Video Matrix Platform (M70-4U-E)

User's Manual

V3.1.0

Foreword

This manual introduces the installation, functions and operations of the video matrix platform (hereinafter referred to as "the Device"). Read carefully before using the device, and keep the manual safe for future reference.

Models

M70-4U-E

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 time.
NOTE	Provides additional information as a supplement to the text.

Revision History

Version	Revision Content	Release Date
V3.1.0	Optimize content.	February 2024
V3.0.0	Baseline revision.	November 2019
V2.1.1	Optimize wording.	October 2019
V2.1.0	Adding 2-channel 4K output card.	August 2019
V2.0.0	Baseline revision.	April 2019
V1.0.0	First release.	June 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. 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.
- Do not transport the device with its front panel facing down.

Storage Requirements

Store the device under allowed humidity and temperature conditions.

Installation Requirements

-  Electrical Hazard

  Preventive measures: Make sure the power is off when you put your hand into the device.
- Stability Hazard

  Possible result: The rack might fall down and cause serious personal injury.

  Preventive measures (including but not limited to):

  - Before extending the rack to the installation position, read the installation instructions.
  - When the Device is installed on the slide rail, do not place any load on it.
  - Do not retract the slide rail while the Device is installed on it.

-  Rotating Fan Blades Hazard

  Avoid touching the fan blades, especially when they are moving.
-  Before installation, disconnect all the power cords.
- Use a cable tie to bundle the cables after they are connected to avoid risk of short circuits, overheating and electrocution caused by tangled cables.

- The device must be installed in a location that only professionals can access. Non-professionals are not allowed to enter the installation area.
- When installing the device, make sure that the power plug can be easily reached to cut off the power.

- A 5 A overcurrent protection device is required to be installed in the external power circuit of the product as a circuit breaker. Make sure the protection device is close to the product, offering safety of cutting power during maintenance.
- Install the device near a power socket for emergency disconnect.
- A safety circuit breaker is designed on the device bottom to cut the power of the device. Make sure the breaker can be easily operated during installation.
- Make sure the product is installed by trained professionals and it must be installed in locations that only professionals can access.
- To ensure heat dissipation, the gap between the device and the surrounding area should not be less than 5 cm on the sides and 1 cm on top of the device.
- Do not block the ventilator of the device with objects, such as newspaper, table cloth or curtains.
- Do not put open flames, such as a lit candle, on the device.
- Prevent liquid from dripping or splashing on the device. Do not put any objects filled with liquid, such as a vase, on top of the device.
- Do not place or install the device in a place exposed to sunlight or near heat sources.
- Keep the device away from dampness, dust, or soot.
- Make sure the device is installed stably and levelly, allowing normal status for internal tremor resistant modules.
- 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.
- An independent protective grounding terminal is designed at the lower-right corner of the product. Make sure the terminal is reliably grounded during installation.
- Connect the cables in sequence when linking the circuit, and connect the power cable last to avoid damaging the device.
- Make sure the negative binding post of the battery is disassembled while the device is being wired.
- Please follow the electrical requirements to power the device.
  - Following are the requirements for selecting a power adapter.
    - The power supply must conform to the requirements of IEC 60950-1 and IEC 62368-1 standards.
    - The voltage must meet the SELV (Safety Extra Low Voltage) requirements and not exceed ES-1 standards.
    - When the power of the device does not exceed 100 W, the power supply must meet LPS requirements and be no higher than PS2.
  - We recommend using the power adapter provided with the device.
  - When selecting the power adapter, the power supply requirements (such as rated voltage) are subject to the device label.

Operation Requirements

DANGER

- The Device or remote control contains button batteries. Do not swallow the batteries due to the risk of chemical burns.

  Possible result: The swallowed button battery can cause serious internal burns and death within 2 hours.

  Preventive measures (including but not limited to):

  - Keep new and used batteries out of reach of children.

- If the battery compartment is not securely closed, stop using the product immediately and keep out of reach of children.
- Seek immediate medical attention if a battery is believed to be swallowed or inserted inside any part of the body.

- Battery Pack Precautions

  Preventive measures (including but not limited to):

  - Do not transport, store or use the batteries in high altitudes with low pressure and environments with extremely high and low temperatures.
  - Do not dispose the batteries in fire or a hot oven, or mechanically crush or cut the batteries to avoid an explosion.
  - Do not leave the batteries in environments with extremely high temperatures to avoid explosions and leakage of flammable liquid or gas.
  - Do not subject the batteries to extremely low air pressure to avoid explosions and the leakage of flammable liquid or gas.

WARNING

- Operating the device in a domestic environment may cause radio interference.
- Place the device in a location that children cannot easily access.
- High Current

  Preventative measure: Ground the screw of the device to protective ground before you power it on.
- Do not use multiple devices together to avoid generating high current.

  Preventative measure: Ground the device to protective ground before you power it on.

- Use the device under the allowed humidity and temperature conditions.
- Use the device within the rated range of power input and output.
- Operating temperature: –10 °C to +55 °C (14 °F to 131 °F).
- Do not disassemble the device.
- Do not plug or unplug RS-232, RS-485 or the audio/video signal cable with the power on to avoid damaging the ports.

Maintenance Requirements

DANGER

Replacing unwanted batteries with the wrong type of new batteries might result in explosion.

Preventive measures (including but not limited to):

- Replace unwanted batteries with new batteries of the same type and model to avoid the risk of fire and explosion.
- Dispose of the old batteries as instructed.

WARNING

- A blown fuse does not ensure disconnection of subsequent circuit. Please be cautious during maintenance.
- Power off the device before maintenance.
- The device can only be used with batteries possessing internal protection. To prevent explosion, dispose of the old batteries as instructed.

- Make sure to use the same model when replacing the battery to avoid fire or explosion.

- The device casing provides protection for internal components. Use a screwdriver to loosen the screws before detaching the casing. Make sure the casing is put back and fixed to the original spot before power on and use the device again.
- Damp dust on the circuit board might cause the device to short circuit, resulting in device damage. Make sure to regularly clear dust from the circuit board, connectors and the case with a brush.

Table of Contents

1 Product Overview

1.1 Introduction

Based on Advanced Telecommunications Computing Architecture (ATCA), video matrix platform is designed as a modern telecommunication-level device which supersedes DVR, decoder, analog matrix, and video wall controller. It is compatible with past and current network monitoring environments.

Figure 1-1 Appearance

1.2 Features

- Flexible equipping of function card.
- This product is a digital video matrix system with functions of digital video switch, multiple operation access, centralized management and distributed deployment.
- It switches among analog signal, digital signal, HD network signal and HD digital video signal and makes HD image available on video walls.
- This platform integrates video signal encoding and decoding, centralized data storage, live view and various networks, plan, log, user permission management, device maintenance functions, and is able to connect with a video conference system for central command.

1.2.1 Structural Feature

- 19-inch 4U standard rack case for universal uses.
- Card-type ATCA structure with strong expansibility and flexibility.
- Two groups of fans for intelligent temperature controlling, and stabilized air passage with the case structure to balance internal temperature.
- Dual channel redundant power supply for continuous working of device and security of data.
- Dual blade function card.

1.2.2 Hardware Feature

- Intel x86 platform for device expandability and fluency when system is in full load.
- High-speed connector on compression card, x4 PCI-E gen2 and 12 VDC power supply, for fluency of high-speed data flow.
- Hot swap button and indicator of compression card help users to flexibly extend the application, and know compression card status.
- Various ports of compression card, such as USB, serial, Internet page, HDMI, BNC, and DVI, which guarantee device functions and simplify operation and debugging done by users and technical staff.

- Each function card works independently to balance system's work load and ensure fluency.
- Dual high-speed non-blocking design for rear panel to meet demand of large volume A/V data transmission.

1.2.3 Software Feature

Embedded LINUX OS: Safe, reliable, stable, efficient, easy development and maintenance.

Matrix Switch Control

- Analog, network, digital video signal input and switch output.
- Signal non-compression direct switch output.
- Keyboard control switch.
- Modular input card and output card can be integrated into digital video matrix of different requirements.

A/V Encoding Input

- Adopt H.264 video compression standard, dual stream technology, VBR, composite streaming, video stream encoding, and A/V sync during composite stream encoding.
- A/V encoding card supports 32-ch BNC (CVBS signal), 8-ch HD-SDI, 4-ch 3G-SDI, 4-ch DVI (support DVI, VGA, HDMI signal), 8-ch HDCVI, 4-ch HDMI (support DVI, HDMI signal).
- Support decoding up to 80 channels of HD video or 320 channels of SD video.
- Support non-standard stream.
- Support SVAC, MPEG4, H.264, MJPEG and H.265 video standards.

A/V Decoding Output

- DVI, HDMI output display.
- 1/4/6/8/9/16/25/36 window split and custom split.
- The fluency function is able to remarkably enhance video fluency by doubling the original frame rate from 25 fps or 30 ftps to 50 ftps or 60 ftps, which makes a difference especially when viewing high-speed movements.
- One single card supports max 6-ch HDMI HD A/V decoding capacity, 4-ch 4K HD decoding capacity, 32-ch 1080P HD video decoding capacity, 64-ch 720P HD video decoding capacity and 64-ch D1 and lower SD video decoding capacity.
- 12 MP, 8 MP, 5 MP and 3 MP HD video decoding.
- 320-ch 1080P/60-ch 4K (3840×2160@30fps HDMI) decoding capacity.
- Maximum 40-ch 4K output.
- 60-ch HD output.
- Maximum 320-ch 1080P H.265 bit stream real-time output.
- 30 preset scenes; user may customize each TV wall layout.

Video Wall Splicing

- Random splicing among 60 screens.
- Digital zoom in and zoom out.
- Open window and roaming; one single screen supports 36 windows.
- Spliced window supports 1, 4, 6, 8, 9, 16, 25 and 36 splits.

- Point-to-point HD background display.

Network Function

- Six RJ45 ports, supporting 1000M network.
- Support TCP/IP protocol stack, including TCP, UDP, RTP, RTSP, DHCP, DNS, DDNS, NTP, SADP protocols.
- Support management software to achieve remote switching between analog and digital videos on video wall and control with keyboard.
- Obtain and configure parameter, reboot, export and import parameters remotely.

Other Functions

- Operation, alarm, abnormality and log recording facilitate maintenance.
- Improve user authority management to provide more clear and orderly authorization levels.
- Timely upgrade the system in local and remote online way.
- Support network storage to accommodate demand from medium to large monitoring systems.
- Multiple users and clients login, convenient for users to preview and manage monitoring whenever and wherever possible.

1.3 Introduction to Cards in System

Table 1-1 System cards

Name	Model	Functional Module	Description	Note
Platform host	M70-4U-E	Video Matrix Platform host	• 1 4U host case, support 10 function cards • 1 MBC0004 main control panel • 1 control panel • 1 built-in power adaptor	Standard (dual-redundant power optional)
Input module	VEC0804HS	HD-SDI encoding card	• 8-ch HD-SDI video input (BNC) • 2-ch RS–485 page	Optional
	VEC0404HD	DVI encoding card	4-ch DVI video input	Optional (support DVI, VGA, HDMI)
	VEC0804HC	HDCVI encoding card	8-ch BNC video input (HDCVI)	Optional
	VEC0404HH	HDMI encoding card	4-ch HDMI video input	

Name	Model	Functional Module	Description	Note
	VEC3204FB	CVBS encoding card	• 32-ch CVBS video input • 2-ch RS–485 page	
	VEC0404US	HD 3G-SDI encoding card (4-ch)	• 4-ch 3G-SDI video input (BNC) • 2-ch RS-485 port	
	VIC0201UH	4K capture card	• 2-ch HDMI video input • 2-ch 3.5 mm audio output	
Output module	VDC0605H	HDMI decoding card	6 HDMI video output ports	

1.4 Host System

1.4.1 4U Host Case

Video Matrix Platform with 19-inch 4U structure host case includes function card slot, power page and intelligent temperature-controlled fan.

Figure 1-2 Appearance (4U)

Indicator lights on the front panel, for displaying device working status.

Table 1-2 Function introduction

Function description	
	ON/OFF button. It is blue after power on.
	Device power indicator light. • It is off when the device is powered off. • It is red when the device is powered on.

Function description	
	Device alarm indicator light. • It is red when the device goes wrong. • It is off when the device is normal.
	System status indicator light. It is yellow after the device is booted and operating normally.

