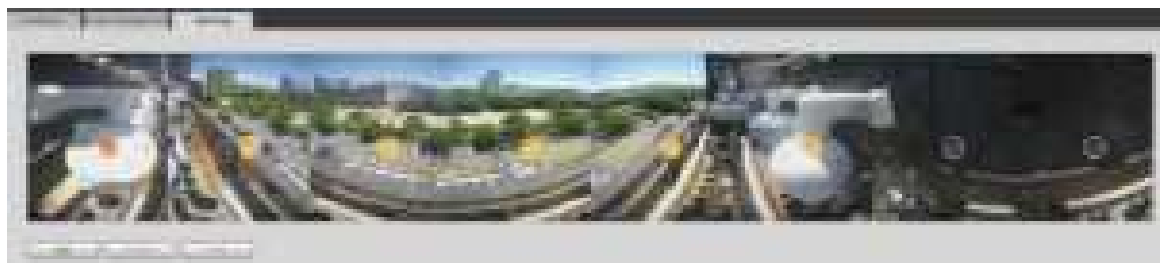
4.5.1.4 Splicing

When the panorama contains multiple images captured by different lenses, enable this function. Before splicing, make sure that the surveillance scene is large and there are no objects blocking the camera from taking a clear picture, otherwise, the splicing might fail.

Procedure

Step 1 Select **Setting** > **Camera** > **Conditions** > **Splicing**.

Figure 4-52 Splicing



Step 2 Select the lenses that need to be spliced.

When splicing the image through selecting lenses, you need to select the continuous splicing screens. The screen with the icon  (deeper color) is the first screen of the splicing. You can select any screen as the first one, and then select the following screens continuously. The system supports the splicing of 2 lenses to 8 lenses.



- This function is available on select models. And it is all sensors splicing by default.
- For Multi-Sensor Panoramic + PTZ Camera, the 4-sensor device supports 2 to 4 lenses splicing; the 6-sensor device supports 2 to 6 lenses splicing; the 8-sensor device supports 2-8 lenses splicing.

Step 3 Click **Start**.

The system starts to splice the image.

- Some cameras restart automatically after splicing is complete, You can view the results of the splicing in the **Live** window.
- Some cameras display splicing live window after splicing is complete. Click **OK**, and then the default window appears. Click **OK** and the splicing will take effect.

4.5.2 Setting Video Parameters

This section introduces video parameters, such as video, snapshot, overlay, ROI (region of interest), and path.



Click **Default**, and the device is restored to default configuration. Click **Refresh** to view the latest configuration.

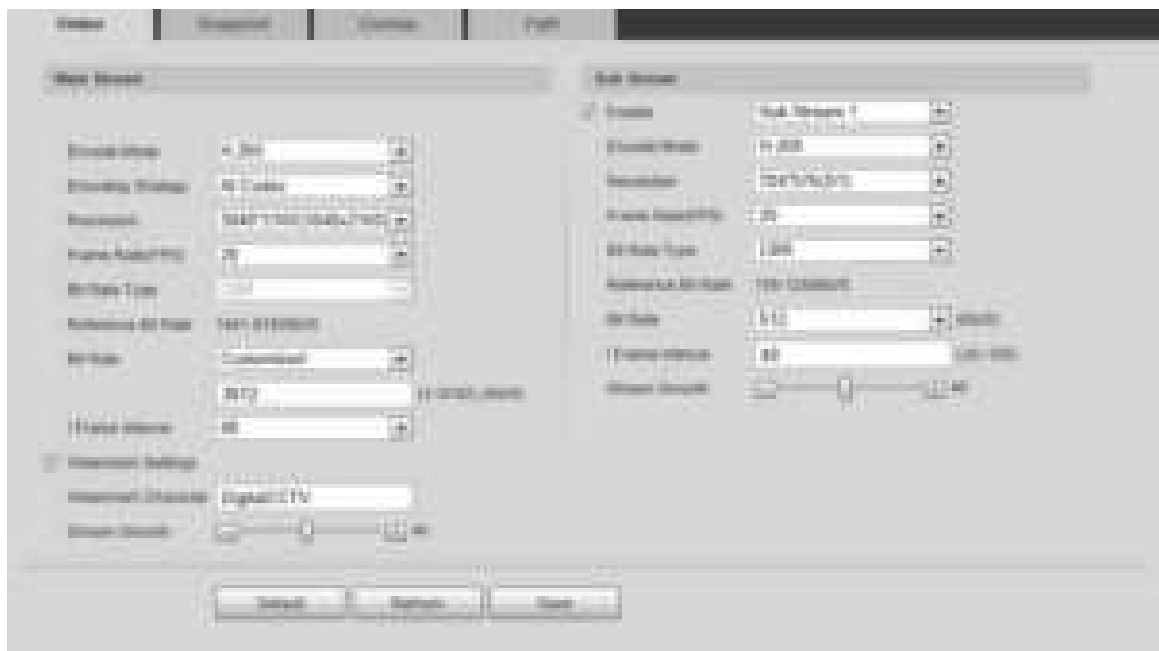
4.5.2.1 Video

Configure video stream parameters, such as stream type, encode mode, resolution, frame rate, bit rate type, bit rate, I frame interval, SVC, and watermark.

Procedure

Step 1 Select **Setting** > **Camera** > **Video** > **Video**.

Figure 4-53 Video



Step 2 Configure video parameters.

Table 4-17 Description of video parameters

Parameter	Description
Enable	Select the Enable check box to enable sub stream. It is enabled by default.  - You can enable multiple sub streams simultaneously. - When the device enables image correction, intelligent event and sub stream 2 are closed automatically.
Encode Mode	Select encode mode. H.264 : Main profile encode mode. Compared with H.264B, it requires smaller bandwidth. H.264H : High profile encode mode. Compared with H.264, it requires smaller bandwidth. H.264B : Baseline profile encode mode. It requires smaller bandwidth. H.265 : Main profile encode mode. Compared with H.264, it requires smaller bandwidth. MJPEG : When under this mode, the image requires high bit rate value to ensure clarity, you are recommended to set the Bit Rate value to the biggest value in the Reference Bit Rate.
Encoding Strategy	Select the encoding strategy as needed. - General: Disable smart codec. - Smart Codec: Enable smart codec to improve video compressibility and save storage space. It is applicable to static scenes. - AI Code: When the bandwidth and storage space are restricted, the camera will select the encoding strategy with lower bit rate to save storage space. It is applicable to dynamic scenes. After AI codec is enabled, Bit Rate Type is CBR, and it cannot be changed. Comparing with general mode, AI codec has lower bite rate. This function is only available on cameras with AI functions.  After smart codec and AI codec are enabled, the camera would stop supporting the third stream, ROI, and smart event detection. Pages might vary on different models.
Resolution	The resolution of the video. The higher the value is, the clearer the image will be, but the bigger the bandwidth will be required.

Parameter	Description
Video Clip	This function is available only for sub stream 2 of some select models. ● Main stream 1. Select the resolution as needed, and click  next to Resolution. 2. Clip the image on the Area page, and then click Save. View the clipped video on Live page. ● Sub stream 2 1. Select Video Clip, and click . 2. View the clipped video on Live page (only the live page of sub stream 2 displays the clipped area).
Frame Rate (FPS)	The number of frames in one second of video. The higher the value is, the clearer and smoother the video will be.
Bit Rate Type	The bit rate control type during video data transmission. You can select bit rate type from: ● CBR (Constant Bit Rate): The bit rate changes a little and keeps close to the defined bit rate value. ● VBR (Variable Bit Rate): The bit rate changes as monitoring scene changes.  The Bit Rate Type can be only be set as CBR when Encode Mode is set as MJPEG.
Quality	This parameter can be configured only when the Bit Rate Type is set as VBR. The better the quality is, the larger the bandwidth will be requested.
Reference Bit Rate	The most suitable bit rate value range recommended to user according to the defined resolution and frame rate.
Max Bit Rate	This parameter can be configured only when the Bit Rate Type is set as VBR. You can select the value of the Max Bit Rate according to the Reference Bit Rate value. The bit rate then changes as monitoring scene changes, but the max bit rate keeps close to the defined value.
Bit Rate	This parameter can be configured only when the Bit Rate Type is set as CBR. Select bit rate value in the list according to actual condition. You can also customize the value.

Parameter	Description
I Frame Interval	This parameter can be configured only when Encoding Strategy is set as General or AI Codec. The number of P frames between two I frames. The smaller the value, the higher the image quality, and the range changes as Frame Rate(FPS) changes. It is recommended to set I Frame Interval twice as big as Frame Rate(FPS). When selecting AI Codec in Encoding Strategy, you can only select the value same as or twice as big as Frame Rate(FPS).
SVC	Scaled video coding, able to encode a high quality video bit stream that contains one or more subset bit streams. When sending stream, to improve fluency, the system will quit some data of related lays according to the network status. 1: The default value, which means that there is no layered coding. 2, 3 and 4: The lay number that the video stream is packed.
Watermark Settings	You can verify the watermark to check if the video has been tampered. 1. Select the check box to enable watermark function. 2. The default character is DigitalCCTV.
Watermark Character	
Stream Smooth	Click , or drag to set the value of Stream Smooth. The higher the value is, the less smooth the stream, but the higher the image definition; the lower the value is, the smoother the stream, but the lower the image definition. The value of Stream Smooth is 100 by default.

Step 3 Click **Save**.

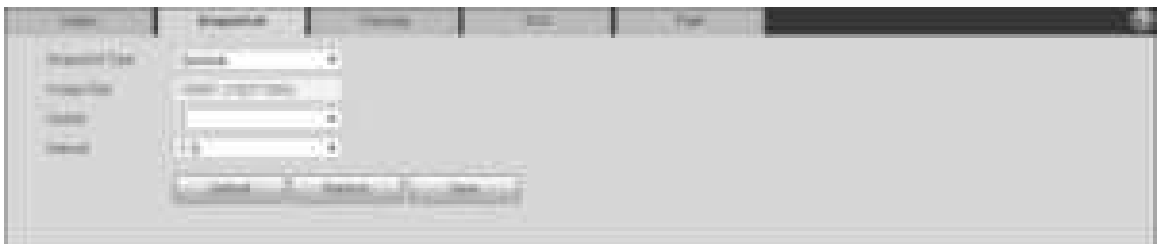
4.5.2.2 Snapshot

You can configure snapshot parameters, including snapshot type, image size, quality and interval.

Procedure

Step 1 Select **Setting** > **Camera** > **Video** > **Snapshot**.

Figure 4-54 Snapshot



Step 2 Configure snapshot parameters.

Table 4-18 Description of snapshot parameter

Parameter	Description
Snapshot Type	You can select General and Event. • General : The system takes snapshot as scheduled. For details, see "4.7.2 Setting Schedule". • Event : The system takes snapshot when the video detection, audio detection, event, or alarm is triggered. This function requires the corresponding snapshot being enabled.
Image Size	The same resolution with main stream.
Quality	Configures the snapshot quality. There are six levels of Image quality, and the sixth is the best.
Interval	Configures the snapshot frequency. Select Customized, and then you can configure snapshot frequency manually.

Step 3 Click **Save**.

4.5.2.3 Overlay

Configure overlay information, and it will be displayed on the **Live** page.

4.5.2.3.1 Configuring Privacy Masking

You can enable this function when you need to protect privacy of some area on the video image.



Functions might vary with different models.

Privacy Masking (1)

Procedure

1. Select **Setting** > **Camera** > **Video** > **Overlay** > **Privacy Masking**.

Figure 4-55 Privacy masking (1)



2. Configure privacy masking.

- PTZ dome
 - a. Select the SN.
 - b. Adjust the live image to the proper location through PTZ, select the color, and then click **Draw**. Press the mouse button to draw rectangles. The configuration takes effect immediately.
 - c. Other operations:
 - ◊ Select the SN, and click **Go to**, the speed dome rotates to the masked area.
 - ◊ Select the SN, and click **Delete** to delete the masking rectangles.
 - ◊ Click **Clear**, and the click **OK** to clear all masking rectangles.
- Other cameras
 - a. Select **Enable**, and then drag the block to the area that you need to cover.


 - ◊ You can drag 4 rectangles at most.
 - ◊ Click **Remove All** to delete all the area boxes; select one box, and then click **Delete** or right-click to delete it.
 - b. Adjust the size of the rectangle to protect the privacy.
 - c. Click **Save**.

Privacy Masking (2)

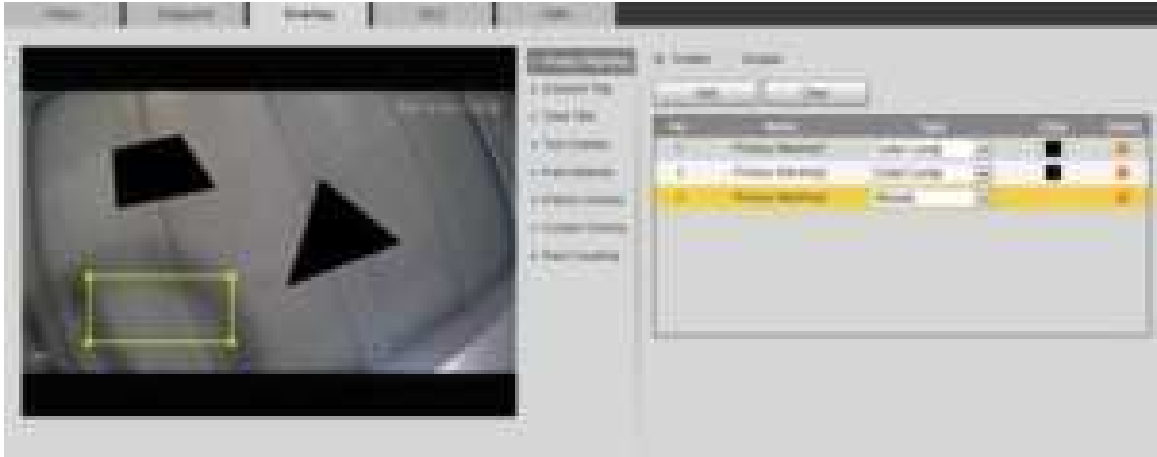
You can select the type of the masking from **Color Lump** and **Mosaic**

- When selecting **Color Lump** only, you can draw triangles and convex quadrilaterals as blocks. You can drag 8 blocks at most, and the color is black.
- When selecting **Mosaic**, you can draw rectangles as blocks with mosaic. You can draw 4 blocks at most.
- **Color Lump + Mosaic** (≤ 4): You can draw 8 blocks at most.

Procedure

1. Select **Setting** > **Camera** > **Video** > **Overlay** > **Privacy Masking**.
2. Select **Enable**.
3. Click **Add**, select the masking type, and then draw blocks in image as needed.

Figure 4-57 Privacy masking (2)



Related Operations

- View and edit the block
Select the privacy masking rule to be edited in the list, then the rule is highlighted, and the block frame is displayed in the image. You can edit the selected block as needed, including moving the position, and adjusting the size.
- Edit the block name
Double-click the name in **Name** to edit the block name.
- Delete the block
 - ◇ Click  to delete blocks one by one.
 - ◇ Click **Clear** to delete all blocks.

4.5.2.3.2 Configuring Channel Title

You can enable this function when you need to display channel title in the video image.

Procedure

- Step 1 Select **Setting** > **Camera** > **Video** > **Overlay** > **Channel Title**.

Figure 4-58 Channel title



Step 2 Select the **Enable** check box, enter the channel title, and then select the text align.



Click  to expand the channel title, and you can expand 1 line at most.

Step 3 Move the title box to the position that you want in the image.

Step 4 Click **Save**.

4.5.2.3.3 Configuring Time Title

You can enable this function when you need to display time in the video image.

Procedure

Step 1 Select **Setting > Camera > Video > Overlay > Time Title**.

Figure 4-59 Time title



Step 2 Select the **Enable** check box.

Step 3 Select the **Week Display** check box.

Step 4 Move the time box to the position that you want in the image.

Step 5 Click **Save**.

4.5.2.3.4 Configuring Text Overlay

You can enable this function if you need to display text in the video image.



Text overlay and picture overlay cannot work at the same time, and the IPC that connects to mobile NVR with private protocol would display GPS information as priority.

Procedure

Step 1 Select **Setting** > **Camera** > **Video** > **Overlay** > **Text Overlay**.

Figure 4-60 Text overlay



Step 2 Select the **Enable** check box, enter the text you need, and then select alignment. The text is displayed in the video image.



Click  to expand the text overlay, and you can expand 9 lines at most.

Step 3 Move the text box to the position that you want in the image.

Step 4 Click **Save**.

4.5.2.3.5 Configuring Font Attribute

You can enable this function if you need to adjust the font size in the video image.

Procedure

Step 1 Select **Setting > Camera > Video > Overlay > Font Attribute**.

Figure 4-61 Font attribute



Step 2 Select the font color and size.

Click **More Color** to customize the font color.

Step 3 Click **Save**.

4.5.2.3.6 Configuring Picture Overlay

You can enable this function if you need to display picture information on the video image.



Text overlay and picture overlay cannot work at the same time.

Procedure

Step 1 Select **Setting > Camera > Video > Overlay > Picture Overlay**.

Figure 4-62 Picture overlay



Step 2 Select the **Enable** check box, click **Upload Picture**, and then select the picture to be overlaid.

The picture is displayed on the video image.

Step 3 Move the overlaid picture to the position that you want in the image.

Step 4 Click **Save**.

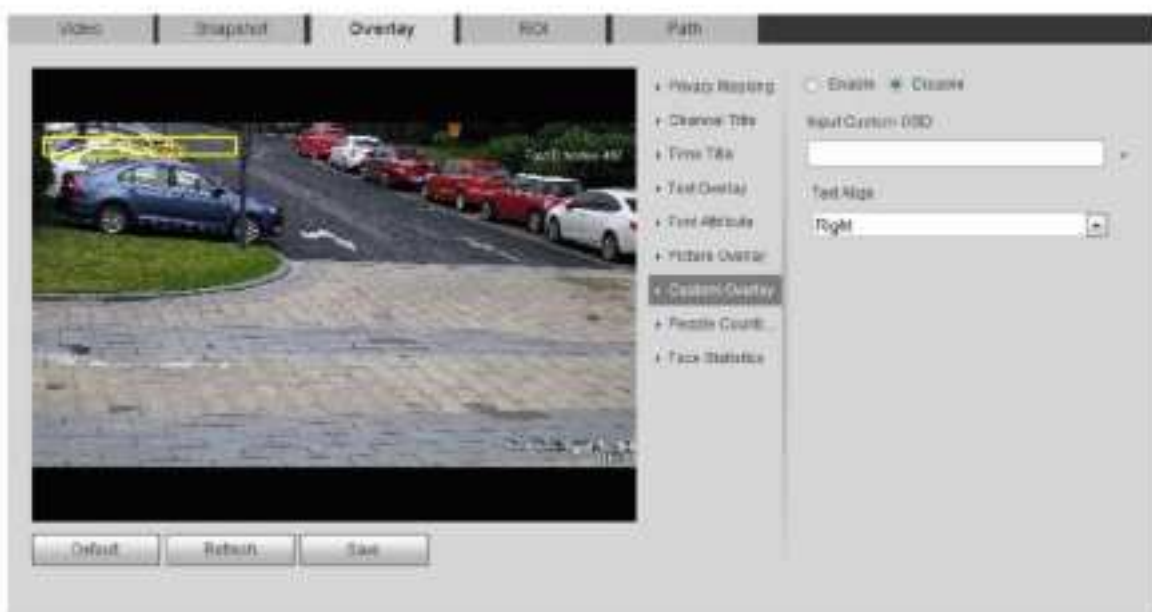
4.5.2.3.7 Configuring Custom Overlay

You can enable this function if you need to display custom information on the video image.

Procedure

Step 1 Select **Setting > Camera > Video > Overlay > Custom Overlay**.

Figure 4-63 Custom overlay



Step 2 Select the **Enable** check box, and then select the text align.



Click **+** to expand the custom overlay, and you can expand 1 line at most.

Step 3 Move the custom box to the position that you want in the image.

Step 4 Click **Save**.

4.5.2.3.8 Configuring OSD Info

You can enable this function if you want to display the information of preset, PTZ coordinates, zoom, tour and location on the video image.



Only tracking speed dome supports OSD info function.

Procedure

Step 1 Select **Setting > Camera > Video > Overlay > OSD Info**.

Figure 4-64 OSD information



Step 2 Configure OSD information.

Table 4-19 Description of OSD information

Parameter	Description
Preset	Select Enable , and the preset name is displayed in the image when the camera turns to the preset, and it will disappear 3 s later.
Temperature	Select Enable and the internal temperature of the current device is displayed.
Coordinates	Select Enable and the PTZ coordinates info is displayed in the image.
Zoom	Select Enable and the zoom info is displayed in the image. Such as  , which means 12x zoom rate.
North	Select Enable and the north direction is displayed in the image.
RS485	Select Enable and it will enable RS-485 communication function.
Text	Select Enable and set text, and the text is displayed in the image.
Input Text	
Text Align	Alignment mode of the displayed information in the image.

Step 3 Move the OSD box to the position that you want in the image.

Step 4 Click **Save**.

4.5.2.3.9 Configuring Counting

The image displays statistics of the enter number and leave number. When the overlay function is enabled during intelligent rules configuration, this function is enabled simultaneously.

Procedure

Step 1 Select **Setting** > **Camera** > **Video** > **Overlay** > **Counting**.

Figure 4-65 Counting



Step 2 Select the **Enable** check box, and then configure counting method and alignment.

Step 3 Move the counting box to the position that you want in the image.

Step 4 Click **Save**.

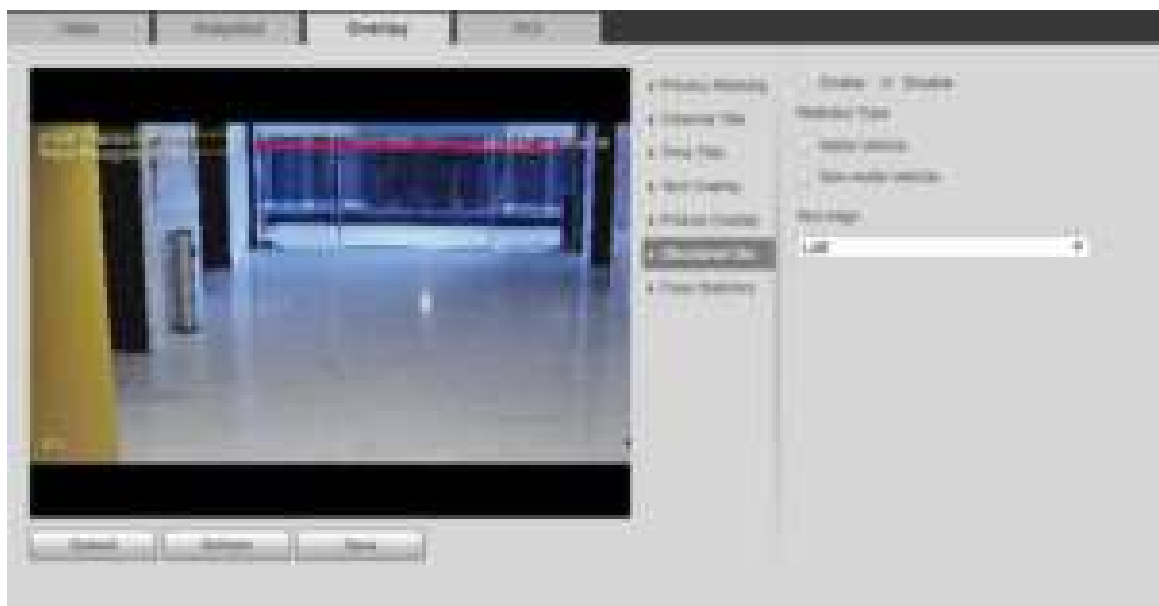
4.5.2.3.10 Configuring Structured Statistics

The image displays structured statistics. When the overlay function enabled during intelligent rules configuration, this function is enabled simultaneously.

Procedure

Step 1 Select **Setting** > **Camera** > **Video** > **Overlay** > **Structured Statistics**.

Figure 4-66 Structured statistics



Step 2 Select the **Enable** check box, select the statistics type, and then select text align.

Step 3 Move the structured statistics box to the position that you want in the image.

Step 4 Click **Save**.

4.5.2.3.11 Configuring GPS Position

The image displays GPS position. When the overlay function enabled during intelligent rules configuration, this function is enabled simultaneously.

Procedure

Step 1 Select **Setting > Camera > Video > Overlay > GDP Position**.

Figure 4-67 GDP position



Step 2 Select the **Enable** check box, and then select the **Mode** to **Auto** or **Manual**.

- Auto: The GPS positions the longitude and latitude automatically.
- Manual: Enter the longitude and latitude manually.

Step 3 Move GPS position box to the position that you want in the image.

Step 4 Click **Save**.

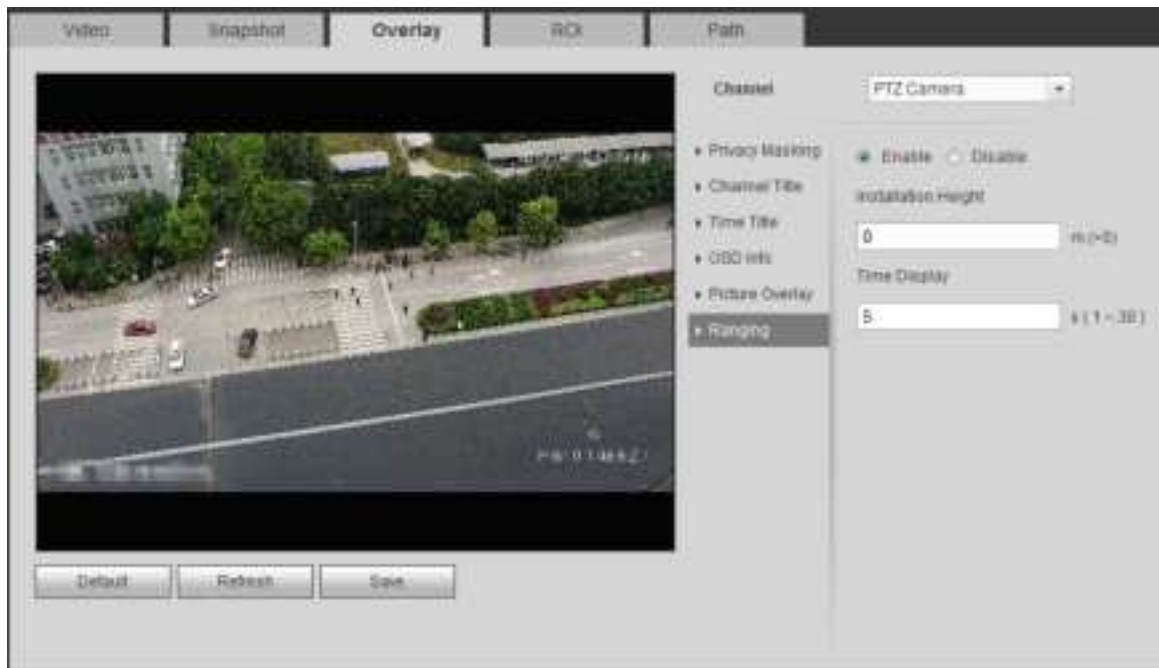
4.5.2.3.12 Configuring Ranging

Configure camera height and the display time of overlay information. Click any point on the ground that the pole is installed on the image, and the overlay information between camera and the selected point is displayed.

Procedure

Step 1 Select **Setting > Camera > Video > Overlay > Ranging**.

Figure 4-68 Ranging



Step 2 Select the **Enable** check box, and then set the installation height and time display.

Time display: The display time of the ranging information on live image.

Step 3 Click **Save**.

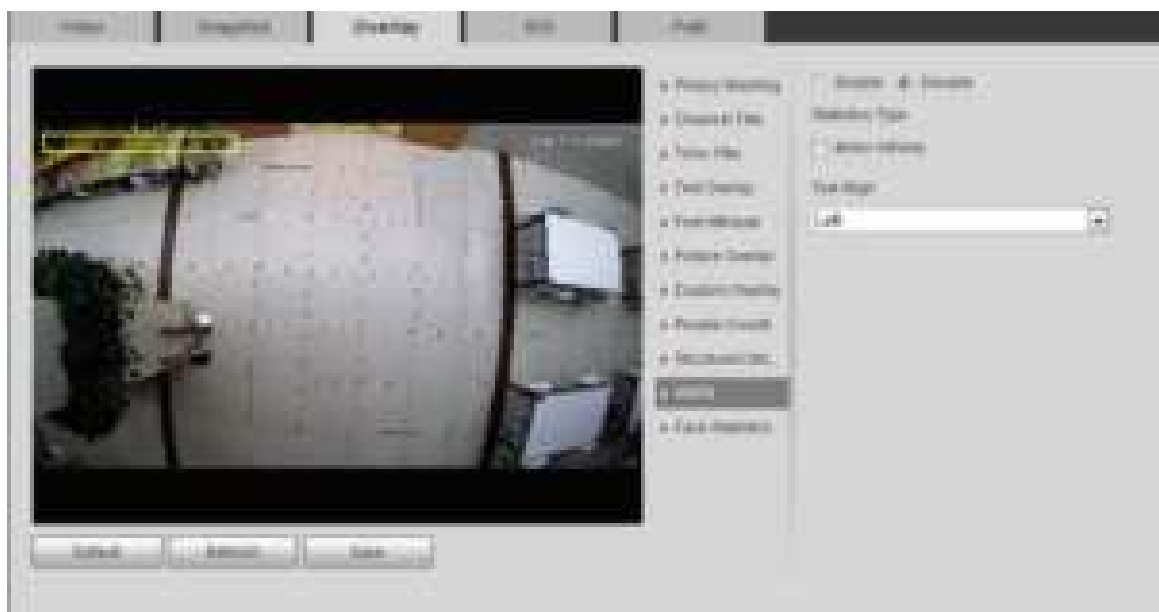
4.5.2.3.13 Configuring ANPR

The image displays ANPR statistics information. When the overlay function enabled during intelligent rules configuration, this function is enabled simultaneously.

Procedure

Step 1 Select **Setting** > **Camera** > **Video** > **Overlay** > **ANPR**.

Figure 4-69 ANPR



- Step 2 Select the **Enable** check box, select the statistics type, and then select text align.
- Step 3 Move the ANPR box to the position that you want in the image.
- Step 4 Click **Save**.

4.5.2.3.14 Configuring Face Statistics

The image displays face statistics information. When the overlay function enabled during intelligent rules configuration, this function is enabled simultaneously.

Procedure

- Step 1 Select **Setting > Camera > Video > Overlay > Face Statistics**.

Figure 4-70 Face statistics



- Step 2 Select the **Enable** check box, and select text align.
- Step 3 Move the structured statistics box to the position that you want in the image.
- Step 4 Click **Save**.

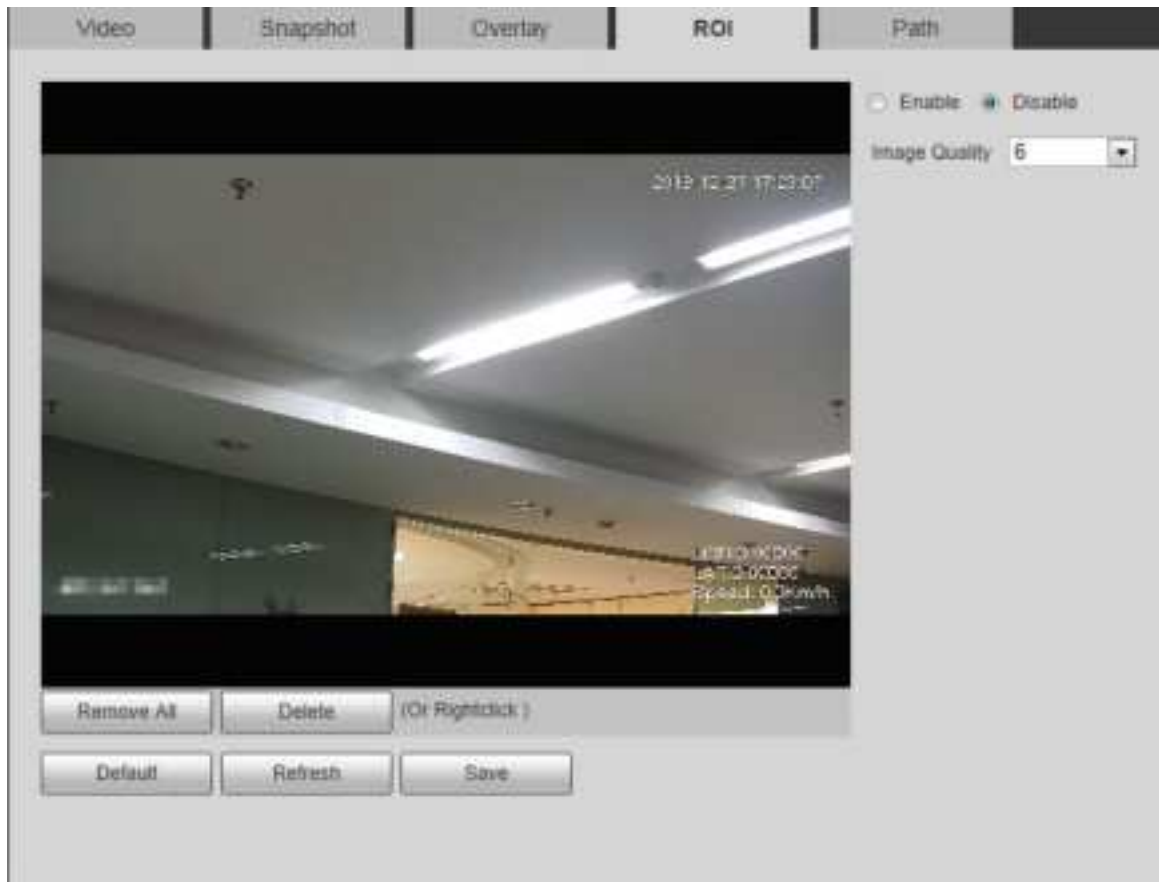
4.5.2.4 ROI

Select ROI (region of interest) on the image and configure the image quality of ROI, and then the selected image is display at defined quality.

Procedure

- Step 1 Select **Setting > Camera > Video > ROI**.

Figure 4-71 ROI



Step 2 Select the **Enable** check box, draw the area on the image, and then configure the image quality of ROI.



- You can draw four area boxes at most.
- The higher the image quality value is, the better the quality will be.
- Click **Remove All** to delete all the area boxes; select one box, and then click **Delete** or right-click to delete it.

Step 3 Click **Save**.

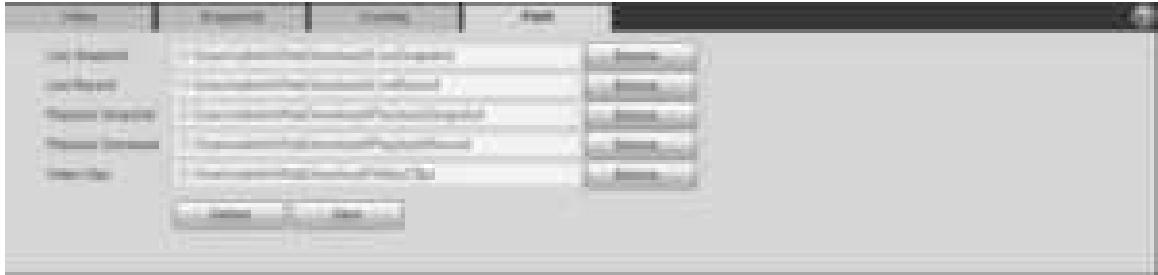
4.5.2.5 Path

You can configure the storage path for live snapshot, live record, playback snapshot, playback download, and video clips.

Procedure

Step 1 Select **Setting > Camera > Video > Path**.

Figure 4-72 Path



Step 2 Click **Browse** to select the storage path for live snapshot, live record, playback snapshot, playback download, and video clips.

Table 4-20 Description of path

Parameter	Description	
Live Snapshot	The snapshot of live page. The default path is C:\Users\admin\WebDownload\LiveSnapshot.	Admin in the path refers to the account being used.
Live Record	The recorded video of live page. The default path is C:\Users\admin\WebDownload\LiveRecord.	
Playback Snapshot	The snapshot of playback page. The default path is C:\Users\admin\WebDownload\PlaybackSnapshot.	
Playback Download	The downloaded video of playback page. The default path is C:\Users\admin\WebDownload\PlaybackRecord.	
Video Clips	The clipped video of playback page. The default path is C:\Users\admin\WebDownload\VideoClips.	

Step 3 Click **Save**.

4.5.3 Audio

You can configure audio parameters and alarm audio.

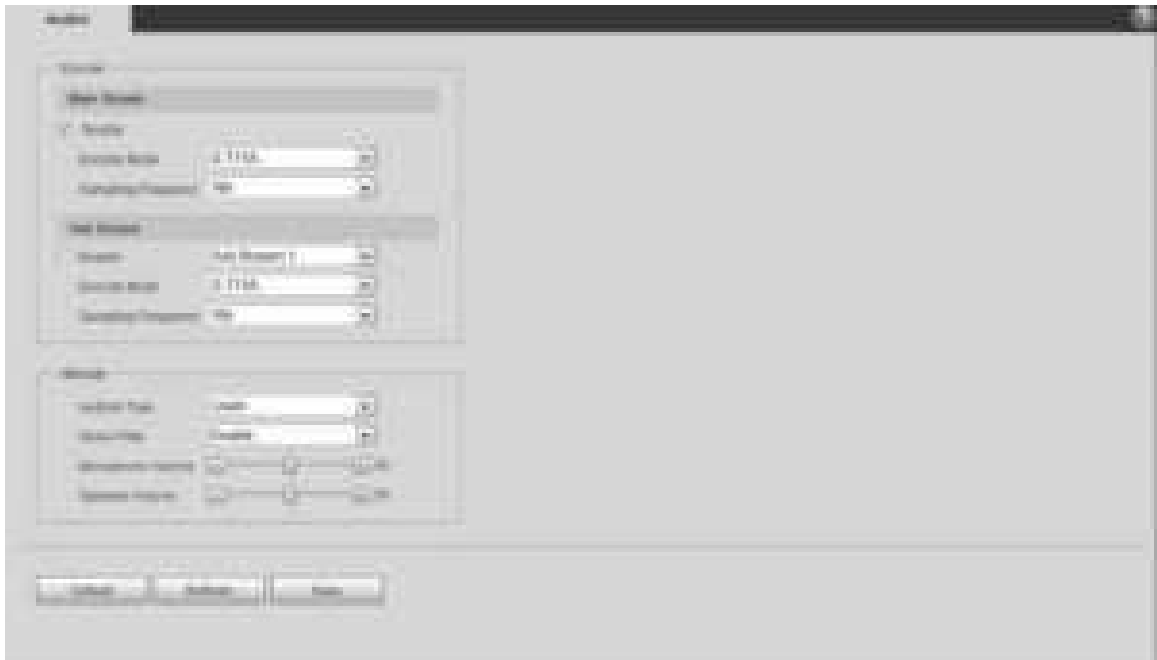
4.5.3.1 Configuring Audio Parameter

This section introduces audio parameters, including encode mode, sampling frequency, audio in type, and noise filter.

Procedure

Step 1 Select **Setting** > **Camera** > **Audio** > **Audio**.

Figure 4-73 Audio



Step 2 Select the **Enable** check box in **Main Stream** or **Sub Stream**.

For the camera with multiple channels, select the channel number.



Please activate or deactivate the audio acquisition function based on the requirements of the scene.

Step 3 Configure audio parameters.

Table 4-21 Description of audio parameters

Parameter	Description
Encode Mode	You can select audio Encode Mode from G.711A , G.711Mu , AAC , G.726 . The configured audio encode mode applies to both audio and intercom. The default value is recommended.
Sampling Frequency	Sampling number per second. The higher the sampling frequency is, the more the sample in a second will be, and the more accurate the restored signal will be. You can select audio Sampling Frequency from 8K , 16K , 32K , 48K , 64K .
Audioin Type	You can select audioin type from: • Linein : Requires external audio device. • Mic : Not require external audio device.
Noise Filter	Enable this function, and the system auto filters ambient noise.
Microphone Volume	Adjusts microphone volume.
Speaker Volume	Adjusts speaker volume.

Step 4 Click **Save**.

4.5.3.2 Configuring Alarm Audio

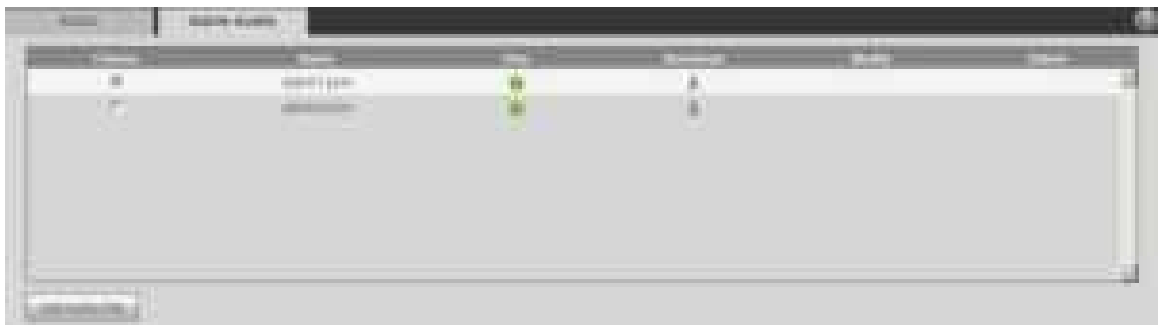
You can record or upload alarm audio file. The audio file will be played when the alarm is triggered.

- Click  to play the selected audio.
- Click  to download the audio to local storage.

Procedure

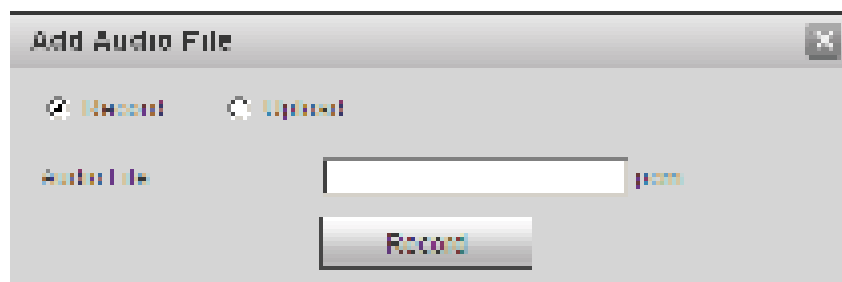
Step 1 Select **Setting** > **Camera** > **Audio** > **Alarm Audio**.

Figure 4-74 Alarm audio



Step 2 Click **Add Audio File**.

Figure 4-75 Add audio file



Step 3 Configure the audio file.

- Select **Record**, enter the audio name in the input box, and then click **Record**.
- Select **Upload**, click  to select the audio file to be uploaded, and then click **Upload**.