Hardware structure is as below:

- Two groups of intelligent temperature-controlled fan allow hot swap.
- 10 page board slots of function card are labeled in sequence and used to install rear page board of function card.
- Page board slots of main control panel, marked as "M".
- Page board slots of control panel, marked as "C".
- Dual-power module supports 220V module.

1.4.2 Main Control Panel

1.4.2.1 Port Introduction

Figure 1-3 Ports of main control panel

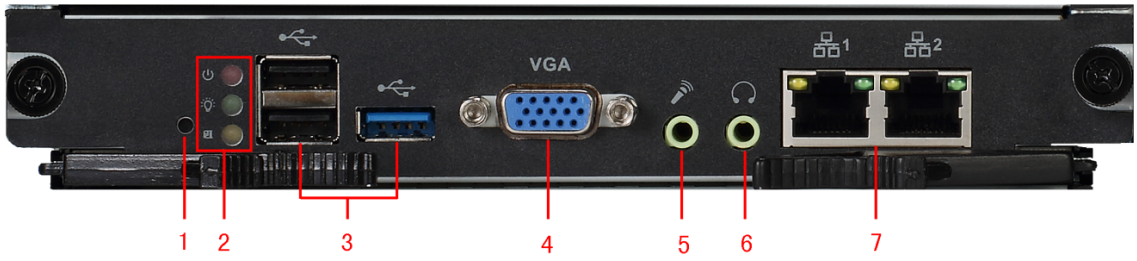


Table 1-3 Introduction to ports of main control panel

No.	Name	Function
1	Reset button	Restore default settings.
2	Power status indicator light of main control panel	Display power status of main control panel.
	System operating status indicator light	Display system working status.
	PCI-E status indicator light	Display PCI-E working status.
3	USB port	One USB3.0 port and two USB2.0 ports for connection to mouse, keyboard and USB.
4	VGA	Local display output port.
5	Audio input	Audio input.
6	Audio output	Audio mixing output.

No.	Name	Function
7	RJ-45 Ethernet port	2 Gigabit Ethernet ports, for transmission of network A/V data and network control signal.

To guarantee normal use, connect network port 2 on main control panel to any network port on control panel via a network cable.

1.4.2.2 Performance Feature

- High-speed connector, including ten x4 PCI-E gen2, DC 12V power and I2C.
- Memory slot, 1-slot single channel, 4G DDR3L memory.
- Fan page, power/rotation rate control (CPU).
- Three indicator lights (power status indicator light, system running status indicator light, PCI-E status indicator light).

1.4.3 Control Panel

1.4.3.1 Port Introduction

Figure 1-4 Ports of control panel

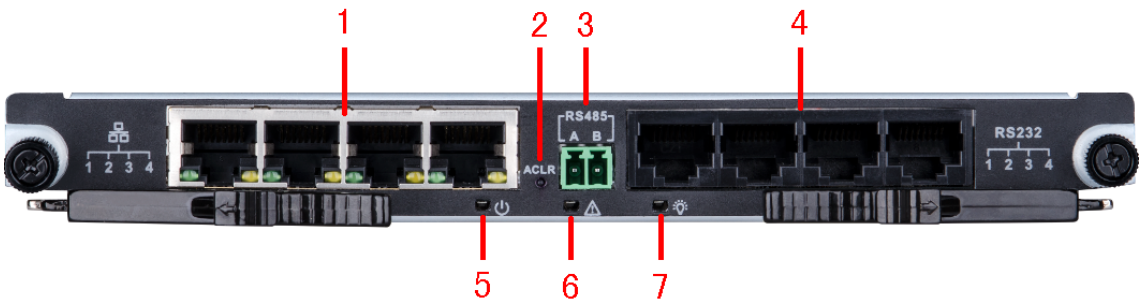


Table 1-4 Introduction to ports of control panel

No.	Name	Function
1	RJ–45 Ethernet port	4 Gigabit Ethernet ports, for transmission of network A/V data and network control signal.
2	Alarm reset button	Clear alarm signal.
3	RS–485	Control PTZ.
4	RJ–45 to RS–232	• Serial port 1, 2 and 3, used to control peripheral device. • Serial port 4, function reserved.
5	Power status indicator light	Display power status of control panel.
6	Alarm indicator light	Display alarm status.

No.	Name	Function
7	System operating status indicator light	Display system working status.

1.4.3.2 Performance Feature

- Device power on/off control and working status monitoring.
- When system gives an alarm, alarm reset button clears system alarm.
- Three indicator lights (power indicator light, system alarm indicator light and system running status indicator light).
- Connect central control device or debug PC through RS–232 port.

1.5 Function Card

Function card with blade modular design is mainly used for analog and digital image input, centralized encoding compression, remote preview, network centralized storage, centralized management and centralized decoding, and more.

1.5.1 VEC0804HS 8-CH HD SDI Encoding Card

Figure 1-5 VEC0804HS

1.5.1.1 Main Performance and Function

Performance Feature

- 8-ch HD-SDI video port input.
- 2-ch RS–485 port.
- Two hot swap buttons.
- Four operating indicator lights.
- High-speed connector, including x4 PCI-E gen2, DC 12V power.

Performance Feature

- Video encoding parameter is independent and adjustable in each channel, including resolution, frame rate, code rate, image quality, and more.
- Each channel supports schedule and event as compression parameters.
- Support composite stream and video stream encoding; audio and video synchronization during composite stream coding.
- Support picture compression and network transmission in 4 CIF or CIF under JPEG standard.
- Support watermark technology.

1.5.1.2 Port Introduction

VIN video input port and BNC port.

1.5.2 VEC0404HD 4-CH DVI Encoding Card

Figure 1-6 VEC0404HD

1.5.2.1 Main Performance and Function

Performance Feature

- 4-ch DVI-I video port input, to input DVI, VGA and HDMI signals.
- Two hot swap buttons.
- Four operating indicator lights.
- High-speed connector, including x4 PCI-E gen2, DC 12V power.

Encoding Function

- Video encoding parameter is independent and adjustable in each channel, including resolution, frame rate, code rate, and image quality.
- Each channel supports schedule and event as compression parameters.
- Support composite stream and video stream encoding.
- Support picture compression and network transmission in 4 CIF or CIF under JPEG standard.
- Support watermark technology.

1.5.2.2 Port Introduction

VIN video input port and DVI-I port.

1.5.3 VEC0804HC 8-CH HDCVI Encoding Card

Figure 1-7 VEC0804HC

1.5.3.1 Main Performance and Function

Performance Feature

- 8-ch BNC video port input, to input HDCVI signals.
- 8-ch embedded audio input.
- Support reverse control.
- Two hot swap buttons.
- Four operating indicator lights.
- High-speed connector, including x4 PCI-E gen2, DC 12V power.

Encoding Function

- Video encoding parameter is independent and adjustable in each channel, including resolution, frame rate, code rate, image quality and etc.
- Each channel supports compression parameters of schedule and event.
- Composite stream and video stream encoding; audio and video synchronization during composite stream coding.
- Picture compression and network transmission in 4 CIF or CIF under JPEG standard.
- Watermark technology.

1.5.3.2 Port Introduction

A/V input port and BNC port.

1.5.4 VEC0404HH 4-CH HDMI Encoding Card

Figure 1-8 VEC0404HH

1.5.4.1 Main Performance and Function

Performance Feature

- 4-ch HDMI video port input, to input DVI and HDMI signals.
- Two hot swap buttons.
- Four operating indicator lights.
- High-speed connector, including x4 PCI-E gen2, DC 12V power.

Encoding Function

- Video encoding parameter is independent and adjustable in each channel, including resolution, frame rate, code rate, image quality and etc.

- Each channel supports schedule and event as compression parameters.
- Support composite stream and video stream encoding.
- Support picture compression and network transmission in 4 CIF or CIF according to JPEG standard.
- Support watermark technology.

1.5.4.2 Page Introduction

VIN video input port and HDMI port.

1.5.5 VEC3204FB 32-CH CVBS Encoding Card

Figure 1-9 VEC3204FB

1.5.5.1 Main Performance and Function

Performance Feature

- 32-ch CVBS video port input.
- 2-ch RS–485 port.
- Two hot swap buttons.
- Two operating indicator lights.
- High-speed connector, including x4 PCI-E gen2, DC 12V power.

Encoding Function

- Video encoding parameter is independent and adjustable in each channel, including resolution, frame rate, code rate, image quality and etc.
- Each channel supports schedule and event as compression parameters.
- Support composite stream and video stream encoding.
- Support picture compression and network transmission in 4 CIF or CIF under JPEG standard.
- Support watermark technology.

1.5.5.2 Port Introduction

VIN video input port, 2-ch DB26 port, convertor from braided wire to 32-ch BNC.

1.5.6 VEC0404US 4-CH 3G-SDI Encoding Card

Figure 1-10 VEC0404US

1.5.6.1 Main Performance and Function

Performance Feature

- 4-ch 3G-SDI video port input.
- 2-ch RS-485 port.
- Two hot swap buttons.
- Four operating indicator lights.
- High-speed connector, including x4 PCI-E gen2, DC 12V power.

Encoding Function

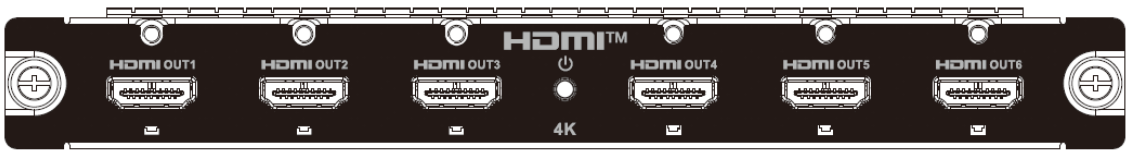
- Video encoding parameter is independent and adjustable in each channel, including resolution, frame rate, code rate, image quality and etc.
- Each channel supports schedule and event as compression parameters.
- Support composite stream and video stream encoding; A/V synchronization during composite stream encoding.
- Support picture compression and network transmission in 4 CIF or CIF under JPEG standard.
- Support watermark technology.

1.5.6.2 Port Introduction

VIN video input port, BNC port.

1.5.7 VDC0605H 6-CH HDMI Decoding Card

Figure 1-11 VDC0605H



1.5.7.1 Main Performance and Function

Performance Feature

- 6-ch HDMI digital video port output.

- One hot swap button.
- Six operating indicator lights.
- High-speed connector, including x4 PCI-E gen2, DC 12V power.

1.5.7.2 Port Introduction

VOUT video output port, HDMI port.

1.5.8 VIC0201UH 2-CH 4K Capture Card

Figure 1-12 VIC0201UH

1.5.8.1 Main Performance and Function

Performance Feature

- 2-ch HDMI video port input. Support HDMI signal input.
- Two hot swap buttons.
- Two operating indicator lights.
- Two audio loop output ports.
- High-speed connector, including x4 PCI-E gen2, DC 12V power.

Capture Function

- Support to input 4K×2K and below resolutions that meet VESA standard.
- Support to capture customized non-standard resolutions.

1.5.8.2 Port Introduction

- VIN video input port, and HDMI port.
- AOUT audio output port, 3.5 mm audio port.

2 Device Installation Guide

During installation of Video Matrix Platform, please refer to relevant state standards of engineering construction for detailed requirements.

2.1 Inspection Steps

Background Information

When you receive Video Matrix Platform, please inspect it according to the following steps.

Procedure

Step 1 Inspect whether there are obvious damages on its appearance.

The material of product package should be able to protect the product from most impacts during transportation.

Step 2 Open the external package, and check whether any part of accessories is missing. You may refer to accompanied accessory bag. After you have checked that all parts are included, you may remove protective film on the device.

Step 3 Open device case to inspect data cable and power cable of front panel, and see if the connection between main control panel and page board is loose. Inspect whether main control panel, control panel and function card are inserted tightly.

One label at the side of the case owns serial number and other information of the device, which shall be provided when dialing after-sales calls. This label shall be protected well, and shall not be torn or discarded; otherwise, we may not be able to provide effective service.

2.2 Accompanied Accessory Bag

Accompanied assessory bag includes user's manual, disk and certificate of quality. When you unpack the product, please make sure that all contents match the checklist.