The camera supports audio file with .pcm format only, and you can upload audio files with .pcm, .wav in standard .pcm format, .mp3 or .aac formats.

Step 4 Select the file that you need.

4.6 Network

This section introduces network configuration.

4.6.1 TCP/IP

You can configure IP address and DNS (Domain Name System) server and so on according to network planning.

Prerequisites

The camera has connected to the network.

Procedure

Step 1 Select **Setting** > **Network** > **TCP/IP**.

Figure 4-76 TCP/IP



Step 2 Configure TCP/IP parameters.

Table 4-22 Description of TCP/IP parameters

Parameter	Description
Host Name	Enter the host name, and the maximum length is 15 characters.
Ethernet Card	Select the Ethernet card that need to be configured, and the default one is Wire .

Parameter	Description
Mode	The mode that the camera gets IP: • Static Configure IP Address , Subnet Mask, and Default Gateway manually, and then click Save, the login page with the configured IP address is displayed. • DHCP When there is DHCP server in the network, select DHCP, and the camera acquires IP address automatically.
MAC Address	Displays host MAC address.
IP Version	Select IPv4 or IPv6 .
IP Address	When you select Static in Mode, enter the IP address and subnet mask that you need. ⏮ ⏭ • IPv6 does not have subnet mask. • The default gateway must be in the same network segment with the IP address.
Subnet Mask	
Default Gateway	
Preferred DNS	IP address of the preferred DNS.
Alternate DNS	IP address of the alternate DNS.

Parameter	Description
Enable ARP/Ping to set IP address service	Select the check box, get the camera MAC address, and then you can modify and configure the device IP address with ARP/ping command. This is enabled by default. During reboot, you will have no more than 2 minutes to configure the device IP address by a ping packet with certain length, the server will be turned off in 2 minutes, or it will be turned off immediately after the IP address is successfully configured. If this is not enabled, the IP address cannot be configured with ping packet. A demonstration of configuring IP address with ARP/Ping. - Keep the camera that needs to be configured and the PC within the same local network, and then get a usable IP address. - Get the MAC address of the camera from device label. - Open command editor on the PC and enter the following command. Windows example <pre>arp -s <IPAddress> <MAC> -e ping -l 480 -t <IPAddress></pre> Windows example <pre>arp -s 192.168.0.125 11-40-8c-15-10-11- ping -l 480 -t 192.168.0.125</pre> UNIDV Linux/Mac example <pre>arp -s <IPAddress> <MAC> -e ping -s 480 <IPAddress></pre> UNIDV Linux/Mac example <pre>arp -s 192.168.0.125 11-40-8c-15-10-11- ping -s 480 192.168.0.125</pre> - Restart the camera. - Check the PC command line, if information such as Reply from 192.168.0.125... is displayed, the configuration succeeds, and you can turn it off then. - Enter http://(IP address) in the browser address bar to log in.

Step 3 Click **Save**.

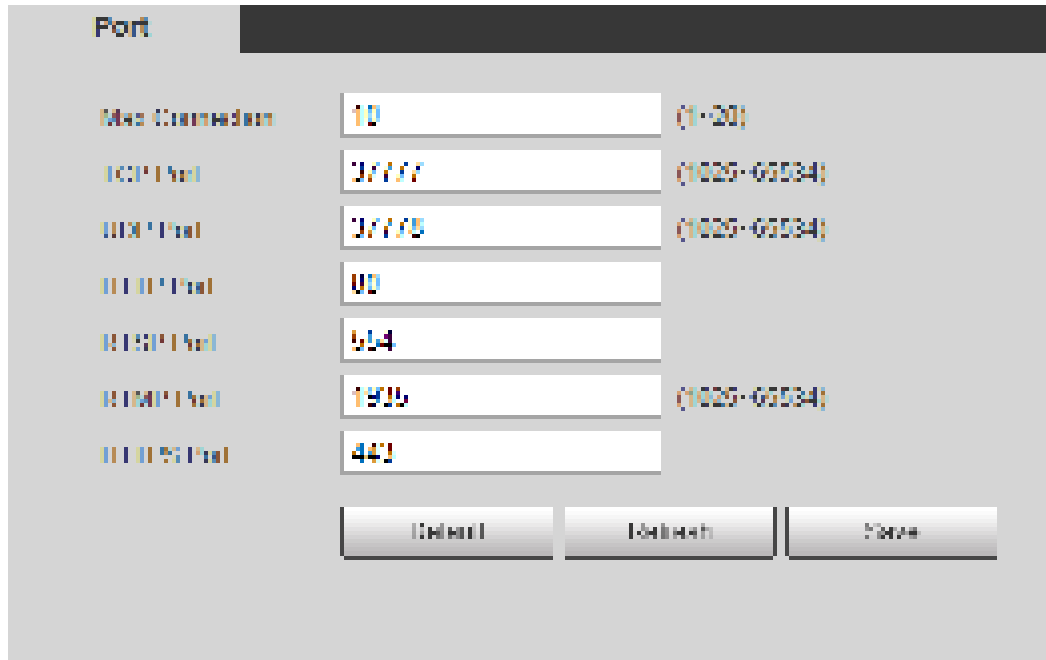
4.6.2 Port

Configure the port numbers and the maximum number of users (includes web, platform client, and mobile phone client) that can connect to the device simultaneously.

Procedure

Step 1 Select **Setting** > **Network** > **Port**.

Figure 4-77 Port



Parameter	Value	Range
Max Connection	10	(1-20)
TCP Port	3777	(1025-65534)
UDP Port	3778	(1025-65534)
HTTP Port	80	
RTSP Port	554	
RTMP Port	1935	(1025-65534)
HTTPS Port	443	

Buttons: Default, Refresh, Save

Step 2 Configure port parameters.



- 0–1024, 1900, 3800, 5000, 5050, 9999, 37776, 37780–37880, 39999, 42323 are occupied for specific uses.
- Do not use the same value of any other port during port configuration.

Table 4-23 Description of port parameters

Parameter	Description
Max Connection	The max number of users (web client, platform client or mobile phone client) that can connect to the device simultaneously. The value is 10 by default.
TCP Port	Transmission control protocol port. The value is 37777 by default.
UDP Port	User datagram protocol port. The value is 37778 by default.
HTTP Port	Hyper text transfer protocol port. The value is 80 by default.

Parameter	Description
RTSP Port	- Real time streaming protocol port, and the value is 554 by default. If you play live view with QuickTime, VLC or Blackberry smart phone, the following URL format is available. - When the URL format requiring RTSP, you need to specify channel number and bit stream type in the URL, and also user name and password if needed. - When playing live view with Blackberry smart phone, you need to turn off the audio, and then set the codec mode to H.264B and resolution to CIF. URL format example: rtsp://username:password@ip:port/cam/realmonitor?channel=1&subtype=0 Among that: - Username: The user's name, such as admin. - Password: The password, such as admin. - IP: The device IP, such as 192.168.1.112. - Port: Leave it if the value is 554 by default. - Channel: The channel number, which starts from 1. For example, if you are using channel 2, then the channel=2. - Subtype: The bit stream type; 0 means main stream (Subtype=0) and 1 means sub stream (Subtype=1). Example: If you require the sub stream of channel 2 from a certain device, then the URL should be: rtsp://admin:admin@ip:port/cam/realmonitor?channel=2&subtype=1 If user name and password are not needed, then the URL can be: rtsp://ip:port/cam/realmonitor?channel=1&subtype=0.
RTMP Port	Real Time Messaging Protocol. The port that RTMP provides service. It is 1935 by default.
HTTPS Port	HTTPS communication port. It is 443 by default.

Step 3 Click **Save**.



The configuration of **Max Connection** takes effect immediately, and others will take effect after reboot.

4.6.3 PPPoE

Point-to-Point Protocol over Ethernet, it is one of the protocols that device uses to connect to the internet. Get the PPPoE username and password from the internet service provider, and then set up network connection through PPPoE, the camera will acquire a WAN dynamic IP address.

Prerequisites

- The camera has connected to the network.
- You have gotten the account and password from Internet Service Provider.

Procedure

Step 1 Select **Setting** > **Network** > **PPPoE**.

Figure 4-78 PPPoE



Step 2 Select the **Enable** check box, and then enter user name and password.



- Disable UPnP while using PPPoE to avoid possible influence.
- After making PPPoE connection, the device IP address cannot be modified through web page.

Step 3 Click **Save**.

The success prompt box is displayed, and then the real-time WAN IP address is displayed. You can visit camera through the IP address.

4.6.4 DDNS

Properly configure DDNS, and then the domain name on the DNS server matches your IP address and the matching relation refreshes in real time. You can always visit the camera with the same domain name no matter how the IP address changes.

Prerequisites

Check the type of DNS server supported by the camera.

Procedure

Step 1 Select **Setting** > **Network** > **DDNS**.



- Third party server might collect your device information after DDNS is enabled.
- Register and log in to the DDNS website, and then you can view the information of all the connected devices in your account.

Figure 4-79 DDNS



Step 2 Select **Type**, and configure the parameters as needed.

Table 4-24 Description of DDNS parameters

Parameter	Description
Type	The name and web address of the DDNS service provider, see the matching relationship below: • CN99 DDNS web address: www.3322.org • NO-IP DDNS web address: dynupdate.no-ip.com • Dyndns DDNS web address: members.dyndns.org
Web Address	
Domain Name	The domain name you registered on the DDNS website.
Test	Only when selecting NO-IP DDNS type, you can click test to check whether the domain name registration is successful.
Username	Enter the username and password that you got from the DDNS server provider. You need to register an account (includes username and password) on the DDNS server provider's website.
Password	
Interval	The update cycle of the connection between the device and the server, and the time is 10 minutes by default.

Step 3 Click **Save**.

Results

Open the browser on PC, enter the domain name at the address bar, and then press Enter, the login page is displayed.

4.6.5 SMTP (Email)

Configure email parameter and enable email linkage. The system sends email to the defined address when the corresponding alarm is triggered.

Procedure

Step 1 Select **Setting** > **Network** > **SMTP (Email)**.

Figure 4-80 SMTP (Email)



The screenshot shows the 'SMTP (Email)' configuration window. It contains the following fields and controls:

- SMTP Server:** Text box with 'none'.
- Port:** Text box with '25'.
- Anonymity:** Check box (unchecked).
- Username:** Text box with 'anonymity'.
- Password:** Text box with masked characters '*****'.
- Sender:** Text box with 'none'.
- Authentication:** Dropdown menu set to 'TLS'.
- Title:** Text box with 'IPC Message'.
- Mail Receiver:** A list box with an empty list and '+' and '-' buttons.
- Health Mail:** Check box (unchecked).
- Update Period:** Text box with '10' and a unit 'Min (10-1440)'.
- Buttons:** 'Test', 'Default', 'Refresh', and 'Save' at the bottom.

Step 2 Configure SMTP (Email) parameters.

Table 4-25 Description of SMTP (Email) parameters

Parameter	Description	
SMTP Server	SMTP server address	 For details, see Table 4-26 .
Port	The port number of the SMTP server.	
Username	The account of SMTP server.	
Password	The password of SMTP server.	
Anonymity	Select the check box, and the sender's information is not displayed in the email.	
Sender	Sender's email address.	
Authentication	Select Authentication from None , SSL and TLS .  For details, see Table 4-26 .	

Parameter	Description
Title	Enter maximum 63 characters in Chinese, English, and Arabic numerals. Click  to select title type, including Name , Device ID , and Event Type , and you can set maximum 2 titles.
Attachment	Select the check box to support attachment in the email.
Mail Receiver	Receiver's email address. Supports 3 addresses at most.
Health Mail	The system sends test mail to check if the connection is successfully configured. Select Health Mail and configure the Update Period , and then the system sends test mail as the set interval.

For the configuration of major mailboxes, see Table 4-26 .

Table 4-26 Description of major mailbox configuration

Mailbox	SMTP server	Authenticatio n	Port	Description
QQ	smtp.qq.com	SSL	465	- The authentication type cannot be None. - You need to enable SMTP service in your mailbox. - The authentication code is required, the QQ password or email password is not applicable.  Authentication code: The code you receive when enabling SMTP service.
		TLS	587	- The authentication type cannot be None. - You need to enable SMTP service in your mailbox. - The authentication code is required, the QQ password or email password is not applicable.  Authentication code: The code you receive when enabling SMTP service.
163	smtp.163.com	SSL	465/994	- You need to enable SMTP service in your mailbox. - The authentication code is required; the email password is not applicable.  Authentication code: the code you receive when enabling SMTP service.

Mailbox	SMTP server	Authentication	Port	Description
		TLS	25	- You need to enable SMTP service in your mailbox. - The authentication code is required; the email password is not applicable. Authentication code: the code you receive when enabling SMTP service.
		none	25	- You need to enable SMTP service in your mailbox. - The authentication code is required; the email password is not applicable. Authentication code: the code you receive when enabling SMTP service.
Sina	smtp.sina.com	SSL	465	Enable SMTP service in your mailbox.
		none	25	
126	smtp.126.com	none	25	Enable SMTP service in your mailbox.

Step 3 Click **Save**.

Step 4 Click **Test** to test whether the emails can be sent and received successfully.

4.6.6 UPnP

UPnP (Universal Plug and Play), a protocol that establishes mapping relation between local area and wide area networks. This function enables you to visit local area device through wide area IP address.

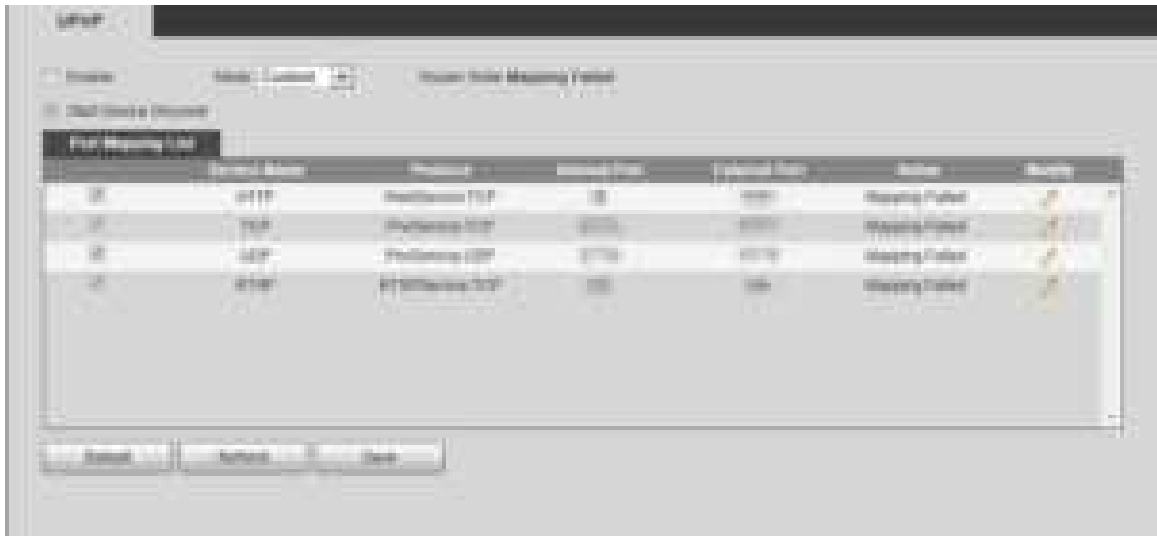
Prerequisites

- Make sure the UPnP service is installed in the system.
- Log in the router, and configure WAN IP address to set up internet connection.
- Enable UPnP in the router.
- Connect your device to the LAN port of the router.
- Select **Setting** > **Network** > **TCP/IP**, in **IP Address**, enter the local area IP address of the router or select **DHCP** and acquires IP address automatically.

Procedure

Step 1 Select **Setting** > **Network** > **UPnP**.

Figure 4-81 UPnP



Step 2 Select the **Enable** check box, and there are two mapping modes: **Custom** and **Default**.

- Select **Custom**, click  and then you can modify external port as needed.
- Select **Default**, and then the system finishes mapping with unoccupied port automatically, and you cannot modify mapping relation.

Step 3 Click **Save**.

Open web browser on PC, enter http:// wide area IP address: external port number, and then you can visit the local area device with corresponding port.

4.6.7 SNMP

SNMP (Simple Network Management Protocol) can be used to enable software such as MIB Builder and MG-SOFT MIB Browser to connect to the camera and manage and monitor the camera.

Prerequisites

- Install SNMP monitoring and managing tools such as MIB Builder and MG-SOFT MIB Browser.
- Get the MIB file of the matched version from technical support.

Procedure

Step 1 Select **Setting** > **Network** > **SNMP**.

Figure 4-82 SNMP (1)



SNMP

Version: ☐ v1 ☐ v2 ☐ v3

SNMP Port: (1-65535)

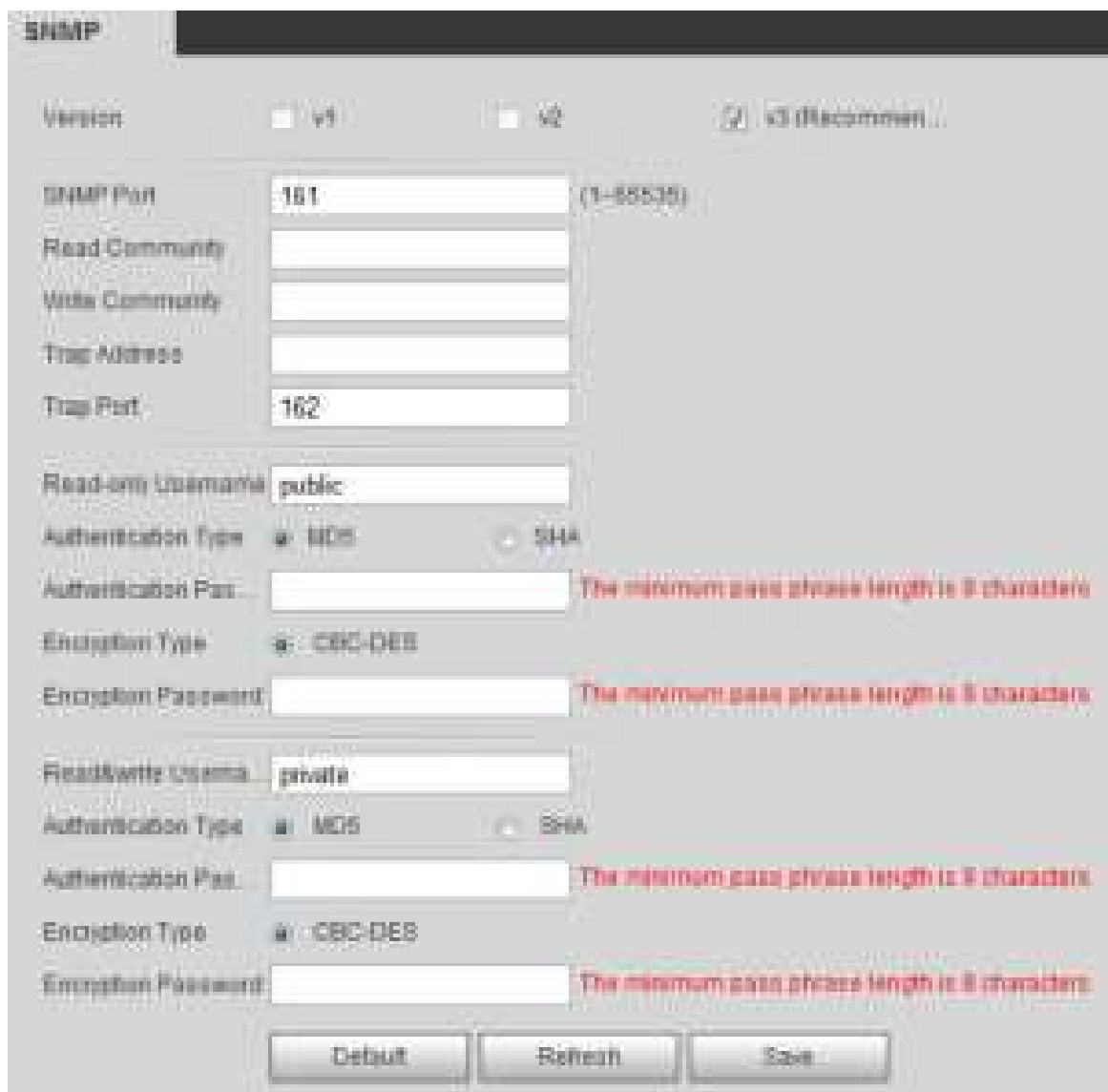
Read Community:

Write Community:

Trap Address:

Trap Port:

Figure 4-83 SNMP (2)



SNMP

Version: ☐ v1 ☐ v2 ☒ v3 (Recommended)

SNMP Port: (1-65535)

Read Community:

Write Community:

Trap Address:

Trap Port:

Read-only Username:

Authentication Type: ☒ MD5 ☐ SHA

Authentication Password: The minimum password length is 8 characters

Encryption Type: ☒ CBC-DES

Encryption Password: The minimum password length is 8 characters

Read/write Username:

Authentication Type: ☒ MD5 ☐ SHA

Authentication Password: The minimum password length is 8 characters

Encryption Type: ☒ CBC-DES

Encryption Password: The minimum password length is 8 characters

Step 2 Select SNMP version to enable SNMP.

- Select **V1**, and the system can only process information of V1 version.
- Select **V2**, and the system can only process information of V2 version.
- Select **V3**, and then **V1** and **V2** become unavailable. You can configure user name, password and authentication type. It requires corresponding user name, password and authentication type to visit your device from the server.



Using **V1** and **V2** might cause data leakage, and **V3** is recommended.

In **Trap Address**, enter the IP address of the PC that has MIB Builder and MG-SOFT MIB Browser installed, and leave other parameters to the default.

Table 4-27 Description of SNMP parameters

Parameter	Description
SNMP Port	The listening port of the software agent in the device.
Read Community, Write Community	The read and write community string that the software agent supports.  You can enter number, letter, underline and dash to form the name.
Trap Address	The target address of the Trap information sent by the software agent in the device.
Trap Port	The target port of the Trap information sent by the software agent in the device.
Read-only Username	Set the read-only username accessing device, and it is public by default.  You can enter number, letter, and underline to form the name.
Read/Write Username	Set the read/write username access device, and it is public by default.  You can enter number, letter, and underline to form the name.
Authentication Type	You can select from MD5 and SHA . The default type is MD5 .
Authentication Password	It should be no less than 8 digits.
Encryption Type	The default is CBC-DES.
Encryption Password	It should be no less than 8 digits.

Step 3 Click **Save**.

Results

View device configuration through MIB Builder or MG-SOFT MIB Browser.

1. Run MIB Builder and MG-SOFT MIB Browser.

2. Compile the two MIB files with MIB Builder.
3. Load the generated modules with MG-SOFT MIB Browser.
4. Enter the IP address of the device you need to manage in the MG-SOFT MIB Browser, and then select version to search.
5. Unfold all the tree lists displayed in the MG-SOFT MIB Browser, and then you can view the configuration information, video channel amount, audio channel amount, and software version.

┌ ┐

Use PC with Windows OS and disable SNMP Trap service. The MG-SOFT MIB Browser will display prompt when alarm is triggered.

4.6.8 Bonjour

Enable this function, and the OS and clients that support Bonjour would find the camera automatically. You can have quick visit to the camera with Safari browser.

┌ ┐

Bonjour is enabled by default.

Procedure

Step 1 Select **Setting** > **Network** > **Bonjour**.

Figure 4-84 Bonjour



Step 2 Select the **Enable** check box, and then configure server name.

Step 3 Click **Save**.

Results

In the OS and clients that support Bonjour, follow the steps below to visit the network camera with Safari browser.

1. Click **Show All Bookmarks** in Safari.
2. Enable **Bonjour**. The OS or client automatically detects the network cameras with Bonjour enabled in the LAN.
3. Click the camera to visit the corresponding web page.

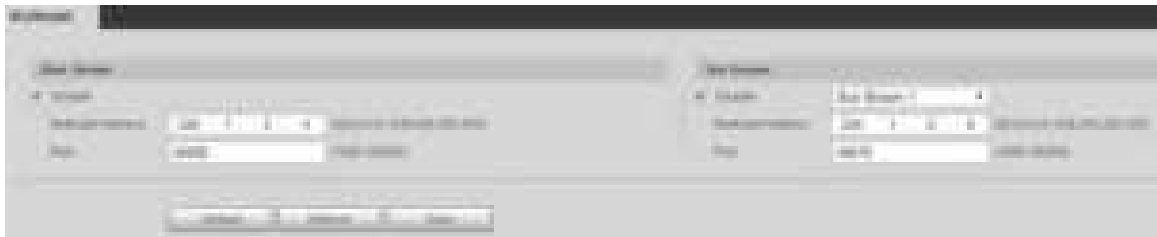
4.6.9 Multicast

When multiple users are previewing the device video image simultaneously through network, it might fail due to limited bandwidth. You can solve this problem by setting up a multicast IP (224.0.1.0–238.255.255.255) for the camera and adopt the multicast protocol.

Procedure

Step 1 Select **Setting** > **Network** > **Multicast**.

Figure 4-85 Multicast



Step 2 Select the **Enable** check box, and enter IP address and port number.

Table 4-28 Description of multicast parameters

Parameter	Description
Multicast Address	The multicast IP address of Main Stream /Sub Stream is 224.1.2.4 by default, and the range is 224.0.0.0–239.255.255.255.
Port	The multicast port of corresponding stream: Main Stream : 40000; Sub Stream1 : 40016; Sub Stream2 : 40032, and all the range is 1025–65500.

Step 3 Click **Save**.

Results

In the **Live** page, select **RTSP in Multicast**, and then you can view the video image with multicast protocol.

4.6.10 802.1x

Cameras can connect to LAN after passing 802.1x authentication.

Procedure

Step 1 Select **Setting > Network > 802.1x**.

Figure 4-86 802.1x



Step 2 Select the **Enable** check box, and then configure parameters.

Table 4-29 Description of 802.1x parameters

Parameter	Description
Authentication	PEAP (protected EAP protocol).

Parameter	Description
Username	The user name that was authenticated on the server.
Password	Corresponding password.

Step 3 Click **Save**.

4.6.11 QoS

You can solve problems such as network delay and congestion with this function. It helps to assure bandwidth, reduce transmission delay, packet loss rate, and delay jitter to improve experience.

0–63 means 64 degrees of priority; 0 for the lowest and 63 the highest.

Procedure

Step 1 Select **Setting** > **Network** > **QoS**.

Figure 4-87 QoS



Step 2 Configure QoS parameters.

Table 4-30 Description of QoS parameters

Parameter	Description
Realtime Monitor	Configure the priority of the data packets that used for network surveillance. 0 for the lowest and 63 the highest.
Command	Configure the priority of the data packets that used for configure or checking.

Step 3 Click **Save**.

4.6.12 4G

4G configuration includes dialing configuration and mobile configuration. Install SIM card (Subscriber Identification Module) to the camera, and then connect it to 4G network through dialing configuration and mobile configuration.

4.6.12.1 Dialing Setting

Configure the camera to connect it to 4G network.

Procedure

Step 1 Select **Setting** > **Network** > **4G** > **Dialing Setting**.

Step 2 Select the **Enable** check box, and configure the parameters.

Figure 4-88 Dialing setting

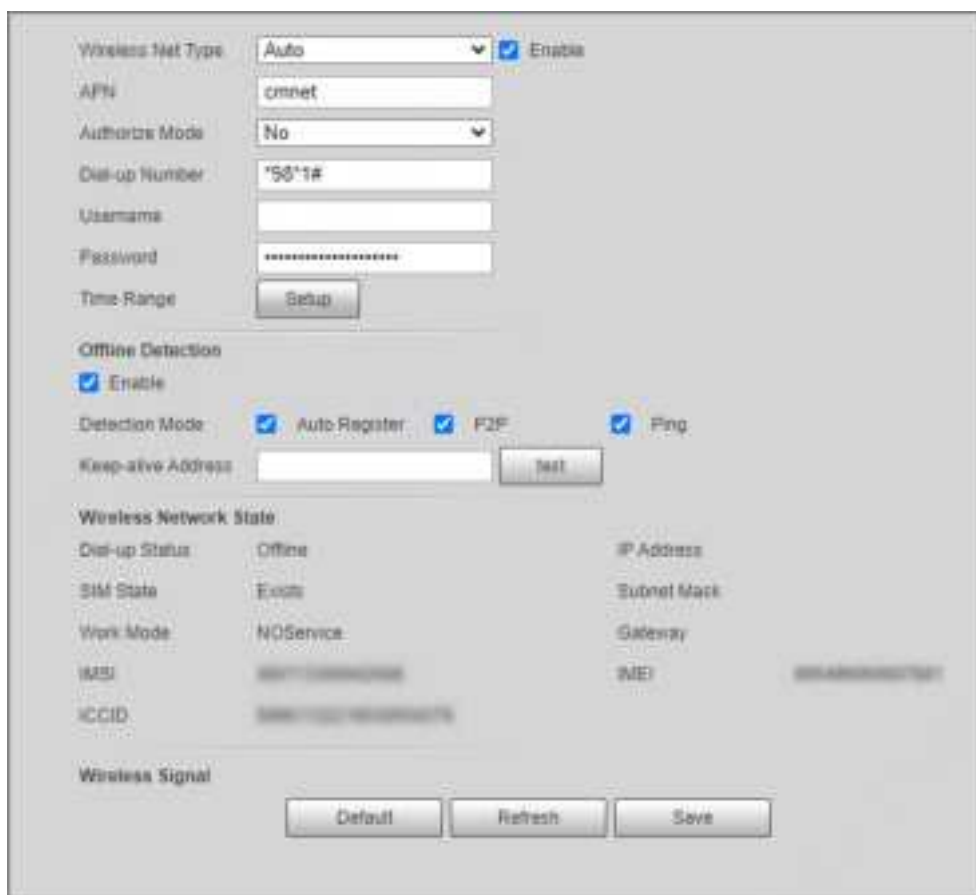


Table 4-31 Dialing setting parameters

Parameter	Description
Wireless Net Type	Select the wireless net type according to the carrier.
APN	Acquired from the carrier.
Authorize Mode	Select the authorize mode according to different carriers.
Dial-up Number	The numbers are different according to different carriers, and it can be acquired from the carrier.
Username	Acquired from the carrier.
Password	Acquired from the carrier.
Time Range	The camera can connect to 4G network during the configured period. For details, see "5.1.1.1 Setting Period".

Parameter	Description
Offline Detection	You can check whether the device is offline using Ping, P2P and Auto Register.  • When using Ping, please enter the keep-alive address. • When the device is offline, the 4G module will continue to dial until the device is online again. • P2P and Auto Register determine whether the device is online by their protocol statuses.
Wireless Network State	When the dialing is successful, the wireless network status is displayed.
Wireless Signal	When the dialing is successful, the wireless net type and signal strength are displayed.

Step 3 Click **Save**.

4.6.12.2 Mobile Settings

Configure the mobile phone, and all alarm messages support sending messages to the configured receiver. After receiving a message, the receiver can wake up the camera and connect it to 4G network through message or call.

- **Message send:** Set the receiver's phone number, and when an alarm is triggered, the system will send message to the receiver.
- **Message activation:** Set the sender's phone number, the sender can send command message to active the camera. The commands are as following:
 - ◊ **On:** Make the camera online.
 - ◊ **Off:** Make the camera offline.
 - ◊ **Reboot:** Restart the camera.
- **Phone activation:** Set the receiver's phone number, the caller can call the camera to active the camera, and make it online.

Procedure

Step 1 Select **Setting** > **Network** > **4G** > **Mobile Settings**.

Step 2 Select **Message send**, **Message activation**, or **Phone activation** as needed.

Step 3 Enter the phone numbers of receiver, sender, or caller, and click  to add it to the list.



- Select a phone number, and click  to delete it.
- You can edit the message in **Title** during configuration.

Figure 4-89 Mobile setting



4.6.13 5G

5G configuration includes dialing configuration and mobile configuration. Install SIM card (Subscriber Identification Module) to the camera, and connect it to 5G network through dialing configuration and mobile configuration.

- Dialing configuration: Connect the camera to 5G network in a specific period.
- Mobile configuration: Configure the mobile phone to receive the linkage message. When an alarm is triggered, the system sends an alarm message to the receiver, and then the receiver can active the camera and connect it to 5G network through message or call.

4.6.13.1 Dialing Settings

Configure the camera to connect it to 5G network.

Procedure

- Step 1** Select **Setting** > **Network** > **5G** > **Dialing Setting**.
- Step 2** Select the **Enable** checkbox, and configure the parameters.

Figure 4-90 Dialing setting

Table 4-32 Dialing setting parameters

Parameter	Description
Wireless Net Type	Select the wireless net type according to the carrier.
APN	Acquired from the carrier.
Authentication Mode	Select the authentication mode according to different carriers.
Dial-up Number	The numbers are different according to different carriers, and it can be acquired from the carrier.
Username	Acquired from the carrier.
Password	Acquired from the carrier.
Interval	It is the period beyond the dial-up period which has been configured, it is 30 s by default, during which means the camera can auto connect to 5G network. After the period is over, the camera automatically cuts off the connection to save flow.
Time Range	The camera can connect to 5G network during the configured period. For details, see "5.1.1.1 Setting Period".
Wireless Network State	When the dialing is successful, the wireless network status is displayed.
Wireless Signal	When the dialing is successful, the wireless net type and signal strength are displayed.

Step 3 Click **Save**.

4.6.13.2 Mobile Settings

Configure the mobile phone, and all alarm messages support sending messages to the configured receiver. After receiving a message, the receiver can wake up the camera and connect it to 5G network through message or call.

- **Message send:** Set the receiver's phone number, and when an alarm is triggered, the system will send message to the receiver.
- **Message activation:** Set the sender's phone number, the sender can send command message to active the camera. The commands are as following:
 - ◊ **On:** Make the camera online.
 - ◊ **Off:** Make the camera offline.
 - ◊ **Reboot:** Restart the camera.
- **Phone activation:** Set the receiver's phone number, the caller can call the camera to active the camera, and make it online.

Procedure

Step 1 Select **Setting > Network > 5G > Mobile Settings**.

Step 2 Select **Message send**, **Message activation**, or **Phone activation** as needed.

Step 3 Enter the phone numbers of receiver, sender, or caller, and click  to add it to the list.



- Select a phone number, and click  to delete it.
- You can edit the message in **Title** during configuration.

Figure 4-91 Mobile setting

The screenshot shows the 'Mobile Settings' interface with three tabs: 'Message Send', 'Message Activation', and 'Phone Activation'. Each tab contains a 'Receiver' (or 'Sender'/'Caller') field with the phone number '15114411111' and a list of messages. The 'Message Send' tab shows a list with 'Event Message' as the title. At the bottom of the interface are three buttons: 'Default', 'Refresh', and 'Save'.

4.6.14 Access Platform

4.6.14.1 P2P

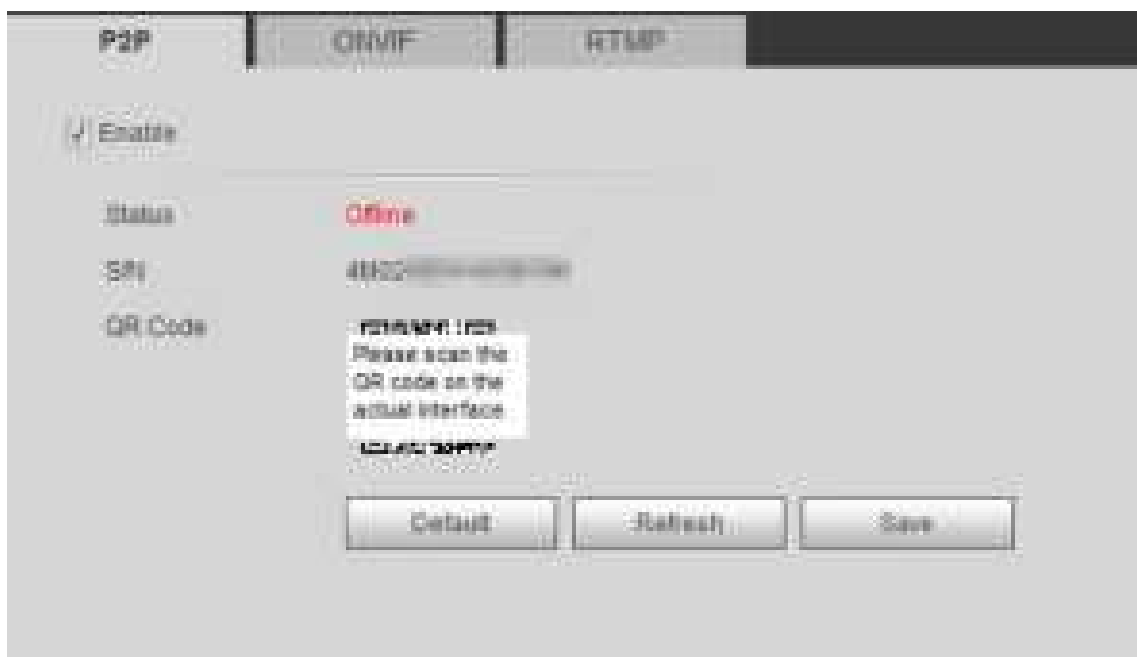
P2P is a private network traversal technology which enables users to manage devices easily without requiring DDNS, port mapping or transit server.

Scan the QR code with your smart phone, and then you can add and manage more devices on the mobile phone client.

Procedure

Step 1 Select **Setting** > **Network** > **Access Platform** > **P2P**.

Figure 4-92 P2P



- When P2P is enabled, remote management on device is supported.
- When P2P is enabled and the device accesses to the network, the status shows online. The information of the IP address, MAC address, device name, and device SN will be collected. The collected information is for remote access only. You can cancel **Enable** selection to reject the collection.

Step 2 Log in to mobile phone client and tap **Device management**.

Step 3 Tap the + at the upper right corner.

Step 4 Scan the QR code on the **P2P** page.

Step 5 Follow the instructions to finish the settings.

4.6.14.2 ONVIF

The ONVIF authentication is **On** by default, which allows the network video products (including video recording device and other recording devices) from other manufacturers to connect to your device.



ONVIF is enabled by default.

Procedure

Step 1 Select **Setting** > **Network** > **Port** > **ONVIF**.

Figure 4-93 ONVIF



Step 2 Select **On** in **Authentication**.

Step 3 Click **Save**.

4.6.14.3 RTMP

Through RTMP, you can access the third-party platform (such as Ali and YouTube) to realize video live view.



- RTMP can be configured by admin only.
- RTMP supports the H.264, H.264 B and H.264H video formats, and the AAC audio format only.

Procedure

Step 1 Select **Setting** > **Network** > **Port** > **RTMP**.

Figure 4-94 RTMP



Step 2 Select the **Enable** check box.



Make sure that the IP address is trustable when enabling RTMP.

Step 3 Configure RTMP parameters.

Table 4-33 Description of RTMP parameters

Parameter	Description
Stream Type	The stream for live view. Make sure that the video format is the H.264, H.264 B and H.264H, and the audio format is AAC.
Address Type	Includes Non-custom and Custom . • Non-custom : Enter the server IP and domain name. • Custom : Enter the path allocated by the server.
IP Address	When selecting Non-custom , you need to enter server IP address and port. • IP address : Support IPv4 or domain name. • Port : We recommend that you use the default one.
Port	
Custom Address	When selecting Custom , you need to enter the path allocated by the server.

Step 4 Click **Save**.

4.7 Storage

This section introduces how to manage saved resources (such as recorded video) and storage space. The storage management helps to make best use of storage space.

4.7.1 Setting Storage Plan

- Setting record plan and record control to achieve all-time recording, recording in specific period or alarm linked recording. For details, see "5.1.1.2.1 Setting Record Plan" and "5.1.1.2.2 Setting Record Control".
- Set the snapshot schedule as needed. For details, see "5.1.1.3.1 Setting Snapshot Plan".

4.7.2 Setting Schedule

You can configure record schedule, snapshot schedule and holiday schedule. Set certain days as holiday, and when the **Record** or **Snapshot** is selected in the holiday schedule, the system takes snapshot or records video as holiday schedule defined.

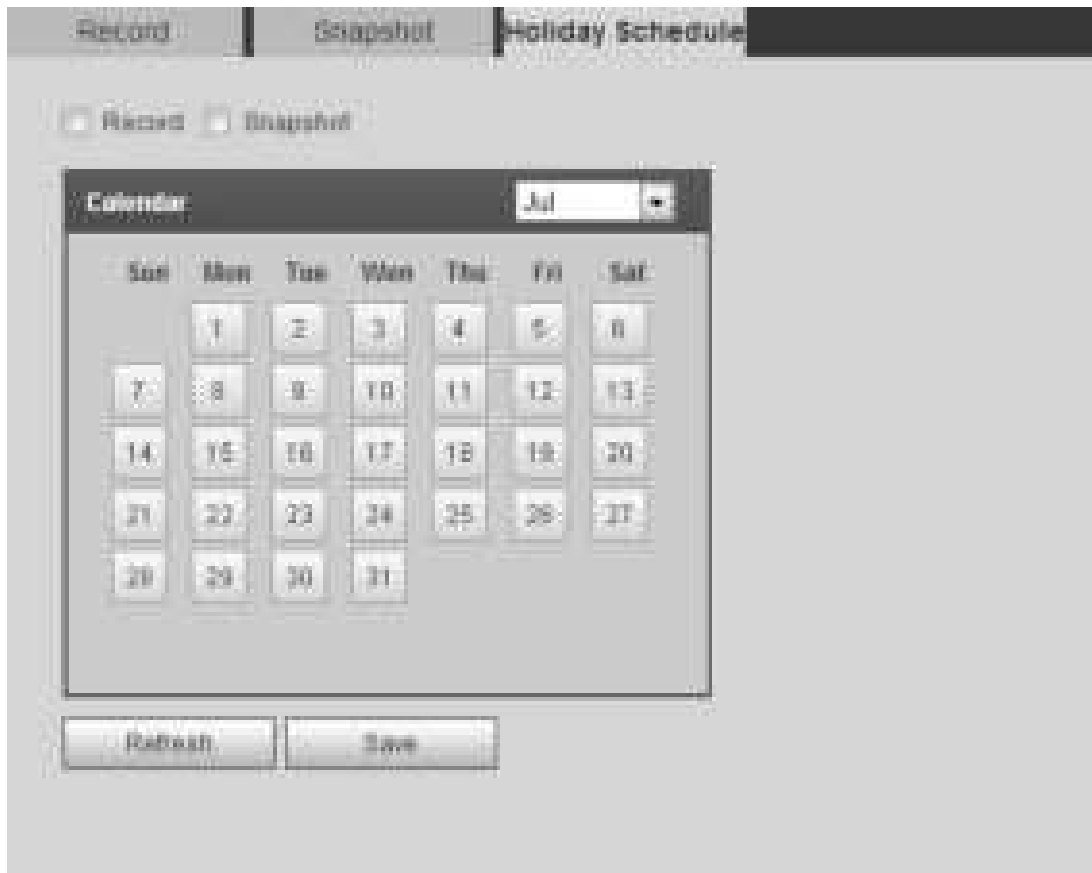
Prerequisites

- Set the record mode to be **Auto** in **Record Control**. For details, see "5.1.1.2.1 Setting Record Plan".
- Configure holiday record and snapshot schedule. For details, see "5.1.1.2.1 Setting Record Plan" and "5.1.1.3.1 Setting Snapshot Plan".

Procedure

Step 1 Select **Setting** > **Storage** > **Schedule** > **Holiday Schedule**.

Figure 4-95 Holiday schedule



Step 2 Select **Record** or **Snapshot**.

Step 3 Select the days you need to set as holiday.

Those days with yellow color indicate that they were set as holidays.



When holiday schedule setting is not the same as the general setting, holiday schedule setting is prior to the general setting. For example, with **Holiday Schedule** enabled, if the day is holiday, the system snapshots or records as holiday schedule setting; otherwise, the system snapshots or records as general setting.

Step 4 Click **Save**.

4.7.3 Setting Destination

This section introduces the configuration of the storage method for the recorded videos and snapshots.

4.7.3.1 Path

You can select different storage paths for the recorded videos and snapshots according to event type. You can select from SD card, FTP and NAS.



Local is displayed only on models that support SD card.

Procedure

Step 1 Select **Setting** > **Storage** > **Destination** > **Path**.

Figure 4-96 Path



Step 2 Select the storage method that you need for the recorded videos and snapshots of different types.

Table 4-34 Description of path parameters

Parameter	Description
Event Type	Select from Scheduled , Motion Detection and Alarm .
Local	Save in the internal SD card.
FTP	Save in the FTP server.
NAS	Save in the NAS (network attached storage).

Step 3 Click **Save**.

Step 4 Configure other path parameters on **Destination**, **FTP** or **NAS** page. For details, see "4.7.3 Setting Destination", "4.7.3.3 FTP" or "4.7.3.4 NAS".

4.7.3.2 Local

Display the information of the local SD card. You can set it as read only or read & write; you can also hot swap and format SD card.



Functions might vary with different models.

Select **Setting** > **Storage** > **Destination** > **Local**.

- Click **Read Only**, and then the SD card is set to read only.
- Click **Read & Write**, and then the SD card is set to read & write.
- Click **Hot Swap**, and then you can pull out the SD card.
- Click **Refresh**, and then you can format the SD card.
- Click **Format**, and you can format the SD card.



When reading SD card on PC, if the SD card capacity is much less than the nominal capacity, you need to format the SD card. Then the data in SD card will be cleared, and the SD card is formatted to be private file system. The private file system can greatly improve SD card multimedia file read/write performance. For details, contact aftersales technicians.

4.7.3.3 FTP

FTP can be enabled only when it was selected as a destination path. When the network does not work, you can save all the files to the internal SD card for emergency.

Procedure

- Step 1** Select **Setting** > **Storage** > **Destination** > **FTP**.
- Step 2** Select the **Enable** check box, and select the FTP type.



You select **FTP** or **SFTP** from the drop-down list. **SFTP** is recommended to enhance network security.

- Step 3** Configure FTP parameters.

Figure 4-97 FTP



The screenshot shows the FTP configuration interface with the following settings:

- Path:** Local, FTP, NAS (FTP is selected)
- Enable:** ☒ (checked)
- Server Address:** 192.168.1.1
- Port:** 21 (Range: 1-65535)
- Username:** admin
- Password:** [Masked]
- Remote Directory:** share
- Directory Structure:** Use Level 3 Directory
- Level 1 Directory:** Name
- Level 2 Directory:** Date
- Level 3 Directory:** Channel NO.
- Customized Picture:** Device Time
- Emergency (Local):** ☐ (unchecked)

Buttons at the bottom: Test, Default, Refresh, Save.

Figure 4-98 Picture name settings

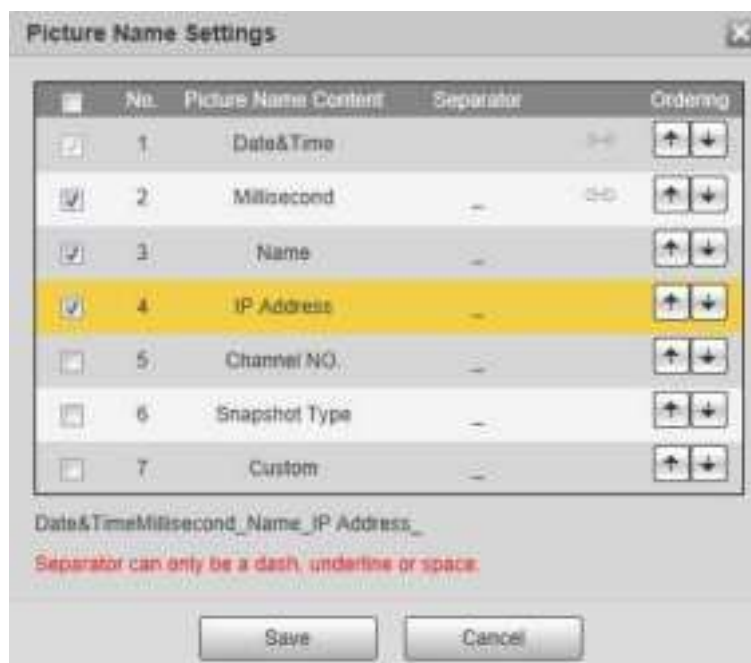


Table 4-35 Description of FTP parameters

Parameter	Description
Server Address	The IP address of the FTP server.
Port	The port number of the FTP server.
Username	The username to log in to the FTP server.
Password	The password to log in to the FTP server.
Remote Directory	The destination path in the FTP server, and it is shared by default.
Directory Structure	Set the directory structure, which supports three levels at most.
Level 1 Directory	Set the directory name, and you can customize the name.
Level 2 Directory	When you select Custom , enter the custom directory name, which supports numbers, English letters, underlines and dashes.
Level 3 Directory	

Parameter	Description
Customized Picture Name	Click Setting to set picture name. • Date&Time is required, and it is selected by default. • Select the other fields of the name, and the corresponding instruction will be displayed on the screen. • Double-click the symbols under Separator, you can customize the separator. • Double-click Custom, you can customize the files of the picture name. • Click the arrow under Ordering, and you can adjust the ordering of the file.  Date&Time and Millisecond is a whole, click the arrow of any one of the two fields, the two moves together. • The real-time value of Millisecond will be displayed for precise snapshot, and for schedule and normal event, the millisecond displays 0000.
Emergency (Local)	Select Emergency (Local) , and when the FTP server does not work, all the files are saved to the internal SD card.

Step 4 Click **Save**.

Step 5 Click **test** to test whether FTP function works normally.

4.7.3.4 NAS

This function can be enabled only when NAS was selected as a destination path. Enable this function, and you can save all the files in the NAS.

Procedure

Step 1 Select **Setting > Storage > Destination > NAS**.

Figure 4-99 NAS



Step 2 Select the **Enable** check box to enable NAS function, and select NAS protocol type.

- **NFS** (Network File System): A file system which enables computers in the same network to share files through TCP/IP.
- **SMB** (Server Message Block): Provides shared access for clients and the server.

Step 3 Configure NAS parameters.

Table 4-36 Description of NAS parameters

Parameter	Description
Server Address	The IP address of the NAS server.

Parameter	Description
Username	When selecting SMB protocol, you are required to enter user name and password. Enter them as needed.
Password	
Remote Directory	The destination path in the NAS server.

Step 4 Click **Save**.

4.8 System

This section introduces system configurations, including general, date & time, account, safety, PTZ settings, default, import/export, remote, auto maintain and upgrade.

4.8.1 General

You can configure device name, language and video standard.

Procedure

Step 1 Select **Setting** > **System** > **General** > **General**.

Figure 4-100 General



Step 2 Configure general parameters.

Table 4-37 Description of general parameters

Parameter	Description
Name	The name of the device. Each device has its own name.
Language	Select system language.
Video Standard	Select video standard from PAL and NTSC .

Parameter	Description
TVOut	Select On or Off. This function is available on models with analog output.  - If the TV out is On, smart plans will be disabled; if the smart plans are enabled, the TV out will be set as Off. - SDI and HDCVI are available on select models.

Step 3 Click **Save**.

4.8.2 Date & Time

You can configure date and time format, time zone, current time, DST (Daylight Saving Time) or NTP server.

Procedure

Step 1 Select **Setting** > **System** > **General** > **Date & Time**.

Figure 4-101 Date and time



The screenshot shows the 'Date & Time' configuration window. It includes the following fields and options:

- Date Format:** YYYY-MM-DD
- Time Format:** 24-Hour
- Time Zone:** (UTC) Coordinated Universal Time
- Current Time:** 2021-08-24 09:15:23 (with a 'Sync PC' button)
- DST:**
 - ☐ DST
 - DST Type:**
 - ☒ Date
 - ☐ Week
 - Start Time:** Jan 1 00:00:00
 - End Time:** Jan 2 00:00:00
- NTP:**
 - ☐ NTP
 - Server:** clock.isc.org
 - Port:** 123
 - Interval:** 10 Min (2-30)
- Positioning System:**
 - Positioning System:** GPS
 - ☒ Positioning System
 - Interval:** 30 Min (1-1440)

At the bottom, there are buttons for 'Default', 'Refresh', and 'Save'.

Step 2 Configure date and time parameters.

Table 4-38 Description of date and time parameters

Parameter	Description
Date Format	Configure the date format.
Time Format	Configure the time format. You can select from 12-Hour or 24-Hour .
Time Zone	Configure the time zone that the camera is at.
Current Time	Configure system time. Click Sync PC , and the system time changes to the PC time.
DST	Enable DST as needed. Select the check box, and configure start time and end time of DST with Date or Week .
NTP	Select the check box, and then NTP (network time protocol) is enabled, the system then syncs time with the internet server in real time. You can also enter the IP address, time zone, port, and interval of a PC which installed NTP server to use NTP.
NTP Server	
Time Zone	
Port	
Interval	
Positioning System	Supports both GPS and BeiDou.
Positioning System Time Synchronization	Select Position System Time Synchronization and configure Interval to enable this function.
Interval	After enabling this function, the device will synchronize the system time according to the interval you set.

Step 3 Click **Save**.

4.8.3 Account

Manage all the users. You can add, delete, or modify users. Users include admin, added users and ONVIF users.

Managing users and groups are only available for administrator users.

- The max length of the user or group name is 31 characters which consisted of number, letters, underline, dash, dot and @.
- The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).
- You can have 18 users and 8 groups at most.
- You can manage users through single user or group, and duplicate user names or group names are not allowed. A user can be in only one group at a time, and the group users can own authorities within group authority range.
- Online users cannot modify their own authority.
- There is one admin by default which has highest authority.
- Select **Anonymous Login** , and then log in with only IP address instead of user name and password. Anonymous users only have preview authorities. During anonymous login, click **Logout**, and then you can log in with other username.

4.8.3.1 Adding a User

You are admin user by default. You can add users, and configure different authorities.

Procedure

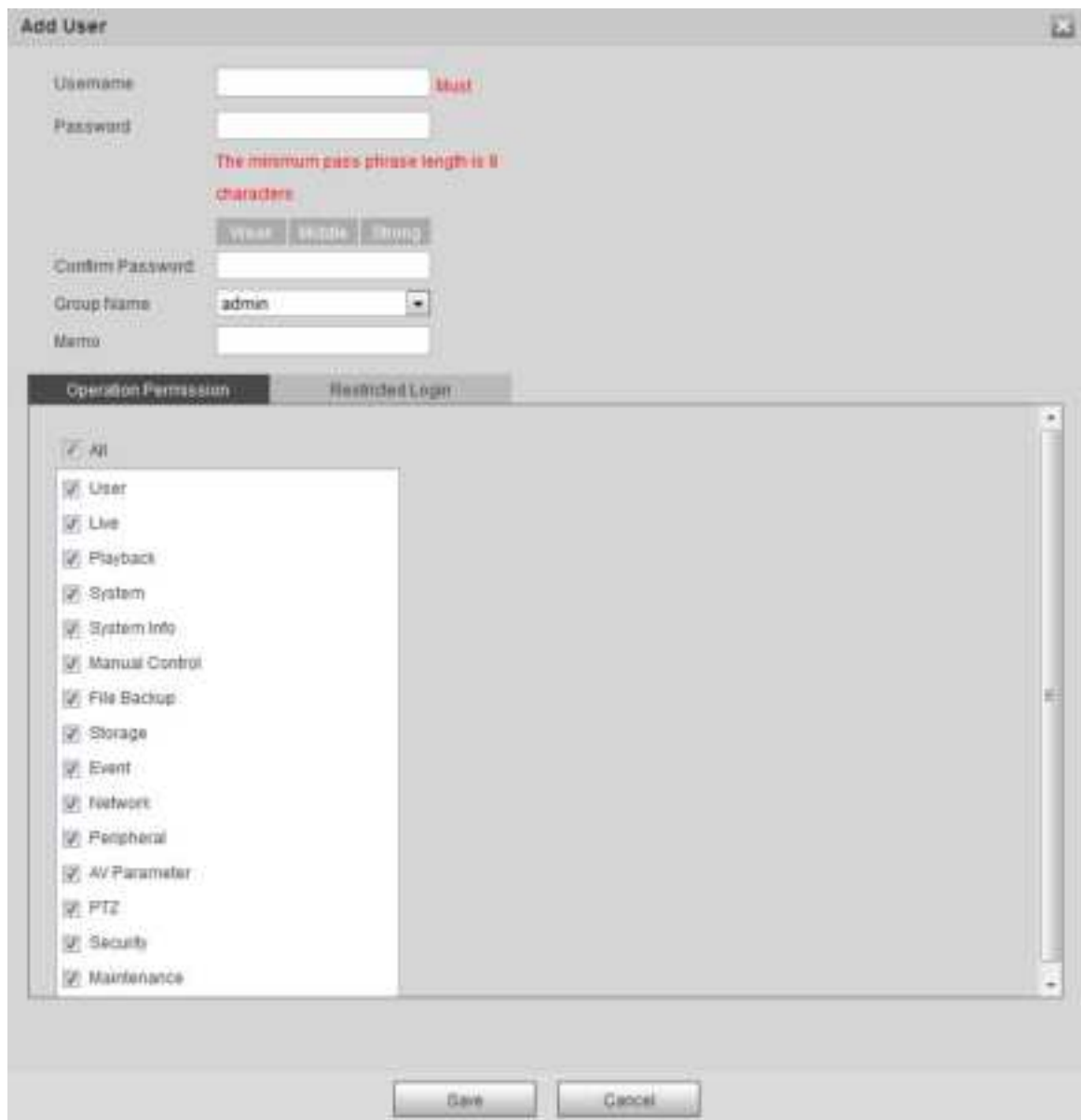
Step 1 Select **Setting** > **System** > **Account** > **Account** > **Username**.

Figure 4-102 Username



Step 2 Click **Add User**.

Figure 4-103 Add user (operation permission)



Add User

Username: Must

Password:

The minimum pass phrase length is 8 characters

Confirm Password:

Group Name:

Memo:

Operation Permission | Restricted Login

- ☒ All
- ☒ User
- ☒ Live
- ☒ Playback
- ☒ System
- ☒ System Info
- ☒ Manual Control
- ☒ File Backup
- ☒ Storage
- ☒ Event
- ☒ Network
- ☒ Peripheral
- ☒ AV Parameter
- ☒ PTZ
- ☒ Security
- ☒ Maintenance

Figure 4-104 Add user (restricted login)



Step 3 Configure user parameters.

Table 4-39 Description of user parameters (1)

Parameter	Description
Username	User's unique identification. You cannot use existed user name.
Password	Enter password and confirm it again.
Confirm Password	The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).
Group Name	The group that users belong to. Each group has different authorities.

Parameter	Description
Memo	Describe the user.
Operation Permission	Select authorities as needed.  We recommend you give fewer authorities to normal users than advance users.
Restricted Login	Set the PC address that allows the defined user to log in to the camera and the validity period and time range. You can log in to web with the defined IP in the defined time range of validity period. - IP address: You can log in to web through the PC with the set IP. - Validity period: You can log in to web in the set validity period. - Time range: You can log in to web in the set time range. Set as following: - Select IP Address : Select IP type and set IP address. - IP Address: Enter the IP address of the host to be added. - IP segment: Enter the start address and end address of the host to be added. - Select Validity Period : Set the begin time and end time. - Select Time Range : Set the time range that allow user to log in. For details, see "5.1.1.1 Setting Period".

Step 4 Click **Save**.

The newly added user is displayed in the username list.

Related Operations

- Edit user information

Click  to change password, group, memo, operation authorities, and login authorities.



You can only change the password of the admin.

The methods of changing password vary with different accounts.

- ◇ Login with the admin account, you can change password through **Old Password** and **Admin Account**.
- ◇ Login with non-admin account (an added account with the permission of user management), you can change password through **Old Password**.
- ◇ **Old Password** : Change the password through entering the old password to be changed, and then the new password.

Figure 4-105 Change password through old password (login with non-admin account)

- ◇ **Admin Account** : Change the password through entering the admin password, and then the new password for the non-admin account to be changed.

Figure 4-106 Change password through admin password (login with admin account)

- Delete users

Click to delete the added users.

Admin account cannot be deleted.

- View the authorities

If the current account has with the permission of user management, click  to view the login authorities of other accounts. If not, you can only view the login authorities of the current account.

4.8.3.2 Adding User Group

You have two groups named admin and user by default, and you can add new group, delete added group or modify group authority and memo.

Procedure

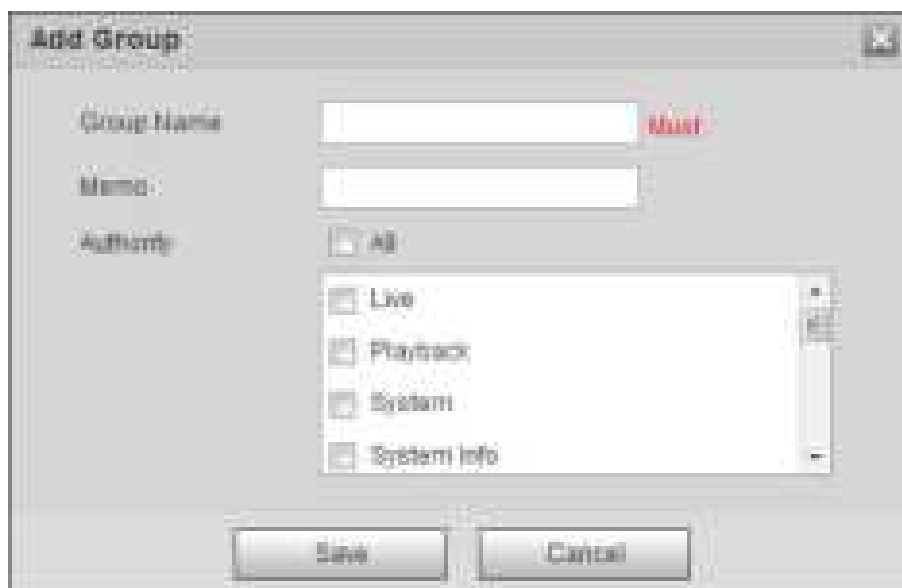
Step 1 Select **Setting** > **System** > **Account** > **Account** > **Group Name**.

Figure 4-107 Group name



Step 2 Click **Add Group**.

Figure 4-108 Add group



Step 3 Enter the group name and memo, and then select group authorities.

The default authorities of Admin group include live, playback, storage, file backup, user, system, system info, manual control, maintenance, peripheral, PTZ, security, network, event and AV parameters; the default authorities of User group include live and playback.

Table 4-40 Description of user group parameters

Group Authority	Admin	User	Functions
User	YES	NA	Add, delete and check user/user group.
Live	YES	YES	Real-time stream view.
Playback	YES	YES	Playback view.
System	YES	NA	System time setting and more.
System Info	YES	NA	Version information, system logs and more.
Manual Control	YES	NA	PTZ settings.
File Backup	YES	NA	File backup.
Storage	YES	NA	Storage point configuration, snapshot recording time configuration, SFTP configuration and more.
Event	YES	NA	Video detection settings, audio detection settings, alarm settings and more.
Network	YES	NA	IP settings, SMTP settings, SNMP settings, AP Hotspot settings and more.
Peripheral	YES	NA	External light, wiper and serial port settings.
AV Parameter	YES	NA	Camera property settings, audio and video settings and more.
PTZ	YES	NA	Preset settings, tour settings and more.
Security	YES	NA	HTTPS settings, RTSP over TLS settings and more.
Maintenance	YES	NA	Automatic maintenance settings and more.

⌋

- Any user in the **Admin** group has **User** authorities to modify group authorities. The **User** group does not have this authority.
- The function of the device corresponds to the authority control respectively. Only user with specified authority can use corresponding function; the **Admin** group has all the authorities.

Step 4 Click **Save** to finish configuration.

The newly added group displays in the group name list.



- After adding group, click to modify group memo or authorities; click to delete the added group, admin group and user group cannot be deleted.
- Click in the row of admin group or user group to modify group memo.

4.8.3.3 ONVIF User

You can add, delete ONVIF user, and modify their passwords.

Procedure

Step 1 Select **Setting > System > Account > ONVIF User**.

Figure 4-109 ONVIF user



Step 2 Click **Add User**.

Figure 4-110 Add user

Step 3 Configure user parameters.

Table 4-41 Description of user parameters

Parameter	Description
Username	User's unique identification. You cannot use existed user name.
Password	Enter password and confirm it again.
Confirm Password	The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).
Group Name	The group that users belong to. Each group has different authorities.

Step 4 Click **Save**.

The newly added user displays in the username list.

Related Operations

- Edit user information

Click  to change password, group, memo, operation authorities, and login authorities.



You can only change the password of the admin.

The methods of changing password vary with different accounts.

- ◇ Log in with admin account, you can change password through **Old Password** and **Admin Account**.
The password of admin account can be changed through **Old Password** only.
- ◇ Login with non-admin account (an added account with the permission of user management), you can change password through **Old Password**.
- ◇ **Old Password** : Change the password through entering the old password to be changed, and then the new password.

Figure 4-111 Change password through old password (login with non-admin account)

The 'Modify User' dialog box shows the 'Modify Password' section selected. The 'Username' field is set to '11'. The 'Old Password' and 'New Password' fields are empty. A red error message states: 'The minimum pass phrase length is 8 characters.' Below this, there are three buttons: 'Weak', 'Medium', and 'Strong'. The 'Confirm Password' field is also empty. The 'Group Name' is set to 'user'. The 'Memo' field is empty. The 'Authority' section has a checkbox for 'All' which is unchecked, and a checkbox for 'Live' which is checked. The 'Playback' checkbox is also checked. At the bottom, there are 'Save' and 'Cancel' buttons.

- ◇ **Admin Account** : Change the password through entering the admin password, and then the new password for the non-admin account to be changed.

Figure 4-112 Change password through admin password (login with admin account)

The 'Modify User' dialog box shows the 'Modify Password' section selected. The 'Modification Mode' is set to 'Admin Account'. The 'Admin Username' field is set to 'admin'. The 'Admin Password' and 'New Password' fields are empty. A red error message states: 'The minimum pass phrase length is 8 characters.' Below this, there are three buttons: 'Weak', 'Medium', and 'Strong'. The 'Confirm Password' field is also empty. The 'Group Name' is set to 'user'. The 'Memo' field is empty. At the bottom, there are 'Save' and 'Cancel' buttons.

- Delete users

Click to delete the added users.

Admin account cannot be deleted.

- View the authorities

If the current account has the permission of user management, click  to view the login authorities of other accounts. If not, you can only view the login authorities of the current account.

4.8.4 Safety

You can configure system service, HTTPS, and firewall.

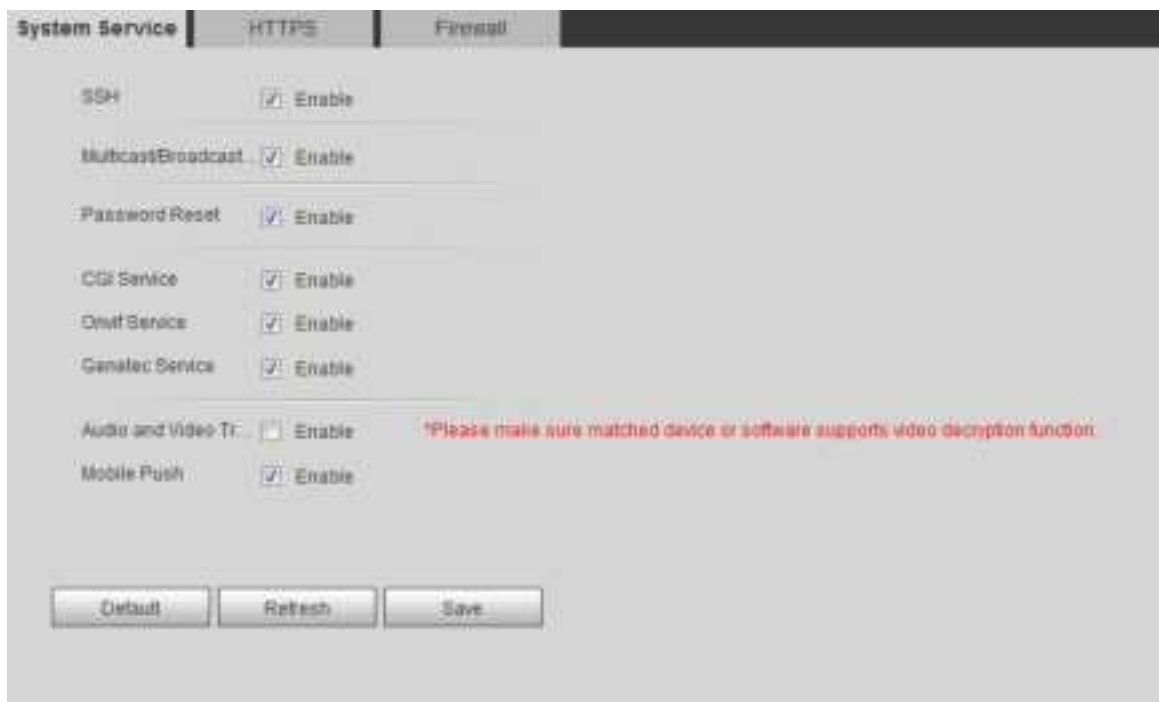
4.8.4.1 System Service

Configure the IP hosts (devices with IP address) that are allowed to visit the device. Only the hosts in the trusted sites list can log in to the web page. This is to enhance network and data security.

Procedure

Step 1 Select **Setting** > **System** > **Safety** > **System Service**.

Figure 4-113 System service



Step 2 Enable the system service according to the actual needs.

Table 4-42 Description of system service parameters

Function	Description
SSH	You can enable SSH authentication to perform safety management.
Multicast/Broadcast Search	Enable this function, and then when multiple users are previewing the device video image simultaneously through network, they can find your device with multicast/broadcast protocol.
Password Reset	Manage system security with this function.

Function	Description
CGI Service	Enable this function, and then other devices can access through this service.
Onvif Service	Enable this function, and then other devices can access through this service.
Genetec Service	Enable this function, and then other devices can access through this service.
Audio and Video Transmission Encryption	Enable to encrypt audio/video transmission. Make sure that the other devices and software that working together with the camera support video decryption.
Mobile Push	Enable this function, and then the system would send the snapshot that was taken when alarm is triggered to your phone, this is enabled by default.

Step 3 Click **Save**.

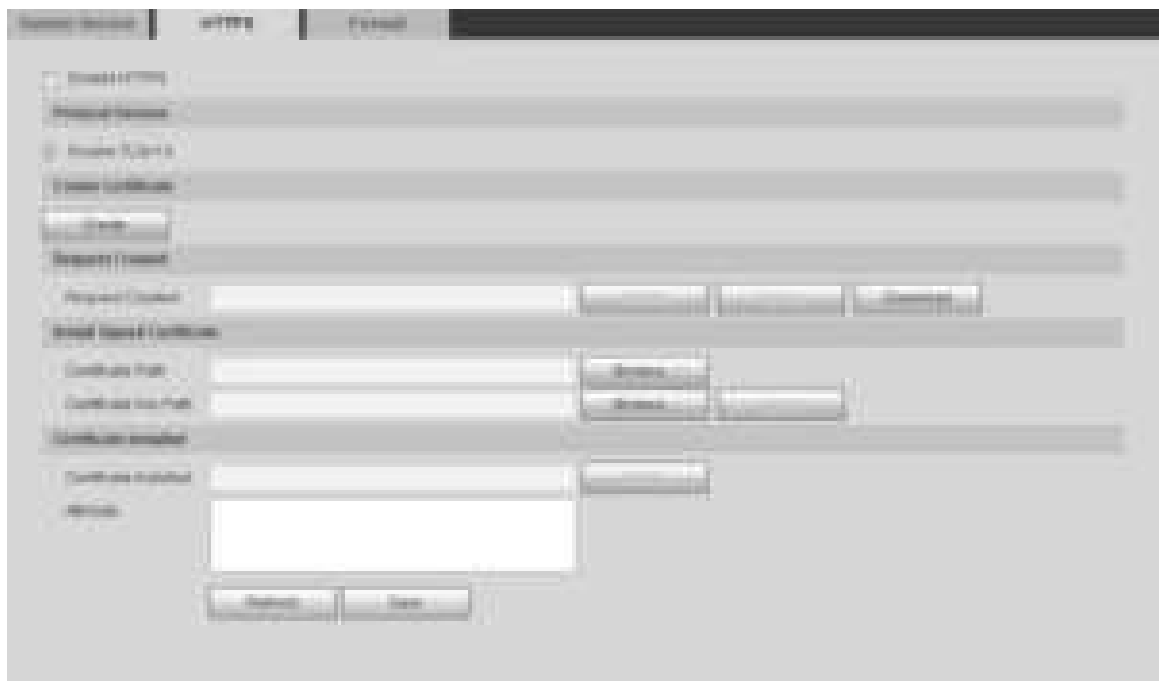
4.8.4.2 HTTPS

Create a certificate or upload an authenticated certificate, and then you can log in through HTTPS with your PC. The HTTPS can protect page authenticity on all types of websites, secure accounts, and keep user communications, identity, and web browsing private.

Procedure

Step 1 Select **Setting** > **Network** > **HTTPS**.

Figure 4-114 HTTPS



Step 2 Create a certificate or upload an authenticated certificate.

- For creating a certificate, click **Create**.

Figure 4-115 HTTPS dialog box



- For uploading the authenticated certificate, click **Browse** to select the certificate and certificate key, click **Upload** to upload them, and then skip to [Step 5](#).

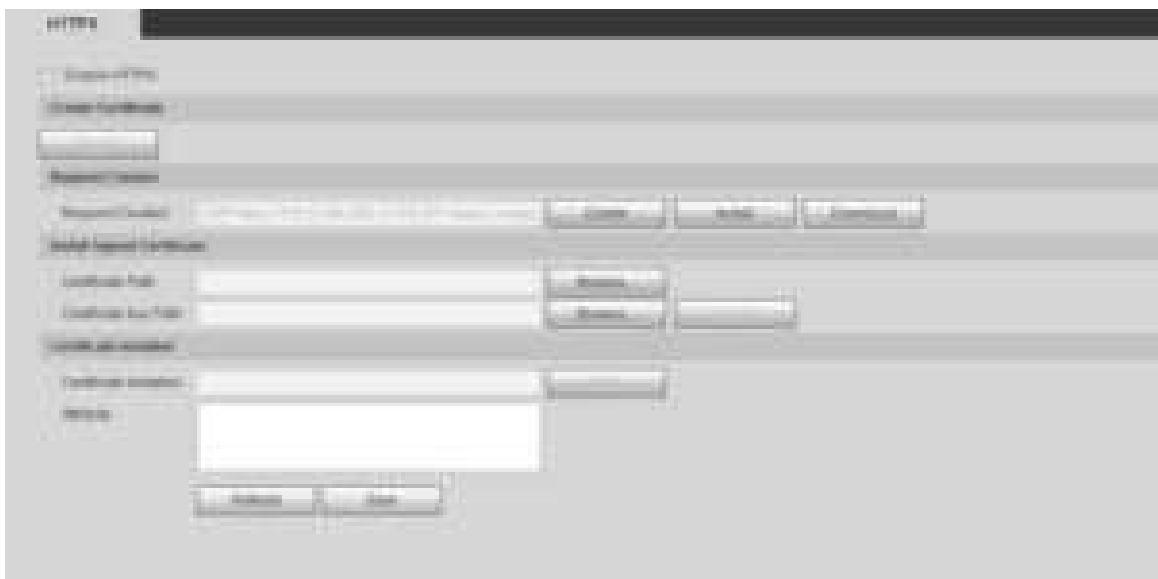
[Step 3](#) Enter the required information and then click **Create**.



The entered **IP or Domain name** must be the same as the IP or domain name of the device.

[Step 4](#) Click **Install**.

Figure 4-116 Certificate installation



[Step 5](#) Click **Download** to download root certificate.

[Step 6](#) Click **Download Root Certificate**.

Figure 4-117 File download



Step 7 Click **Open**.

Figure 4-118 Certificate information



Step 8 Click **Install Certificate**.

Figure 4-119 Certificate import wizard (1)



Step 9 Click **Next**.

Figure 4-120 Certificate store



Step 10 Select the storage location and click **Next**.

Figure 4-121 Certificate import wizard (2)



Step 11 Click **Finish** and a dialog box showing **The import was successful** pops up.

Figure 4-122 Import succeeds



4.8.4.3 Firewall

Configure **Network Access**, **PING prohibited** and **Prevent Semijoin** to enhance network and data security.

- **Network Access** : Set trusted list and restricted list to limit access.
 - ◇ **Allowlist** : Only when the IP/MAC of your PC in the allowlist, can you access the camera. Ports are the same.
 - ◇ **Blocklist** : When the IP/MAC of your PC is in the blocklist, you cannot access the camera. Ports are the same.
- **PING prohibited** : Enable **PING prohibited** function, and the camera will not respond to the ping request.
- **Prevent Semijoin** : Enable **Prevent Semijoin** function, and the camera can provide service normally under Semijoin attack.



- You cannot set allowlist or blocklist for camera IP or MAC addresses.

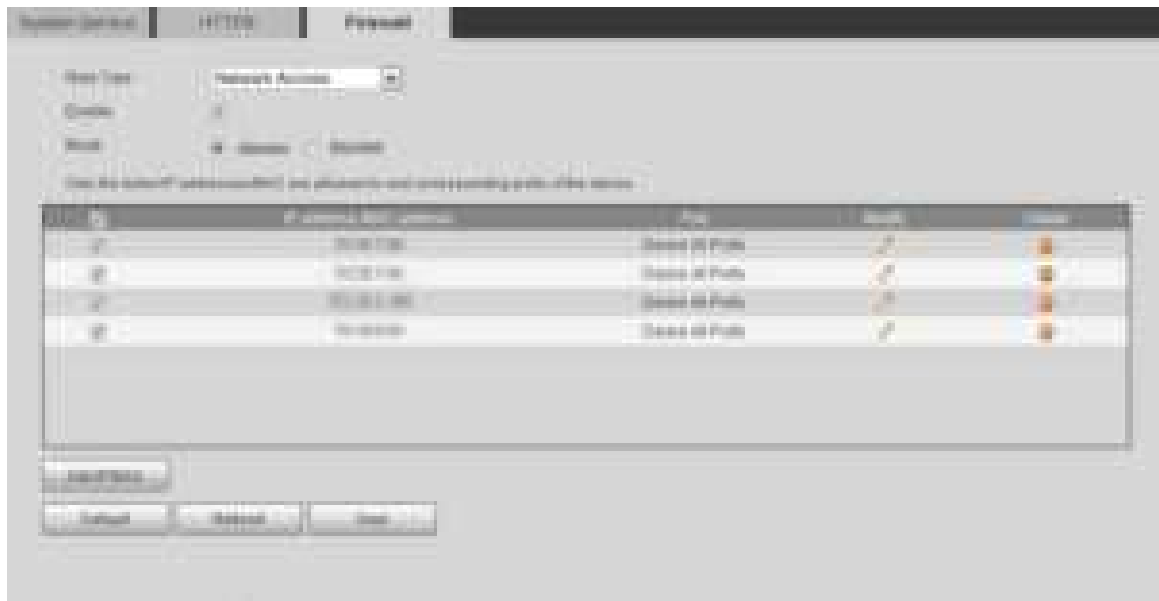
- You cannot set allowlist or blocklist for port MAC addresses.
- When the IP addresses of the camera and your PC are in the same LAN, MAC verification takes effect.
- When you access the camera through internet, the camera verifies the MAC address according to the router MAC.

This section takes **Network Access** as an example.

Procedure

Step 1 Select **Setting** > **System** > **Safety** > **Firewall**.

Figure 4-123 Firewall



Step 2 Select **Network Access** from **Rule Type** list, and then select the **Enable** check box.

- Enable **PING prohibited** and **Prevent Semijoin**, and click **Save**. You do not need to configure parameters.
- Enable **Network Access**, and configure allowlist and blocklist.
 - ◇ Select the mode: **Allowlist** and **Blocklist**.
 - ◇ Click **Add IP/MAC**.

Figure 4-124 Add IP/MAC



Step 3 Configure parameters.

Table 4-43 Description of adding IP/MAC parameters

Parameter	Description
Rule Type	Select IP address, IP segment, MAC address or all IP addresses. - IP address: Select IP version and enter the IP address of the host to be added. - IP segment: Select IP version and enter the start address and end address of the segment to be added. - MAC address: Enter MAC address of the host to be added. - All IP addresses: Set all IP addresses in allowlist or restricted list.
Device All Ports	Set access ports. You can select all ports or the ports in defined areas. - Device all ports: Set all IP port in allowlist or Blocklist. When selecting BlockList in Mode, and All IP Address in Rule Type, you cannot select the Device All Ports check box. - Device start server port and Device end server port: Set Device start server port and device end server port, and the range is 1–65535.
Device Start Server Port	
Device End Server Port	

Step 4 Click **OK**, and the **Firewall** page is displayed.

Step 5 Click **Save**.

4.8.5 Peripheral

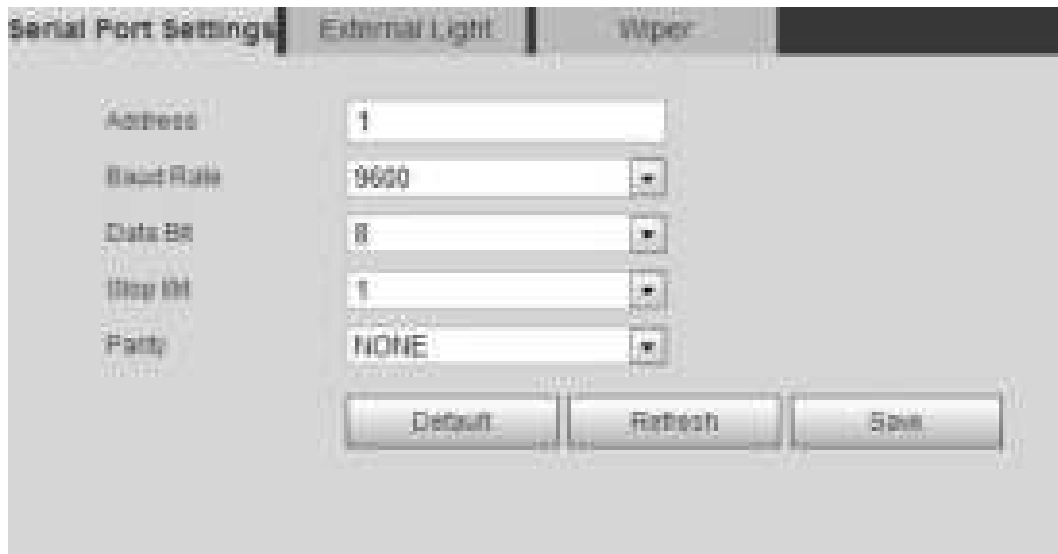
4.8.5.1 Serial Port Settings

Set the serial port of the external device.

Procedure

Step 1 Select **Setting** > **System** > **Peripheral** > **Serial Port Setting**.

Figure 4-125 Serial port settings



Step 2 Configure serial port settings parameters.

Table 4-44 Description of serial port settings parameters

Parameter	Description
Address	The corresponding device address. It is 1 by default. [] Make sure that the address is the device address; otherwise you cannot control the device.
Baud Rate	Select the baud rate for the camera. It is 9600 by default.
Date Bit	It is 8 by default.
Stop Bit	It is 1 by default.
Parity	It is None by default.

Step 3 Click **Save**.

4.8.5.2 External Light

You need to configure external light mode when the external light is used.

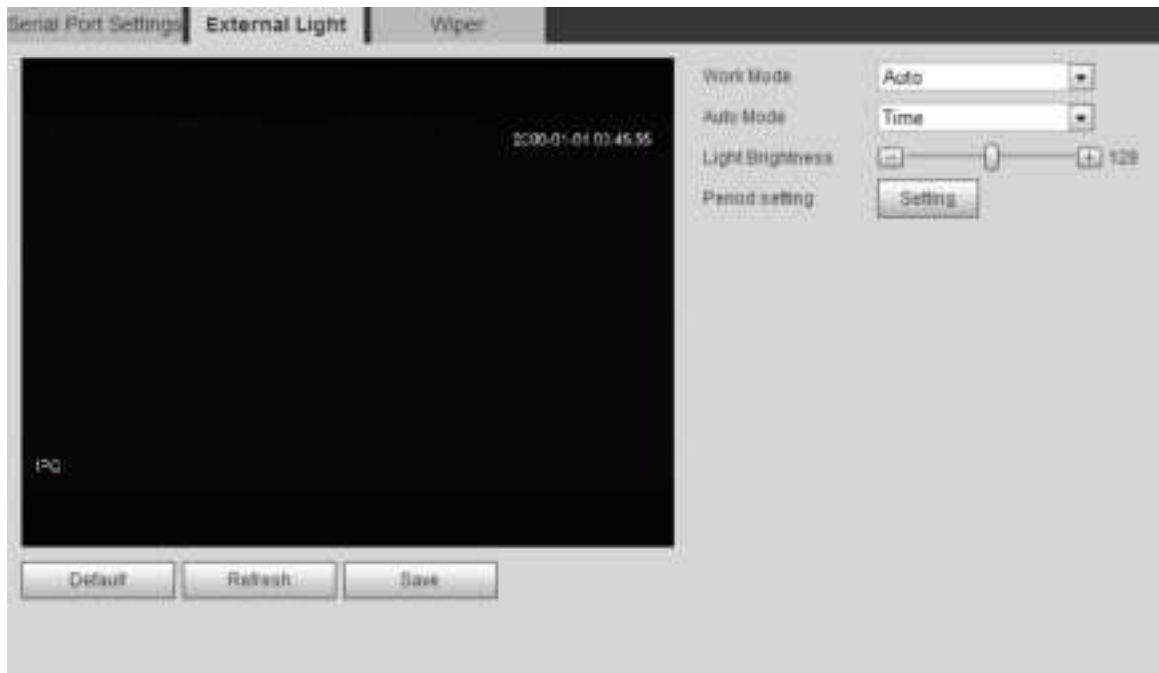
Prerequisites

- Connect external light with RS-485 port.
- You have configured serial port parameters. For details, see "4.8.5.1 Serial Port Settings".