2.3 Device Installation

2.3.1 Preparation of Installation Environment

As a system-level monitoring device, Video Matrix Platform is usually used in central machine room of monitoring system. Its installation site shall meet national and local machine room construction standards.

Video Matrix Platform is a standard rack-mounted device fixed in a cabinet. Please pay attention to the following points during installation and use:

- Ensure that the cabinet is sufficiently firm to support Video Matrix Platform and accessories. During installation, avoid dangers resulting from uneven mechanical load.
- Ensure that A/V cable owns sufficient installation space. Bending radius of cables shall not be less than 5 times as many as their outer diameter.

- Ensure well ventilation. It is suggested that its installation position shall be more than 50 cm above the ground.

Power Supply Requirement

Rated voltage range: AC 100V-AC 120V, AC 200V-AC 240V, and 50 Hz/60 Hz.

Anti-interference Requirement

- On-site power supply system shall take effective anti-interference measures.
- Working ground shall not be shared with ground wire or lightning protection device of electrical device, and shall keep away from them as far as possible.
- Keep away from high-power radio transmitting stations, radars and high-frequency heavy-current devices.
- When necessary, adopt electromagnetic shielding methods to resist interference.

Environmental Requirement

- Ensure that temperature in the cabinet is 0 ℃–50 ℃.
- Ensure that humidity in the machine room is 10% RH–90% RH.
- Ensure air ventilation required by safe operation of the device.

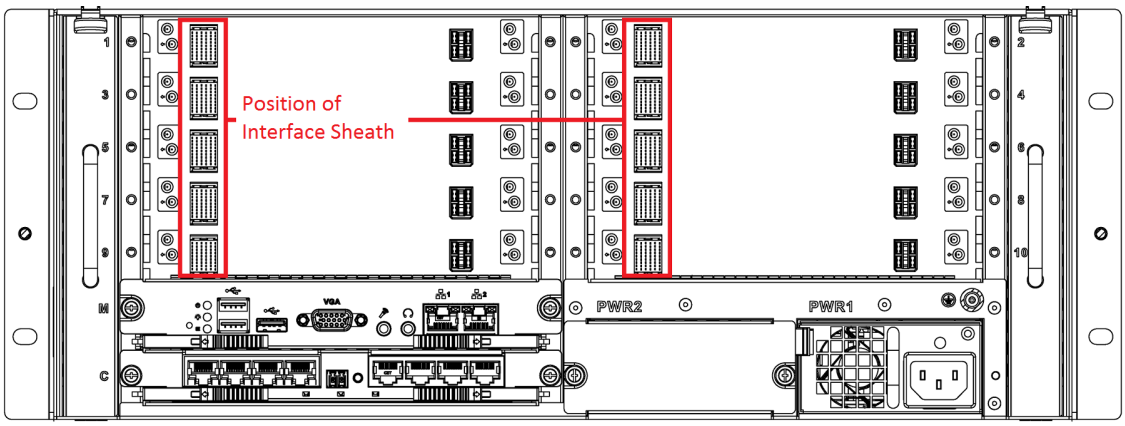
2.3.2 Installation Steps

Procedure

Step 1 Remove port sheath on rear panel of the case.

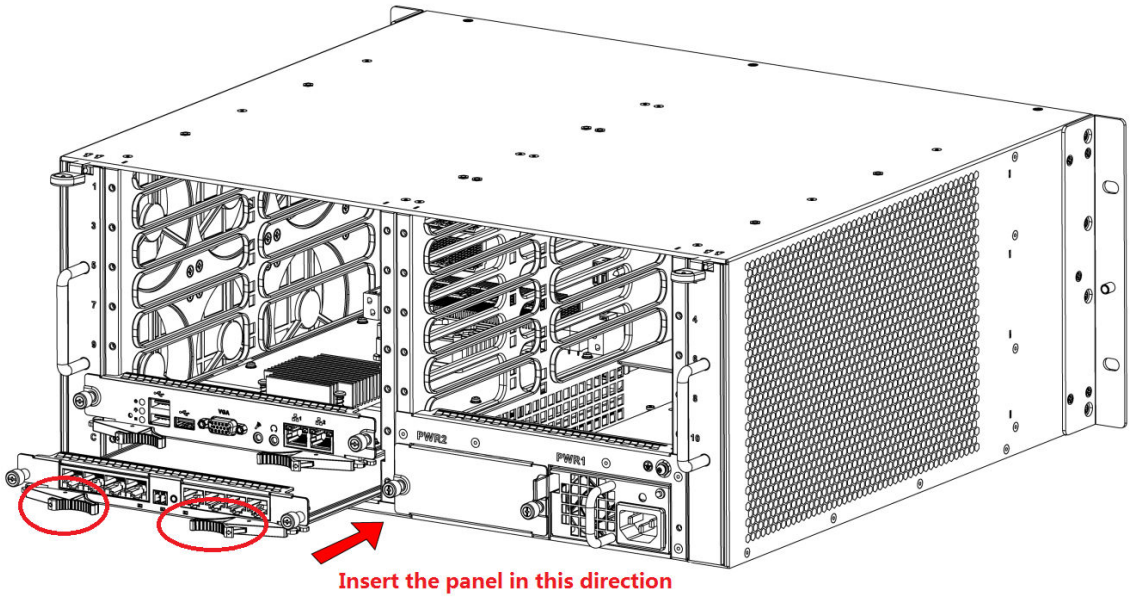
Remove the black port sheath before inserting function card.

Figure 2-1 Remove the port sheath



Step 2 Insert main control panel and control panel into slots of the case, then tighten screws.

Figure 2-2 Insert control panel

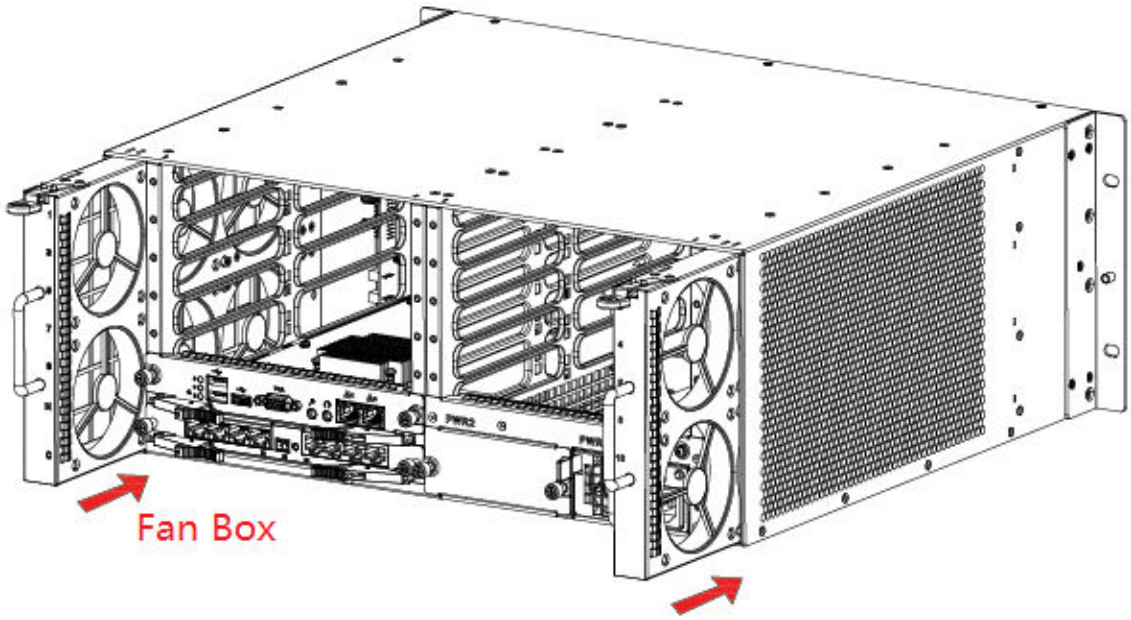


When inserting main control panel and control panel, pull the extraction tool, and then insert the panel in place by pushing the extraction tool inward.

Step 3 Insert functional card according to actual needs. Its installation mode is the same as that of main control panel and control panel.

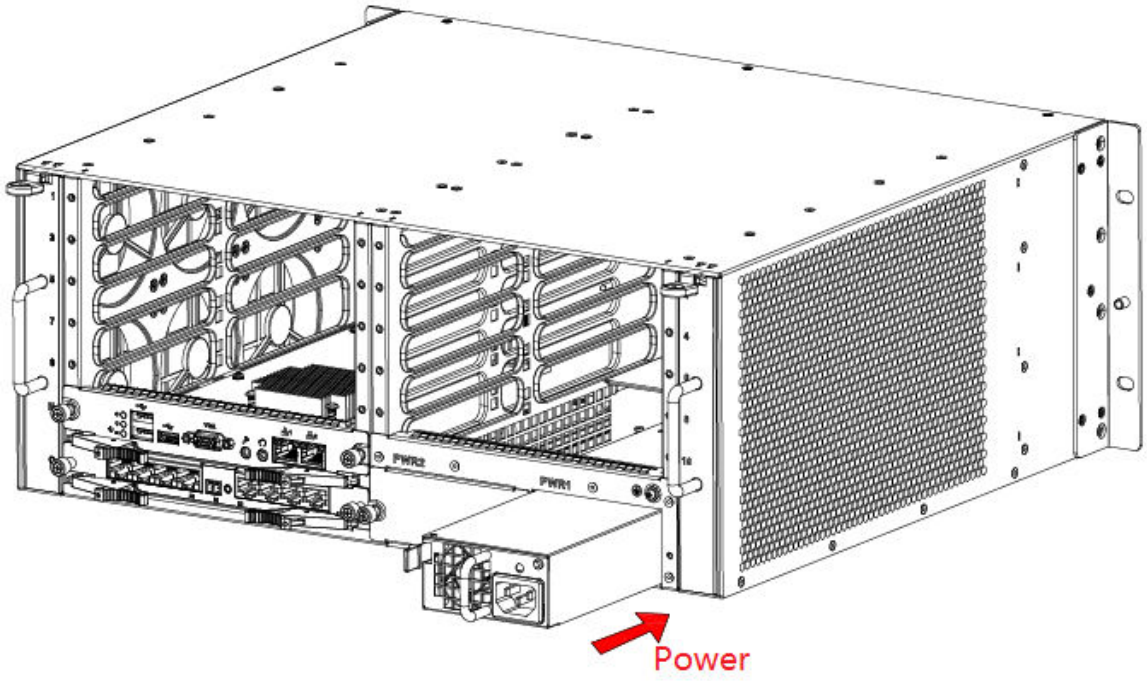
Step 4 Insert left and right fan boxes into corresponding positions, until the top snap joint is fixed.

Figure 2-3 Install fans



Step 5 Insert power supply and fix it.

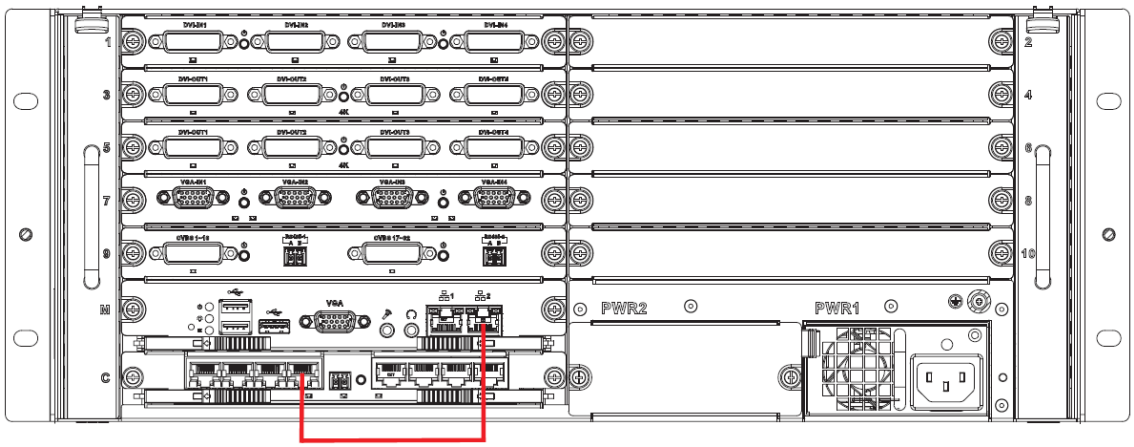
Figure 2-4 Install power



Step 6 Connect network port 2 of main control panel and network port of control panel with a gigabit network cable; connect network port 1 of main control panel and the user's network.

To guarantee normal use, ensure that network page 2 of main control panel and any network page of control panel are connected with a gigabit network cable.

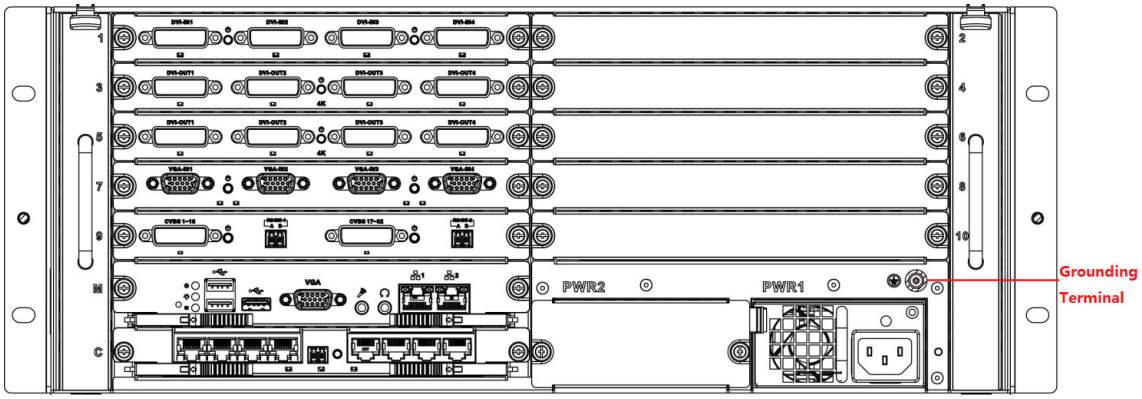
Figure 2-5 Connect network cable



Step 7 Ground terminal of Video Matrix Platform shall realize reliable grounding.

To guarantee personal safety and device safety, Video Matrix Platform and those devices (such as video wall and PC) that are connected the platform with cables shall be grounded.

Figure 2-6 Grounding



At present, power supply of most devices can be grounded directly. In this case, their grounding terminals don't require grounding treatment.

Step 8 Connect network cable, VGA cable and other cables.

Step 9 Plug in and press ON/OFF key to boot the device.

2.3.3 Booting and Shutdown

2.3.3.1 Booting

Plug in power cable, and press power switch on front panel. Power indicator light turns on and device boots up, followed by about 90 s booting page. The time depends on quantity of inserted board cards.

Please pay attention to the following points during booting:

- Make sure that the supplied voltage is within 100V-240V 47Hz-63Hz. Check power cable connection before you turn on the device.
- We recommend you to use power supply with stable voltage and little interference (refer to international standard), which help the device to work stably and prolong service life. This will also benefit external devices such as camera. UPS is the best choice if possible.

2.3.3.2 Shutdown

- Method 1 is recommended, in order to protect the device from damages due to unexpected outage.
- Stop all operations of the device, before you unplug the device from power supply.

There are two shutdown methods:

- Method 1: Select **Main Menu Shut down System** , and choose **Shut down Device**.
- Method 2: Press power button on the panel for 5 seconds.

2.3.3.2.1 Outage Recovery

In case of outage or forced shutdown during working, after connecting power supply again, the device will automatically save and resume previous working status.

2.3.3.2.2 Replace Button Battery

Before replacement, please export and save configurations, or all configurations will be lost!

We recommend that the same type of battery should be used. Inspect system time regularly. Generally speaking, battery shall be replaced once a year, to guarantee system time accuracy.

3 Local Configurations

To perform local configurations, you must connect the Device to a monitor and other control devices, such as the mouse and keyboard.

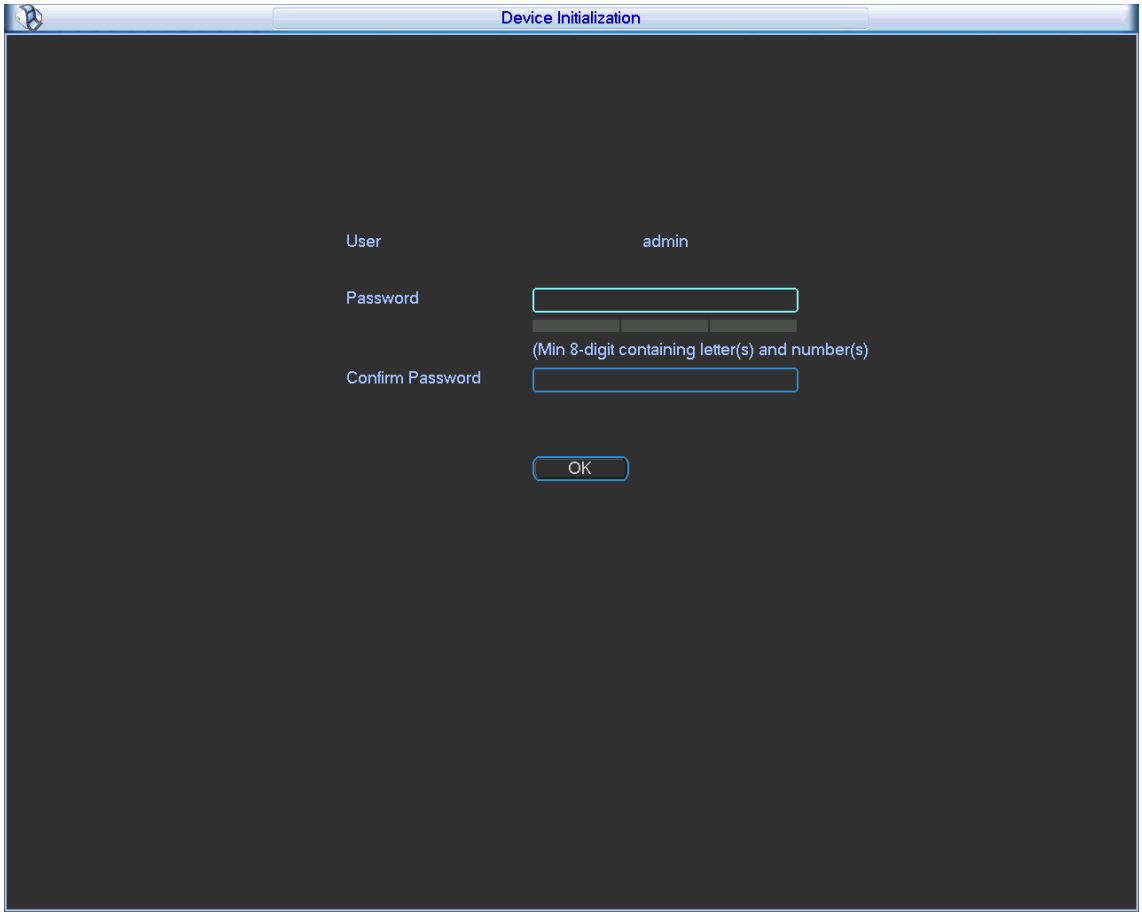
3.1 Basic Operations

3.1.1 Entering System Menu

Procedure

Step 1 Power on the device.

Figure 3-1 Device initialization



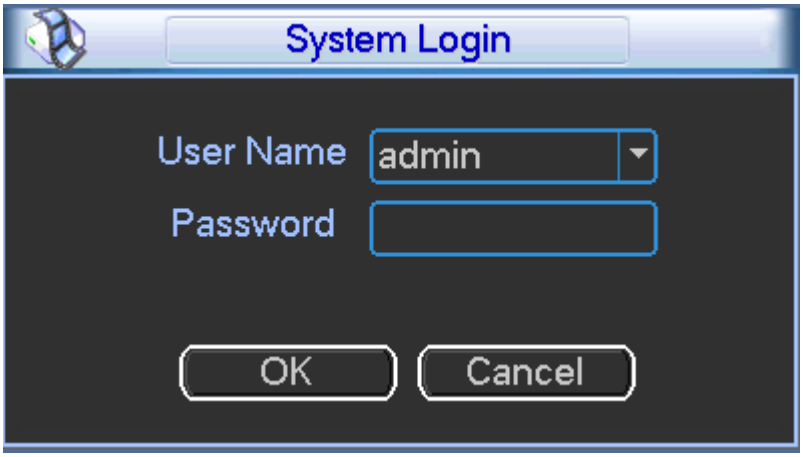
Step 2 Set the password of admin user.

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 ' " ; : &). New password and confirmed password shall be the same. Please set a highly safe password according to password strength.

Step 3 Click **OK**.

Step 4 Right-click the page.

Figure 3-2 System login



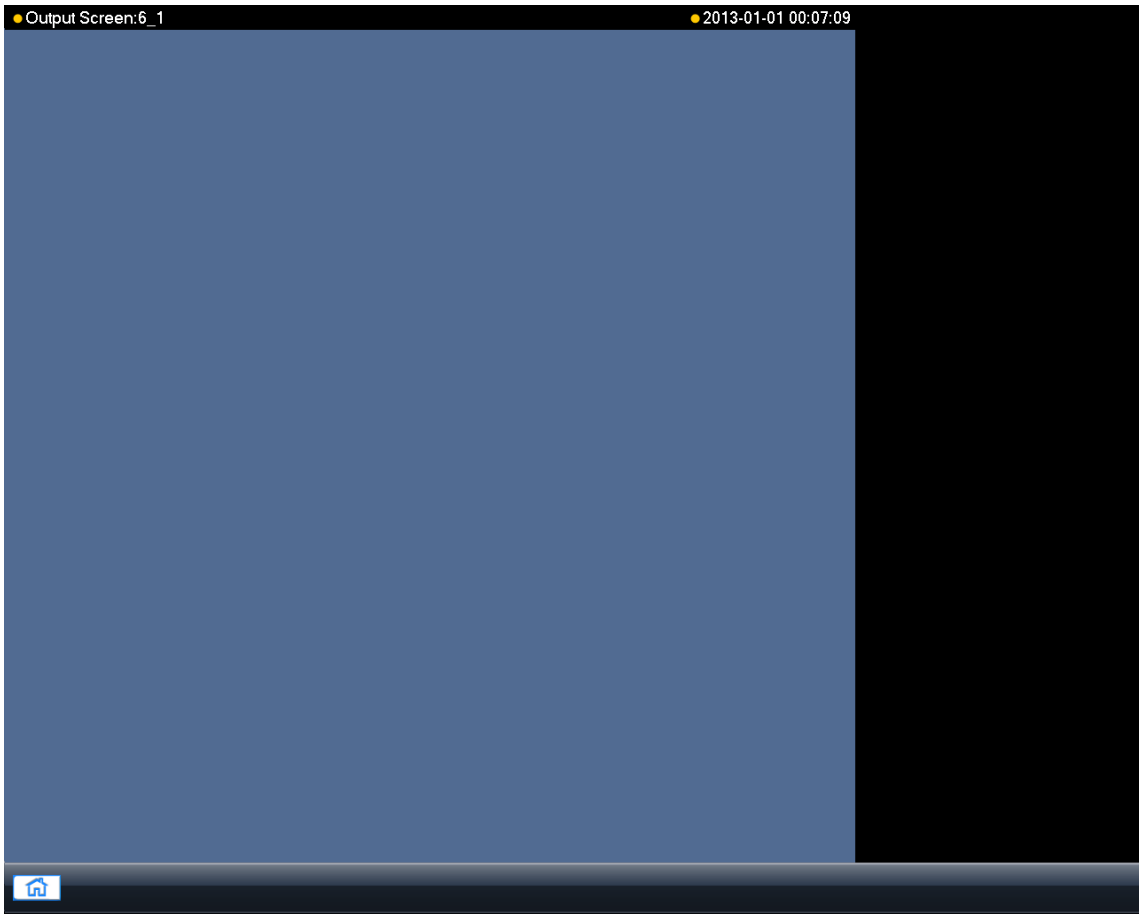
Step 5 Enter the username and password, and then click **OK** to log in to the system.

Password security measure: In case that password is wrong for 5 times within every 30 minutes, the account will be locked.

3.1.2 Home Page

After normal login, the home page is displayed.

Figure 3-3 Home page



3.1.3 Menu Introduction

Right-click the main page. The system pops up functional menu.