Procedure

Step 1 Select **Setting** > **System** > **Peripheral** > **External Light**.

Figure 4-126 External light



Step 2 Configure external light work mode.

Table 4-45 Description of external light parameters

Parameter	Description
Work Mode	• Off : Turn off the external light. • Manual : Set the light brightness manually. • Auto : The camera turns on or turns off the light according to the light time and photoresistor automatically.
Auto Mode	• Time : When selecting Time in Auto Mode, click Setting to set the arming period. During the arming period, the external light is on. For details of arming period setting, see "5.1.1.1 Setting Period". • Photoresistor : When you select Photoresistor in Auto Mode, the system turns on the external light according to the brightness automatically.
Light Brightness	Set the brightness of the external light.

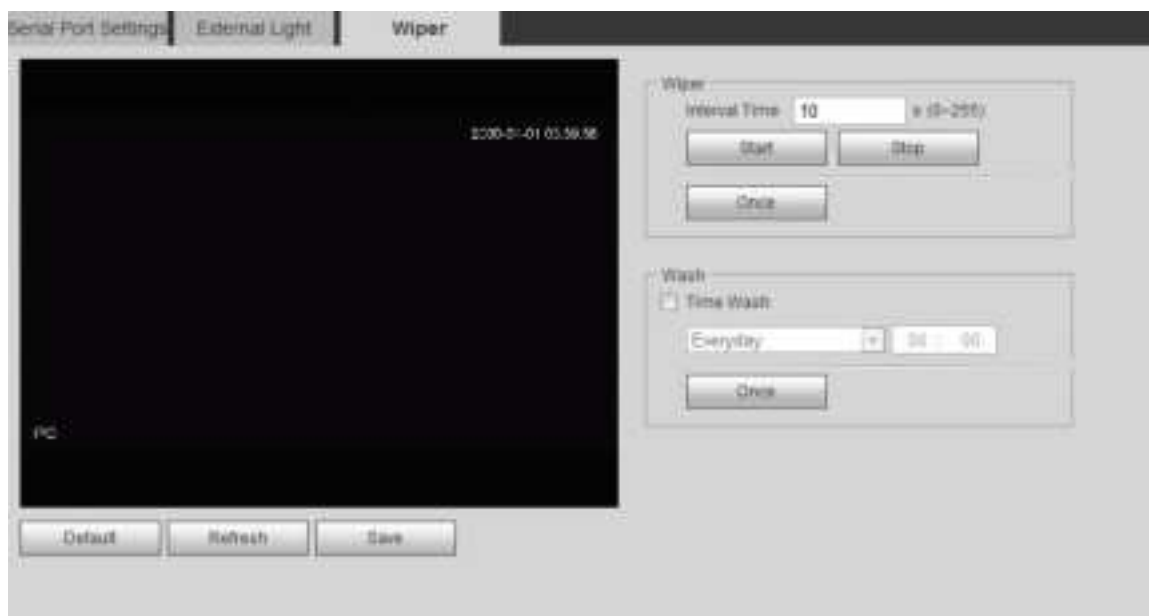
Step 3 Click **Save**.

4.8.5.3 Wiper

Procedure

Step 1 Select **Setting** > **System** > **Peripheral** > **Peripheral** > **Wiper**.

Figure 4-127 Wiper



Step 2 Configure wiper work mode.

Table 4-46 Description of wiper parameters

Parameter	Description
Interval Time	The interval time between stop mode and start mode. For example, set the time to 10 s, and the wiper will work every 10 s.
Start	Set the work status of the wiper.
Stop	- Start: Click Start, and the wiper works as the set interval time. - Stop: Click Stop, and the wiper stops working. - Once: Click Once, and the wiper works once.
Once	
Time Wash	Select the Time Wash check box and set the time, and then the wiper will work as the set time. Click Once , and the wiper works once. It can be used to check whether the wiper can work normally.

Step 3 Click **Save**.

5 Event

This chapter introduces intelligent event settings, including smart track, panoramic calibration, video detection, audio detection, smart plan, IVS, face detection, face recognition, people counting, heat map, video Metadata, alarm, and abnormality.

5.1 Setting Alarm Linkage

5.1.1 Alarm Linkage

When configuring alarm events, select alarm linkages (such as record, snapshot). When the corresponding alarm is triggered in the configured arming period, the system will alarm.

Pags might vary with different events.

Figure 5-1 Alarm linkage



5.1.1.1 Setting Period

Set arming periods. The system only performs corresponding linkage action in the configured period.

Procedure

Step 1 Click **Setting** next to **Period**.

Figure 5-2 Period

Step 2 Set arming periods. Alarms will be triggered in the time period in green on the timeline.

- Method 1: Directly press and drag the left mouse button on the timeline.
- Method 2: Enter an actual time period.

1. Click **Setting** next to a day.
2. Select a time period to be enabled.
3. Enter start time and end time of a time period.



- Select **All** or check boxes of some days to set the time period of multiple days at one time.
- You can set 6 time periods per day.

Step 3 Click **Save**.

5.1.1.2 Record Linkage

The system can link record channel when an alarm event occurs. After alarm, the system stops recording after an extended time period according to the **Record Delay** setting.

To use the record linkage function, set record plan for motion detection alarm and enable auto recording in record control.

5.1.1.2.1 Setting Record Plan

After the corresponding alarm type (**Normal**, **Motion**, and **Alarm**) is enabled, the record channel links recording.

Procedure

Step 1 Select **Setting** > **Storage** > **Schedule** > **Record**.

Figure 5-3 Record

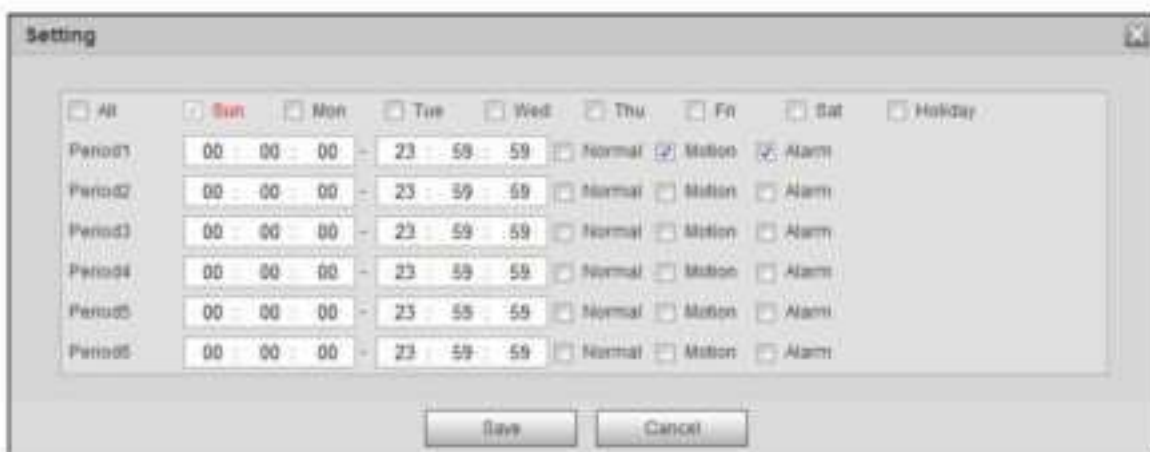


Step 2 Set record plan.

Green represents normal record plan (such as timing recording); yellow represents motion record plan (such as recording triggered by intelligent events); red represents alarm record plan (such as recording triggered by alarm-in).

- Method one: Select a record type, such as **Normal**, and directly press and drag the left mouse button to set the time period for normal record on the timeline.
- Method two: Enter an actual time period.
 1. Click **Setting** next to a day.

Figure 5-4 Setting (record time period)



2. Select a day, and the alarm type next to a period, and then set the period.



- Select **All** or check boxes of some days to set the time period of multiple days at one time.
- You can set 6 time periods per day.

Step 3 Click **Save**.

5.1.1.2.2 Setting Record Control

Set parameters such as pack duration, pre-event record, disk full, record mode, and record stream.



Make sure that the SD card is authenticated before recording if you use Dahua smart card. For details, see "4.5.2.5 Path".

Procedure

Step 1 Select **Setting** > **Storage** > **Record Control**.

Figure 5-5 Record control



Step 2 Set parameters.

Table 5-1 Description of record control parameters

Parameter	Description
Pack Duration	The time for packing each video file.
Pre-event Record	The time to record the video in advance of a triggered alarm event. For example, if the pre-event record is set to be 5 s, the system saves the recorded video of 5 s before the alarm is triggered. When an alarm or motion detection links recording, and the recording is not enabled, the system saves the video data within the pre-event record time to the video file.
Disk Full	Recording strategy when the disk is full. Stop : Stop recording when the disk is full. Overwrite : Cyclically overwrite the earliest video when the disk is full.
Record Mode	When you select Manual , the system starts recording; when you select Auto , the system starts recording in the configured time period of record plan.
Record Stream	Select record stream, including Main Stream and Sub Stream .

Step 3 Click **Save**.

5.1.1.2.3 Setting Record Linkage

On the alarm event setting page (such as the motion detection page), select **Record** and set **Record Delay** to set alarm linkage and record delay.

After **Record Delay** is configured, alarm recording continues for an extended period after the alarm ends.

Figure 5-6 Record linkage



5.1.1.3 Snapshot Linkage

After snapshot linkage is configured, the system can automatically alarm and take snapshots when an alarm is triggered.

After **Motion** is enabled in **Snapshot**, the system takes snapshots when an alarm is triggered. For querying and setting snapshot storage location, see "4.5.2.5 Path".

5.1.1.3.1 Setting Snapshot Plan

According to the configured snapshot plan, the system enables or disables snapshot at corresponding time.

Procedure

Step 1 Select **Setting** > **Storage** > **Schedule** > **Snapshot**.

Figure 5-7 Snapshot



Step 2 Select snapshot type and set time period.

Green represents normal snapshot plan (such as timing snapshot); yellow represents motion snapshot plan (such as snapshot triggered by intelligent events); red represents alarm snapshot plan (such as snapshot triggered by alarm-in).

- Method one: Select snapshot type, such as **Normal**, and directly press and drag the left mouse button to set time period for normal snapshot on the timeline.
- Method two: Enter an actual time period.
 1. Click **Setting** next to a day.

Figure 5-8 Setting (snapshot time period)

	All	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Holiday
Period1		☒							
Period2									
Period3									
Period4									
Period5									
Period6									

Buttons: Save, Cancel

2. Select a day, and the alarm type next to a period. Then set the period.



- ◊ Select **All** or check boxes of some days to set the time period of multiple days at one time.
- ◊ You can set 6 time periods per day.

3. You can set 6 time periods per day.

Step 3 Click **Save**.

5.1.1.3.2 Setting Snapshot Linkage

On the alarm event setting page (such as the motion detection page), select **Snapshot** and set alarm linkage snapshot.

Figure 5-9 Snapshot linkage

☐ Snapshot

5.1.1.4 Relay-out Linkage

When an alarm is triggered, the system can automatically link with relay-out device.

On the alarm event setting page (such as the motion detection page), select **Alarm** and set **Alarm Delay**.

When alarm delay is configured, alarm continues for an extended period after the alarm ends.

Figure 5-10 Relay-out linkage

☒ Relay-out

Alarm Delay

10

s (10~300)

5.1.1.5 Email Linkage

When an alarm is triggered, the system will automatically send an email to users.

Email linkage takes effect only when SMTP is configured. For details, see "4.6.5 SMTP (Email)".

Figure 5-11 Email linkage



5.1.1.6 PTZ Linkage

When an alarm is triggered, the system links PTZ to do some operations. For example, the system links PTZ to rotate to the preset X.

Figure 5-12 PTZ linkage



5.1.1.7 Warning Light Linkage

When an alarm is triggered, the system can automatically enable the warning light.

Set **Mode**, **Flicker Frequency**, **Duration**, and **Period**.

- **Mode**: The display mode of the warning light when an alarm is triggered. It includes **Normally on** and **Flicker**. When setting **Flicker** as the mode, you need to set the flicker frequency.



For the camera with red and blue alarm light, you can only select **Flicker** in **Mode**.

- **Duration**: After setting warning light duration, the warning light is turned off after an extended time of period after an alarm. It is 5 seconds–30 seconds.
- **Period**: The period for using warning light. When an alarm triggered during the configured period, the system links warning light. For the configuration, see "5.1.1.1 Setting Period".

Figure 5-13 Warning light linkage



5.1.1.8 Audio Linkage

The system broadcasts alarm audio file when an alarm event occurs. Select **Setting** > **Camera** > **Audio** > **Alarm Audio** to set alarm audio file.

Figure 5-14 Audio linkage



5.1.2 Subscribing Alarm

5.1.2.1 About Alarm Types

Table 5-2 Description of alarm types

Alarm Type	Description	Preparation
Motion Detection	The alarm is triggered when moving object is detected.	Motion detection is enabled. For details, see "5.4.1 Setting Motion Detection".
Disk Full	The alarm is triggered when the free space of SD card is less than the configured value.	The SD card no space function is enabled. For details, see "5.19.1 Setting SD Card".
Disk Error	The alarm is triggered when there is failure or malfunction in the SD card.	SD card failure detection is enabled. For details, see "5.19.1 Setting SD Card".
Video Tampering	The alarm is triggered when the camera lens is covered or there is defocus in video images.	Video tampering is enabled. For details, see "5.4.2 Setting Video Tampering".
External Alarm	The alarm is triggered when there is external alarm input.	The device has alarm input port and external alarm function is enabled. For details, see "5.18 Setting Relay-in".
Illegal Access	The alarm is triggered when the number of consecutive login password error is up to the allowable number.	Illegal access detection is enabled. For details, see "5.19.3 Setting Illegal Access".
Audio Detection	The alarm is triggered when there is audio connection problem.	Abnormal audio detection is enabled. For details, see "5.6 Setting Audio Detection".
IVS	The alarm is triggered when intelligent rule is triggered.	Enable IVS, crowd map, face detection or people counting, and other intelligent functions.
Scene Changing	The alarm is triggered when the device monitoring scene changes.	Scene changing detection is enabled. For details, see "5.4.3 Setting Scene Changing".
Voltage Detection	The alarm is triggered when the device detects abnormal voltage input.	Voltage detection is enabled. For details, see "5.19.4 Setting Voltage Detection".
Security Exception	The alarm is triggered when the device detects malicious attack.	Voltage detection is enabled. For details, see "5.19.5 Setting Security Exception".

5.1.2.2 Subscribing Alarm Information

You can subscribe alarm event. When a subscribed alarm event is triggered, the system records detailed alarm information at the right side of the page.



Functions of different devices might vary.

Procedure

Step 1 Click the **Alarm** tab.

Figure 5-15 Alarm (subscription)



Step 2 Select **Alarm Type** according to the actual need.

- Select **Prompt**. The system prompts and records alarm information according to actual conditions.
 - ◇ When the subscribed alarm event is triggered and the **Alarm** page is not displayed, the  is displayed on the **Alarm** tab and the alarm information is recorded automatically. Click the **Alarm** tab, and this icon disappears.
 - ◇ When the subscribed alarm event is triggered and the **Alarm** page is displayed, the corresponding alarm information is displayed in the alarm list at the right side of the **Alarm** page.
- Select **Play Alarm Tone**, and select the tone path.

The system would play the selected audio file when the selected alarm is triggered.

5.2 Setting Smart Track

After setting calibration and parameters for smart track, the tracking speed dome can automatically link to a corresponding position and track an object till it is out of the monitoring range or the set tracking time is reached when the intelligent rules for panoramic camera triggers an alarm.

5.2.1 Setting Calibration Parameters for Smart Track

The camera has calibration parameters by default, and you can modify the parameters manually when the effect is not good with default setting.



Auto calibration mode is available on some select models.

Procedure

Step 1 Select **Setting** > **Event** > **Smart Track** > **Smart Track**.

Step 2 Configure calibration parameters.

- Auto calibration

Select **Auto** in **Calibration Mode**, and then click **Start Calibration**.

Figure 5-16 Auto calibration



- Manual calibration

Select **Manual** in **Calibration Mode**, select the channel that you need, and then add calibration point for it in the live image.

Figure 5-17 Manual calibration (1)



Figure 5-18 Manual calibration (2)



1. Adjust the speed dome lens and turn it to the same view as the chosen lens, and then click

The calibration boxes are displayed in both images.

2. Pair each box in the two images, and keep the paired boxes at the same spot of the live view.
3. Click

You need at least 4 pairs of calibration boxes to ensure the views of the speed dome and the panoramic camera as similar as possible.

Step 3 Click **Save**.

5.2.2 Enabling Alarm Track

Alarm Track is disabled by default. Smart Track is enabled only after Alarm Track is enabled and intelligent rules of the panoramic camera are configured. Smart Track is supported only when rules of crowd map, intrusion and tripwire are triggered. See "5.8 Setting IVS" and "5.9 Setting Crowd Map".

Procedure

- Step 1** Select **Setting** > **Event** > **Smart Track** > **Alarm Track**.

Figure 5-19 Alarm track

Step 2 Select the **Enable** check box to enable track linkage.

After enabling the function, manual positioning, manual tacking and auto tracking take effect.

Step 3 Set parameters.

Table 5-3 Description of alarm track parameters

Parameter	Description
Auto Track	Select On , and the speed dome automatically links to a corresponding position and tracks an object when the intelligent rules of the panoramic camera trigger alarms.
Track Time	Set the alarm track time. - Before an object disappears: The speed dome would automatically link to a corresponding position and tracks an object until the object moves out of the monitoring range when the intelligent rules of the panoramic camera trigger alarms. - Custom: Set the auto alarm track time of the speed dome.
Idle Time	It is an interval from the end of alarm track of the speed dome to the start of idle mode.
Idle Position	Set Idle Time and Idle Position . If no event needs to be tracked after the configured idle time, the device automatically rotates to the set idle position. For example, the Idle Time is set to be five seconds and the Idle Position is set to be preset point 1. When the speed dome does not start tracking after five seconds, it automatically rotates to preset 1. To set Idle Position , first set a preset point. For preset point, see "4.3.2.1 Preset".

Step 4 Click **Save**.

5.3 Setting Panoramic Calibration

The device has calibration parameters by default, and you can modify the parameters manually when the effect is not good with default setting. Before manually calibrating a channel, clear all default calibration parameters.

Channel 1 is a PTZ camera. You should calibrate the scene coordinates of **Channel 1** and other channels. Take **Channel 2** as an example.

Procedure

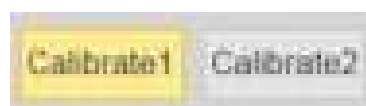
Step 1 Select **Setting** > **Event** > **Panoramic Calibration**.

Figure 5-20 Panoramic calibration



Step 2 Select channel 2, and then select a calibration number under the video images in turns (See Figure 5-21) to add calibration points to the corresponding video images. Take **Calibrate 1** as an example.

Figure 5-21 Select a calibration number



1. Adjust the PTZ angle of channel 1 through the PTZ control page to rotate the center of channel 1 to a position aligned with the green point in **Calibrate 1** image, and then click .

Calibration box is displayed in images of **Channel 1** and **Calibrate 1**

2. Respectively drag calibration boxes on images of **Channel 1** and **Calibrate 1** to the corresponding positions. Click  to save this pair of calibration boxes.

You are recommended to drag calibration box to a static position with clear edges in the image. This can ensure the edges can be accurately distinguished by the camera. After the calibration record is saved, the calibration box is displayed in yellow.

Repeat 1 to 2 to add at least 4 pairs of calibration points to each calibration picture.

Step 3 Click **Save**.

5.4 Setting Video Detection

Check whether there are considerable changes on the video by analyzing video images. In case of any considerable change on the video (such as moving object, fuzzy image), the system performs an alarm linkage.

5.4.1 Setting Motion Detection

The system performs an alarm linkage when the moving object appears on the image and its moving speed reaches the preset sensitivity.

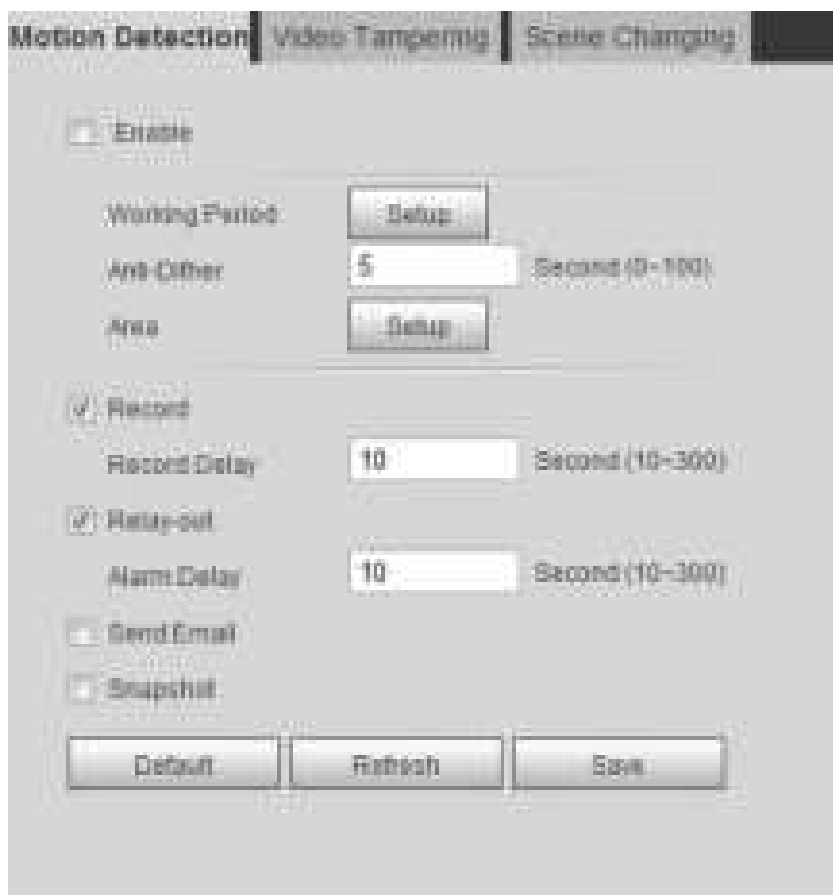


- If you enable motion detection and smart motion detection simultaneously, and configure the linked activities, the linked activities take effect as following:
 - ◊ When **Motion Detection** is triggered, the camera will record and take snapshots, but other configured linkages such as sending emails, PTZ operation will not take effect.
 - ◊ When Smart Motion Detection is triggered, all the configured linkages take effect.
- If you only enable motion detection, all the configured linkages take effect when motion detection is triggered.

Procedure

Step 1 Select **Setting > Event > Video Detection > Motion Detection**.

Figure 5-22 Motion detection



Motion Detection | Video Tampering | Scene Changing

☐ Enable

Working Period:

Anti-Clutter: Second (0-100)

Area:

☒ Record

Record Delay: Second (10-300)

☒ Relay-out

Alarm Delay: Second (10-300)

☐ Send Email

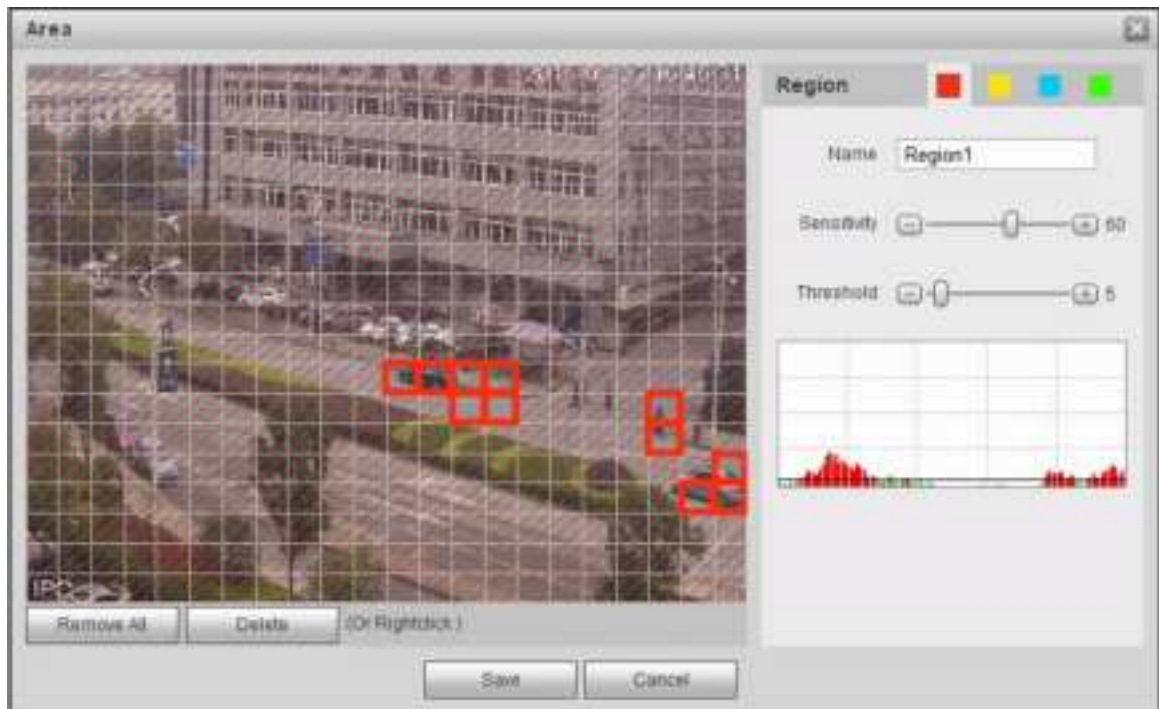
☐ Snapshot

Step 2 Select the **Enable** check box to enable motion detection function.

Step 3 Set the area for motion detection.

1. Click **Setup** next to **Area**.

Figure 5-23 Area



2. Select a color and set the region name. Select an effective area for Motion Detection in the image and set **Sensitivity** and **Threshold**.

- Select a color on  to set different detection parameters for each region.
- **Sensitivity** : Sensitive degree of outside changes. It is easier to trigger the alarm with higher sensitivity.
- **Threshold** : Effective area threshold for Motion Detection. The smaller the threshold is, the easier the alarm is triggered.
- The whole video image is the effective area for Motion Detection by default.
- The red line in the waveform indicates that the Motion Detection is triggered, and the green one indicates that there is no motion detection. Adjust sensitivity and threshold according to the waveform.

3. Click **Save**.

Step 4 Set arming periods and alarm linkage action. For details, see "5.1.1 Alarm Linkage".

Anti-dither: After the **Anti-dither** time is set, the system only records one motion detection event in the period.

Step 5 Click **Save**.

5.4.2 Setting Video Tampering

The system performs alarm linkage when the lens is covered or video output is mono-color screen caused by light and other reasons.

Procedure

Step 1 Select **Setting** > **Event** > **Video Detection** > **Video Tamper**.

Step 2 Select the event type.

- **Video Tampering** : When the percentage of the tampered image and the duration exceed the configured values, an alarm will be triggered.
- **Defocus Detection** : When the image is blurred, an alarm will be triggered. This function is available on some select models.

Figure 5-24 Video tampering



Table 5-4 Description of video temper parameter

Parameter	Description
Tamper Area	When the percentage of the tampered image and the duration exceed the configured values, an alarm will be triggered. The tamper area is 30% and the duration is 5 s by default.
Duration	
Anti-Dither	Only record one alarm event during the anti-dither period.

Step 3 Set arming periods and alarm linkage action. For details, see "5.1.1 Alarm Linkage".

Step 4 Click **Save**.

5.4.3 Setting Scene Changing

The system performs alarm linkage when the image switches from the current scene to another one.

Procedure

Step 1 Select **Setting** > **Event** > **Video Detection** > **Scene Changing**.

Figure 5-25 Scene changing



Step 2 Set arming periods and alarm linkage action. For details, see "5.1.1 Alarm Linkage".

Step 3 Click **Save**.

5.5 Setting Smart Motion Detection

The system performs alarm linkage when human, non-motorized vehicle, or motor vehicle appear on the image and its moving speed reaches the preset sensitivity. Enabling smart motion detection can avoid the alarms triggered by the environment changes, and the function is enabled by default.

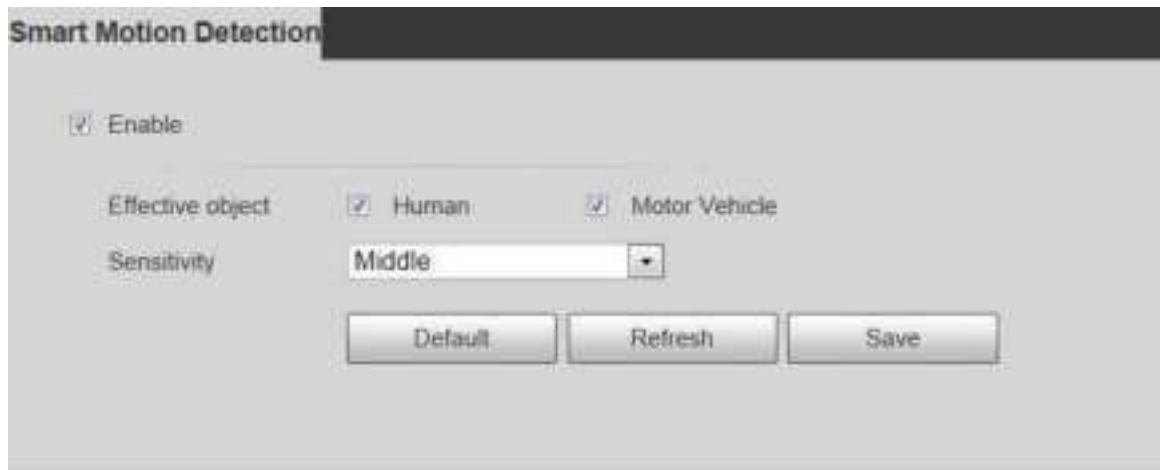
Prerequisites

- Select **Setting** > **Event** > **Video Detection** > **Motion Detection** to enable the motion detection function.
- You have set **Period** and **Area** in **Motion Detection**, and make sure that the sensitivity value is larger than 0, and the threshold value is smaller than 100.

Procedure

Step 1 Select **Setting** > **Event** > **Smart Motion Detection**.

Figure 5-26 Smart motion detection



Step 2 Select the **Enable** check box to enable the smart motion detection function.

Step 3 Set effective object and sensitivity.

- Effective object: Includes **Human** and **Motor vehicle**. When you select **Human**, the camera will detect human and non-motorized vehicle.
- Sensitivity: Includes **Low**, **Middle**, and **High**. The higher the sensitivity is, the easier the alarm will be triggered.

Step 4 Click **OK**.

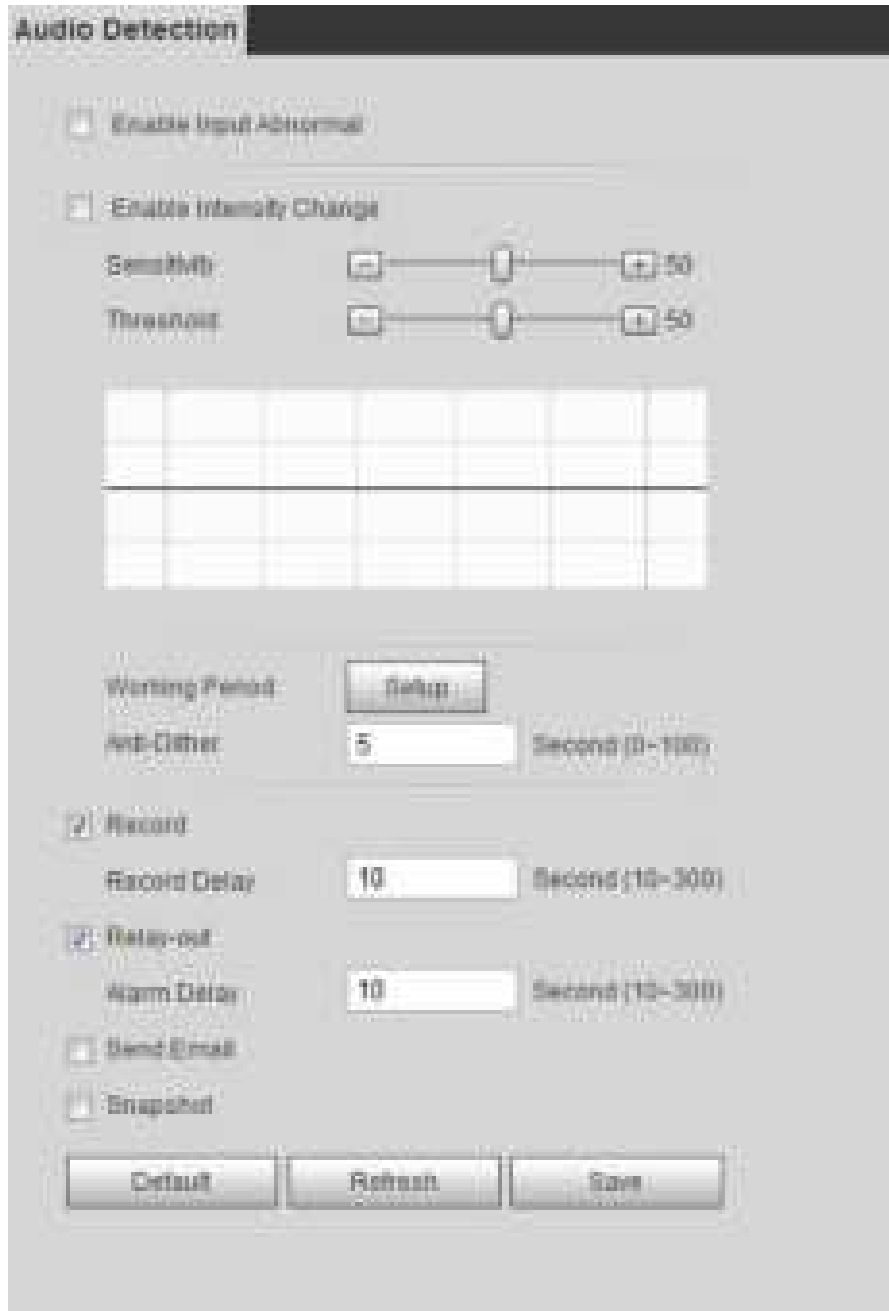
5.6 Setting Audio Detection

The system performs alarm linkage when vague voice, tone change, or sound intensity rapid change is detected.

Procedure

Step 1 Select **Setting** > **Event** > **Audio Detection**.

Figure 5-27 Audio detection



Audio Detection

☐ Enable Input Abnormal

☐ Enable Intensity Change

Sensitivity

Threshold

Working Period

Anti-Clobber Second (0-100)

☒ Record

Record Delay Second (10-300)

☒ Relay-out

Alarm Delay Second (10-300)

☐ Send Email

☐ Snapshot

Step 2 Set parameters.

- Input abnormal: Select the **Enable Input Abnormal** check box, and the alarm is triggered when the system detects abnormal sound input.
- Intensity change: Select the **Enable Intensity Change** check box and then set **Sensitivity** and **Threshold**. The alarm is triggered when the system detects that the sound intensity exceeds the set threshold.
 - ◇ It is easier to trigger the alarm with higher sensitivity or smaller threshold. Set a high threshold for noisy environment.
 - ◇ The red line in the waveform indicates audio detection is triggered, and the green one indicates no audio detection. Adjust sensitivity and threshold according to the waveform.

Step 3 Set arming periods and alarm linkage action.

Step 4 Click **Save**.

5.7 Setting Smart Plan

Smart plan includes face detection, heat map, IVS, people counting, face detection, video metadata, stereo analysis and schedule. The intelligent function can be enabled only after the corresponding smart plan is enabled.

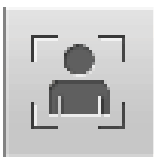
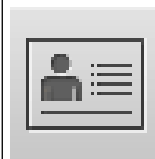
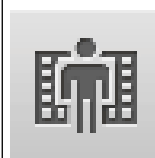
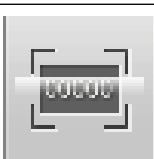
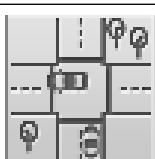
5.7.1 Basic Smart Plan

Procedure

Step 1 Select **Setting** > **Event** > **Smart Plan**.

The **Smart Plan** page is displayed. For smart plan icon, see the table below.

Table 5-5 Description of smart plan icon

Icon	Description	Icon	Description	Icon	Description
	Face detection		Stereo vision		Heat map
	Stereo analysis		IVS		Face recognition
	People counting		Video metadata		Crowd map
	ANPR		Vehicle density	—	—

Step 2 Enable smart functions as need.

Different cameras support different ways to enable smart functions. Select corresponding ways to enable these functions according to the actual page.

- Select an icon to enable the corresponding smart plan.

Click an icon to enable it, and the selected smart function is highlighted. Click it again to cancel the selection.

If the icon  on the page, click it to enable the smart function switch.

- Enable smart plan through **Add Plan**.

1. Select a preset point from the **Add Plan** the page.

The smart plan for the point is displayed.

2. Click the corresponding icon to enable a smart function.

The selected smart function is highlighted. Click it again to cancel the selection.

Step 3 Click **Save**.

5.7.2 Schedule

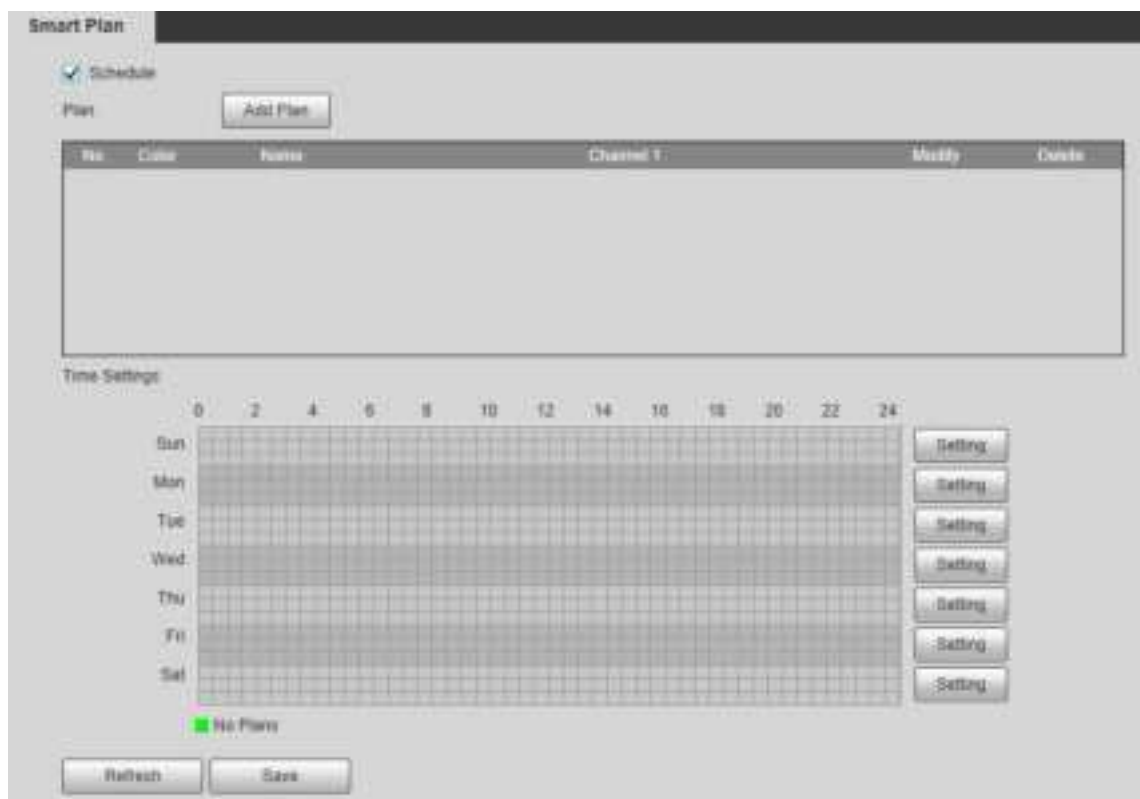
After enabling this function, you can configure different smart plans at different periods for your camera.

Procedure

Step 1 Select **Setting** > **Event** > **Smart Plan**.

Step 2 Enable **Schedule**.

Figure 5-28 Schedule



Step 3 Click **Add Plan**.

1. Rename the plan as needed.
2. Select smart plan. Other plans which are incompatible with the one that you selected would turn gray.
3. Click **Save**.
4. Follow [Step 1](#) to [Step 3](#) to add more plans. You can add 10 plans at most.
 - Click  to modify the plan added.
 - Click  to delete the plan.

Figure 5-29 Add plan (1)

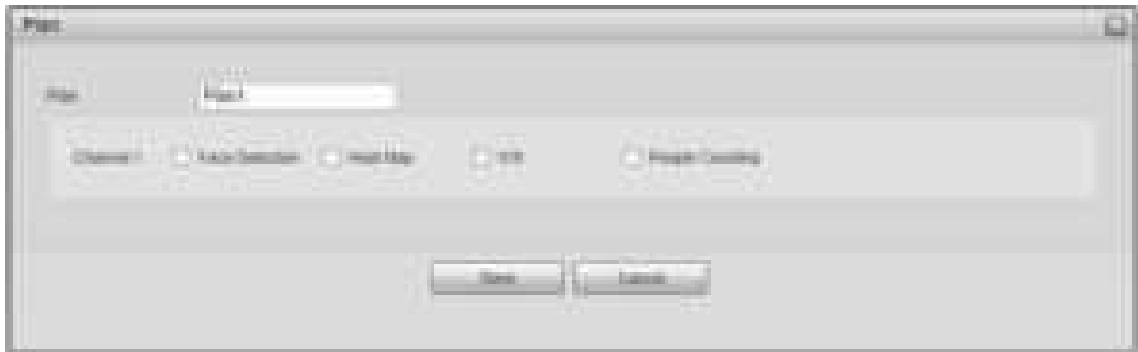
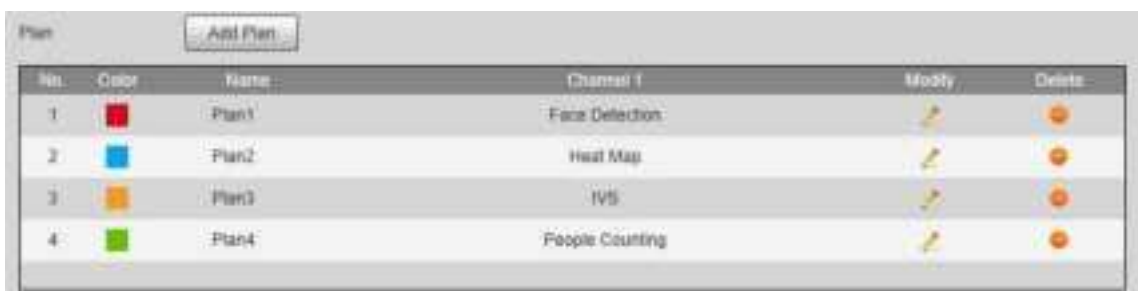


Figure 5-30 Add plan (2)



Step 4 Configure the time settings.