Figure 3-4 Functional menu

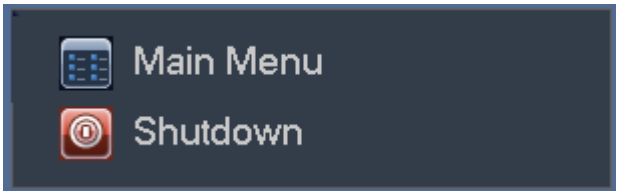


Table 3-1 Functional description

Name	Description
Main Menu	Display main menu, including system setting, system info and shutdown.
Shutdown	Shut down the device.

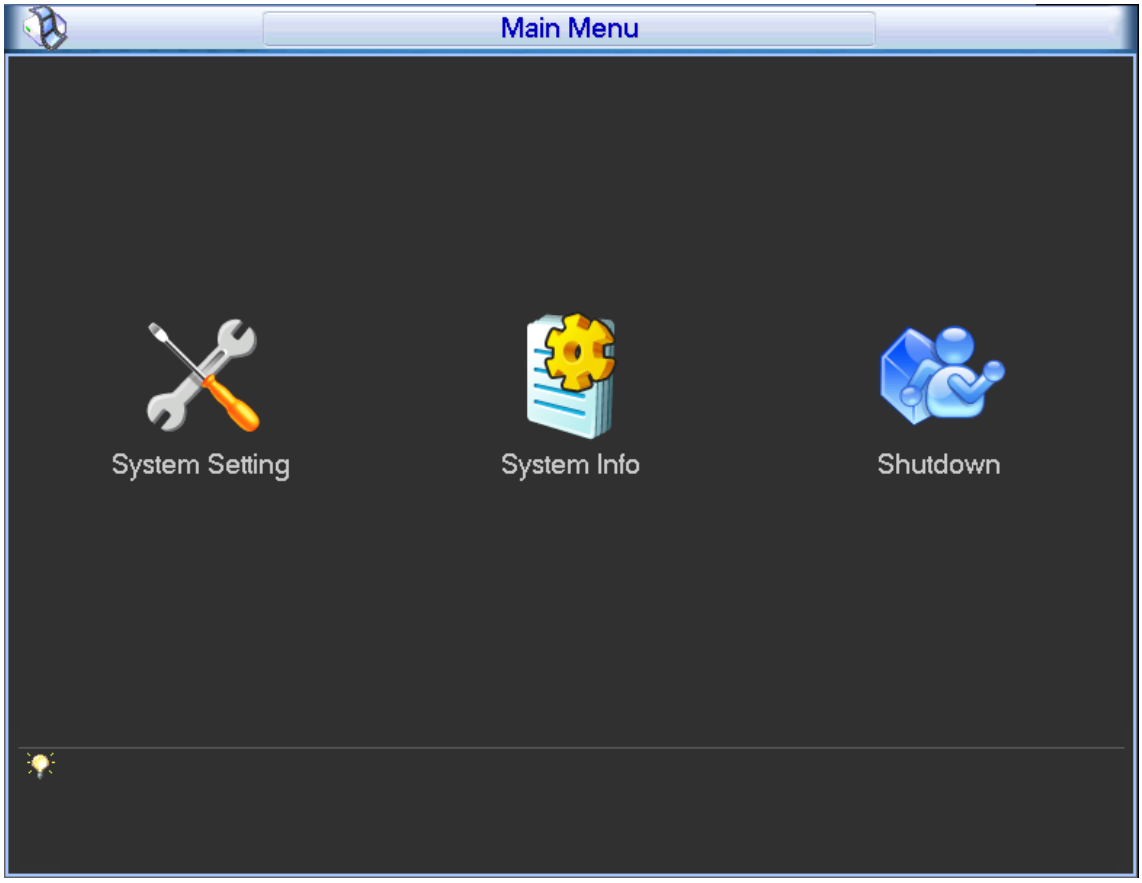
3.2 Advanced Operation of Menu

3.2.1 Main Menu

Main menu includes system setting, system info and shutdown.

- All the sub-menu settings will take effect after they are saved. Otherwise, the settings are invalid.
- The check box is selected when it is filled with or ticked, and it is not selected when it is not filled. This note applies to the whole document.

Figure 3-5 Main menu



3.2.2 Menu Navigation

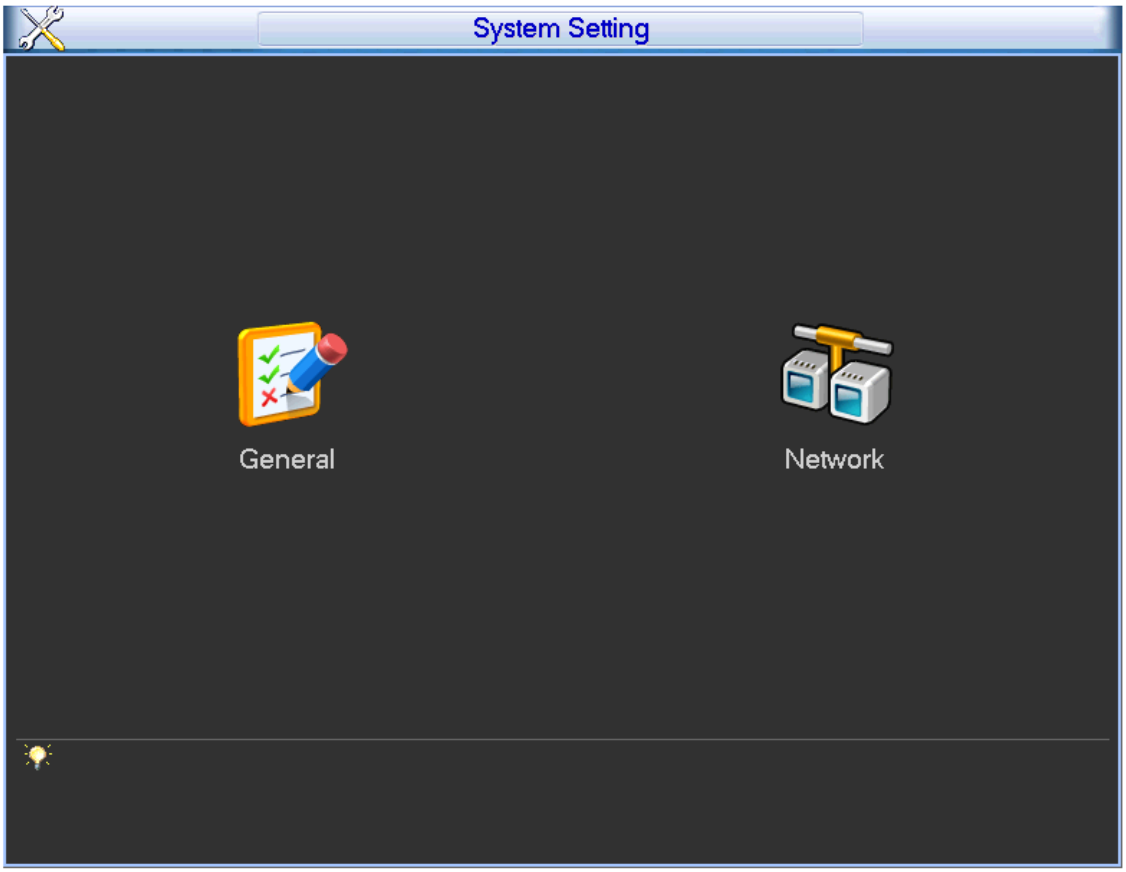
Table 3-2 Menu navigation

Main menu	Sub menu	Description
System Setting	General	Configure system time, device number and other parameters.
	Network	Configure IP address, video data transmission protocol and other parameters.
System Info	Version	View the version details such as system hardware feature, software version and build date.
	Online users	View information about online users.
	Status	View fan speed, card and temperature information, source information, net percentage, CPU percentage and memory percentage.
Shutdown	–	Log out menu user, shut down system, restart system and switch user.

3.2.3 System Setting

You can configure the system, including general and network setting.

Figure 3-6 System setting



System setting can only be configured by authorized users.

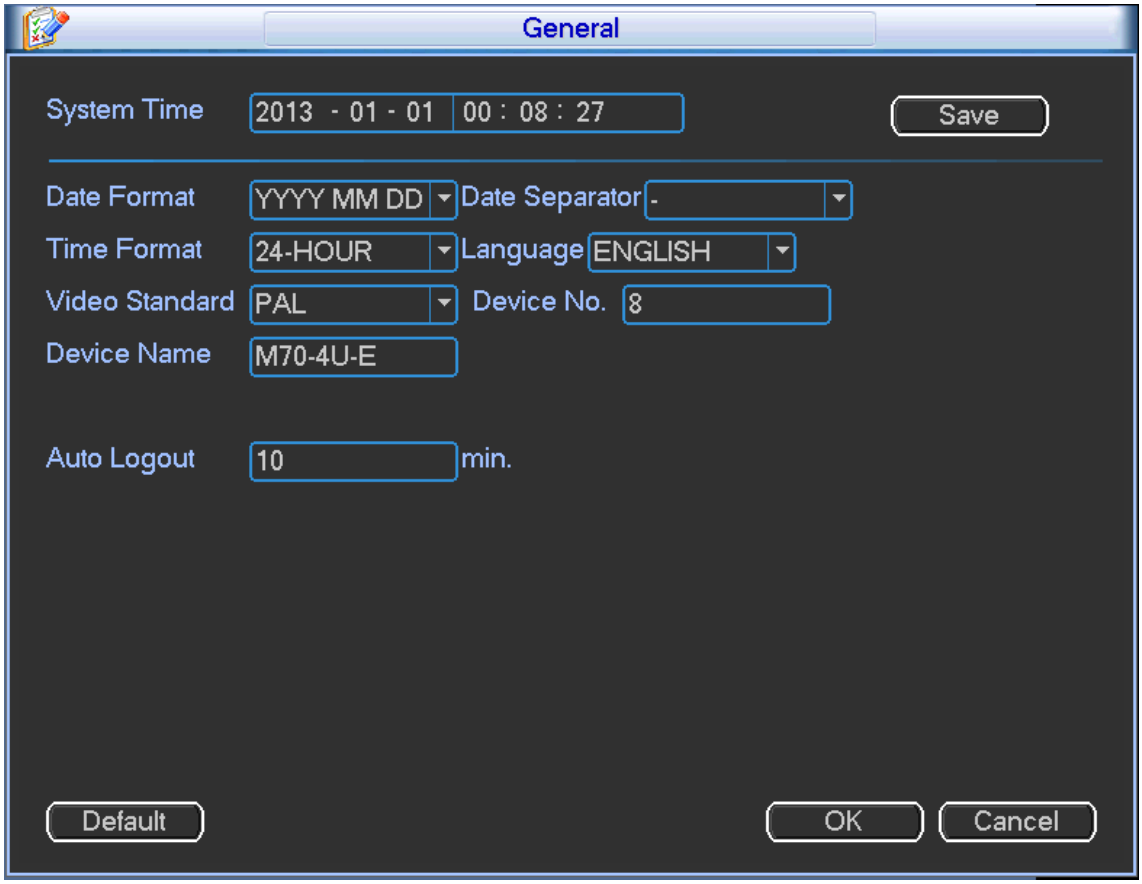
3.2.3.1 General

You can configure basic information of the device, such as device information, system time, and date format.

Procedure

Step 1 In the main menu, select **System Setting** > **General**.

Figure 3-7 General



Step 2 Configure the parameters.

System time cannot be changed arbitrarily, or you cannot search records. System time can only be changed when it is not recording time according to hard drive information, or when the recording is stopped.

Table 3-3 General parameters description

Parameter	Description
System Time	Modify the current system date and time, and then click **Save**.
Date Format	Select date display format, including YYYY MM DD, MM DD YYYY and DD MM YYYY.
Date Separator	Separator of date format.
Time Format	Select 24-hour or 12-hour.
Language	Switch menu language, including Simplified Chinese and English.
Video Standard	Select video standard. It is PAL by default.
Device No.	Enter a number for the device.
Device Name	You can customize device name.

Parameter	Description
Auto Logout	Configure menu standby time to be 0–60 minutes. There is no standby time when it is 0 minute. If the standby time is set, the system will log out current user after the idle period. You need to login again to operate the menu.

Step 3 Click **OK**.