1. Click **Settings**.
2. Configure the period. In the **Smart Plan** list, select the type as needed.
3. Click **Save**.
4. (Optional) Repeat step 1-4 to add more plans for different time.
 - You can set up to 6 different plans for one day.
 - One period can only add one smart plan.

Figure 5-31 Time settings (1)

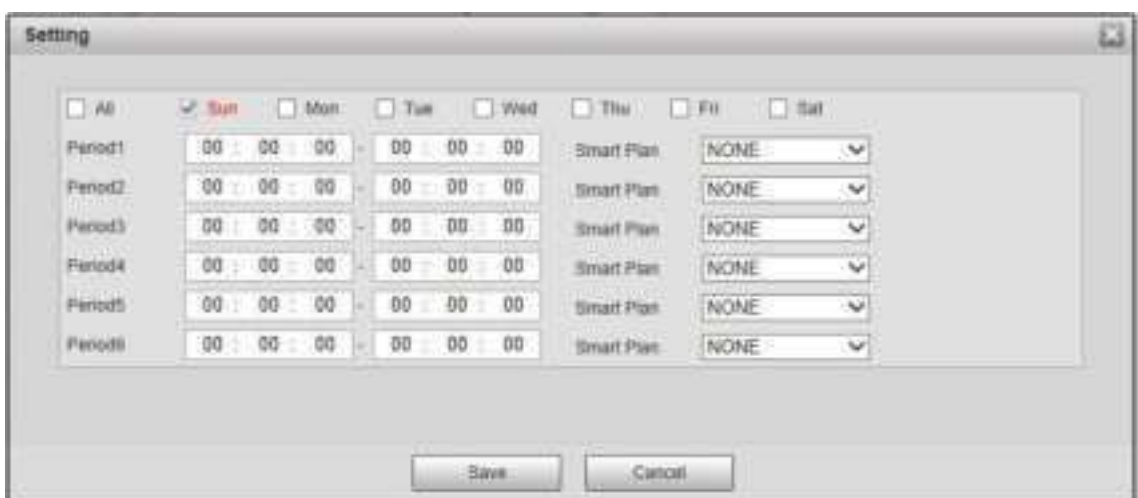
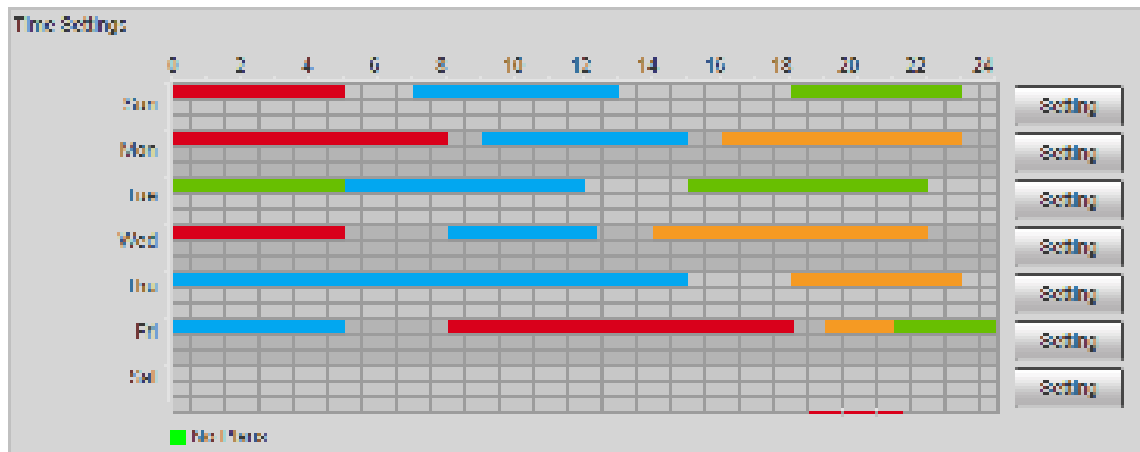


Figure 5-32 Time settings (2)



Step 5 Click **Save**.



The **Schedule** function is only available on single-channel cameras.

5.8 Setting IVS

This section introduces scene selection requirements, rule configuration, and global configuration for IVS (intelligent video surveillance).

Basic requirements on scene selection are as follows.

- The target should occupy no more than 10% of the whole image.
- The target size in the image should be no more than 10 × 10 pixels. The size of abandoned object in the image should be no less than 15 × 15 pixels (CIF image). The target height and width should no more less than a third of the image height and width. The recommended target height is 10% of the image height.
- The brightness difference of the target and the background should be no less than 10 gray levels.
- The target should be continuously present in the image for no less than two seconds, and the moving distance of the target should be larger than its width and no less than 15 pixels (CIF image) at the same time.
- Reduce the complexity of surveillance scene as much as you can. Intelligent analysis functions are not recommended to be used in scene with dense targets and frequent illumination change.
- Avoid areas such as glass, reflective ground, water surface, and areas interfered by branch, shadow and mosquito. Avoid backlight scene and direct light.

5.8.1 Global Configuration

Set global rules for IVS, including anti-disturb, depth of field calibration, and valid motion parameter for targets.

Calibration Purpose

Determine corresponding relationship between 2D image captured by the camera and 3D actual object according to one horizontal ruler and three vertical rulers calibrated by the user and the corresponding actual distance.

Applicable Scene

- Medium or distant view with installation height of more than three meters. Scenes with parallel view or ceiling-mounted are not supported.
- Calibrate horizontal plane, not vertical walls or sloping surfaces.
- This function is not applicable to scenes with distorted view, such as the distorted views captured by super wide-angle or fisheye camera.

Notes

- Calibration Drawing
 - ◇ Calibration area: The calibration area drawn should be on one horizontal plane.
 - ◇ Vertical ruler: The bottom of three vertical rulers should be on the same horizontal plane. Select three reference objects with fixed height in triangular distribution as vertical rulers, such as vehicle parked at roadside or road lamp poles. Arrange three persons to draw at each of the three positions in the monitoring scene.
 - ◇ Horizontal ruler: Select reference object with known length on the ground, such as sign on the road, or use a tape to measure the actual length.
- Calibration Verification

After setting the ruler, draw a straight line on the image, check the estimated value of the straight line, and then compare this value with the value measured in the actual scene to verify calibration accuracy. In case of major difference between the estimated value and the actual one, fine-tune or reset parameters until the error requirement is met.

Procedure

1. Select **Setting > Event > IVS > Global Setup**.

Figure 5-33 Global setup of IVS



2. Set parameters.

Table 5-6 Description of global setup (IVS) parameters

Parameter	Description
Anti-Disturb Enable	A reserved function.
Sensitivity	Adjust the filter sensitivity. With higher value, it is easier to trigger an alarm when low-contrast object and small object are captured, and the false detection rate is higher.
Tracking Overlap Rate	Reserved functions.
Valid Tracking Distance	
Valid Tracking Time	

3. Set calibration area and ruler.
 - a. Click **Add Calibration Area** and draw a calibration area in the image.
 - b. Select a calibration type and enter the actual length, and then click **Add Rulers**.
 - c. Draw one horizontal ruler and three vertical rulers in the calibration area.
4. Click **Save**.

Result

1. Select the verification type, and then click **Calibration Valid**.
To verify vertical ruler and horizontal ruler, respectively select **Height Verification** and **Width Verification**.
2. Draw a straight line in the image to verify whether the rulers are correctly set.
In case of big difference between the estimated value and the actual one, fine-tune or reset parameters until the error requirement is met.

5.8.2 Rule Configuration

Set rules for IVS, including cross fence detection, tripwire, intrusion, abandoned object, moving object, fast moving, parking detection, crowd gathering, and loitering detection.

- Select **Setting** > **Event** > **Smart Plan**, and enable **IVS**.
- Select **Setting** > **Event** > **IVS** > **Global Setup** to finish global configuration, and then configure **Fast Moving** rule.

Table 5-7 Description of IVS functions

Rule	Description	Applicable Scene
Tripwire	When the target crosses tripwire from the defined motion direction, the system performs alarm linkages.	Scenes with sparse targets and no occlusion among targets, such as the perimeter protection of unattended area.
Intrusion	When the target enters, leaves, or appears in the detection area, the system performs alarm linkages.	

Rule	Description	Applicable Scene
Abandoned object	When an object is abandoned in the detection area over the set time, the system performs alarm linkages.	Scenes with sparse targets and without obvious and frequent light change. Simple scene in the detection area is recommended. - Missed alarms might increase in the scenes with dense targets, frequent occlusion, and people staying. - In scenes with complex foreground and background, false alarm might be triggered for abandoned or missing object.
Missing object	When an object is taken out of the detection area over the defined time, the system performs alarm linkages.	Scenes with sparse targets and without obvious and frequent light change. Simple scene in the detection area is recommended. - Missed alarm might increase in the scenes with dense targets, frequent occlusion, and people staying. - In scenes with complex foreground and background, false alarm might be triggered for abandoned or missing object.
Fast moving	When the motion speed is higher than the configured speed, the system performs alarm linkages.	Scene with sparse targets and less occlusion. The camera should be installed right above the monitoring area. The light direction should be vertical to the motion direction.
Parking detection	When the target stays over the configured time, the system performs alarm linkages.	Road monitoring and traffic management.
Crowd gathering	When the crowd gathers or the crowd density is large, the system performs alarm linkages.	Scenes with medium or long distance, such as outdoor plaza, government entrance, station entrance and exit. It is not suitable for short-distance view analysis.

Rule	Description	Applicable Scene
Loitering detection	When the target loiters over the shortest alarm time, the system performs alarm linkages. After alarm is triggered, if the target stays in the area within the time interval of alarm, then alarm will be triggered again.	Scenes such as park and hall.

Configure IVS rules. This section takes tripwire as an example.



Go to the **Rule Config** page of the speed dome, and the PTZ lock function is automatically enabled. The locking time is 180 seconds. You can only manually control the PTZ during the locking time. Click **Unlock** at lower left corner of the **Rule Config** page to manually unlock the PTZ, and click **Lock** again to relock the PTZ.

Procedure

Step 1 Select **Setting > Event > IVS > Rule Config**.

Step 2 Click  on the **Rule Config** page, double-click the name to modify the rule name, and then select **Tripwire** from the **Rule Type** drop-down list.

Figure 5-34 Tripwire



Step 3 Click **Draw Rule** to draw rule line in the image. Right-click to finish drawing.

For requirements of drawing rules, see Table 5-7 . After drawing rules, drag corners of the detection area to adjust the area range.

Table 5-8 Description of IVS analysis

Rule	Description
Tripwire	Draw a detection line.

Rule	Description
Intrusion	Draw a detection area.
Abandoned object	- During the detection of abandoned object, the alarm is also triggered if pedestrian or vehicle stays for a long time. If the abandoned object is smaller than pedestrian and vehicle, set the target size to filter pedestrian and vehicle or properly extend the duration to avoid false alarm triggered by transient staying of pedestrian. - During the detection of crowd gathering, false alarm might be triggered by low installation height, large percentage of single person in an image or obvious target occlusion, continuous shaking of the camera, shaking of leaves and tree shade, frequent opening or closing of retractable door, or dense traffic or people flow.
Missing object	
Fast moving	
Parking detection	
Crowd gathering	
Loitering detection	

Step 4 (Optional) Click **Draw Target** at the right side of **Target Filter**, and then draw the target in the image.

- When the rule of crowd gathering is configured, you do not need to set target filter, but draw the minimum gathering area. Click **Draw Target** to draw the minimum gathering area in the scene. The alarm is triggered when the number of people in the detection area exceeds the minimum area and the duration.
- Click **Clear** to delete all drawn detection lines.
- Click **Draw Target** at the right side of **Pixel Counter**, and then press and hold the left mouse button to draw a rectangle, the **Pixel Counter** then displays its pixel.

Step 5 Set rule parameters for IVS.

Table 5-9 Description of IVS parameters

Parameter	Description
Direction	Set the direction of rule detection. - When setting cross fence detection and tripwire, select A->B, B->A, or A<->B. - When setting intrusion, select Enters, Exits, or Enter&Exit.
Action	When setting intrusion action, select Appears or Cross .
Object tracking	Select Object Tracking to enable this function. When alarm is triggered by a moving object, select 1P+3 or 1P+5 as the object tracking display mode in the Live page. Then the tracking scene follows the moving object until the object is out of the camera range. For details, see "4.2.4 Window Adjustment Bar".  This function is available on some select models.

Parameter	Description
Track linkage	Select Alarm Track and set the tracking time. When alarm is triggered, the camera automatically tracks the person or object that triggers the alarm. Tracking time is the duration that the camera automatically tracks the object.
Track Time	Before enabling this function, you need to enable or disable the Alarm Track function under Smart Track as needed. - When the Channel is set as 1, disable Alarm Track under Smart Track. - When the Channel is set as 2 or 3, enable Alarm Track under Smart Track.
AI Recognition	Select AI Recognition to enable this function. - When you select Person as the alarm target, an alarm will be triggered when the system detects that person trigger the rule. - When you select Vehicle as the alarm target, alarm will be triggered when the system detects that vehicle trigger the rule.
Duration	- For abandoned object, the duration is the shortest time for triggering an alarm after an object is abandoned. - For missing object, the duration is the shortest time for triggering an alarm after an object is missing. - For parking detection, crowd gathering, or loitering detection, the duration is the shortest time for triggering an alarm after an object appears in the area.
Sensitivity	- For fast moving, sensitivity is related to the triggering speed. Lower sensitivity requires faster moving speed to trigger the alarm. - For crowd gathering, sensitivity is related to the alarm triggering time. It is easier to trigger the alarm with higher sensitivity.

Step 6 Set arming periods and alarm linkage action. For details, see "5.1.1 Alarm Linkage".

Step 7 Click **Save**.

To view alarm information on the **Alarm** tab, you need to subscribe relevant alarm event. For details, see "5.1.2 Subscribing Alarm".

5.9 Setting Crowd Map

You can view crowd distribution on the map in real time for timely arming, to prevent stampede and other accidents.

5.9.1 Global Configuration

Set the calibration parameters of panoramic cameras.

Calibration Purpose

Determine corresponding relationship between 2D image captured by the camera and 3D actual object according to one horizontal ruler and three vertical rulers calibrated by the user and the corresponding actual distance.

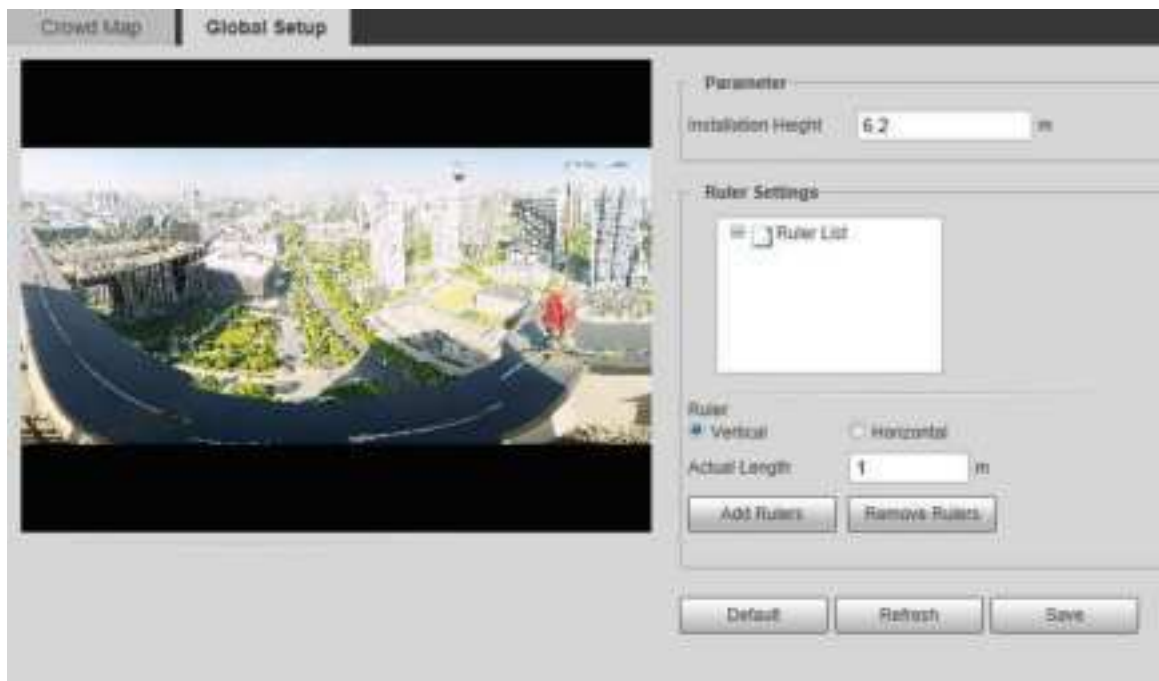
Notes

When drawing calibration ruler, keep the ruler length consistent with the actual length of the object.

Procedure

1. Select **Setting** > **Event** > **Crowd Map** > **Global Setup**.

Figure 5-35 Global setup of crowd map



2. Set calibration area and ruler.
 - a. Click **Add Calibration Area** and draw a calibration area in the image.
 - b. Select a calibration type and enter the actual length, and then click **Add Rulers**.
 - c. Draw one horizontal ruler and three vertical rulers in the calibration area.
3. Click **Save**.

5.9.2 Rule Configuration

When the number of people or the crowd density in the detection area exceeds the configured threshold, the system performs alarm linkages.

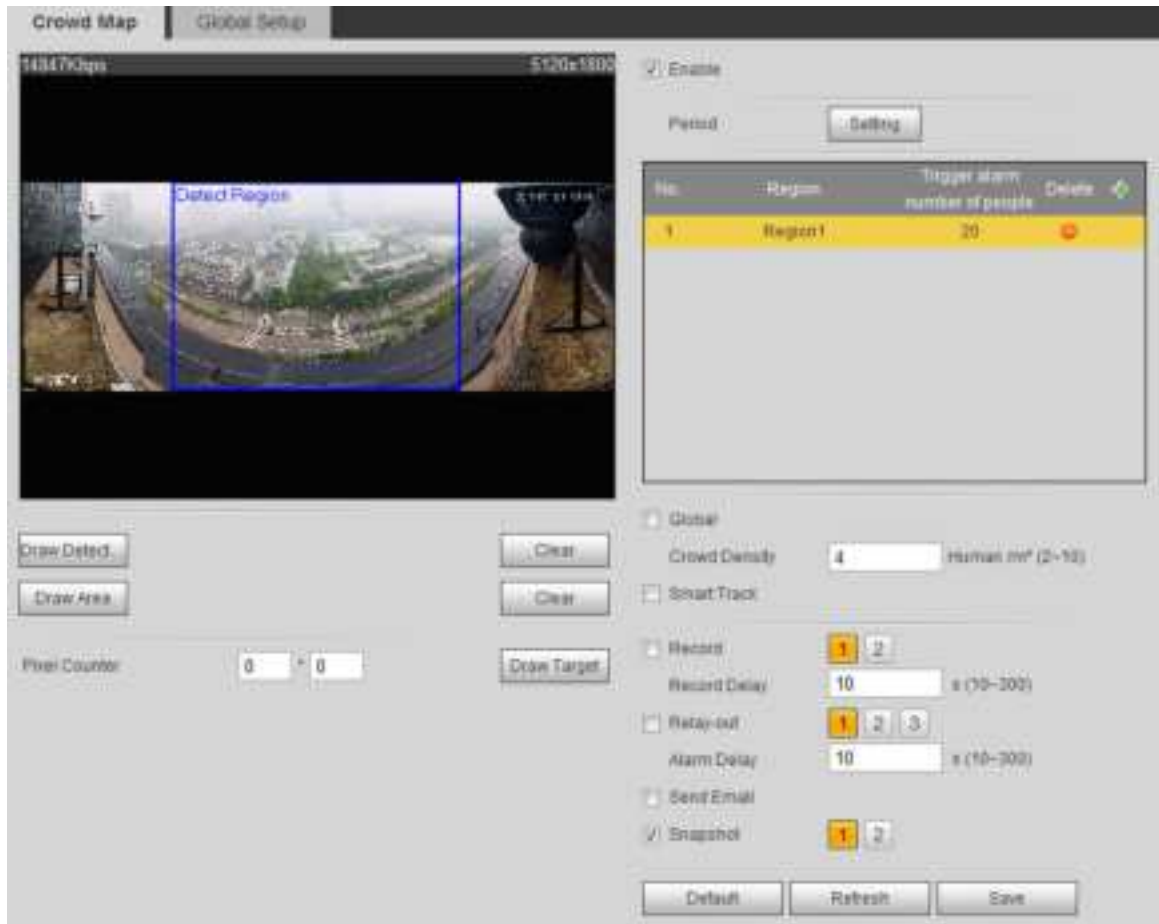
Prerequisites

- Select **Setting** > **Event** > **Smart Plan**, and enable **Crowd Map**.
- Select **Setting** > **Event** > **Crowd Map** > **Global Setup** to configure the crowd map.

Procedure

Step 1 Select **Setting** > **Event** > **Crowd Map** > **Crowd Map**.

Figure 5-36 Crowd map



Step 2 Select the **Enable** check box, and then the crowd map function is enabled.

Step 3 Click **Draw Detection Area** to draw global area for detecting crowd distribution in the image.

After drawing a global area, you can draw multiple local statistical areas in the global area as needed.

1. Click , and then click **Draw Area** to draw local statistical area in global detection area.

You can draw up to eight local statistical areas.

2. Double-click the area name and the alarm people amount to set the area name of local statistical area and the threshold of the alarm people amount.

When the number of people in the statistical area exceeds the alarm people amount, the system performs alarm linkages. The default alarm people amount is 20.

Step 4 Set parameters.

Table 5-10 Description of crowd map parameters

Parameter	Description
Global	Select the Global check box and set the crowd density threshold.
Crowd Density	The system detects crowd distribution in the global area. When the crowd density exceeds the configured threshold, the system performs alarm linkages.
Smart track	Select the Smart Track check box, and when alarm is triggered by the panoramic camera, the speed dome automatically turns to the position where alarm is triggered. The tracking time is "idle time + five seconds." For the details of idle time configuration, see "5.2.2 Enabling Alarm Track". Linkage rules: • Detect global alarm only: Turns to crowd with highest density. • Detect local alarm only: Turns to local area that triggers alarm first. • Detect global alarm + one local alarm: First turns to local area, and then the crowd with highest density when there is no alarm in local area. • Detect global alarm + multiple local alarms: First turns to local area that triggers alarm first, and then the crowd with highest density when there is no alarm in local area.  Before enabling this function, you need to configure Smart Track. For details, see "5.2 Setting Smart Track".
Pixel Counter	Click Draw Target next to Pixel Counter , and then press and hold the left mouse button to draw a rectangle, the Pixel Counter then displays its pixel.

Step 5 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 6 Click **Save**.

Results

Click  on the **Live** page to view the crowd map.

Figure 5-37 Crowd map (1)



Double-click the rendering area at the lower-right corner in the image to view crowd distribution in the area.

Figure 5-38 Crowd map (2)

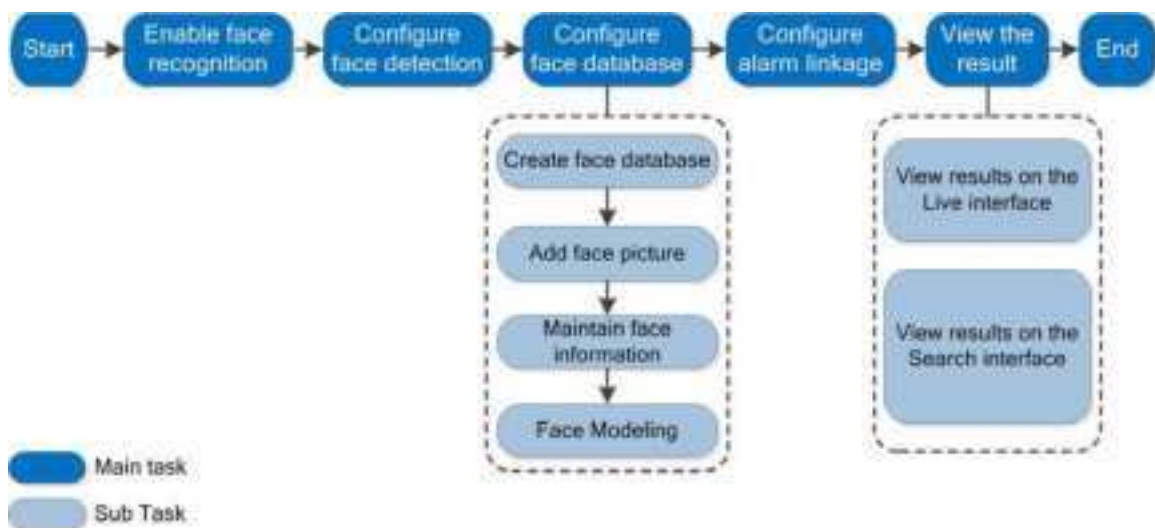


5.10 Setting Face Recognition

When a face is detected or recognized in the detection area, the system performs alarm linkage and supports searching face detection and recognition results.

- **Face Detection:** When a face is detected in the area, the system performs alarm linkage, such as recording and sending emails.
- **Face Recognition:** When a face is detected in the area, the system compares the captured face image with the information in the face database, and links alarm according to the comparison result.

Figure 5-39 Face recognition flowchart



5.10.1 Setting Face Detection

When a face is recognized in the detection area, the system performs alarm linkage.

Prerequisites

Select **Setting** > **Event** > **Smart Plan**, and then enable **Face Recognition**.

Procedure

Step 1 Select **Setting** > **Face Recognition** > **Face Detection**.

Figure 5-40 Face detection



- Step 2** Select the **Enable** check box to enable the face detection function.
- Step 3** (Optional) Click **Draw** next to **Detect Region** to draw a face detection area in the image.
- Step 4** (Optional) Click **Draw** next to **Exclude Region** to draw a non-face detection area in the **Detect Region**.
- Step 5** (Optional) Select **Max Size** or **Min Size**, click **Draw Target** at the right side of **Target filter**, and then draw the target in the image.
- Step 6** Set parameters.

Table 5-11 Description of face detection parameters

Parameter	Description
OSD	Select the OSD check box, and the number of people with face detected and recognized is displayed on the Live page. Click Reset to recount.
Face Enhancement	Select the Face Enhancement check box to preferably guarantee clear face with low stream.
Non-living Filtering	Filter non-living faces in the image, such as a face picture.

Parameter	Description
Snap Face Image	Set a range for snapping face image, including face picture, one-inch picture, and custom. When selecting Custom, click Setting, configure the parameters on the prompt page, and then click OK. ● Customized width: Set snapshot width; enter the times of the original face width. It ranges from 1–5. ● Customized face height: Set face height in snapshot; enter the times of the original face height. It ranges from 1–2. ● Customized body height: Set body height: in snapshot; enter the times of the original body height. It ranges from 0–4. When the value is 0, it means to cutout the face image only.
Snap Mode	● Optimized Snapshot: Capture the clearest picture within the configured time after the camera detects face. ● Recognition Priority: Repeatedly compare the captured face to the faces in the armed face database, and capture the most similar face image and send the alarm. It is recommended to use this mode in access control scene.  Click Advanced to set the optimized time.
Attribute	Select the Attribute check box, and click  to set the display of face attribute during the face detection.
Advanced	● Snapshot Angle Filter: Set snapshot angle to be filtered during the face detection. ● Snapshot Sensitivity: Set snapshot sensitivity during the face detection. It is easier to detect face with higher sensitivity. ● Optimized Time: Set a time period to capture the clearest picture after the camera detects face.
Enable Face Exposure	Select the Enable Face Exposure check box. When a face is detected, the camera can enhance brightness of the face to make the face image clear.
Face Target Brightness	Set the face target brightness. It is 50 by default.
Face Exposure Detection Interval	Set the face exposure detection interval to prevent image flickering caused by constant adjustment of face exposure. It is five seconds by default.
Pixel Counter	Click Draw Target next to Pixel Counter, and then press and hold the left mouse button to draw a rectangle, the Pixel Counter then displays its pixel.

Step 7 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 8 Click **Save**.

5.10.2 Setting Face Database

By setting face database, the face database information can be used to compare with the face detected.

Face database configuration includes creating face database, adding face picture, and face modeling.

5.10.2.1 Creating Face Database

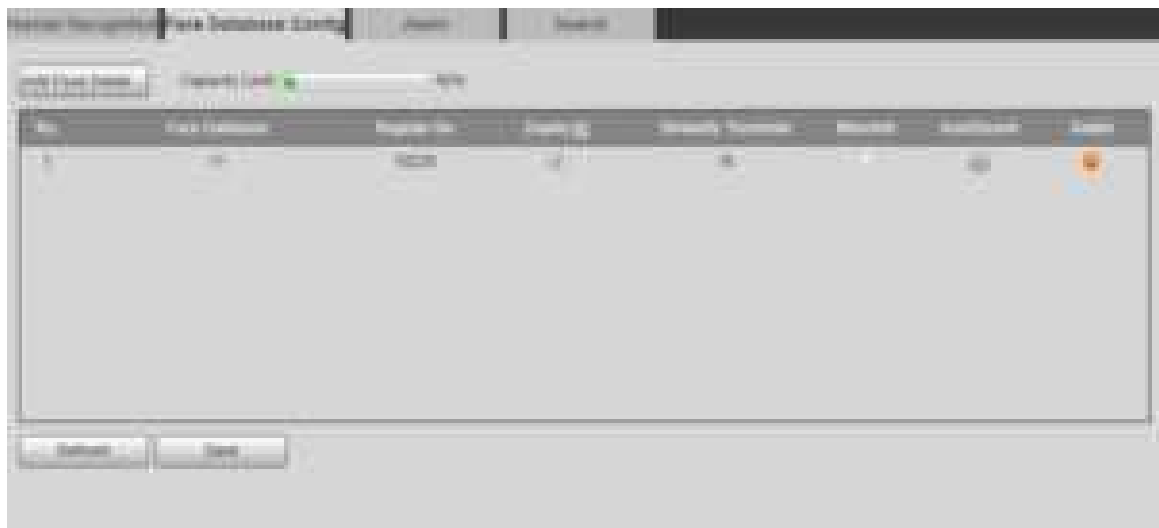
Face database includes face picture, face data and other information. It also provides comparison data for the captured face pictures.

Procedure

Step 1 Select **Setting** > **Event** > **Face Recognition** > **Face Database Config**.

Capacity Limit : Shows the usage of the memory.

Figure 5-41 Face database configuration



Step 2 Click **Add Face Database**.

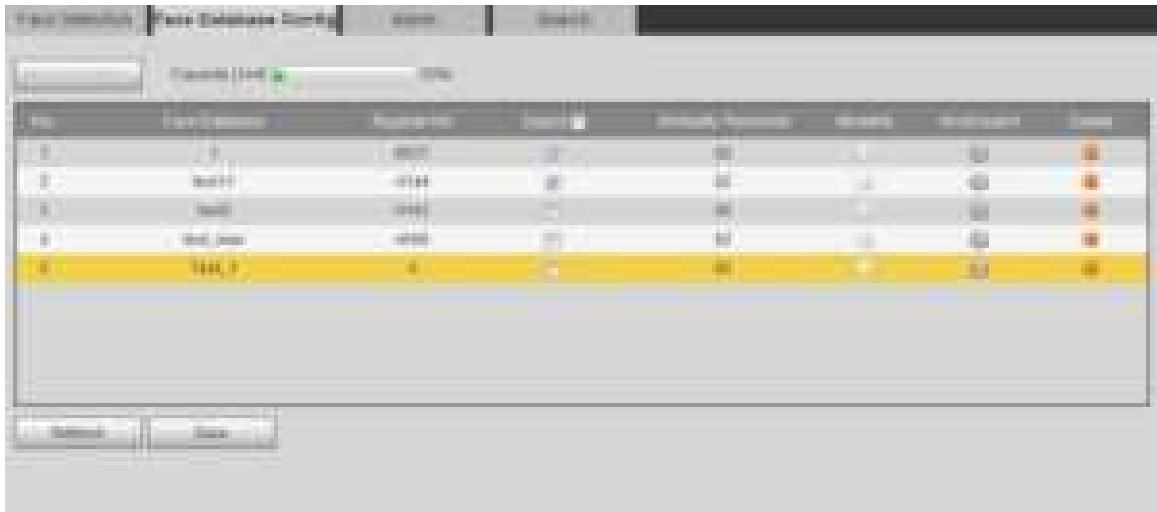
Figure 5-42 Add face database



Step 3 Set the name of the face database.

Step 4 Click **OK**.

Figure 5-43 Face database successfully added



Step 5 Set parameters.

Table 5-12 Description of face database parameters

Parameter	Description
Deploy	Select the Deploy check box, and the face database deployment is enabled. The captured face picture is compared to the armed face database.
Similarity Threshold	The detected face matches the face database only when the similarity between the detected face and the face feature in face database reaches the configured similarity threshold. After successful match, the comparison result is displayed on the Live page.
MoreInfo	Click MoreInfo to manage face database. You can search face images by setting search conditions, register personnel, and modify personnel information.
Arm/Disarm	Set the alarm time period. Alarm event will be triggered only within the defined time. See "5.1.1.1 Setting Period".
Delete	Delete the selected face database.

5.10.2.2 Adding Face Picture

Add face picture to the created face database. Single adding and batch importing are supported.

Requirements on face pictures.

- A single face picture size is 50 K–150 K in JPEG format. The resolution is less than 1080p.
- Face size is 30%–60% of the whole picture. Pixel should be no less than 100 pixels between the ears.
- Taken in full-face view directly facing the camera without makeup, beautification, glasses, and fringe. Eyebrow, mouth and other face features must be visible.

5.10.2.2.1 Single Adding

Add face pictures one by one. Select this way when you need to add a small number of face pictures.

Procedure

Step 1 Select **Setting > Event > Face Recognition > Face Database Config.**

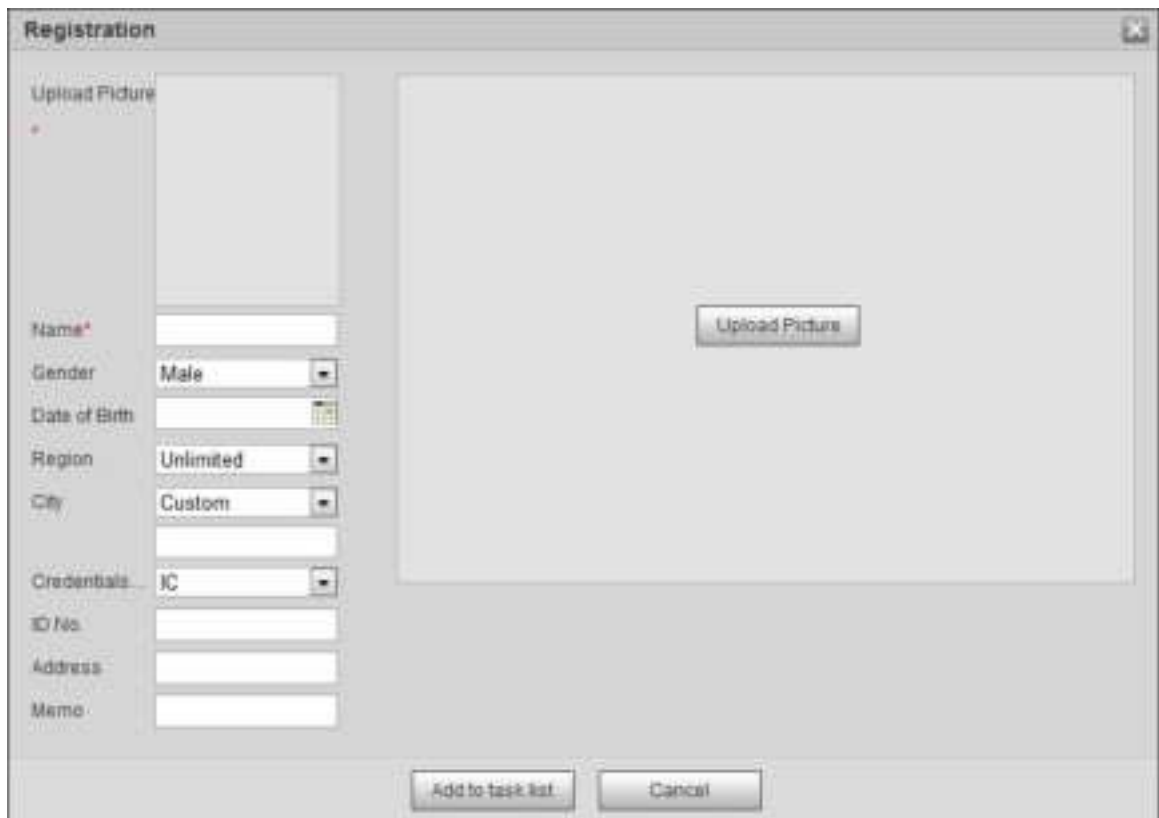
Step 2 Click  next to the face database to be set.

Figure 5-44 Face database configuration



Step 3 Click **Registration.**

Figure 5-45 Registration (1)



Step 4 Click **Upload Picture**, select a face picture to be uploaded, and then click **Open**.



You can manually select the area for a face. After uploading picture, box select a face and click **OK**. When there are multiple faces in a photo, select the target face and click **OK** to save face picture.

Figure 5-46 Registration (2)



The Registration dialog box contains the following fields and controls:

- Upload Picture:** A small thumbnail of the user's face.
- Name:** A text input field.
- Gender:** A dropdown menu with "Male" selected.
- Date of Birth:** A date picker.
- Region:** A dropdown menu with "Unlimited" selected.
- City:** A dropdown menu with "Custom" selected.
- Credentials:** A dropdown menu with "IC" selected.
- ID No.:** A text input field.
- Address:** A text input field.
- Memo:** A text input field.
- OK | Cancel:** Buttons at the top right of the picture area.
- Add to task list | Cancel:** Buttons at the bottom.

Step 5 Enter the information about face picture according to the actual situation.

Step 6 Click **Add to task list**.

Step 7 Click **Task List**, and then click **OK**.

The **Task List** page is displayed. See Figure 5-47 . Click **Remove All** to remove all tasks by one click.

Figure 5-47 Task list (manually add)



The Task List dialog box displays a table with the following structure:

Add	Status
Added	
Modify	Status
Delete	Status

At the bottom, there are **OK** and **Remove All** buttons.

If adding user fails, the error code is displayed on the page. For details, see Table 5-13 . For face modeling operation, see "5.10.2.4 Face Modeling".

Table 5-13 Description of error code

Parameter	Error	Description
0x1134000C	Picture importing error	The picture is too large, and the upper limit is 150K.

Parameter	Error	Description
0x1134000E		The quality of the added pictures is to the upper limit.
0x11340019		The space of the face database exceeds the upper limit.
1	Picture modeling error	The picture format is not correct. Import the picture in JPG format.
2		No face in the picture or the face is not clear. Change the picture.
3		Multiple faces in the picture. Change the picture.
4		Fails to decode the picture. Change the picture.
5		The picture is not suitable to be imported to the face database. Change the picture.
6		The database errors. Restart the camera and model faces again.
7		Fails to get the picture. Import the picture again.
8		System error. Restart the camera and model faces again.

5.10.2.2.2 Batch Importing

Import face pictures in batches. Select this way when you need to add a large number of face pictures.

Prerequisites

Before importing pictures in batches, name face pictures in a format of "Name#SGender#BDate of Birth#NRegion#TCredentials Type#MID No.jpg" (for example, "John#S1#B1990-01-01#T1#M0000").



- The max. size of a single face picture is 150 K, and the resolution is less than 1080p.
- When naming pictures, Name is required, and others are optional.

Table 5-14 Description of naming rules for batch import parameters

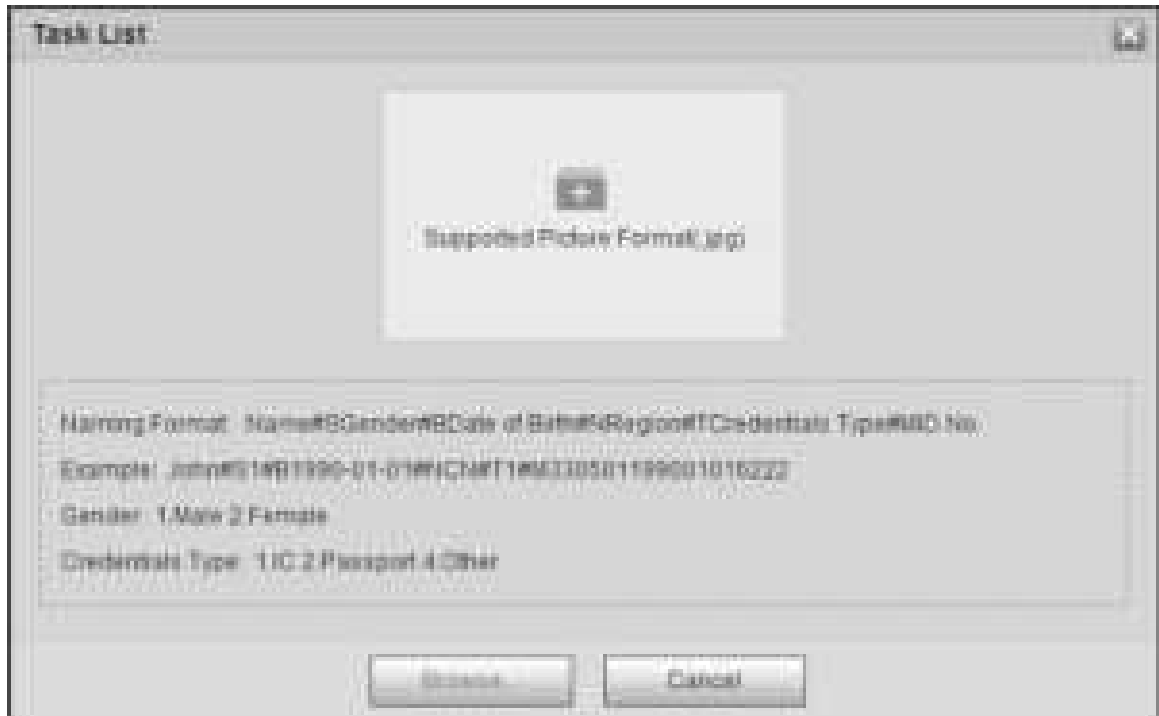
Parameter	Description
Name	Enter a name.
Gender	Enter a figure. "1" is male and "2" is female.
Date of Birth	Enter a figure. Format: yyyy-mm-dd, such as 2017-11-23.
Credentials Type	Enter a figure. "1" is ID card and "2" passport.
ID number	Enter ID No.

Procedure

Step 1 Select **Setting** > **Event** > **Face Recognition** > **Face Database Config**.

- Step 2** Click  next to the face database that you want to set.
- Step 3** Click **Batch Registration**.

Figure 5-48 Batch add



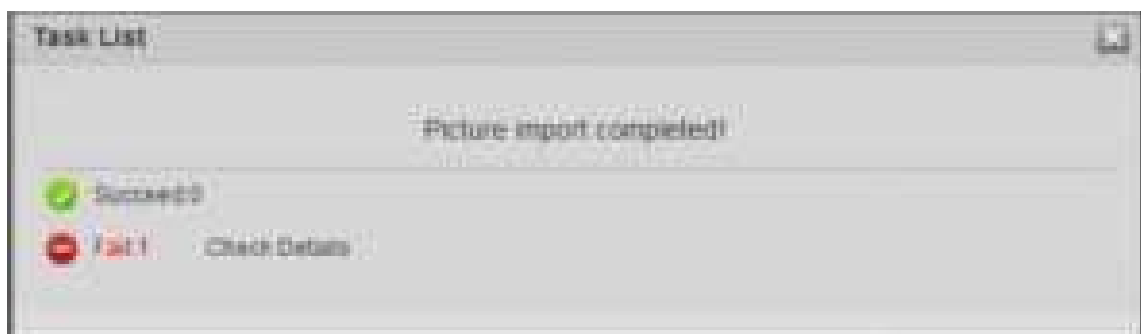
- Step 4** Click  to select file path.

Figure 5-49 Batch import



- Step 5** Click **Browse**.

Figure 5-50 Imported successfully



5.10.2.3 Managing Face Picture

Add face pictures to face database, and then manage and maintain face pictures to ensure correct information.

5.10.2.3.1 Modifying Face Information

Procedure

Step 1 Go to the **Face Database Config** page, set filtering condition as needed, and click **Search**.

The search result is displayed.

Step 2 Select the row where the face picture or the personnel information is located, and then click  or .

Figure 5-51 Face information modification



The image shows a 'Registration' dialog box with a close button (X) in the top right corner. On the left side, there is a vertical panel with the title 'Upload Picture' and a small thumbnail of a person's face. Below the thumbnail are several input fields: 'Name*' (containing '021819'), 'Gender' (a dropdown menu), 'Date of Birth' (a date picker), 'Region' (a dropdown menu with 'Unlimited' selected), 'City' (a dropdown menu with 'Custom' selected), 'Credentials' (a dropdown menu with 'Other' selected), 'ID No.', 'Address', and 'Memo'. To the right of this panel is a large, empty rectangular area. At the bottom of the dialog box, there are two buttons: 'Add to task list' and 'Cancel'.

Step 3 Modify face information according to the actual need. Click **Add to task list**.

Step 4 Click , and then click **OK**.

5.10.2.3.2 Deleting Face Picture

Go to the **Face Database Config** page, and delete the created face picture.

- Single delete: Select the row where the face picture or the personnel information is located, and click  or  to delete the face picture.

- Batch delete: Select  at the upper right corner of the face picture or  of the row where the personnel information is located. Select the information, click **Add to Deletion List**, , and then click **OK** to delete the selected face picture.
- Delete all: When viewing face pictures in a list, click  of the row where the serial number is located; when viewing by thumbnail, select **All** to select all face pictures. Click **Add to Deletion List**, , and then click **OK** to delete all face pictures.

5.10.2.4 Face Modeling

Face modeling extracts face picture information and imports the information to a database to establish relevant face feature models. Through this function, the face recognition and other intelligent detections can be realized.



- The more the selected face pictures are, the longer time the face modeling takes. Please wait patiently.
- During modeling, some intelligent detection functions (such as face recognition) are not available temporarily, and will be available after modeling.

Procedure

Step 1 Select **Setting** > **Event** > **Face Recognition** > **Face Database Config**.

The **Face Database Config** page is displayed.

Step 2 Click  next to the face database to be set.

Figure 5-52 Face database configuration



Step 3 Start modeling.

- Selective modeling.
If there are many face pictures in the face database, you can set search criteria to select the pictures that need to be modeled.
 1. Set the search criteria, and click **Search**.
 2. Select the face pictures to be modeled.
 3. Click **Modeling**.
- All modeling.
Click **Modeling All** to complete modeling of all face pictures in the face database.

Step 4 View the modeling result.

- Successful modeling.

Figure 5-53 Successful modeling



- Failed modeling.

Figure 5-54 Failed modeling



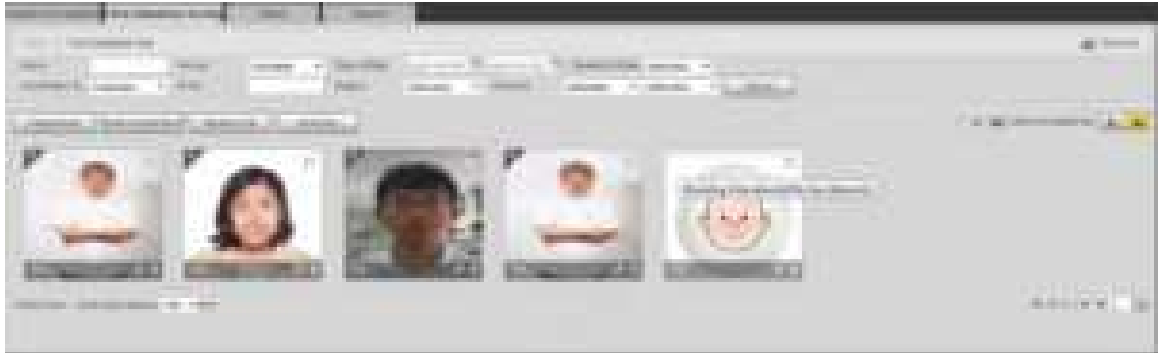
Click **Search**, and the face details are displayed. Click to view the face picture in list format. See Figure 5-55 . Click to view the face picture in thumbnail format. See Figure 5-56 .

- ◇ When the modeling status is **Valid** in the list or is displayed on the left corner of the thumbnail, it means the modeling succeeded.
- ◇ When the modeling status is **Invalid** in the list or is not displayed on the left corner of the thumbnail, it means the modeling failed. Point to the modeling status in the list or the pictures without to view the details of the failure. Change the pictures according to the details.

Figure 5-55 Modeling status (list)



Figure 5-56 Modeling status (thumbnail)



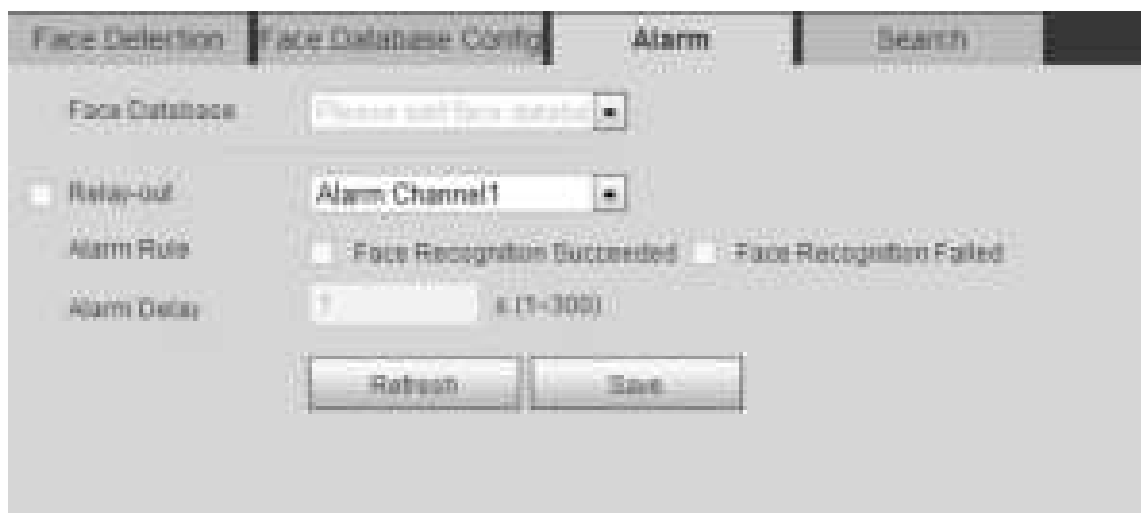
5.10.3 Setting Face Recognition Alarm Linkage

When face recognition succeeded or failed, the device links alarm out.

Procedure

Step 1 Select **Setting** > **Event** > **Face Recognition** > **Alarm**.

Figure 5-57 Alarm (face recognition)



Step 2 Select a face database and an alarm rule.

- Face recognition succeeded: When the detected face matches that in the face database, the device links alarm out.
- Face recognition failed: When the detected face fails to match that in the face database, the device links alarm out.

Step 3 Set alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 4 Click **Save**.

5.10.4 Viewing Face Recognition Result

View face recognition result on the **Live** page or by the search function.

5.10.4.1 Viewing Result on the Live Page

View face recognition result on the **Live** page.

- Face recognition result is displayed at the left side and the captured face pictures and attribute information at the right side.
- Click a face picture in the display area, and the information is displayed.

Figure 5-58 Face recognition result



5.10.4.2 Viewing Result by Search Function

View face recognition or face snapshot result. Take face recognition search as an example.

Prerequisites

You have installed a SD card in the camera.

Procedure

Step 1 Select **Setting** > **Event** > **Face Recognition** > **Search**.

Figure 5-59 Face recognition search



Step 2 Select **Face Recognition** for **Type**, enter the start time and the end time, and then click **Search**.

- Click **Advanced Parameters** to set more search conditions.
- Click a search result to view details.

Figure 5-60 Search results (face recognition)

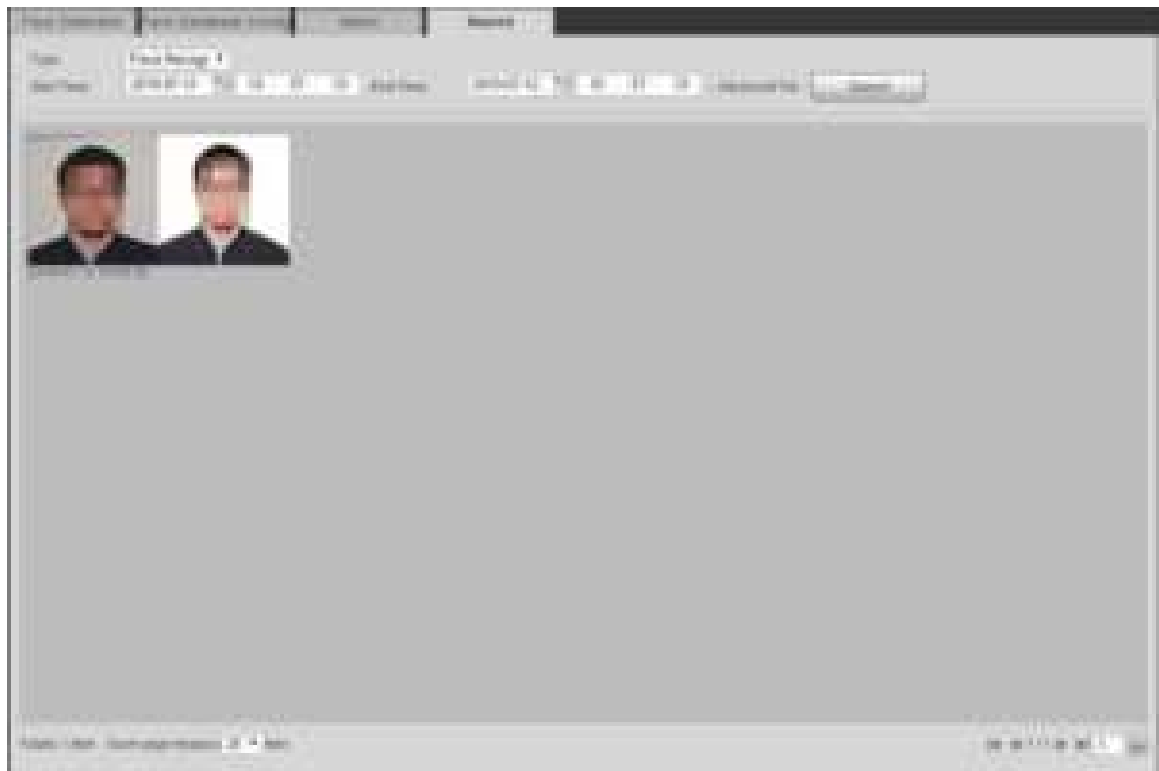


Figure 5-61 MoreInfo (face recognition)



5.11 Setting Face Detection

When a face is detected in the detection area, the system performs an alarm linkage.

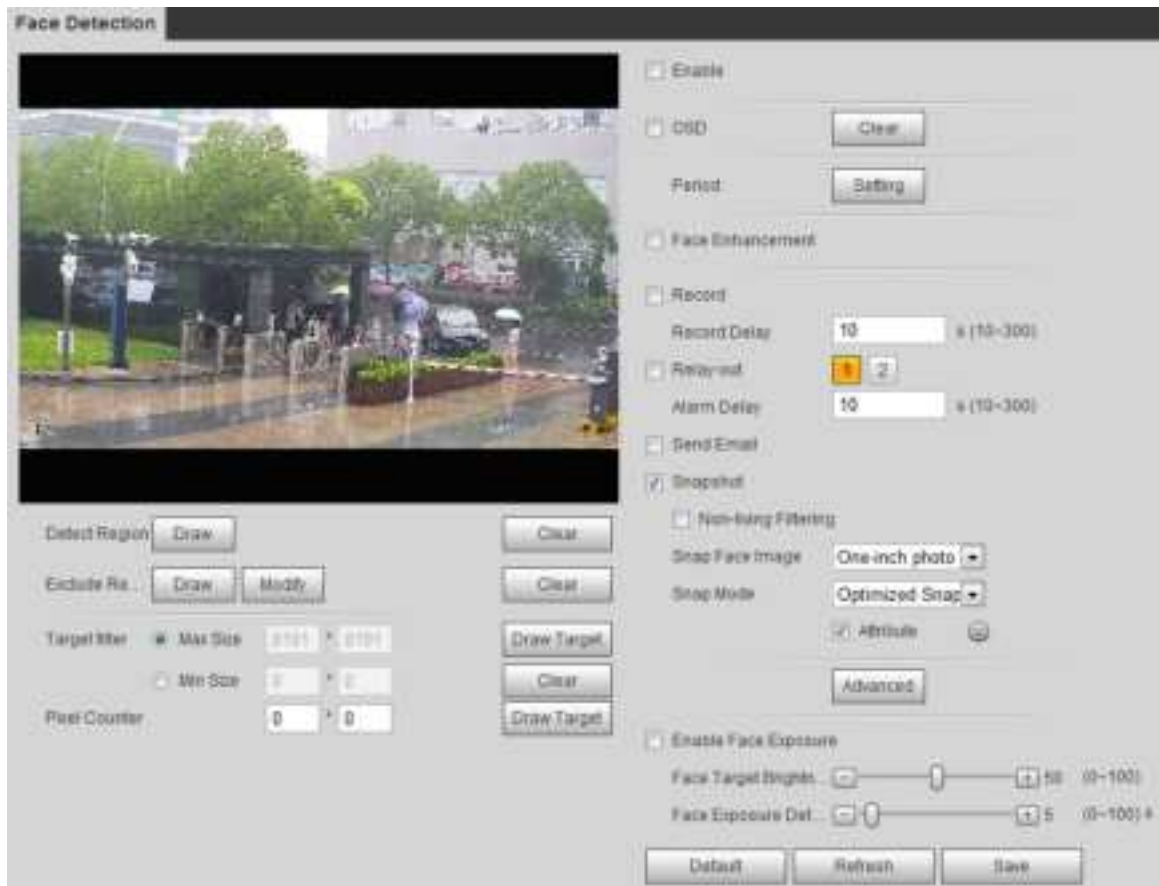
Prerequisites

Select **Setting** > **Event** > **Smart Plan**, and then enable **Face Detection**.

Procedure

Step 1 Select **Setting** > **Event** > **Face Detection**.

Figure 5-62 Face detection



Step 2 Select the **Enable** check box to enable the face detection function.

Step 3 (Optional) Click **Draw** next to **Detect Region** to draw a face detection area in the image.

Step 4 (Optional) Click **Draw** next to **Exclude Region**, and then draw an area excluding face detection in the image.

Step 5 (Optional) Select **Max Size** or **Min Size**, click **Draw Target** at the right side of **Target filter**, and then draw the target in the image.

Step 6 Set parameters.

Table 5-15 Description of face detection parameters

Parameter	Description
OSD	Select the OSD check box, and the number people with face detected and recognized is displayed on the Live page. Click Clear to recount.

Parameter	Description
Face Enhancement	Select the Face Enhancement check box to preferably guarantee clear face with low stream.
Target Box Overlay	Select the Non-living Filtering check box to add a target box to the face in the captured picture to highlight the face. The captured face picture is saved in SD card. Click the Snap Face Image tab to view the captured picture.
Non-living Filtering	Filter non-living faces in the image, such as a face picture.
Snap Face Image	Set a range for snapping face image, including face picture, one-inch picture, and custom. When selecting Custom , click Setting , configure the parameters on the prompt page, and then click OK . - Customized width: Set snapshot width; enter the times of the original face width. It ranges from 1–5. - Customized face height: Set face height in snapshot; enter the times of the original face height. It ranges from 1–2. - Customized body height: Set body height: in snapshot; enter the times of the original body height. It ranges from 0–4. When the value is 0, it means to cutout the face image only.
Snap Mode	Optimized Snapshot: Capture the clearest picture within the configured time after the camera detects face. Recognition Priority: Repeatedly compare the captured face to the faces in the armed face database, and capture the most similar face image and send the event. It is recommended to use this mode in access control scene.  Click Advanced to set the optimized time.
Attribute	Select the Attribute check box, and click  to set the display of face attribute during the face detection.
Advanced	Snapshot Angle Filter: Set snapshot angle to be filtered during the face detection. Snapshot Sensitivity: Set snapshot sensitivity during the face detection. It is easier to detect face with higher sensitivity. Optimized Time: Set a time period to capture the clearest picture after the camera detects face.
Enable Face Exposure	Select the Enable Face Exposure check box. When a face is detected, the camera can enhance brightness of the face to make the face image clear.
Face Target Brightness	Set the face target brightness. It is 50 by default.
Face Exposure Detection Interval	Set the face exposure detection interval to prevent image flickering caused by constant adjustment of face exposure. It is five seconds by default.

Parameter	Description
Pixel Counter	Click Draw Target next to Pixel Counter , and then press and hold the left mouse button to draw a rectangle, the Pixel Counter then displays its pixel.

Step 7 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 8 Click **Save**.

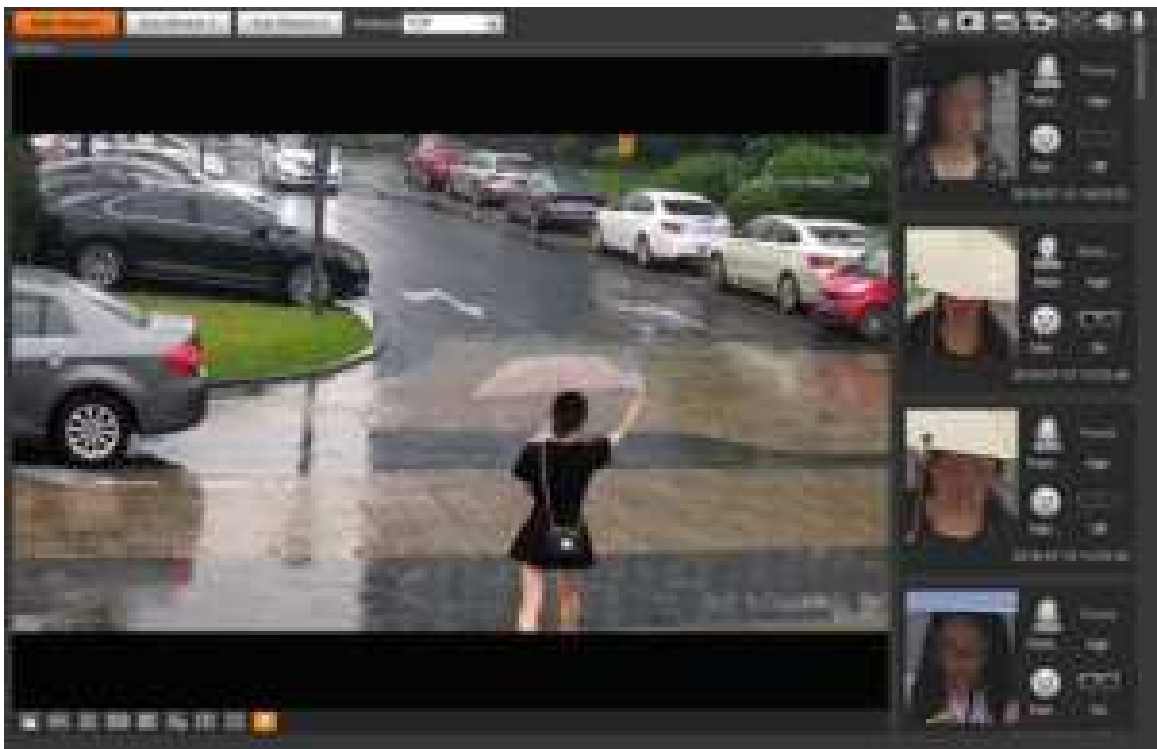
To view alarm information on the **Alarm** tab, subscribe relevant alarm event. For details, see "5.1.2 Subscribing Alarm".

Results

The face detection result is displayed on the **Live** page.

- The face pictures captured in real time and their attribute information is displayed.
- Click a face picture in the display area, and the details are displayed.

Figure 5-63 Face detection result



5.12 Setting People Counting

People counting (including enter number, leave number and strand number in area), calibration configuration, queuing number, and view the people counting data in report form.

5.12.1 People Counting

The system counts the people entering and leaving the detection area. When the number of counted people exceeds the configured value, the system performs an alarm linkage.

Prerequisites

Select **Setting** > **Event** > **Smart Plan**, and then enable **People Counting**.

Procedure

Step 1 Select **Setting** > **Event** > **People Counting**.

Figure 5-64 People counting

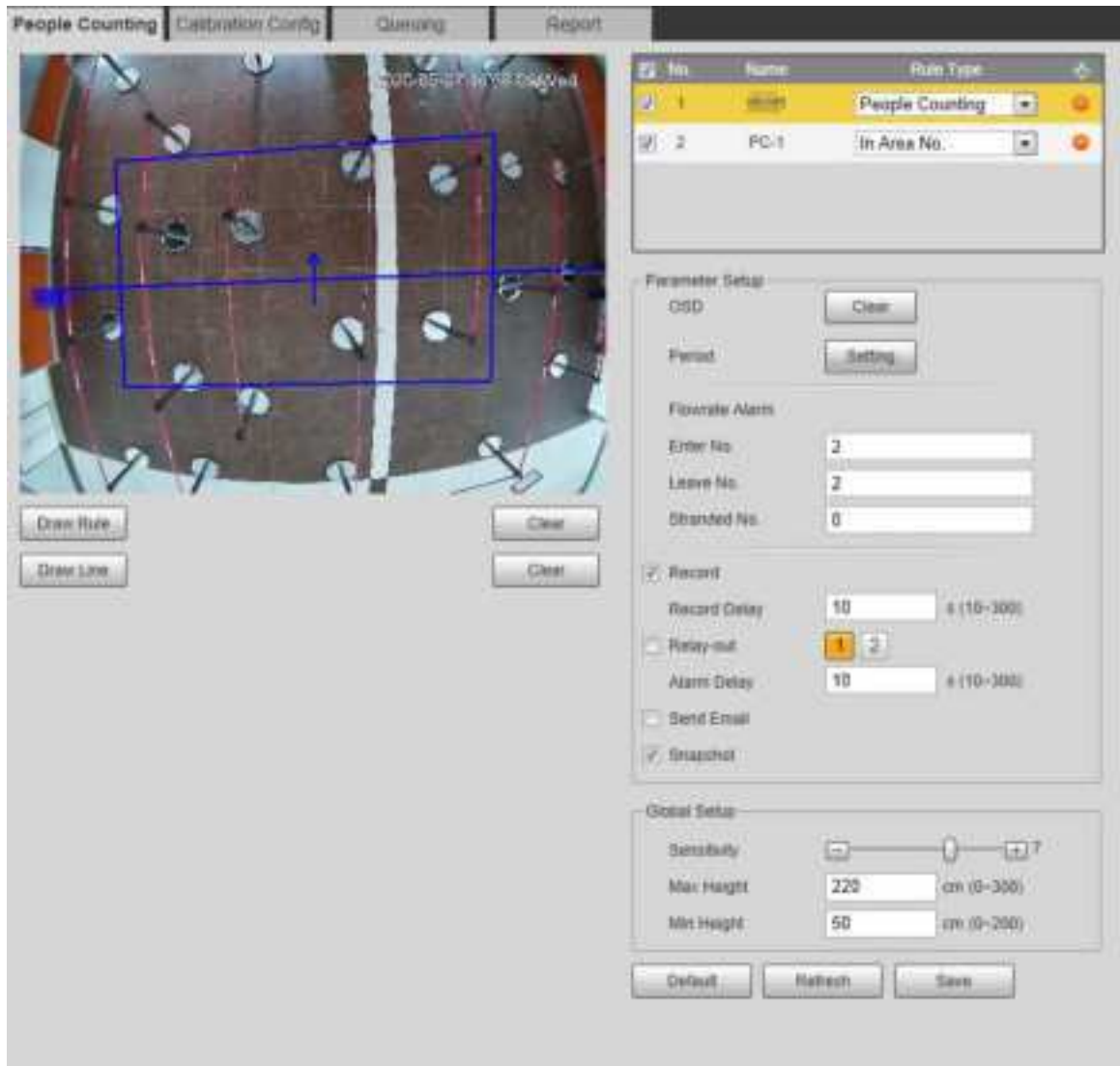
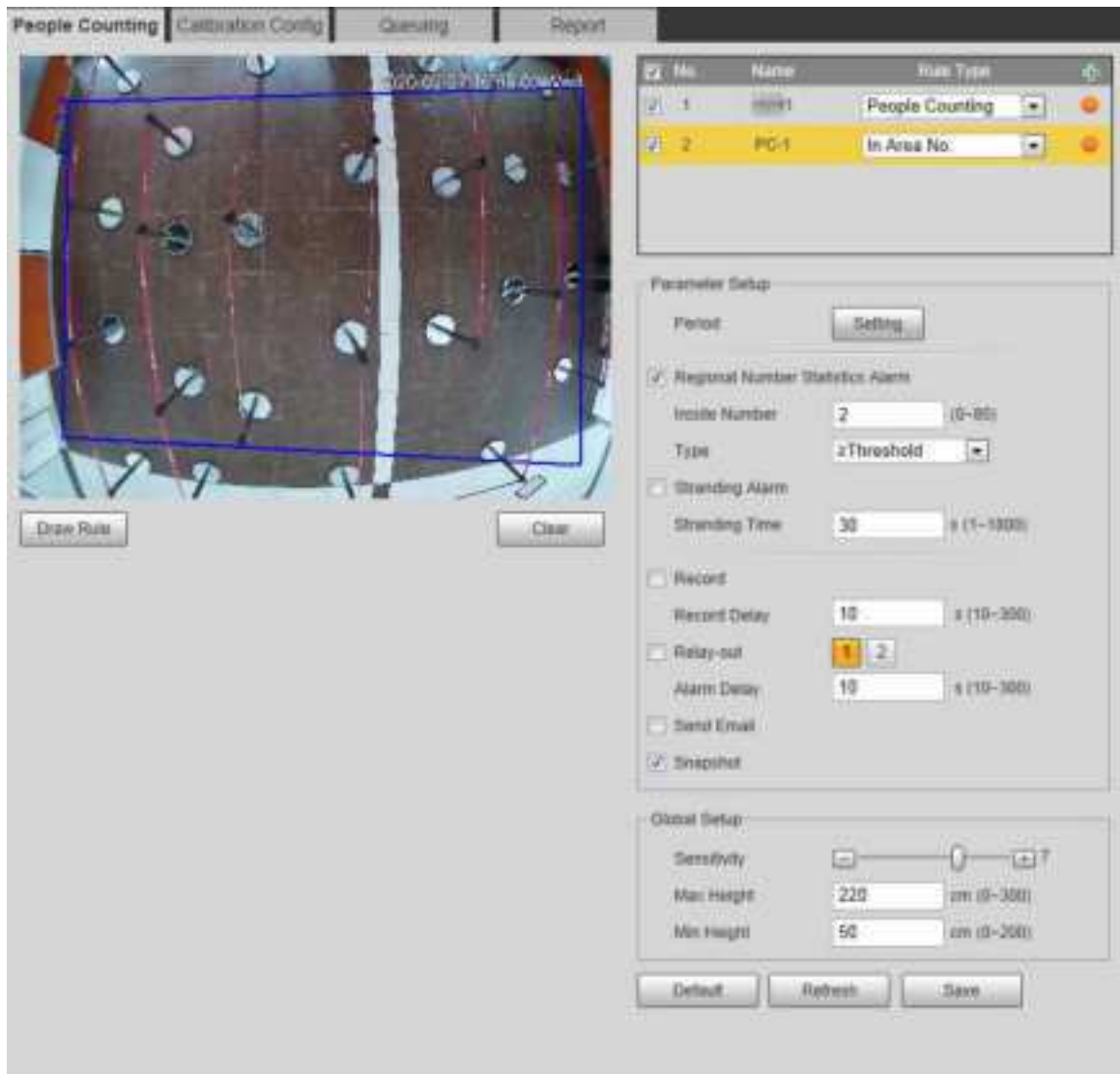


Figure 5-65 In area No.



Step 2 Click to add the people counting function.

Step 3 Double-click the name to modify the rule name. Select **People Counting** or **In Area No.**

- **People Counting** : The system counts the people entering and leaving the detection area. When the number of counted number of people who enter, leave, or stay in the area exceeds the configured value, the system performs an alarm linkage.
- **In Area No.** : The system counts the people in the detection area and the duration that people stay in the area. When the number of counted number of people in the detection area or the stay duration exceeds the configured value, the system performs an alarm linkage. This function is available on some select models.

Step 4 Click **Draw Area** to draw a detection area in the image.

- When setting **People Counting**, you need to draw direction lines. When targets enter or leave along the direction line, they will be counted.
- For the models that support multiple counting rules, different detection areas can be overlapped.

Step 5 Set parameters.

Table 5-16 Description of people counting parameters

Parameter	Description
OSD	Select the OSD check box or select the Enter No. or Leave No. check box under OSD to display the people counting data in the image. Click Clear to clear the count.
Flip	Set the viewing angle of the image as Inclined or Vertical .
Flowrate Alarm	Set Enter No. , Leave No. , and Stranded No. The alarm is triggered when the configured value is reached.
Regional People Number Statistics Alarm	Set the number of people in the people counting region. When the people count reaches the threshold or the stay duration exceeds the configured value, the alarm is triggered.
Inside Number	When you set inside number to be 0, and select the type to be $\geq$ Threshold , the system will not perform the alarm linkage.
Type	
Stranding Alarm	Select the Stranding Alarm check box, and then set the stranding time, when the stay duration exceeds the configured value, the alarm will be triggered.
Stranding Time	
Sensitivity	Set the alarm-triggered sensitivity. The higher the sensitivity is, the easier the alarm will be triggered.
Max Height	Set the maximum height of the people in detection area. The unit is cm, and the range is 0–300.
Min Height	Set the minimum height of the people in detection area. The unit is cm, and the range is 0–200.

Step 6 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 7 Click **Save**.

To view alarm information on the **Alarm** tab, subscribe relevant alarm event. For details, see "5.1.2 Subscribing Alarm".

Results

You can view the counting results on the **Live** page.

- For **People Counting** rule, the entry and exit numbers are displayed.
- For **In Area No.** rule, the inside number is displayed.

Figure 5-66 Counting result



5.12.2 Calibration Configuration

After configuring the rule for people counting, set the installation height and angle of the camera through calibration configuration.

Prerequisites

You have set at least one rule in **Setting** > **Event** > **People counting** > **People Counting**.

Procedure

Step 1 Select **Setting** > **Event** > **People Counting** > **Calibration Config**.

Figure 5-67 Calibration configuration (stereo analysis)



Step 2 Click **Clear** to clear the default calibration box.

Step 3 Click **Ground** to draw a rectangular box in the image.

Ground should be on the same plane and as big as possible for calibration.

Step 4 Click **Save**, and then the camera calculates its height above the ground and the angle it forms with the ground.

If the height and angle are quite different from the actual situation, repeat Step 2 and Step 3.

5.12.3 Queuing

The system counts the queue people in the detection area. When the queue people number exceeds the configured number or the queue time exceeds the configured time, the alarm is triggered, and the system performs an alarm linkage.

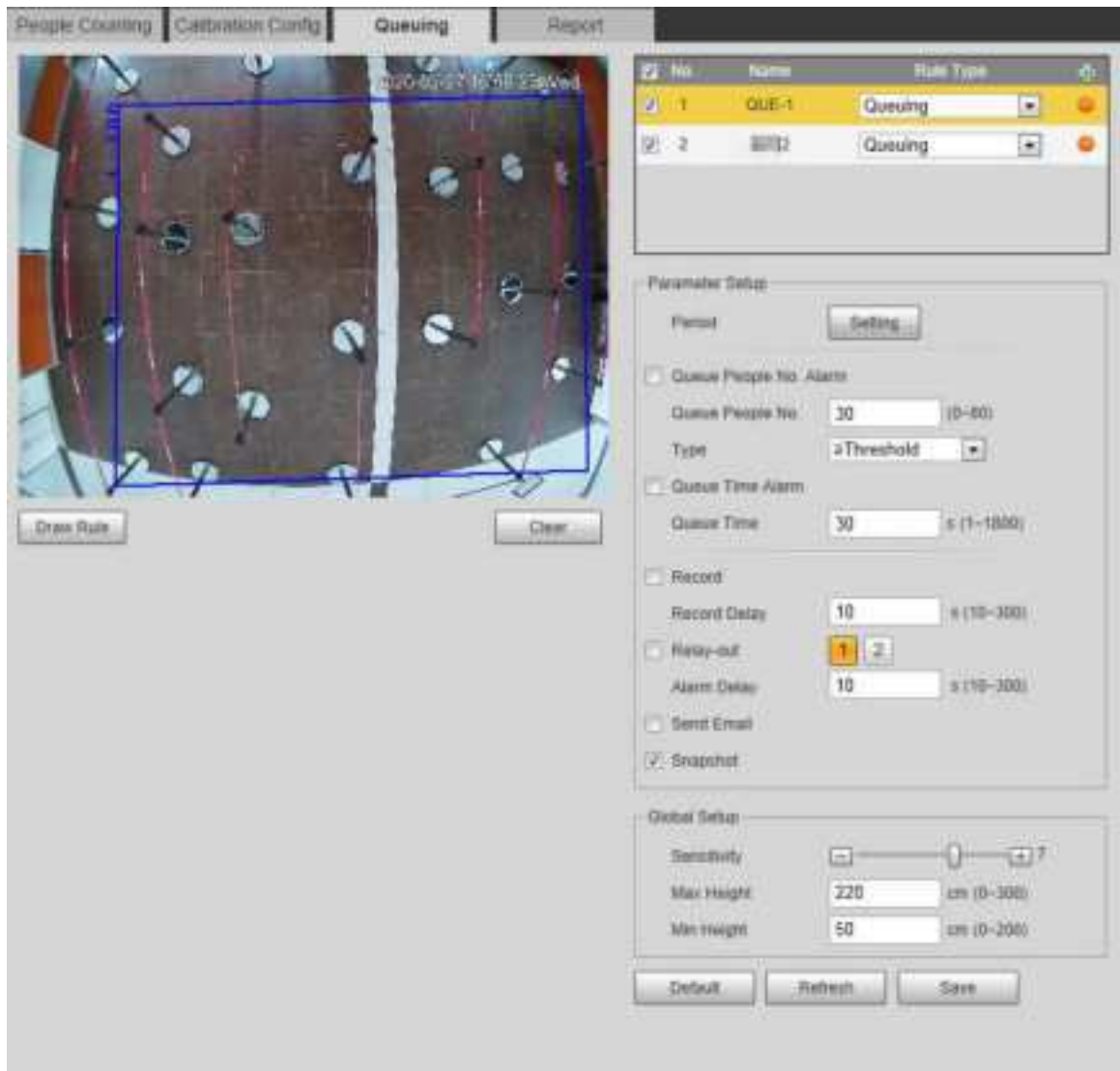
Prerequisites

Select **Setting** > **Event** > **Smart Plan**, and then enable **People Counting**.

Procedure

Step 1 Select **Setting** > **Event** > **Queuing**.

Figure 5-68 Queuing



Step 2 Click to add the queuing function.



You can add 4 rules at most.

Step 3 Double-click the name to modify the rule name. Click **Draw Rule** to draw a detection area in the image, and right-click to complete the drawing.

Step 4 Set parameters.

Table 5-17 Description of people queuing

Parameter	Description
Queue People No. Alarm	Set the queue people number for triggering the alarm and counting type. When the queue people number reaches the configured value, the alarm is triggered.
Queue People No.	
Type	
Queue Time Alarm	Set the queue time. When the queue time reaches the configured value, the alarm is triggered.
Queue Time	

Parameter	Description
Sensitivity	Set the alarm-triggered sensitivity. The higher the sensitivity is, the easier the alarm will be triggered.
Max Height	Set the maximum height of the people in detection area. The unit is cm, and the range is 0–300.
Min Height	Set the minimum height of the people in detection area. The unit is cm, and the range is 0–200.

Step 5 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 6 Click **Save**.

To view alarm information on the **Alarm** tab, subscribe relevant alarm event. For details, see "5.1.2 Subscribing Alarm".

Results

You can view the queuing result on the **Live** page.

The queuing number and the stranding time of each target are displayed on the page.

Figure 5-69 Queuing result



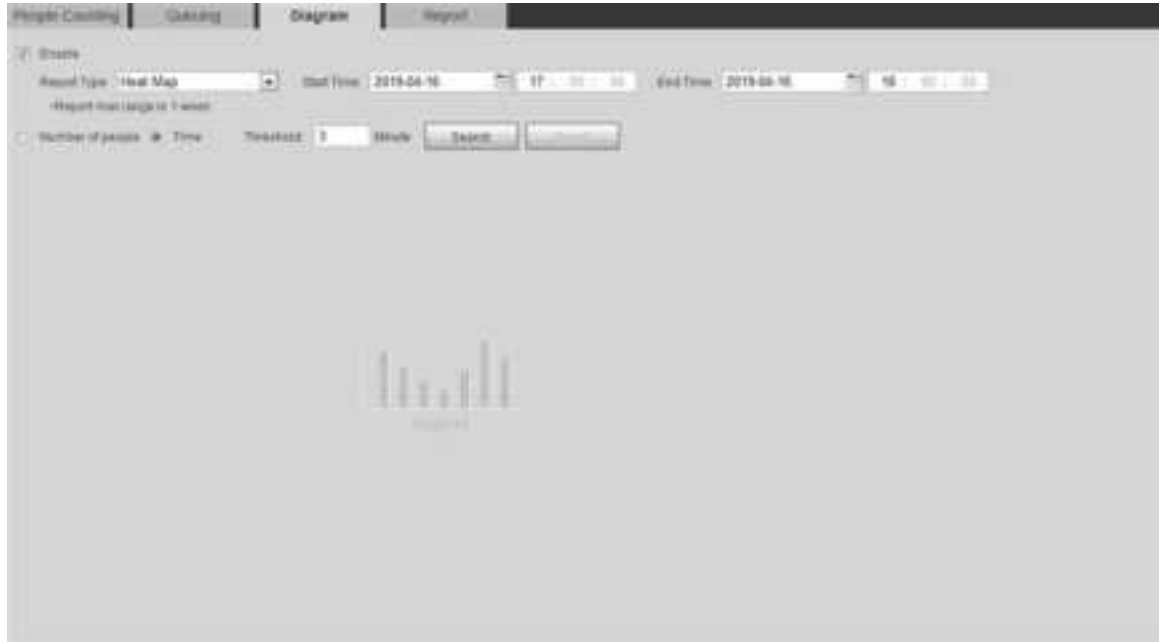
5.12.4 Viewing People Counting Diagram

You can search and export the heat map and tracking map according to the set searching criteria. This function is available on some fisheye cameras.

Procedure

Step 1 Select **Setting** > **Event** > **People Counting** > **Diagram**.

Figure 5-70 Diagram



Step 2 Select the **Enable** check box to enable diagram function. And then you can search the diagram during the set period.

Step 3 Set the searching criteria.

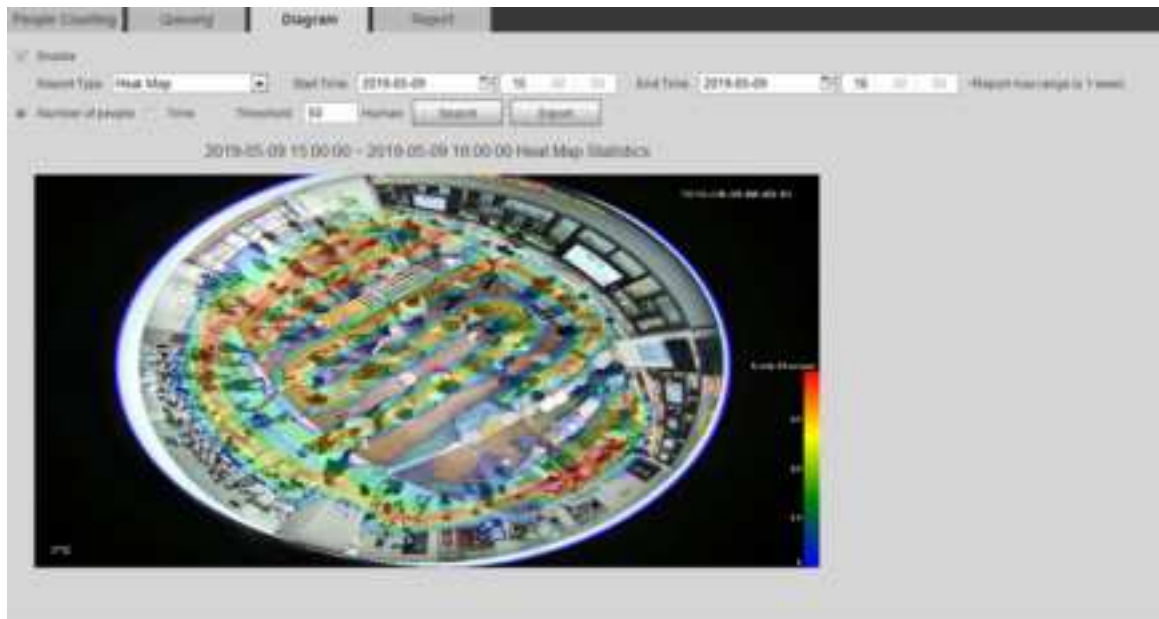
Table 5-18 Description of searching criteria

Parameter	Description
Report Type	Select the report type from the following two types: Heat Map : Density statistics of moving object, the color range is from blue to red, blue means the minimum heat value and red means the maximum heat value. Track Map : Tendency statistics of moving object.
Start Time	The start time of the report.
End Time	The end time of the report.
Number of People	When selecting heat map as the report type, you can select Number of People , and set the threshold. The system searches the diagram according to the number of people in the area, and shows the heat map.
Threshold	
Time	When selecting heat map as the report type, you can select Time , and set the threshold. The system searches the diagram according to the queuing time in the area and shows the heat map.
Threshold	

Step 4 Click **Search** to complete the diagram.