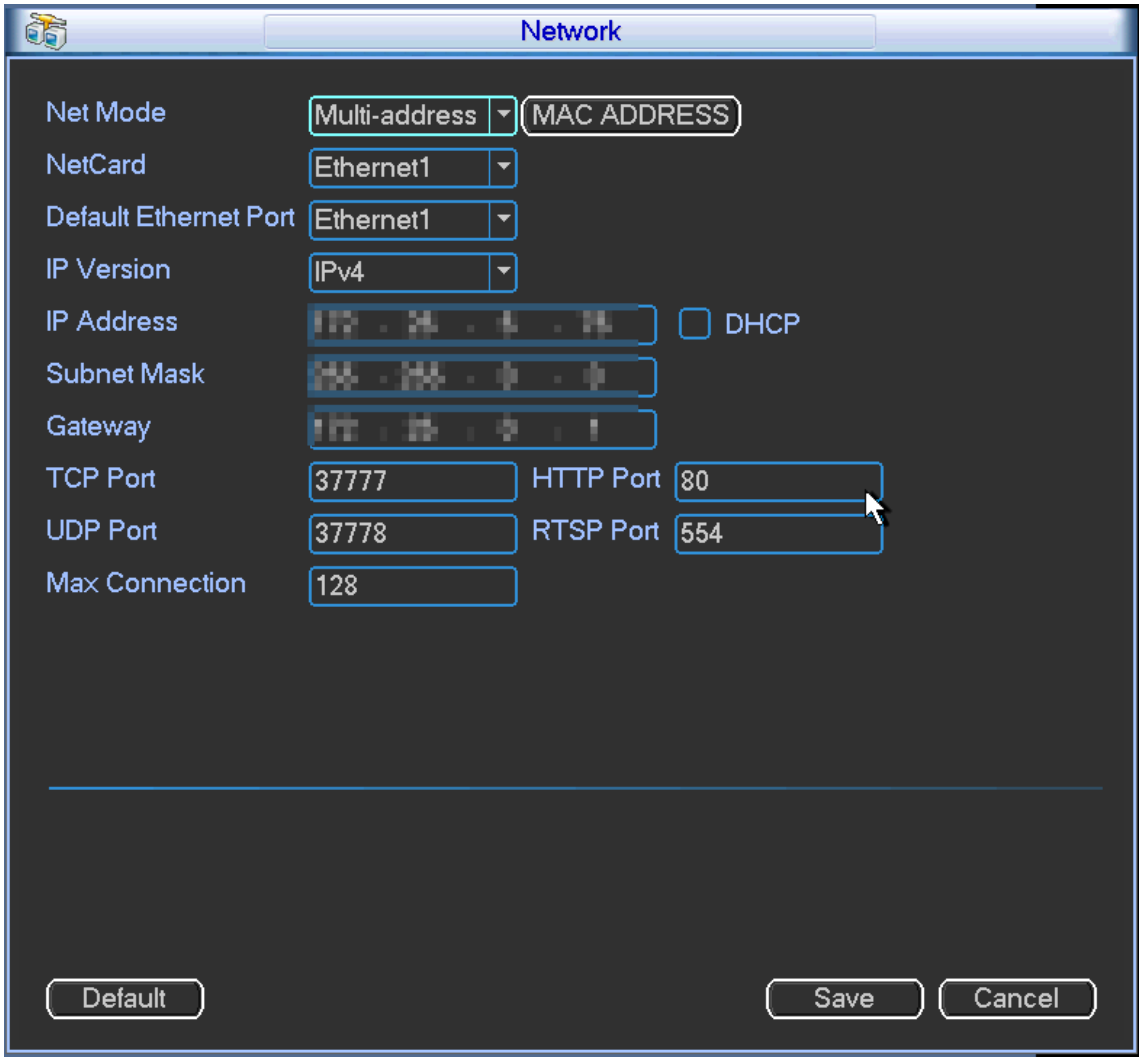
3.2.3.2 Network

Configure device network parameters, so that device can communicate with devices in the network.

Procedure

Step 1 In the main menu, select **System Setting** > **Network**.

Figure 3-8 Network



Step 2 Configure the parameters.

Table 3-4 Network parameters description

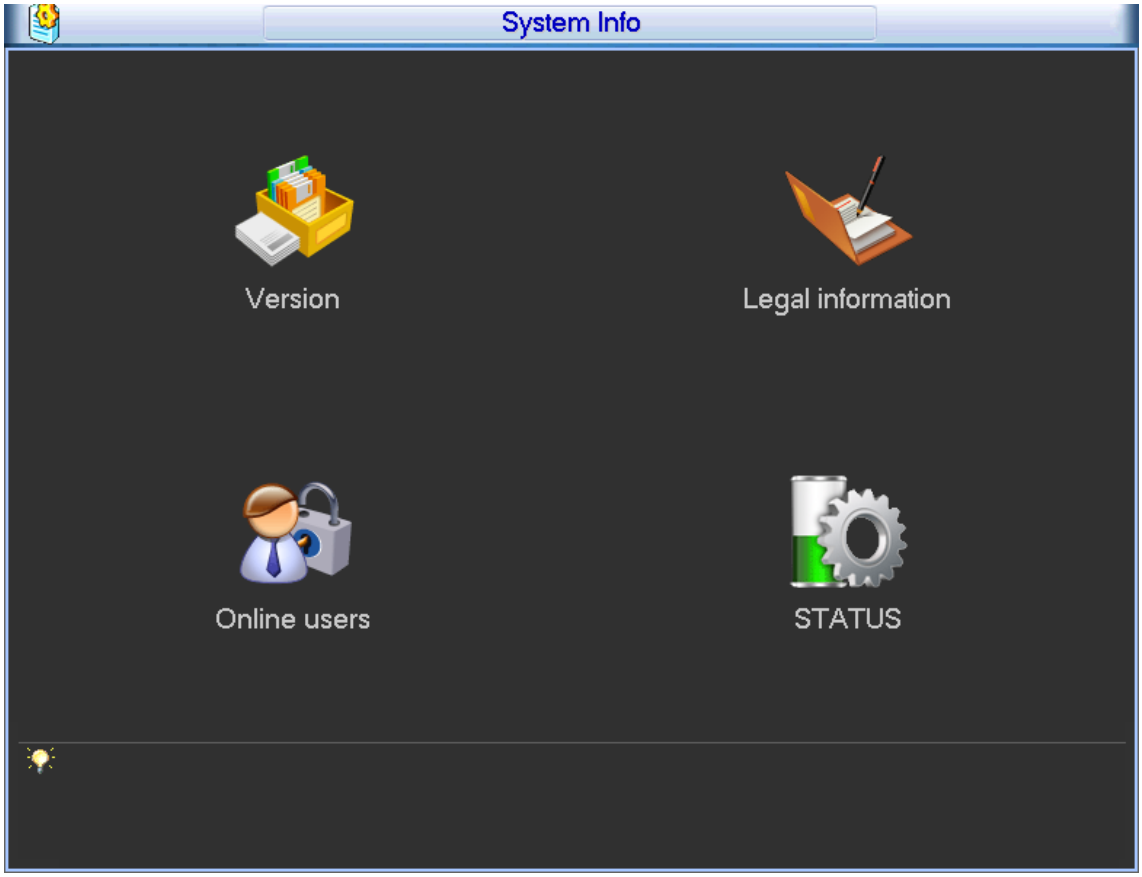
Parameter	Description
Net Mode	It is **Multi-address** by default.
MAC Address	Configure the MAC address.
NetCard	It is **Ethernet1** by default.
Default Ethernet Port	
IP Version	It is IPv4 by default.
IP Address	Enter numbers to change the IP address, and then configure its **Subnet Mask** and **Gateway**.
DHCP	Select the **DHCP** check box, the system automatically obtains an IP address. When the **DHCP** function is enabled, the IP address, gateway, and subnet mask cannot be set manually. • If DHCP is effective, the obtained information will be displayed in the **IP Address** box, **Subnet Mask** box and **Gateway** box. If DHCP is not effective, they all display 0. • To view manually set IP when DHCP is not effective, you shall disable DHCP first, and then the device will display IP information that is not obtained through DHCP. If DHCP is effective, if DHCP is not enabled, static IP information will restore default settings. You need to configure IP again.
Subnet Mask	Enter subnet mask and gateway corresponding to the IP address. IP address and gateway must be in the same network segment.
Gateway	
TCP Port	It is 37777 by default. You can configure port.
HTTP Port	It is 80 by default. You can configure port.
UDP Port	It is 37778 by default. You can configure port.
Max Connection	Connection is 0 to 128. If it is 0, no network user connection is allowed. Max connection is 128.

Step 3 Click **Save**.

3.2.4 System Information

You can view version information, online users, legal information and system status.

Figure 3-9 System information



3.2.4.1 Version

You can view the version details such as system version, build date, web version, and serial number.

3.2.4.2 Legal Information

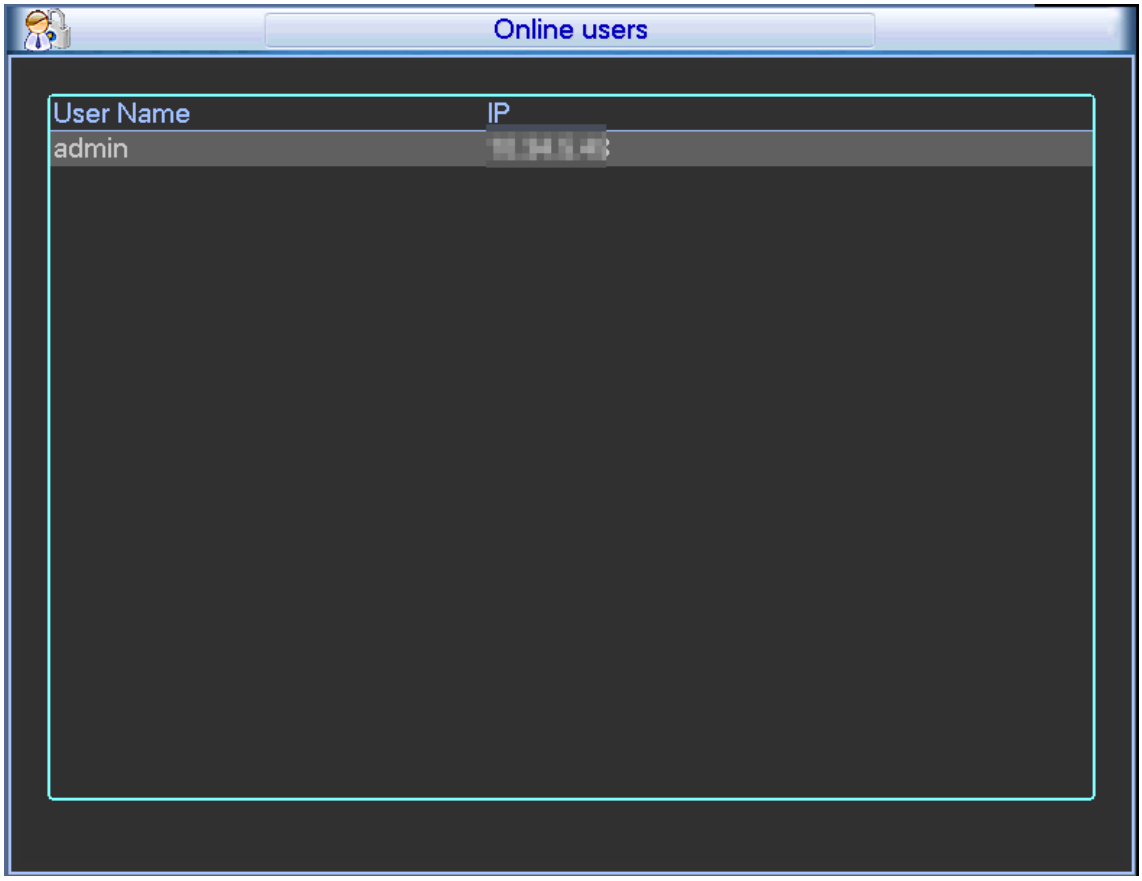
You can view the open source software statement.

3.2.4.3 Online Users

You can view online users that visit the video matrix platform remotely.

In the main menu, select **System Info** > **Online users**.