Click **Export** to export the report.

Figure 5-71 Diagram



With the ruler on the right, you can read the diagram clearly.

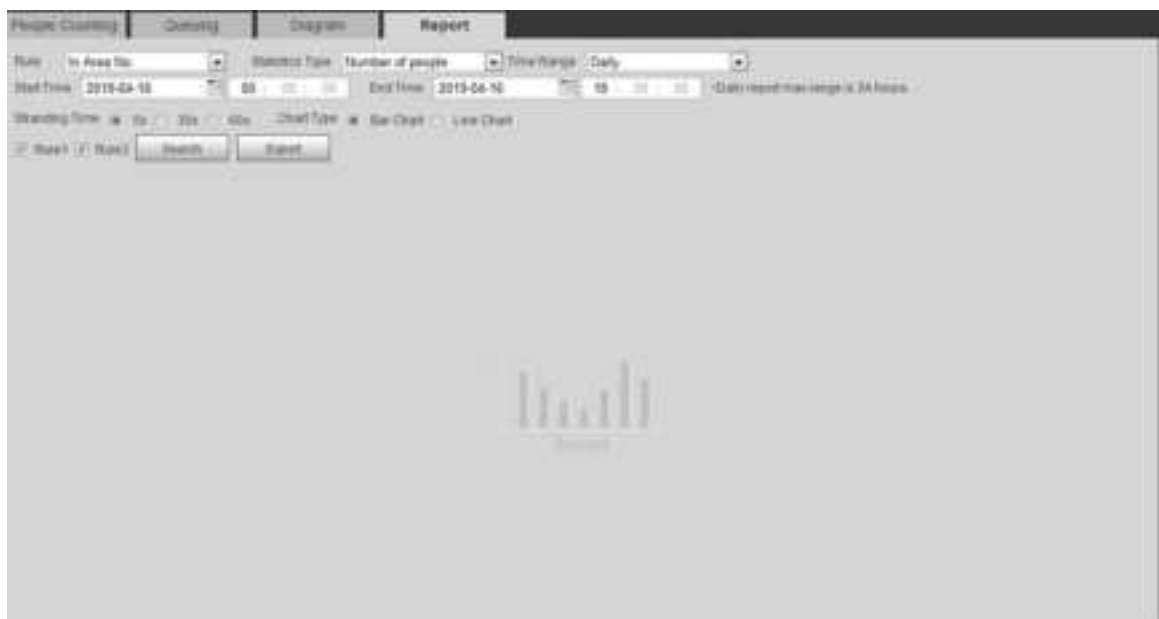
5.12.5 Viewing People Counting Report

Generate people counting data in report form.

Procedure

Step 1 Select **Setting** > **Event** > **People Counting** > **People Counting Report**.

Figure 5-72 People counting report



Step 2 Set search conditions.

Table 5-19 Description of people counting report parameters

Parameter	Description
Rule	Select the rule of the report from In Area No and Queuing .
Statistics Type	The statistical type of people counting report. - When you select Number of people, the system generates the report of the number of people that exceeds the configured number of people. - When you select Average stranding time, the system generates the report of the average stranding time that exceeds the average stranding time.
Time Range	Select the period for the report. - When selecting People Counting, you can view daily report, monthly report and annual report. - When selecting In Area No., you can view daily report and monthly report.
Begin Time	The begin time and the end time of people counting.
End Time	
People Counting Direction	In and out directions of people counting report. You can select Entrance or Leave . Select Display Data , and the statistical quantity is displayed on the report.
Stranding Time	Count the stay time, select 5 s, 30 s, or 60 s.
Queue Time	Count the queuing time, select 1 minute, 5 minutes, or 10 minutes.
Report Type (Bar Chart/Line Chart)	Includes bar chart and line chart.
Rule 1, Rule 2...	Select the check box to search the report of the corresponding rule.

Step 3 Click **Search** to complete the report.

Click **Export** to export the report in .bmp or .csv format.

5.13 Setting Heat Map

Make statistics on the cumulative density of object movement and view heat map in report.

5.13.1 Heat Map

Detect the distribution of dynamically moving objects in the target area within a certain period and displays the distribution on a heat map. Color varies from blue to red. The lowest heating value is in blue, and the highest heating value is in red. When mirroring occurs on the camera or the viewing angle changes, original data on the heat map will be cleared.

Prerequisites

Select **Setting** > **Setting** > **Event** > **Smart Plan**, and then enable **Heat Map**.

Procedure

Step 1 Select **Setting** > **Event** > **Heat Map** > **Heat Map**.

Figure 5-73 Heat map



- Step 2** Select the **Enable** check box to enable the heat map function.
- Step 3** Set the arming period. For details, see "5.1.1.1 Setting Period".
- Step 4** Click **Save**.

5.13.2 Viewing Heat Map Report

The system can export heat map data as a report.

Procedure

- Step 1** Select **Setting** > **Event** > **Heat Map** > **Report**.

Figure 5-74 Heat map report



- Step 2** Set the start time and end time.
- Only some devices support heat map sequence numbers.
- Step 3** Click **Search** to complete the report.
- Click **Export** to export the statistical report.

5.14 Setting Vehicle Density

Configure the rules for traffic congestion and parking upper limit, and view the counting data on the **Live** page.

Prerequisites

Select **Setting** > **Event** > **Smart Plan**, and then enable **Vehicle Density**.

Procedure

Step 1 Select **Setting** > **Event** > **Vehicle Density**.

Figure 5-75 Vehicle density (traffic congestion)

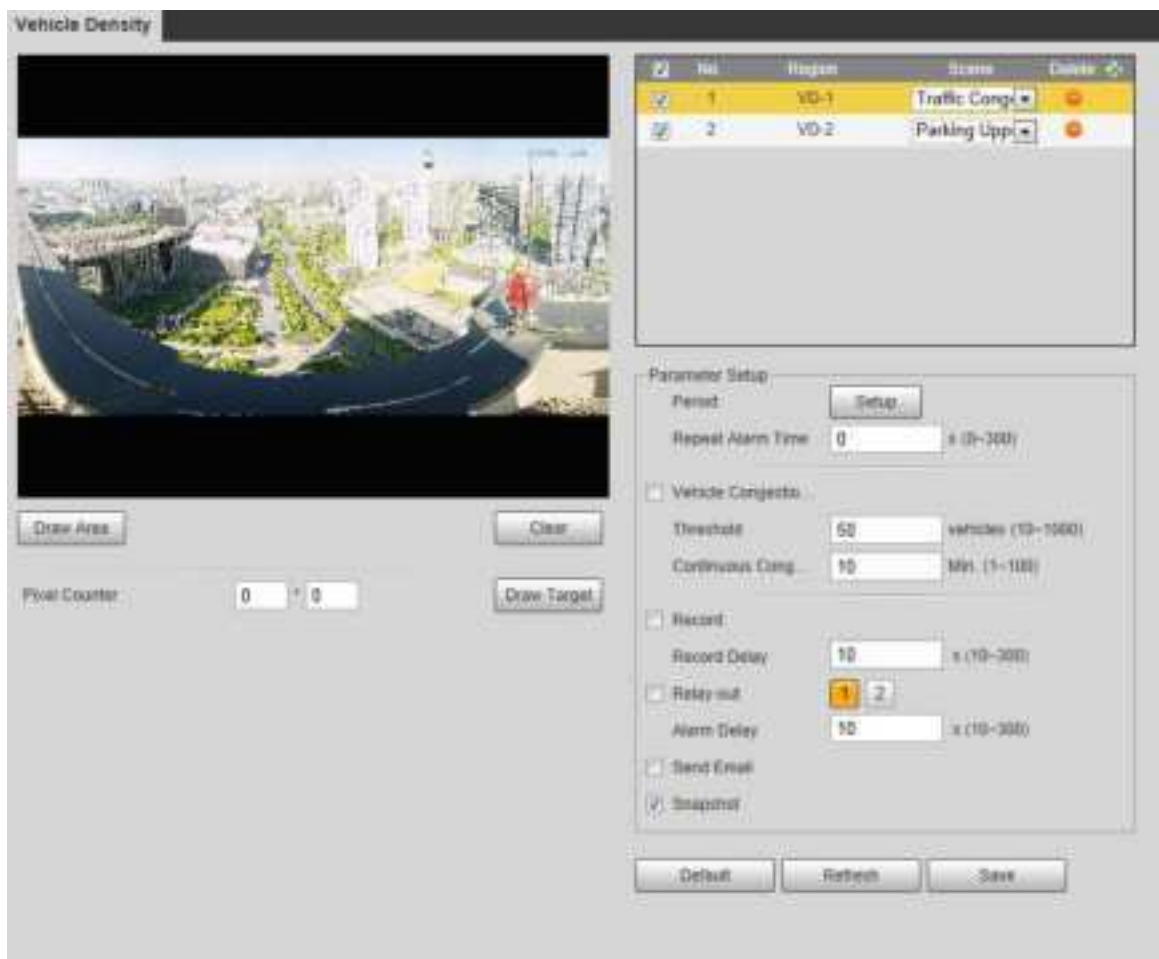
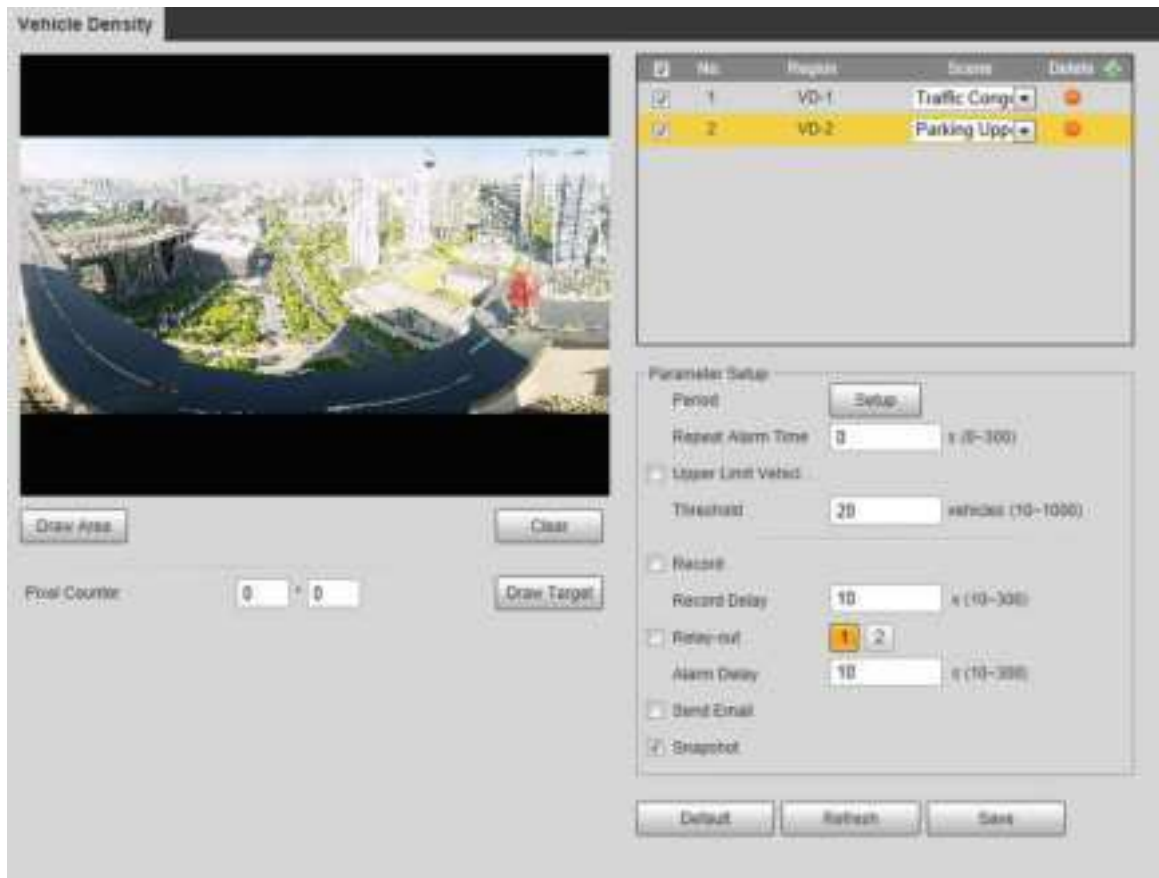


Figure 5-76 Vehicle density (parking upper limit)



Step 2 Click to add the vehicle density function.

Step 3 Double-click the name to modify the rule name. Select **Traffic Congestion** or **Parking Upper Limit**.

- **Traffic Congestion** : The system counts the vehicles in the detection area. When the counted vehicle number and the continuous congestion time exceed the configured values, an alarm is triggered and the system performs an alarm linkage.
- **Parking Upper Limit** : The system counts the vehicles in the detection area. When the counted vehicle number exceeds the configured value, an alarm triggered and the system performs an alarm linkage.

Step 4 Click **Draw Area** to draw a detection area in the image.

Step 5 Set parameters.

Table 5-20 Description of people counting parameters

Parameter	Description
Repeat Alarm Time	After the alarm is triggered, if the status lasts for the configured time in Repeat Alarm Time, the alarm will be triggered again. 0 indicates that the function is disabled.

Parameter	Description
Vehicle Congestion Alarm	Select the check box, and set the Threshold and Continuous Congestion Time . When the counted vehicle and the continuous congestion time exceed the configured values, an alarm is triggered.
Upper Limit Vehicle Quantity Alarm	Select the check box, and set the Threshold . When the counted vehicle exceeds the configured values, an alarm is triggered.
Pixel Counter	Click Draw Target next to Pixel Counter , and then press and hold the left mouse button to draw a rectangle, the Pixel Counter then displays its pixel.

Step 6 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 7 Click **Save**.

To view alarm information on the **Alarm** tab, subscribe relevant alarm event. For details, see "5.1.2 Subscribing Alarm".

Results

You can view the counting result on the **Live** page.

- For **Traffic Congestion** rule, the entry and exit numbers are displayed.
- For **Parking Upper Limit** rule, the inside number is displayed.

Figure 5-77 Traffic congestion



Figure 5-78 Parking upper limit



5.15 Setting Stereo Analysis

Stereo analysis includes rule configuration and calibration configuration.

5.15.1 Setting Rules for Stereo Analysis

The rules for stereo analysis include **Activation Analysis**, **Back Detection**, **Fall Detection**, **Walking Detection**, **Blackboard Writing Detection**, **Violence Detection**, **People No. Error**, **Stand Detection**, **Running Detection**, **People Approaching Detection**, and **Strand Detection**.

Prerequisites

Select **Setting** > **Event** > **Smart Plan**, and then enable **Stereo Analysis**.

Table 5-21 Description of stereo analysis function

Rule	Function	Applicable Scene
Activation Analysis	Working with a recording & broadcasting server, the camera monitors the target's positions in the front of the classroom and analyzes the data, and then generates a report.	Classrooms
Back Detection	When the camera monitors the front of the classroom works with a recording & broadcasting server, and detects a target with back to the camera, an alarm will be triggered.	Classrooms
Fall Detection	When walking or standing people in the detection area suddenly fall down on the ground, the alarm will be triggered.	Park and hall

Rule	Function	Applicable Scene
Walking Detection	When the camera that monitors the front of the classroom works with a recording & broadcasting server, and detects a working target, an alarm will be triggered.	Classrooms
Blackboard Writing Detection	When the camera that monitors the front of the classroom works with a recording & broadcasting server, and detect blackboard writing actions, an alarm will be triggered.  When configuring the rule, click Draw Close-up Area to draw the blackboard as the close-up area, and then the image of sub stream 3 switches to close-up image from the global image.	Classrooms
Violence Detection	When people walking or standing inside or outside the self-service hall or ATM protection cabin have violent movement (such as smashing ATM machine) or fighting, an alarm will be triggered.	Bank halls and ATM protection cabins
People No. Error (vary from devices.)	The camera can recognize the real-time number of people in the detection area. When the number of people exceeds the configured value, an alarm will be triggered.	Scenic spots and banks
	When a recording & broadcasting server is used, the camera that monitors the front of a classroom needs to be configured this function. With this function, the teacher's actions can be traced and enlarged. When the number of people in the image is not 1, the global image is displayed.	Classrooms
Stand Detection	When a recording & broadcasting server is used, the camera that monitors the area where the students stay needs to be configured with this function. When only 1 standing person in the image, an alarm will be triggered, and enlarge the person; when the number of people in the image is not 1, or the stand time is longer than the defined time, the global image is displayed.	Classrooms
Running Detection	When the camera detects a running person, an alarm will be triggered.	Classrooms

Rule	Function	Applicable Scene
People Approaching Detection	When the distance between two walking/standing people reaches the configured value, an alarm will be triggered.	Banks and educational institutions
Strand Detection	When people in the detection area stay longer than the configured stranding time, an alarm will be triggered.	Banks and parks

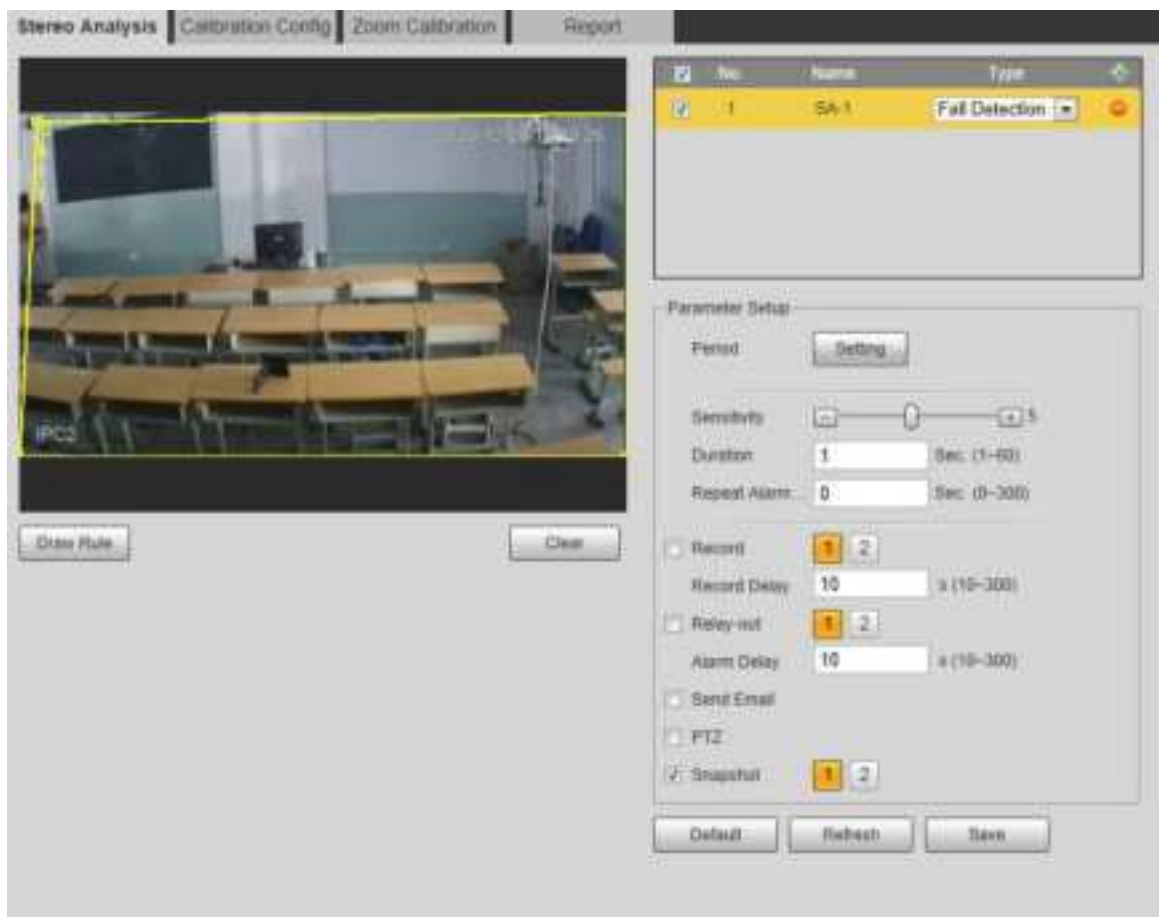
This section takes Fall Detection as an example to introduce the configuration of stereo analysis rule.

Procedure

Step 1 Select **Setting** > **Event** > **Stereo Analysis** > **Stereo Analysis**.

Step 2 Click , double-click the name to modify the rule name, and then select **Fall Detection** as **Rule Type**.

Figure 5-79 Fall detection



Step 3 (Optional) Click **Clear** to delete the default rule box, and then click **Draw Rule** to draw a detection area in the image.

- When configuring **People No. Error** for a recording & broadcasting device, draw the front of a classroom as the detection area.
- When configuring **Stand Detection** for a recording & broadcasting device, draw the area where the students stay as the detection area.

- When configuring **Activation Analysis**, draw the front of a classroom as the detection area.
- When configuring **Back Detection**, draw the front of a classroom as the detection area.
- When configuring **Blackboard Writing Detection**, draw the blackboard as the detection area, and make sure that the detection is larger than the blackboard. Click **Draw Close-up Area** draw the blackboard as the close-up area.
- For other devices without special requirements, use the default box of the system (draw the full screen as the detection area).

Step 4 Set parameters.

Parameters for recording device and common device are different.

Table 5-22 Description of stereo analysis parameters

Parameter	Description
Sensitivity	Set the alarm-triggered sensitivity. The higher the sensitivity is, the easier the alarm will be triggered.
Alarm People Amount	When configuring People No. Error , set the alarm people amount and alarm type. Alarm type includes Greater than , Equal to , Less than , and Unequal to .
Alarm Type	When the real-time number of people in the detection area is greater than, equal to, less than, or unequal to Alarm People Amount , the alarm is triggered.
Duration	• For People Approaching Detection, when the time for people approaching reaches the configured value, the alarm is triggered. • For Fall Detection, when the time of people falling down on the ground reaches the configured value, the alarm is triggered. • For People No. Error, when the number of people in the area reaches the configured value of alarm people amount and alarm type, and the time reaches the configured value, the alarm is triggered.
Close-up Mode	• For people No. error function for a recording device, select Tracking Mode as Close-up Mode. Then the camera traces the teacher's walking trajectory. You can view the tracking effect through sub stream 1 of the live page. When the number of people on the image is not 1, the full screen is displayed. • When setting the stand detection function for a recording device, select Fixed Mode as Close-up Mode. Then sub stream 1 enlarges and displays the image of standing people. When the number of standing people is not 1, the full screen is displayed. L J Before viewing the tracking or enlargement effect through sub stream 1, ensure that sub stream 1 is enabled and the resolution of the main stream and sub stream is 1080p. For configuration details of the main and sub streams, see "4.5.2.1 Video".

Parameter	Description
Repeat Alarm Time	After the alarm is triggered, if the status lasts for the configured time in Repeat Alarm Time , the alarm will be triggered again. 0 indicates that the function is disabled.
Strand Time Threshold	When configuring Strand Detection, you need to set the strand time threshold. When people in the area stay longer than the configured strand time threshold, the alarm is triggered.

Step 5 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 6 Click **Save**.

- Select **Setting > Event > Stereo Analysis > Calibration Config** to finish calibration configuration for other devices, and then the detection rule becomes valid. For details, see "5.15.2 Calibration Configuration".
- To view alarm information on the **Alarm** tab, you should subscribe relevant alarm event. For details, see "5.1.2 Subscribing Alarm".

5.15.2 Calibration Configuration

After configuring the rule for stereo analysis, set the installation height and angle of the camera through calibration configuration. There are two calibration modes: Calibration mode 1: Directly enter the installation height and angle according to the actual conditions; calibration mode 2: Draw an area in the image to automatically calculate the installation height and the angle. This section takes calibration mode 2 as an example.

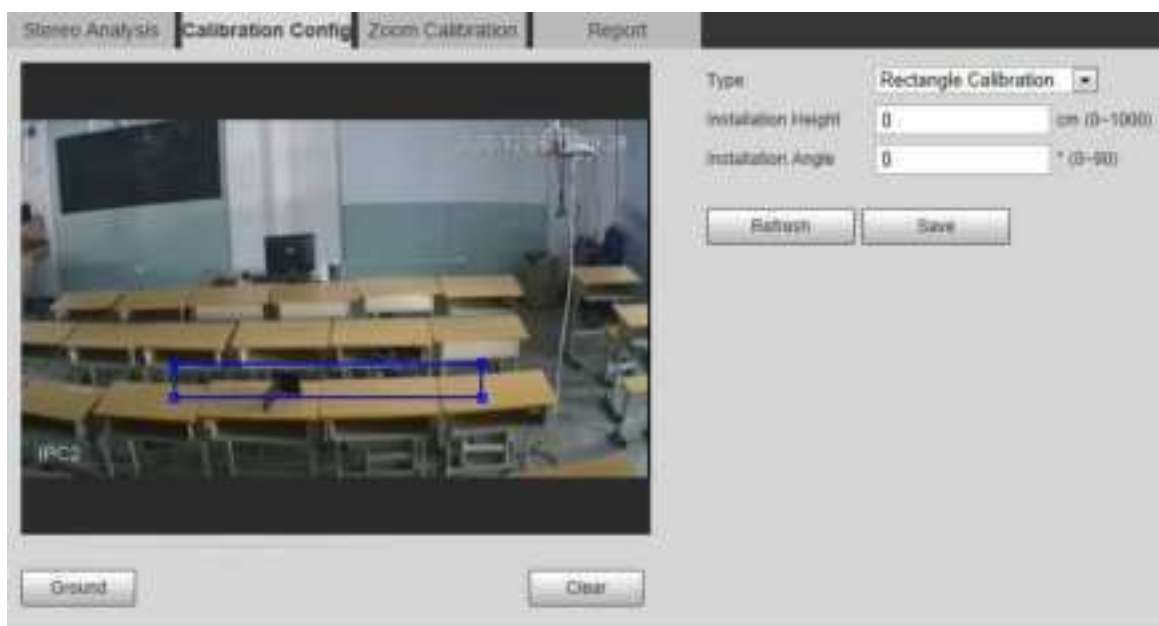
Prerequisites

You have set at least one rule in **Setting > Event > Stereo Analysis > Stereo Analysis**.

Procedure

Step 1 Select **Setting > Event > Stereo Analysis > Calibration Config**.

Figure 5-80 Calibration configuration (stereo analysis)



Step 2 Click **Clear** to clear the default calibration box.

Step 3 Click **Ground** to draw a rectangular box in the image.

Ground should be on the same plane and as big as possible for calibration.

Step 4 Click **Save**, and then the camera calculates its height above the ground and the angle it forms with the ground.

If the height and angle are quite different from the actual situation, repeat Step 2 –.

5.15.3 Zoom Calibration

When configuring People No. Error and Stand Detection rule, you need to configure the enlarging zoom in the image of sub stream 1. When the number of people in the image is not 1, the global image (sub stream 1) is displayed.

Prerequisites

You have set at least one rule in **Setting > Event > Stereo Analysis > Stereo Analysis**.



Zoom configuration is only available on recording & broadcasting devices.

Procedure

Step 1 Select **Setting > Event > Stereo Analysis > Zoom Configuration**.

Step 2 Configure the zoom.

- Method 1: Click **Calibration Area**, and then draw a rectangular box in the image, which is size of the enlarged image of sub stream 1.
- Method 2: Set the zoom value. For example, if you want the target to be 1/5 of the image, set the zoom value to 5.



- When calibrating the zoom for Stand Detection, make sure that there is 1 person in the image at least.
- When calibrating the zoom for People No. Error, make the calibration box in the center of the image, and the zoom value larger than 3. Some models only support calibration by drawing calibration area.

Figure 5-81 Calibration configuration (stereo analysis)



Step 3 Click **Save**.

5.15.4 Viewing Report

Working with a recording & broadcasting server, the camera monitors the target's positions in the front of the classroom and analyzes the data, and then generates a report.

Prerequisites

You have set at least one rule in **Setting > Event > Stereo Analysis > Stereo Analysis**.

Procedure

Step 1 Select **Setting > Event > Stereo Analysis > Report**.

Step 2 Select the start time and end time.

You can search for reports within the time range of 30 minutes–24 hours.

Step 3 Set the number of screen sections.

We recommend splitting the window into 2ⁿ windows.

Step 4 Click **Search**.

Figure 5-82 Report



5.16 Setting ANPR

Extract information of motor vehicles and display related attributes on the **Live** page.

5.16.1 Scene Configuration

Configure non-motor vehicle detection.

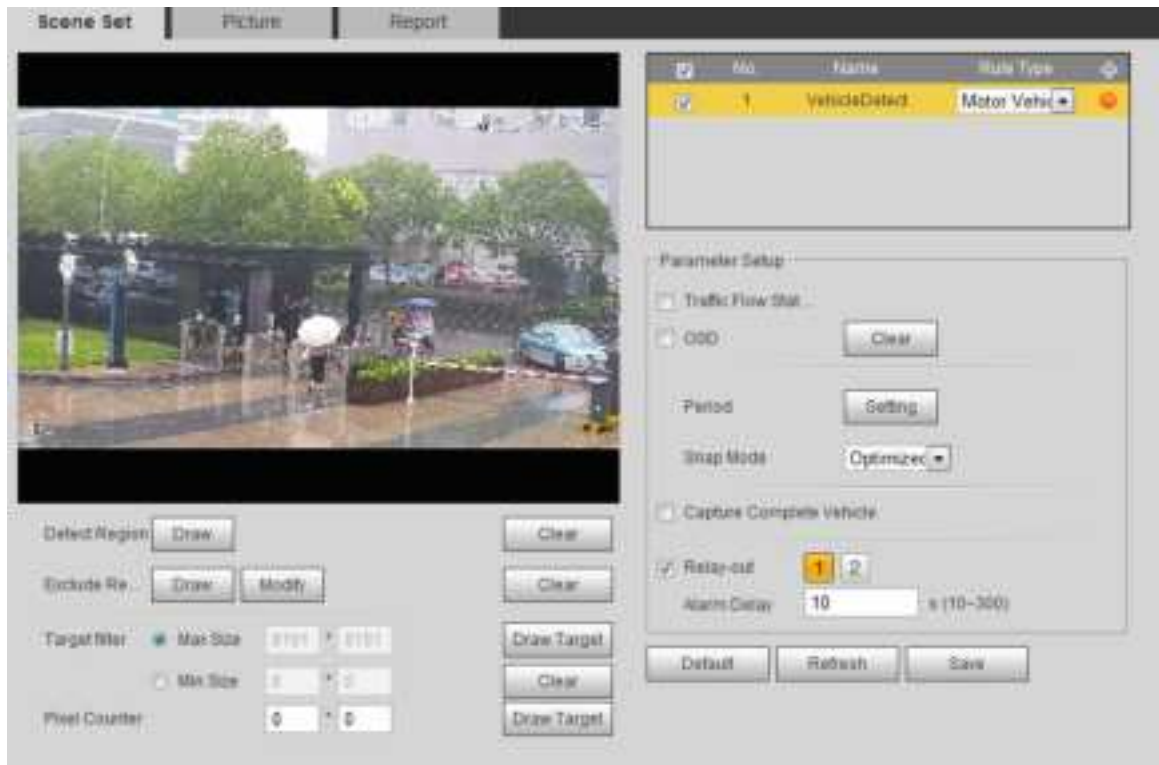
Prerequisites

Select **Setting** > **Event** > **Smart Plan**, and then enable **ANPR**.

Procedure

Step 1 Select **Setting** > **Event** > **ANPR** > **Scene Set**.

Figure 5-83 Scene set (ANPR)



Step 2 Click **Draw** to draw a detect region and an exclude region in the image.

- Detect region: The region that needs to be detected.
- Exclude region: The region that does not need to be detected. Click **Modify** to modify the drawn region.

Click **Clear** at the right side to draw the detection area again.

Step 3 Click **Draw Target** next to **Target Filter** to draw the maximum size and minimum size for the detection target in the image.

Step 4 Configure parameters.

Table 5-23 Description of scene set parameters (ANPR)

Parameter	Description
Traffic Flow Statistics	Select Traffic Flow Stat , and the device detects the number of motor vehicles and non-motor vehicles in the detection area and generates the statistical report. If Traffic Flow Stat is disabled, the report has no statistical data.
OSD	Select OSD to display the statistical result on the preview page. To clear the statistical result, click Clear .
Snap Mode	Select the snap mode: Optimized Snap and Tripwire .
Relay-out	Select the Relay-out check box, and when alarm is triggered, the system interacts with the linked alarm devices.
Alarm Delay	The Alarm linkage keeps running for the configured time after alarm is ended.

Step 5 Set arming periods and alarm linkage action. For details, see "5.1.1 Alarm Linkage".

Step 6 Click **Save**.

Results

The ANPR result is displayed on the live page.

- The plate no. and attribute information of vehicle are displayed at the right side.
- Click the picture in the display area, and the detailed information is displayed.

Figure 5-84 ANPR result



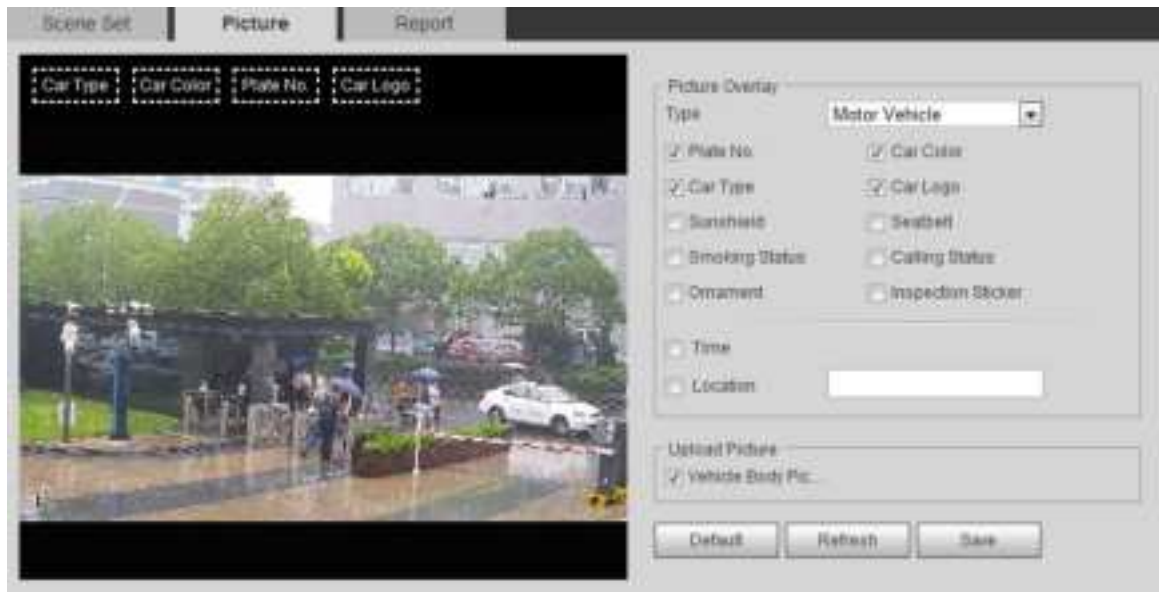
5.16.2 Setting Picture Overlay

Set overlay of motor vehicle.

Procedure

Step 1 Select **Setting** > **Event** > **ANPR** > **Picture**.

Figure 5-85 Picture



Step 2 Select **Motor Vehicle** from the **Type** drop-down list.

Step 3 Set overlay information and box position, such as plate no., time, car color, car type, and car logo.

Step 4 Click **Save**.

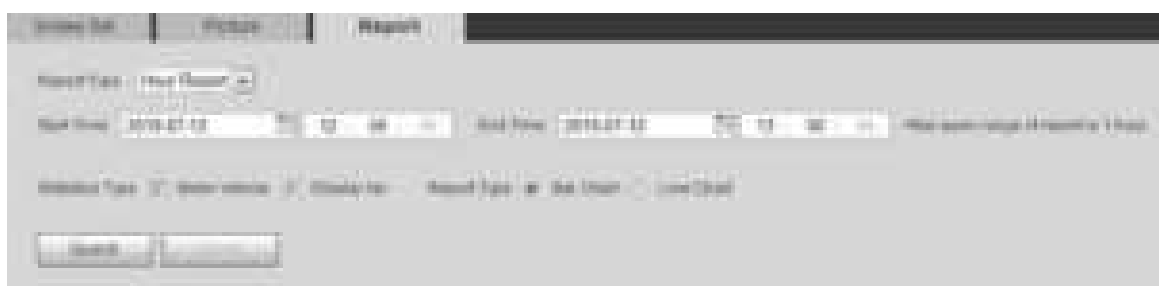
5.16.3 Viewing ANPR Report

Generate data of ANPR in report form.

Procedure

Step 1 Select **Setting > Event > ANPR > Report**.

Figure 5-86 Report

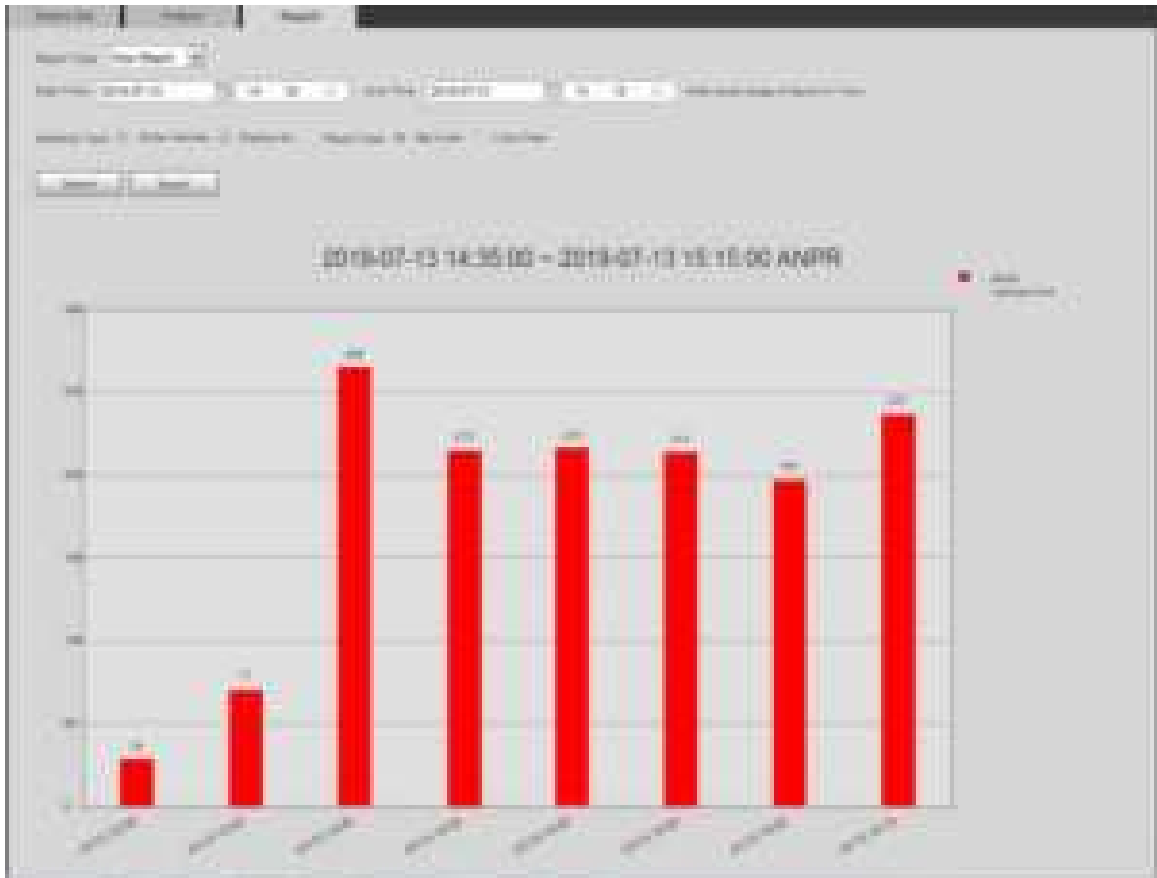


Step 2 Select the report type, start time, end time, and other parameters.

Step 3 Click **Search**.

The statistical results are displayed. Then click **Export** to export the statistical report.

Figure 5-87 Statistical results



5.17 Setting Video Metadata

Classify people, non-motor vehicles and motor vehicles in the captured video, and display the relevant attributes on the live page.

5.17.1 Scene Configuration

Set the detection scenes and rules, including rules for people, non-motor vehicles and motor vehicles. This section takes setting of the People Detection rules as an example.

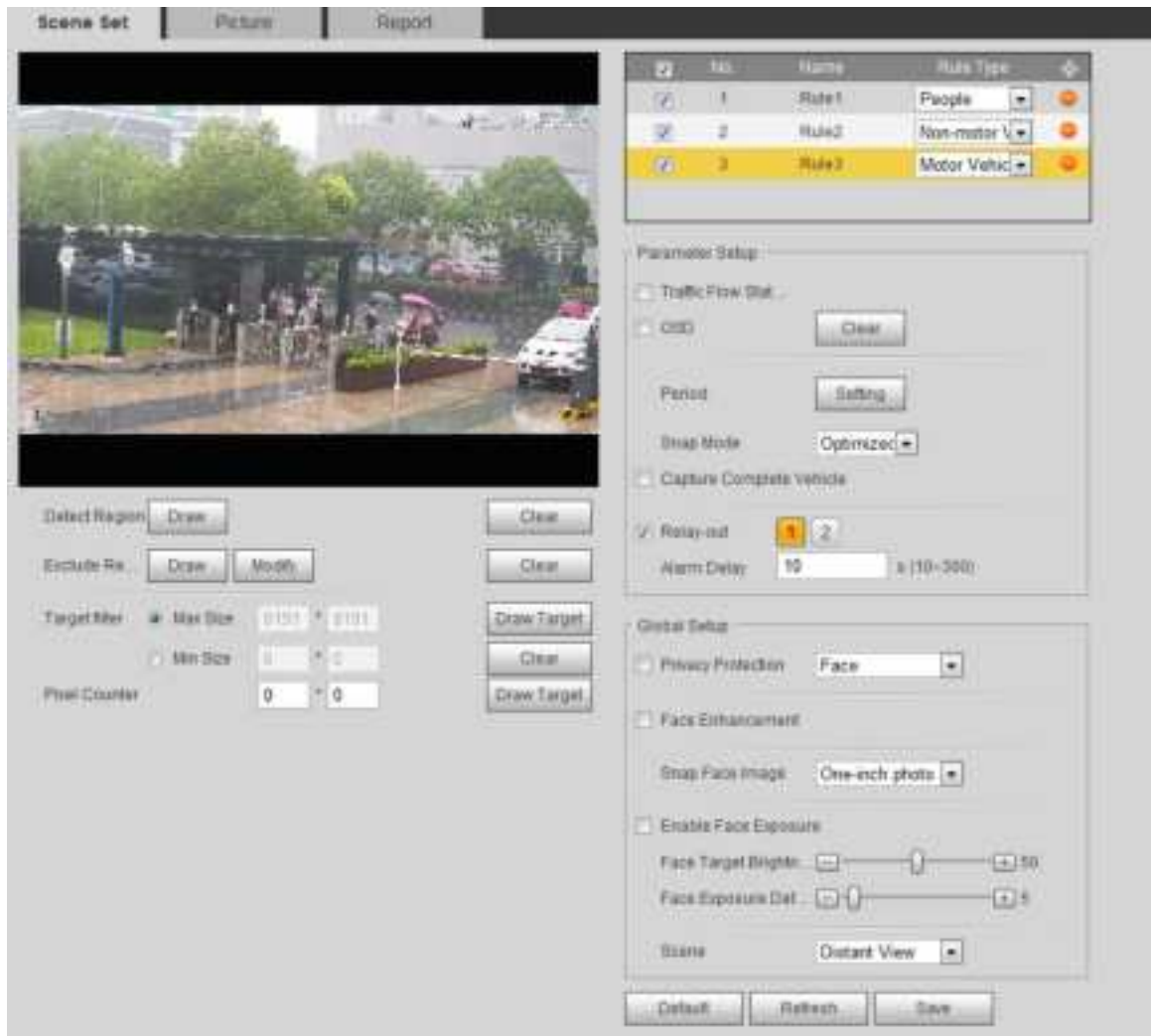
Prerequisites

Select **Setting** > **Event** > **Smart Plan**, and then enable **Video Metadata**.

Procedure

Step 1 Select **Setting** > **Event** > **Video Metadata** > **Scene Set**.

Figure 5-88 Scene set (video metadata)



- Step 2** Click , and double-click the name to modify the rule name, and select **People** in **Rule Type** list.
- Step 3** Click **Draw** to draw a detect region and an exclude region in the image.
- Step 4** Click **Draw Target** next to **Target Filter** to draw the maximum size and minimum size for the detection target in the image.
- Step 5** Set parameters.

Table 5-24 Description of scene set parameters (video metadata)

Parameter	Description
People Flow Statistics	Select the People Flow Statistics check box to count the number of people in the detection area.
Traffic Flow Stat	Select the Traffic Flow Statistics check box to count the number of motor vehicles in the detection area.
Capture whole vehicle	Select the Capture Whole Vehicle check box to capture whole vehicle. The snapshot is saved in the preset path for monitoring snapshots. For details, see "4.5.2.5 Path".
Non-motor Vehicle Flow Statistics	Select the Non-motor Vehicle Flow Statistics check box to count the number of non-motor vehicles in the detection area.

Parameter	Description
OSD	Select the OSD check box, and the numbers of motor vehicles, non-motor vehicles and people in the detection area are displayed.  Click Reset to recount.
Pixel Counter	Click Draw Target next to Pixel Counter , and then press and hold the left mouse button to draw a rectangle, the Pixel Counter then displays its pixel.
Privacy Protection	Select the Privacy Protection check box and then select Face or Human body from the drop-down list to blur faces or human bodies in the image.
Face Enhancement	Select the Face Enhancement check box to preferably guarantee clear face with low stream.
Snap Face Image	Set a range for snapping face image, including face picture and one-inch picture.
Enable Face Exposure	Select the Enable Face Exposure check box to make face clearer by adjusting lens aperture and shutter.
Face Target Brightness	Set the face target brightness, and it is 50 by default.
Face Exposure Detection Interval	Set the face exposure detection interval to prevent image flickering caused by constant adjustment of face exposure. It is 5 seconds by default.
Scene	Set scene as Distant View or Close View .

Step 6 Set arming periods and alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 7 Click **Save**.

Results

Click  on the live page to view the detection results of video metadata.

- The plate no. and attributes of motor vehicle are displayed at the right side, and pictures of people and non-motor vehicles and their attributes at the bottom.
- Click the picture in the display area, and the detailed information is displayed.

Figure 5-89 Video metadata result



5.17.2 Setting Picture Information

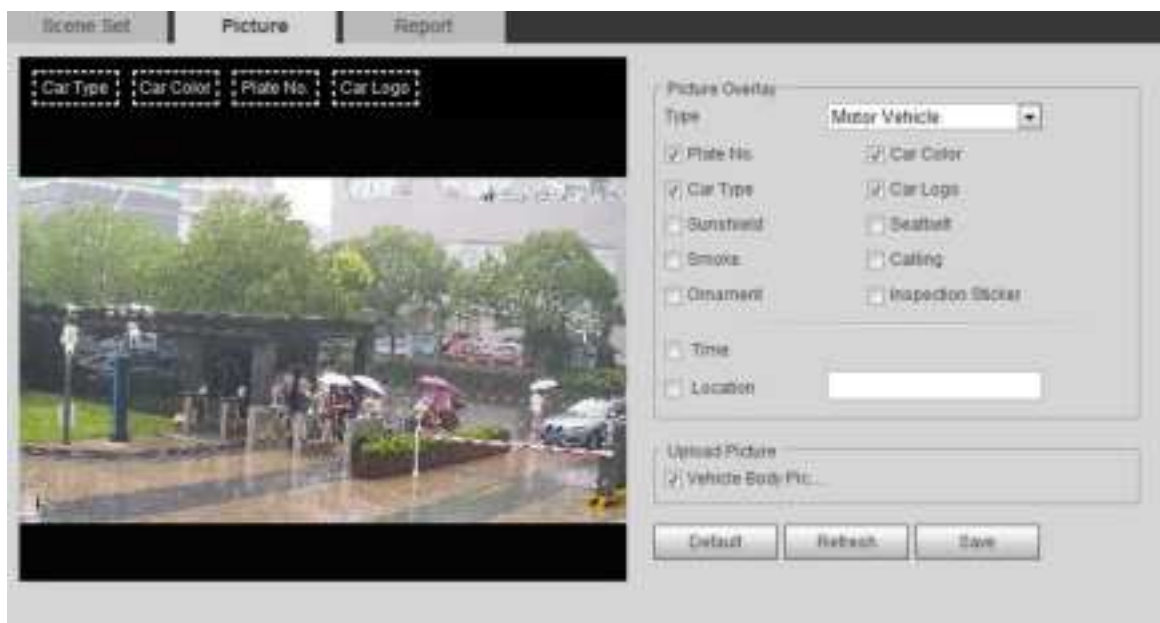
Set overlay of motor vehicle, non-motor vehicle and people and the box position.

This section takes the configuration of motor vehicle overlay as an example.

Procedure

Step 1 Select **Setting** > **Event** > **Video Metadata** > **Picture**.

Figure 5-90 Picture (video metadata)



Step 2 Select **Motor Vehicle** from the **Type** drop-down list.

- Select **Non-motor Vehicle** or **People**, and set non-motor vehicle and people overlay.
- Step 3** Set overlay information and box position, such as plate No., time, car color, car type, and car logo.
- Step 4** Click **Save**.

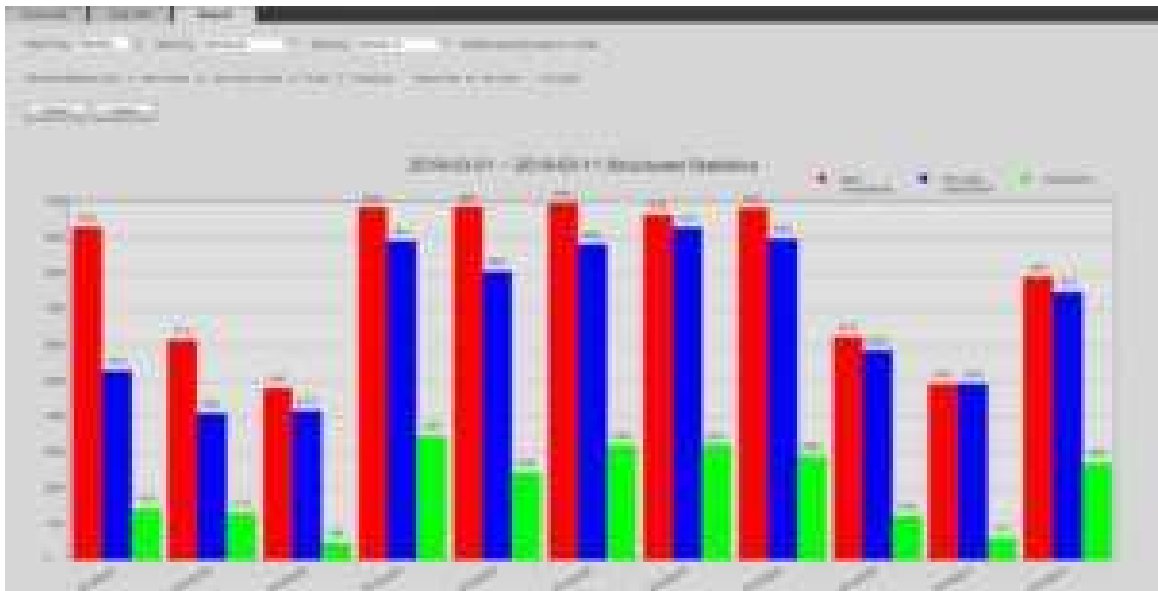
5.17.3 Viewing Video Metadata Report

Generate data of video metadata recognition in report form.

Procedure

- Step 1** Select **Setting > Event > Video Metadata > Report**.
The **Report** page is displayed.
- Step 2** Select the report type, start time, end time, and other parameters.
- Step 3** Click **Search** to complete the report.
The statistical results are displayed. Click **Export** to export the statistical report.

Figure 5-91 Video metadata report



5.18 Setting Relay-in

When an alarm is triggered at the alarm-in port, the system performs alarm linkage.



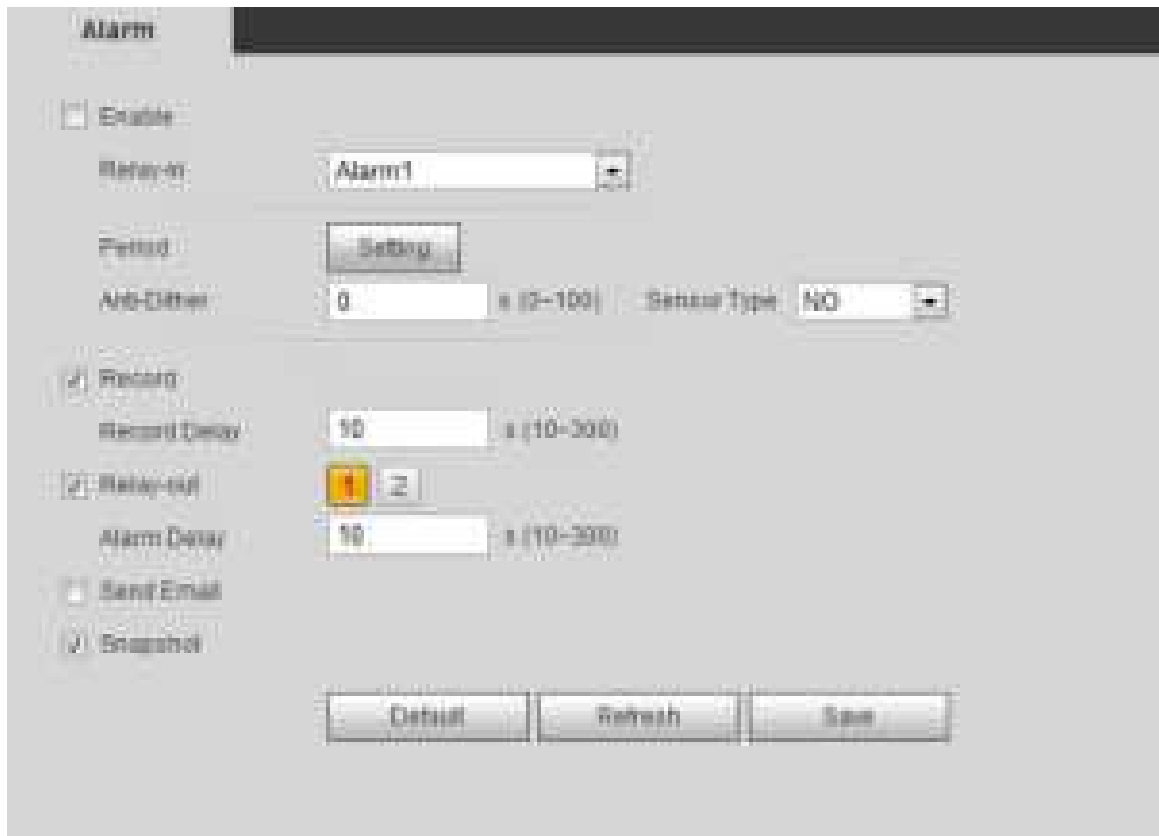
Functions might vary with different models.

5.18.1 Relay-in (1)

Procedure

- Step 1** Select **Setting > Event > Alarm**.

Figure 5-92 Alarm linkage

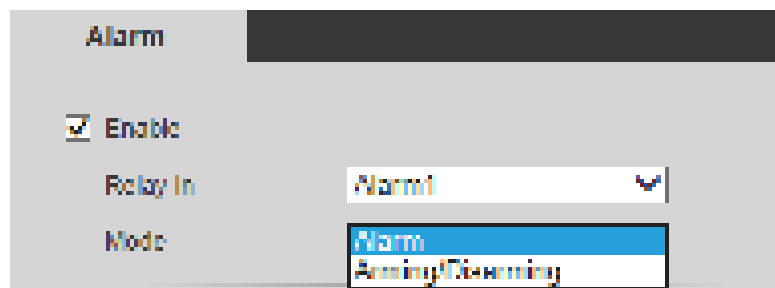


- Step 2** Select the **Enable** check box to enable the alarm linkage function.
- Step 3** Select a relay-in port and a sensor type.
- Sensor Type: NO or NC.
 - Anti-Dither: Only record one alarm event during the anti-dither period.
- Step 4** Set arming periods and alarm linkage action. For details, see "5.1.1 Alarm Linkage".
- Step 5** Click **Save**.

5.18.2 Relay-in (2)

You can select the mode from **Alarm** and **Arming/Disarming**.

Figure 5-93 Select the mode



- When selecting **Alarm**, the function is same as Relay-in (1). For details, see "5.18.1 Relay-in (1)".
- When selecting **Arming/Disarming**, you can enable arming or disarming mode through one press on an external alarm system.

Procedure

- Step 1 Select **Enable** check box to enable the alarm function.
- Step 2 Select a relay-in port, for details, see "5.18.1 Relay-in (1)".
- Step 3 In the **Mode** list, select **Arming/Disarming**.

Figure 5-94 Arming/Disarming

⌋ ⌋

The arming/disarming check box is selected by default. Do not cancel the selection; otherwise the configuration is invalid.

- Step 4 Select the sensor type from **NO** and **NC**.
- Step 5 Click **Save**.

5.19 Setting Abnormality

Abnormality includes SD card, network, illegal access, voltage detection, and security exception.

⌋ ⌋

Only the device with SD card has the abnormality functions, including **No SD Card**, **SD Card Error**, and **Capacity Warning**.

5.19.1 Setting SD Card

In case of SD card abnormality, the system performs alarm linkage. The event types include **No SD Card**, **Capacity Warning**, and **SD Card Error**. The introduction is for reference only, and may differ from the actual page.

Procedure

- Step 1 Select **Setting** > **Event** > **Exception Handling** > **SD Card**.

Figure 5-95 SD card



Step 2 Select the event type from the **Event Type** drop-down list, and then select the **Enable** check box to enable the SD card detection function.

When setting **Capacity Warning** as **Event Type**, set **Capacity Limit**. When the remaining space of SD card is less than this value, the alarm is triggered.

Step 3 Set alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 4 Click **Save**.

5.19.2 Setting Network

In case of network abnormality, the system performs alarm linkage. The event types include **Disconnection** and **IP Conflict**.

Procedure

Step 1 Select **Setting > Event > Abnormality > Network**.

Figure 5-96 Network



- Step 2** Select the event type from the **Event Type** drop-down list, and then select the **Enable** check box to enable the network detection function.
- Step 3** Set alarm linkage actions. For details, see "5.1.1 Alarm Linkage".
- Step 4** Click **Save**.

5.19.3 Setting Illegal Access

When you enter a wrong login password more than the set times, the system performs alarm linkage.

Procedure

- Step 1** Select **Setting** > **Event** > **Abnormality** > **Illegal Access**.

Figure 5-97 Illegal access



- Step 2** Select the **Enable** check box to enable the illegal access detection function.
- Step 3** Set **Login Error**.
If you consecutively enter a wrong password more than the set value, the account will be locked.
- Step 4** Set alarm linkage actions. For details, see "5.1.1 Alarm Linkage".
- Step 5** Click **Save**.

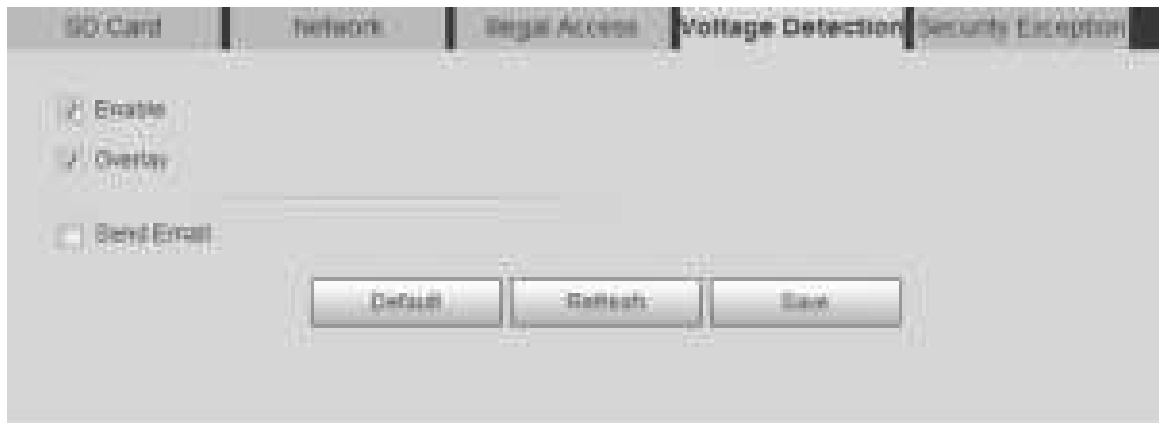
5.19.4 Setting Voltage Detection

When the input voltage is higher than or lower than the rated value of the device, the system performs alarm linkage.

Procedure

- Step 1** Select **Setting** > **Event** > **Abnormality** > **Voltage Detection**.

Figure 5-98 Voltage detection



- Step 2** Select the **Enable** check box to enable the voltage detection function.
Select **Overlay**, and the alarm icon is displayed by overlapping when the alarm is triggered.  indicates undervoltage and  indicates overvoltage.
- Step 3** Set alarm linkage actions. For details, see "5.1.1 Alarm Linkage".
- Step 4** Click **Save**.

5.19.5 Setting Security Exception

When a hostile attack is detected, the system performs alarm linkage.

Procedure

- Step 1** Select **Setting** > **Event** > **Abnormality** > **Security Exception**.
- Step 2** Select the **Enable** check box.

Figure 5-99 Security exception



Step 3 Select the event to be monitored as needed.

Table 5-25 Security exception description

Parameter	Description
Trusted environment detected program	Monitors the programs that run in trusted environment to detect whether there are program running without trusted signature. Select it to prevent the program with trojan and virus.
Account login exceeds the set time range	The account tries to login during the period that does not allow user to log in. Configure Restricted Login in Setting > System > Account > Account > Username , including the IP address, validity period, and time range.
Session ID Brute Force Attack	When sessionid false reaches the configured threshold in the defined period, an alarm will be triggered. Select it to monitor attacks in real time, so that attacks can be prevented timely.
Brute force attack of web path	Generates the web serve directory and send a request through enumeration. When URL false reaches the configured threshold in the defined period, an alarm will be triggered. Select it to monitor attacks in real time, so that attacks can be prevented timely.
Session connection exceeds limit	The number of users (web, platform or mobile phone client) exceeds the max number of users that can connect to the device simultaneously. Configure the Max Connection in Setting > Network > Port .

Step 4 Set alarm linkage actions. For details, see "5.1.1 Alarm Linkage".

Step 5 Click **Save**.

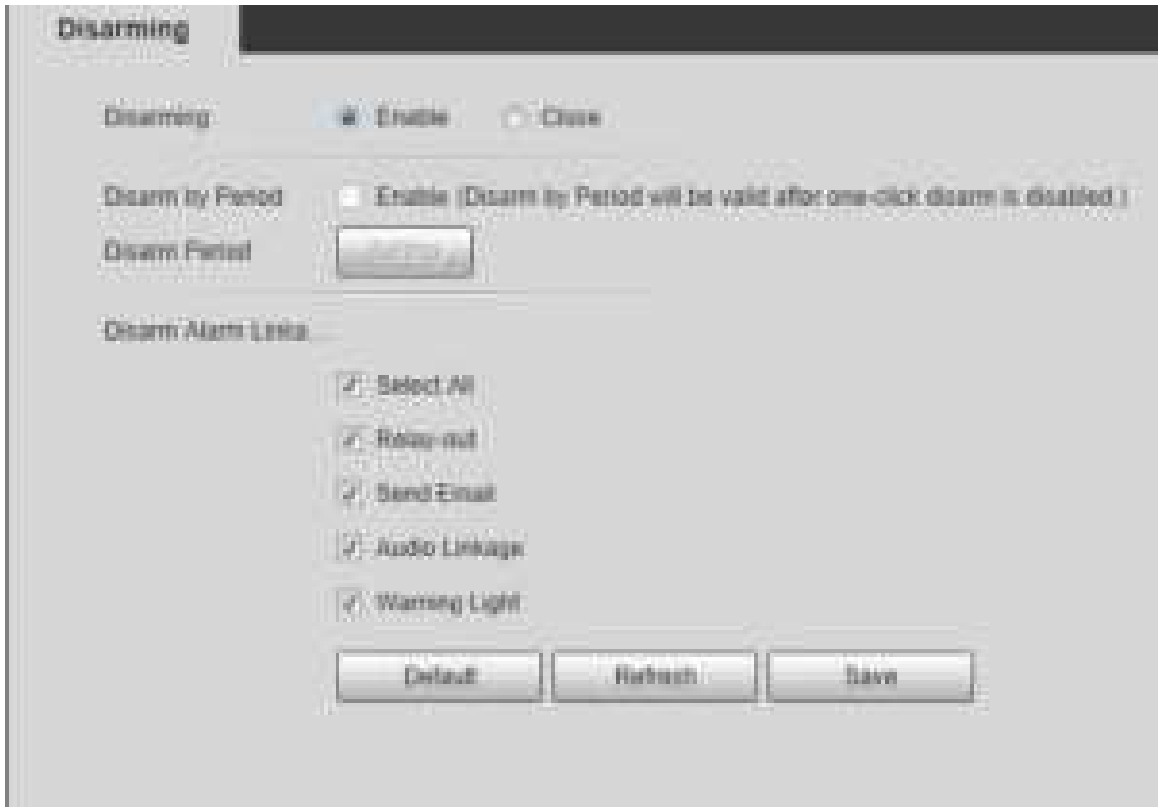
5.19.6 Setting Disarming

You can disable the linkage actions through the app on your smart phone, and then the system will not perform any linkage action, but alarm records will still be generated.

Procedure

Step 1 Select **Setting > Event > Disarming**.

Figure 5-100 Disarming



Step 2 Select the **Enable** check box to disarm.

Step 3 (Optional) Select the **Enable** check box next to **Disarm by Period** to enable the Disarm by Period function, and then you can disarm by period. For setting disarm period, see "5.1.1.1 Setting Period".



This function is only valid when **Disarming** is disabled.

Step 4 Select alarm linkage actions as needed.

Step 5 Click **Save**.

6 Maintenance

6.1 Requirements

To make sure the system runs normally, maintain it as the following requirements:

- Check surveillance images regularly.
- Clear regularly user and user group information that are not frequently used.
- Modify the password every three months. For details, see "4.8.3 Account".
- View system logs and analyze them, and process the abnormality in time.
- Back up the system configuration regularly.
- Restart the device and delete the old files regularly.
- Upgrade firmware in time.

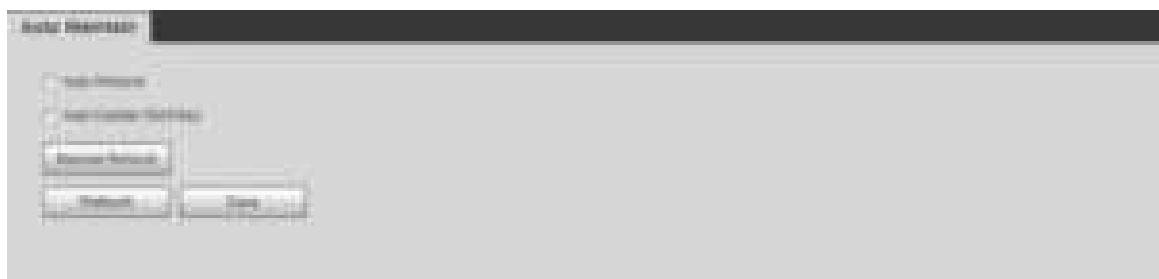
6.2 Auto Maintain

You can restart the system manually, and set the time of auto reboot and auto deleting old files. This function is disabled by default.

Procedure

Step 1 Select **Setting** > **System** > **Auto Maintain**.

Figure 6-1 Auto maintain



Step 2 Configure auto maintain parameters.

- Select the **Auto Reboot** check box, and set the reboot time, the system automatically restarts as the set time every week.
- Select the **Auto Delete Old Files** check box, and set the time, the system automatically deletes old files as the set time. The time range is 1 to 31 days.



When you enable and confirm the **Auto Delete Old Files** function, The **The deleted files cannot be restored, are you sure?** notice is displayed. Operate it carefully.

- Click **Manual Reboot**, and then click **OK** on the displayed page, the camera will restart.

Step 3 Click **OK**.

6.3 Resetting Password

When you need to reset the password for the admin account, there will be a security code sent to the entered email address which can be used to reset the password.

Prerequisites

You have enabled password reset service. For details, see "4.8.4.1 System Service".

Procedure

Step 1 Open IE browser, enter the IP address of the device in the address bar and press Enter.

Figure 6-2 Login



Step 2 Click **Forgot password?**

Figure 6-3 Prompt



Step 3 Click **OK**.



Clicking **OK** means that you are informed that some of your personal data might be collected to help reset the password, such as phone number, MAC address, and device serial number. Read the prompt carefully to decide whether to authorize the collection activity.

Figure 6-4 Reset the password (1)



Reset the password(1/2)

DFE_2014AB9YAZ00013

QR code:

Please scan the QR code on the actual interface

Note(for admin only):

Option 1: Please download Easy4ip and then from Me-Settings-Reset device password, scan the left QR code.

Option 2: Please use an APP to scan the left QR code to get special strings. And then send the strings to support_ipwd@global.dahuatech.com.

The security code will be delivered to 1***@qq.com

Security code:

Cancel Next

Step 4 Reset the password.

Step 5 Scan the QR code, and there will be a security code sent to the email address you entered. Enter the security code as instructed.



- Please use the security code within 24 hours after you receive it. Otherwise, it will become invalid.
- If you fail to use the security code for two times continuously, there will be fail notice when you try to get a security code for the third time. You have to reset the device to get a security code or wait 24 hours to get it again.

Step 6 Click **Next**.

Figure 6-5 Reset the password (2)



Reset the password(2/2)

Username: admin

Password:

Weak Middle Strong

Use a password that has 8 to 32 characters, it can be a combination of letter(s), number(s) and symbol(s) with at least two kinds of them. (please do not use special symbols like " " , &)

Confirm Password:

Cancel Save

Step 7 Reset and confirm the password.

The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).

Step 8 Click **Save**.

6.4 Backup and Default

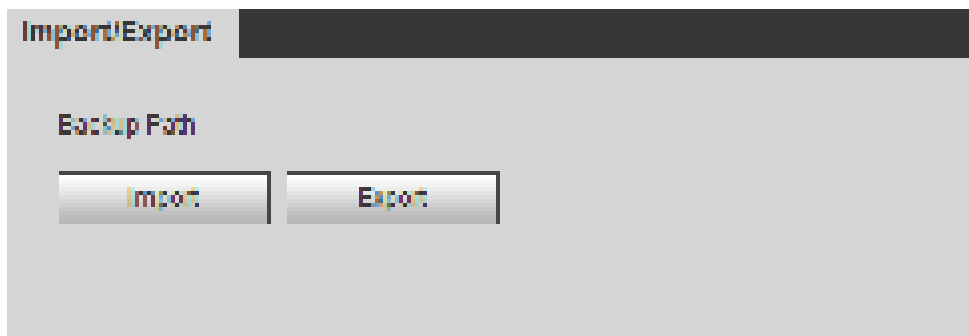
6.4.1 Import/Export

- Export the system configuration file to back up the system configuration.
- Import system configuration file to make quick configuration or recover system configuration.

Procedure

Step 1 Select **Setting** > **System** > **Import/Export**.

Figure 6-6 Import/Export



Step 2 Click **Import** or **Export**.

- Import: Select local configuration file, and click **Open** to import the local system configuration file to the system.
- Export: Select the storage path, and click **Save** to export the system configuration file to local storage.

Step 3 Click **Save** to finish configuration.

6.4.2 Default

Restore the device to default configuration or factory settings.

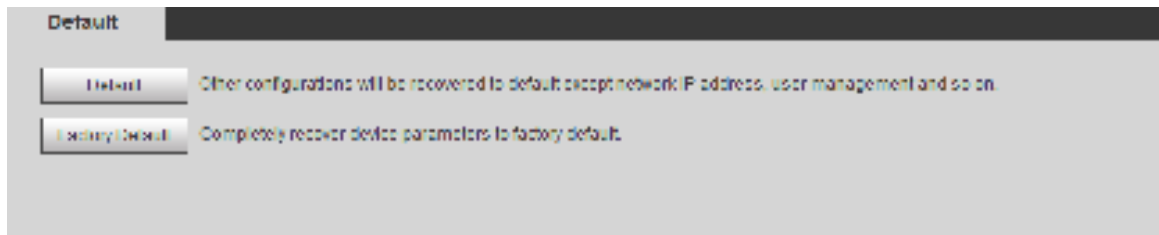


This function will restore the device to default configuration or factory setting.

Select **Setting** > **System** > **Default**.

- Click **Default**, and then all the configurations except IP address and account are reset to default.
- Click **Factory Default**, and all the configurations are reset to factory settings.

Figure 6-7 Default



6.5 Upgrade

Upgrading to the latest system can perfect camera functions and improve stability.

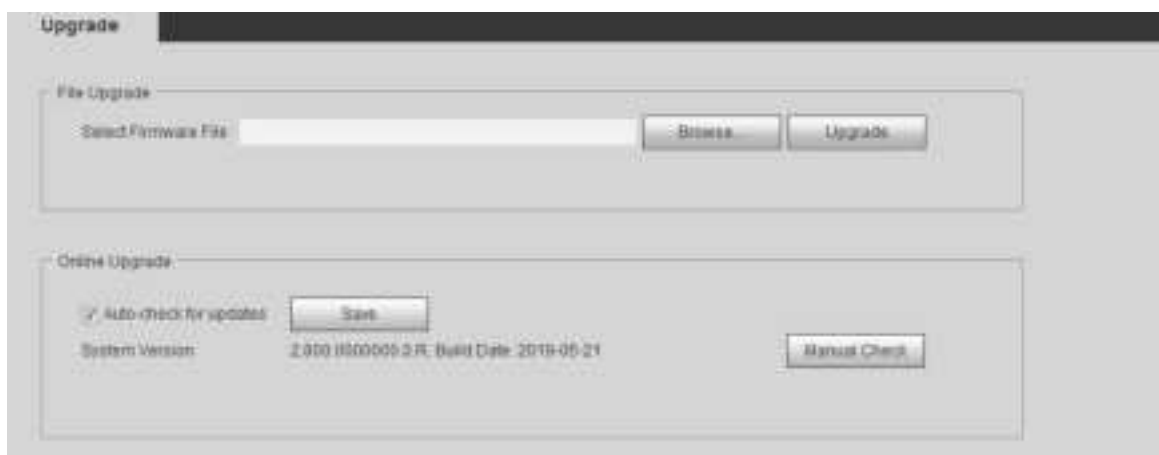


If wrong upgrade file has been used, restart the device; otherwise some functions might not work properly.

Procedure

Step 1 Select **Setting** > **System** > **Upgrade**.

Figure 6-8 Upgrade



Step 2 Select upgrading method according to the actual needs.

- File Upgrade
 1. Click **Browse**, and then upload upgrade file.
 2. The upgrade file should be a .bin file.
 3. Click **Upgrade**.

The upgrade starts.

- Online Upgrade
 1. Select the **Auto-check for updates** check box.

The system checks for upgrade once a day automatically, and there will be system notice if any upgrade is available.



We need to collect the data such as device name, firmware version, and device serial number to proceed auto-check. The collected information is only used for verifying the legality of cameras and upgrade notice.

2. If there is any upgrade available, click **Upgrade**, and then the system starts upgrading.



Click **Manual Check** to check for upgrade manually.

6.6 Information

You can view the information, including version, log and online user, and back up or clear log.

6.6.1 Version

You can view device information such as hardware, system version, and web version.

Select **Setting** > **Information** > **Version** to view the version information.

6.6.2 Log

You can view and back up logs.

Procedure

- Step 1 Select **Setting** > **Information** > **Log**.

Figure 6-9 Log



- Step 2 Configure **Start Time** and **End Time**, and then select the log type.

The start time should be later than January 1st, 2000, and the end time should be earlier than December 31, 2037.

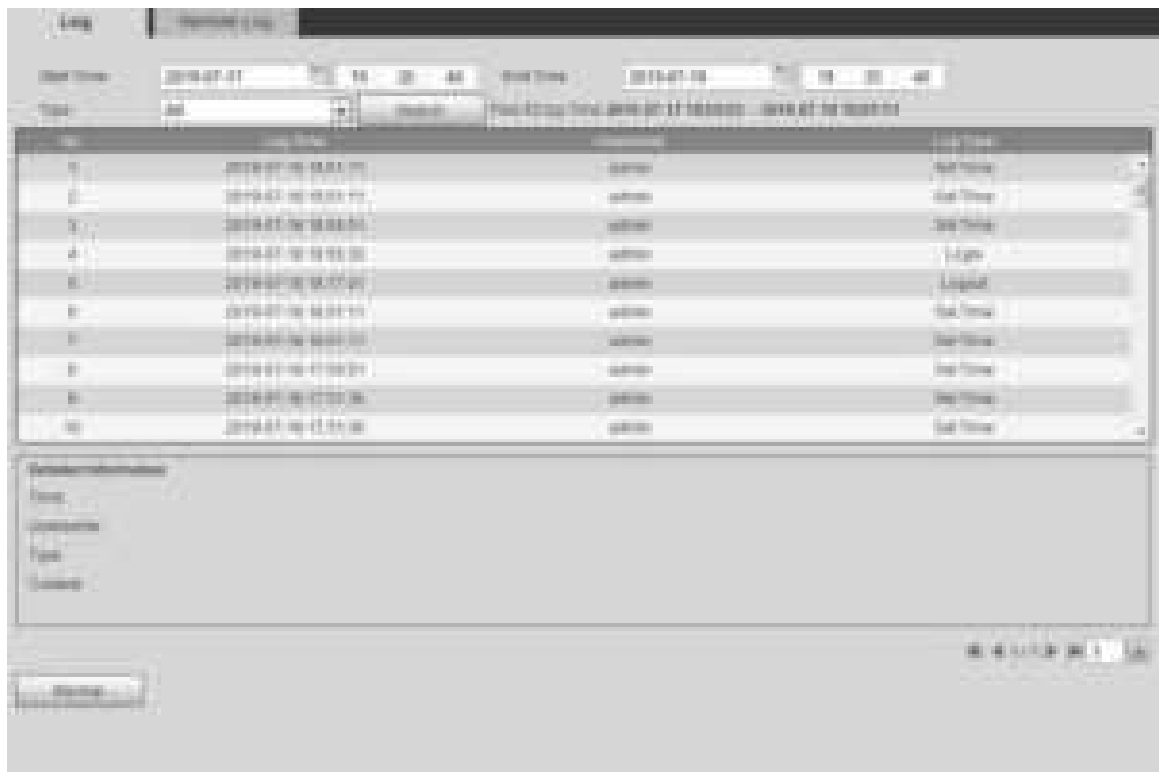
The log type includes All, System, Setting, Data, Event, Record, Account, and Safety.

- **System** : Includes program start, abnormal close, close, program reboot, device closedown, device reboot, system reboot, and system upgrade.
- **Setting** : Includes saving configuration and deleting configuration file.
- **Data** : Includes configuring disk type, clearing data, hot swap, FTP state, and record mode.
- **Event** (records events such as video detection, smart plan, alarm and abnormality): includes event start and event end.
- **Record** : Includes file access, file access error, and file search.
- **Account** : Includes login, logout, adding user, deleting user, modifying user, adding group, deleting group, and modifying group.
- **Safety**: Includes password resetting and IP filter.

Step 3 Click **Search**.

- Click a certain log, and then you can view the detailed information in **Detailed Information** area.
- Click **Backup**, and then you can back up all found logs to local PC.

Figure 6-10 Log (details)



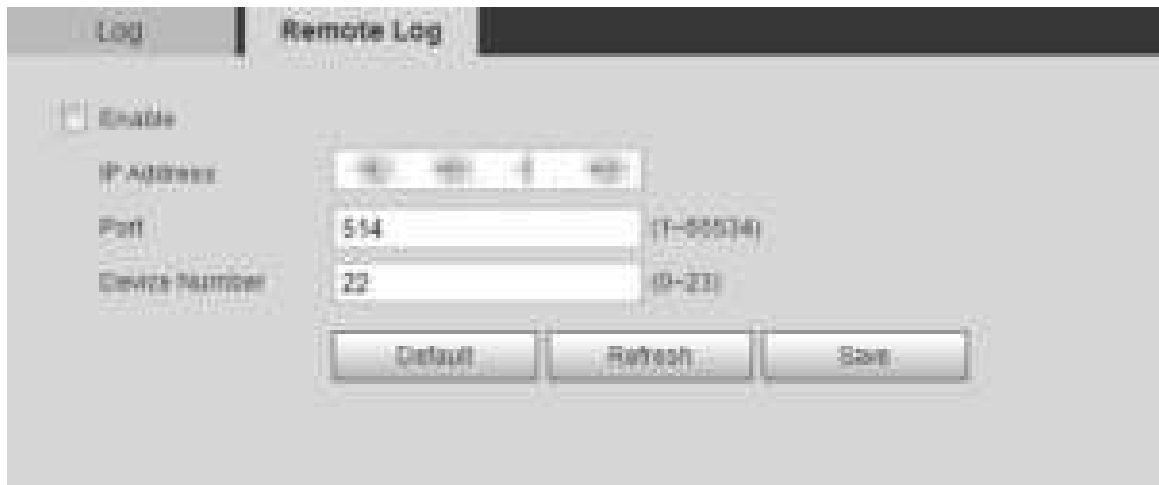
6.6.3 Remote Log

Configure remote log, and you can get the related log by accessing the set address.

Procedure

Step 1 Select **Setting** > **Information** > **Remote Log**.

Figure 6-11 Remote log



Step 2 Select the **Enable** check box to enable remote log function.

Step 3 Set address, port and device number.

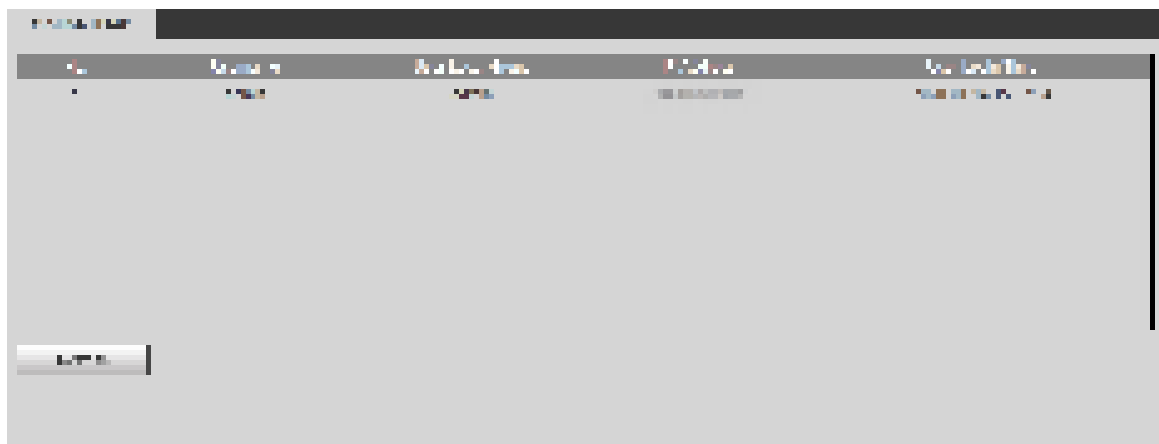
Step 4 Click **Save**.

6.6.4 Online User

View all the current users logging in to web.

Select **Setting** > **Information** > **Online User**.

Figure 6-12 Online user



No.	Username	Available time	IP Address	User Location

Refresh

Appendix 1 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 from Dahua 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.

More information

Please visit Dahua official website security emergency response center for security announcements and the latest security recommendations.

ENABLING A SAFER SOCIETY AND SMARTER LIVING

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