Figure 3-10 Online users



3.2.4.4 Status

You can view fan speed, card, temperature and source information, device time, net percentage, CPU percentage and memory percentage.

In the main menu, select **System Info** > **Status**.

Figure 3-11 Status

Table 3-5 System status description

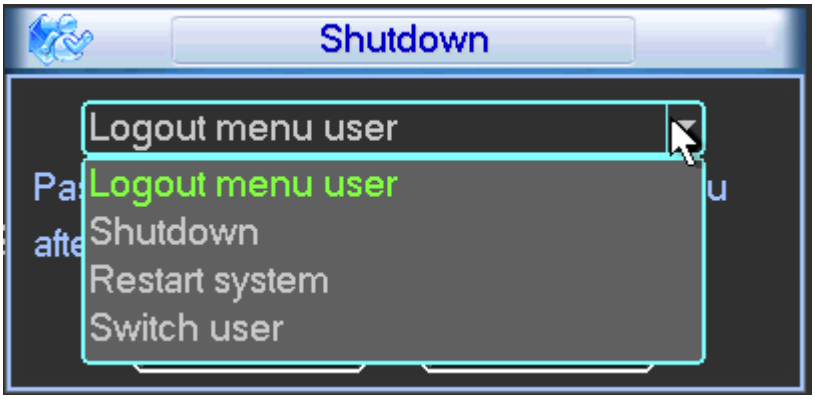
Parameter	Description
Fan Speed	Display the speed of two fans.
Card Information	Display information about cards in the slots, including card type, encoding or decoding card. Also, display present operating status, including data exchange and online status.
Temperature Information	Display present temperature and status of cards.
Source Information	Display the status of two powers.
Time	Display present time of video matrix platform.
Net Percentage	Display the receiving and transmitting rate of each network port.
CPU Percentage	Display percentage of each CPU.
Memory Percentage	Display percentage of memory.

3.2.5 Shutdown

You can log out menu user, shut down, restart system and switch user.

In the main menu, select **Shutdown**.

Figure 3-12 Shutdown



- Logout menu user: Exit the menu, and you need to input password to enter the menu again.
- Shutdown: Exit the system, and turn off power supply.
- Restart system: Exit the system, and restart the system.
- Switch user: Log out current user, and switch to another user.

4 Web Operation

4.1 Network Connection

Procedure

Step 1 Connect the Device to a computer through network.

Step 2 Configure the IP address, subnet mask and gateway of the Device and the computer respectively. For network setup of video matrix platform, see"4.5.2 Network".

- If there is no router on the network, distribute IP address on the same network segment.
- If there is a router on the network, configure the corresponding gateway and subnet mask.

Step 3 Ping ***.***.***.***(IP address of the Device) to check whether connection is available.

Step 4 Open the Internet Explorer, in **Tools** > **Internet Option** > **Security** > **Custom Level**, and select **Enable** or **Prompt** for all ActiveX controls and plug-ins.

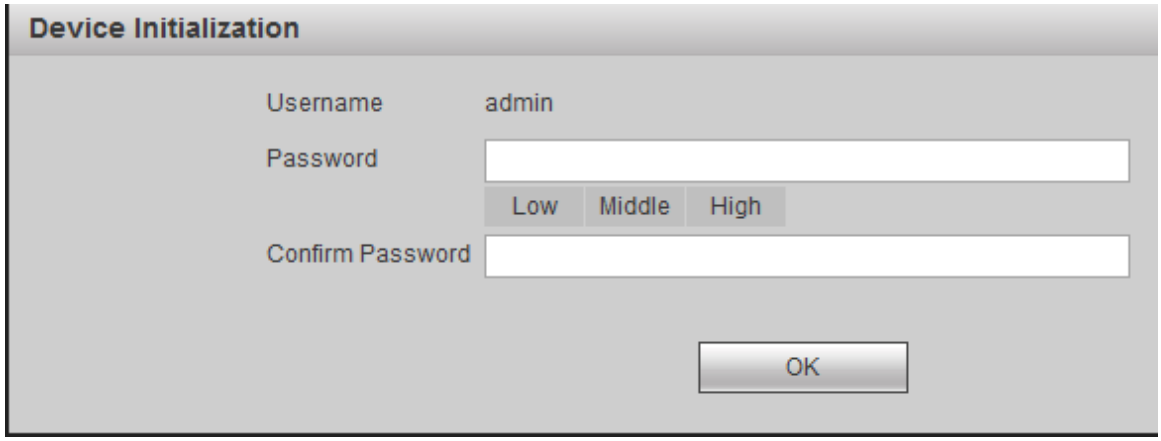
We recommend IE8 or a later version.

4.2 Login

Procedure

Step 1 Enter IP address of the Device in the address bar of the browser, and then press the Enter key.

Figure 4-1 Device initialization

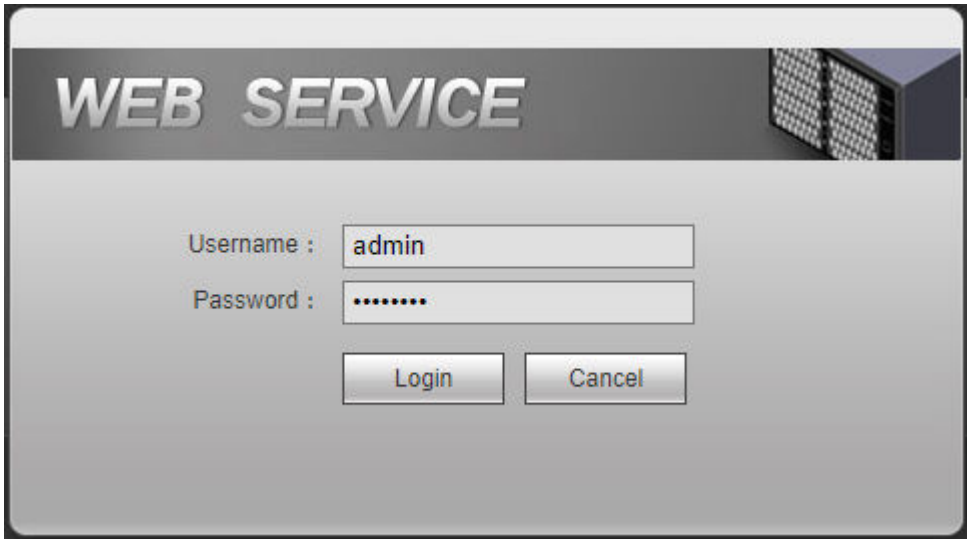


Step 2 Enter and confirm the new admin password.

- 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 ' " ; : &).
- Set a high security password according to the prompt of password strength.

Step 3 Click **OK**.

Figure 4-2 Login



Step 4 Enter username and password, and then click **Login**.

Step 5 View the points for attention and highlights on the page.

- Please conform to the points for attention.
- Click to close the page.
- Select **Do not show again** checkbox, and then this window will not be displayed when you log in for the next time.

Step 6 Install or load controls as prompted by the system.

Click **Logout** to log out of the system.

4.3 Screen

Click the **Screen** tab. The **Screen** page is displayed.

Figure 4-3 Screen

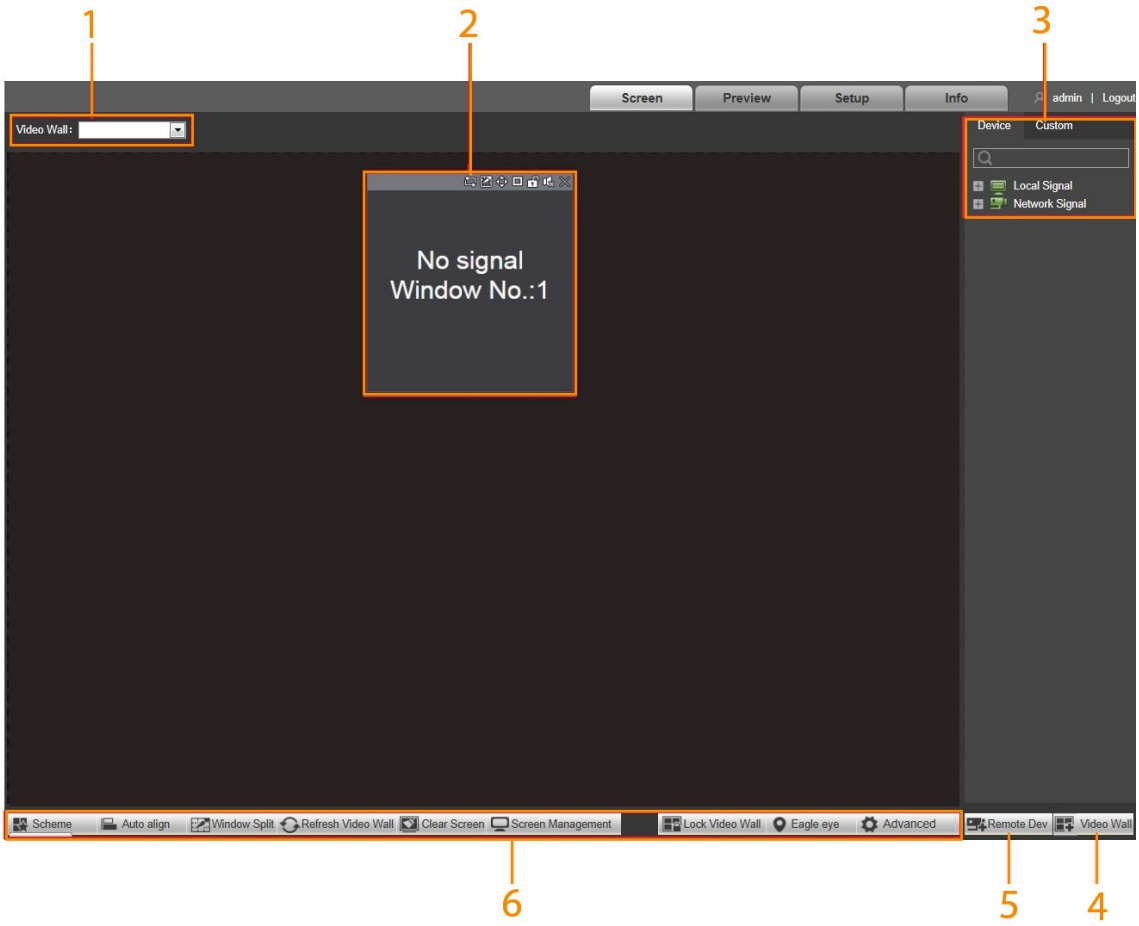


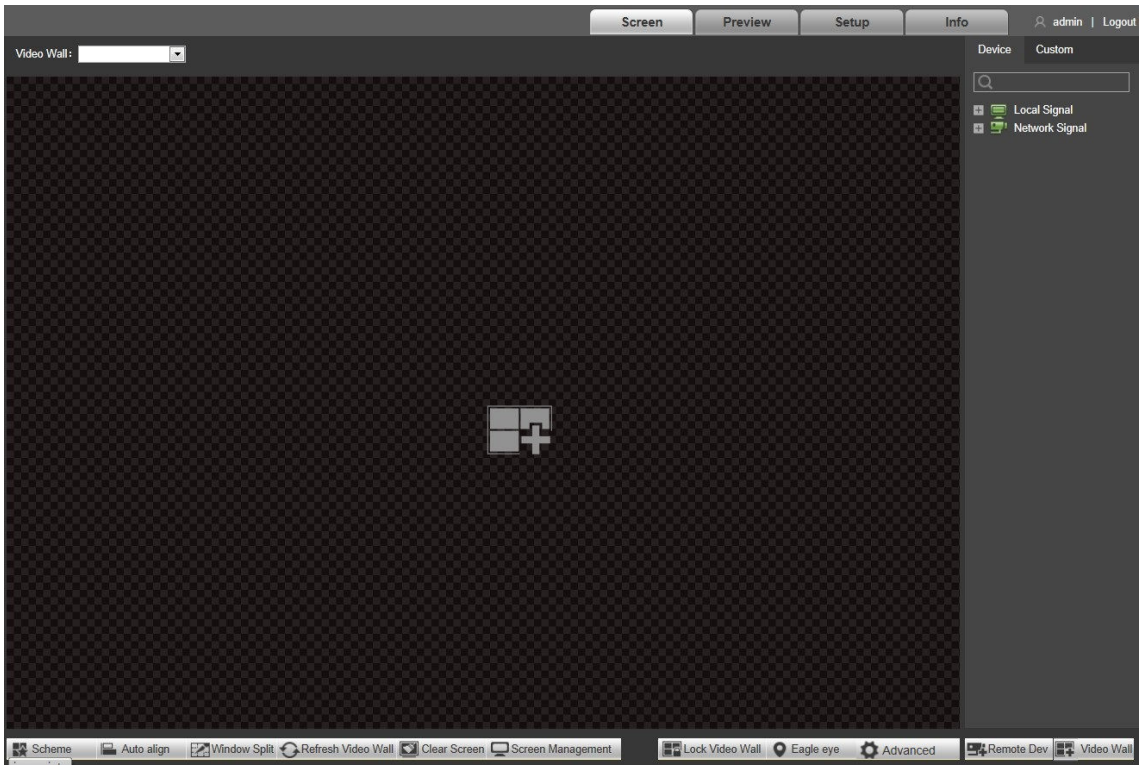
Table 4-1 Screen function description

No.	Name	Description
1	Video wall selection area	After you add a video wall, you can select the video wall in the drop-down list of **Video Wall**.
2	Window configuration	Add window, adjust window, put the window at the bottom and turn off the signal.
3	Signal management	Select different tabs to operate. Click **Device**, you can view local signal and channel information, preview and display the signals on the video wall. Click **Custom**, you can view signal group information, and configure signal tour on the video wall.
4	Video wall	Click **Video Wall** to go to **Video Wall Setup** page. You can add, modify and delete video wall.
5	Network signal	Click **Remote Dev** to go to **Network Signal** page. You can add, modify and delete device.
6	Video wall management	You can carry out management, auto-align, window-split, refresh video wall, clear screen and screen management. Lock or unlock video wall.

4.3.1 Adding Video Walls

For first time login, you need to click  to add a video wall.

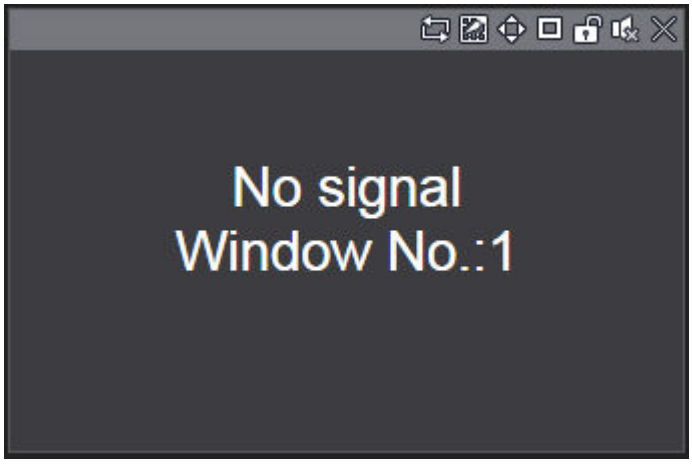
Figure 4-4 Adding video wall



4.3.2 Window Configuration

4.3.2.1 Adding a Window

Figure 4-5 Adding a Window



- Select a window, press and hold the left mouse button, and you can move it to the desired position.

- Select a window, and hover over the window border. When the mouse pointer becomes a double-headed arrow, drag the mouse pointer to resize the window.
- Select a window, right-click and select **Bottom**. The selected window will be at the bottom of other windows.
- Select a window that is displaying signal, right-click and select **Signal Off**. The signal can be turned off.

4.3.2.2 Adjusting Window

Click the adjustment icons at the upper-right corner of the window to make window adjustments.

Table 4-2 Icon description

Icon	Name	Description
	Start/stop signal tour	• Click the icon to start a signal tour, and the icon becomes . • Click to stop a signal tour.
	Split	Split the window, including 2-split (horizontal/ vertical), 4-split, 9-split and 16-split. When the window is maximized or pasted to the screen, the icon turns to . Click the icon to drag the window anywhere.
	Paste screen	Click the icon to paste the window to the screen, and you cannot adjust the window.
	Paste window	Click the icon to maximize the window without overlapping other windows.
	Lock	Click the icon to lock the window, and then the window position and size cannot be adjusted. Click to unlock the window.
/	Audio	Click the icon to turn on/off the audio.
	Close	Click the icon to close this window.

4.3.2.3 Configuring Window Information

You can set the position and size of the window as desired.

Prerequisites

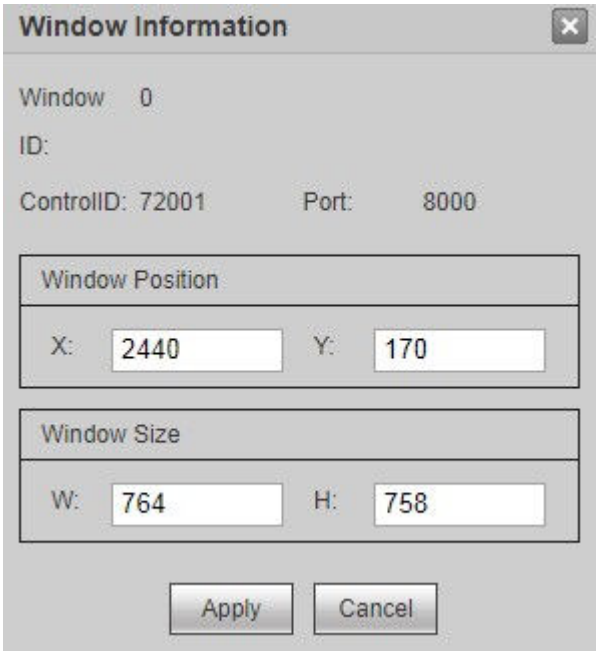
Manual setting window wide and height has been enabled.

Procedure

Step 1 Double-click the window.

Step 2 Configure window position and window size.

Figure 4-6 Window information



Step 3 Click **Apply**.

The window position and size is adjusted according to the configuration.

4.3.3 Signal Configuration

You can select a signal directly, or enter keywords to search for a signal.

4.3.3.1 Device Tree

Device tree displays all local signals and the added network signals.

- Local signal: Display local signal sources. For details, see "4.5.4.2 Local Signal."
- Network signal: Display the added signal sources. For details, see "4.5.4.1 Network Signal."

4.3.3.2 Custom

You can customize a signal groups and drag it to the window to display in sequence all of the signals in this group.

4.3.3.3 Signals on the Video Wall

You can drag a signal to a window on the video wall, and then view the video of this signal.

Procedure

Step 1 Select a window on the video wall, or press and hold the mouse button to drag a window to the video wall.

Step 2 Select a signal from **Device** or **Custom**. This section uses **Device** as an example.

Figure 4-7 Select signal source

Step 3 Display signal on the video wall.

- Drag the signal to a window. The signal is output to the window.
- Select a window, and double-click the signal. The signal is output to the window.

4.3.3.4 Signal Tour

You can drag the configured signal group to a window to display a signal tour, and then set the stay time and stream type.

Prerequisites

Make sure that you have configured the signal group.

Procedure

Step 1 Select a window to display a signal tour.

Step 2 Select **Custom** > **Collection**, and then select and hold a signal group to drag it to the selected window.

Step 3 Click at the bottom of the page.

All signal information in the window is displayed.

Figure 4-8 Signal information

Step 4 Configure **Stay Time** and **Stream Type**.

- Click corresponding to a signal, and the signal will not appear in the tour queue, but the signal group still exists in the signal group.
- Click or to adjust signal tour sequence.
- The setting takes effect immediately.

Step 5 Click at the top right corner of window, so you can stop signal tour.

4.3.4 Video Wall Management

You can manage the video wall, including scheme management, auto-align, window split, video wall refreshment, screen management, eagle eye and advanced functions.

4.3.4.1 Scheme Management

You can manage schemes and configure switch timer.

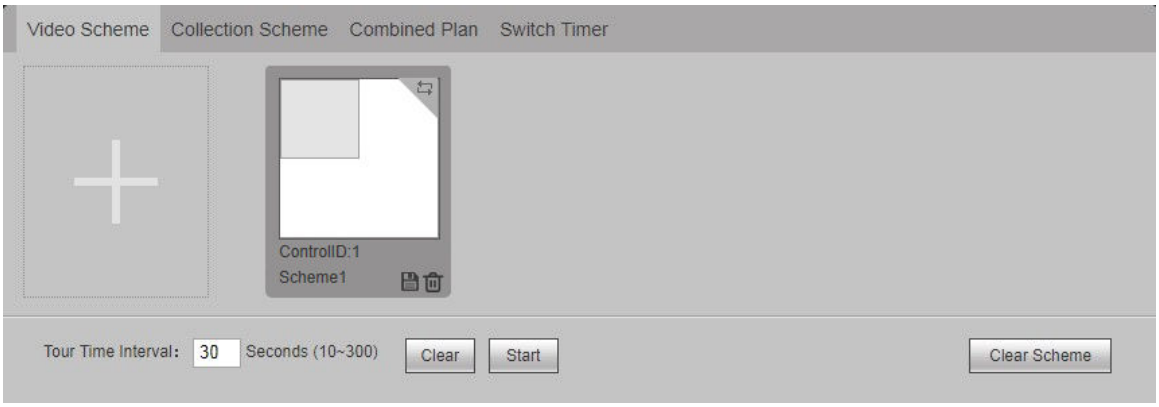
4.3.4.1.1 Video Scheme

You can save the video wall layout as a video scheme, and then configure multiple video schemes to be displayed on the screen in turn.

Procedure

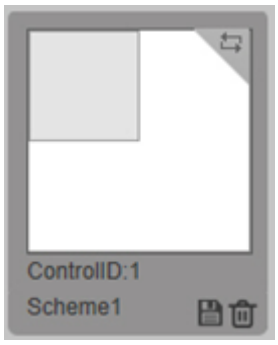
Step 1 At the bottom of the **Screen** page, select **Scheme** > **Video Scheme**.

Figure 4-9 Video scheme



Step 2 Click to save the scheme.

Figure 4-10 Save video scheme



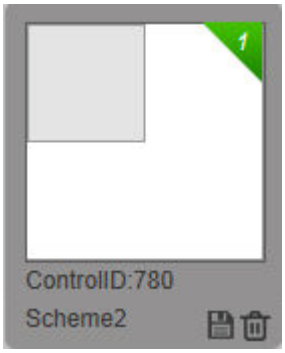
Step 3 Configure the current layout again, and repeat Step 2 to add more schemes.

Step 4 Configure tour time interval.

Step 5 Click at the top right corner of each scheme to add the scheme to tour queue.

Double-click **Control ID** and scheme name, and you can change them.

Figure 4-11 Configure tour sequence



Step 6 Click **Start**.

- Click **Stop** to stop tour.
- During scheme tour, you cannot operate on the **Screen** page.
- Click **Clear** to clear the whole scheme tour plan.
- Control ID distinguishes different schemes when central control device issues commands.

4.3.4.1.2 Collection Scheme

Save virtual LED and background configuration to be a collection scheme. Multiple collection schemes can be displayed on the video wall in turn. For details, see "4.3.4.1.1 Video Scheme".

For virtual LED configuration, see "4.3.4.9.2 Virtual LED" for virtual LED configuration. For background configurations, see "4.3.4.9.3 Background".

4.3.4.1.3 Combined Plan

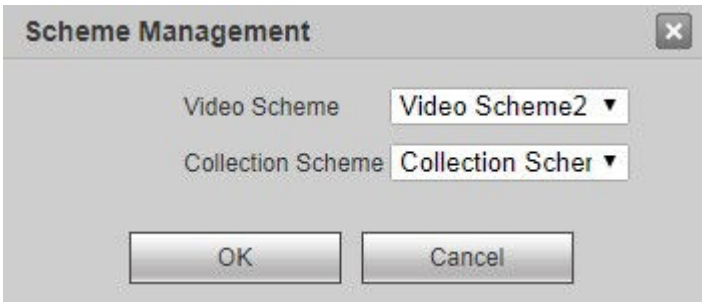
According to your need, combine the video scheme and collection scheme into a combined plan, and display it on the video wall.

Procedure

Step 1 On the **Screen** page, select **Scheme** > **Combined Plan**.

Step 2 Click  to select a video scheme and a collection scheme.

Figure 4-12 Scheme management



Step 3 Click **OK** to save the combined plan.

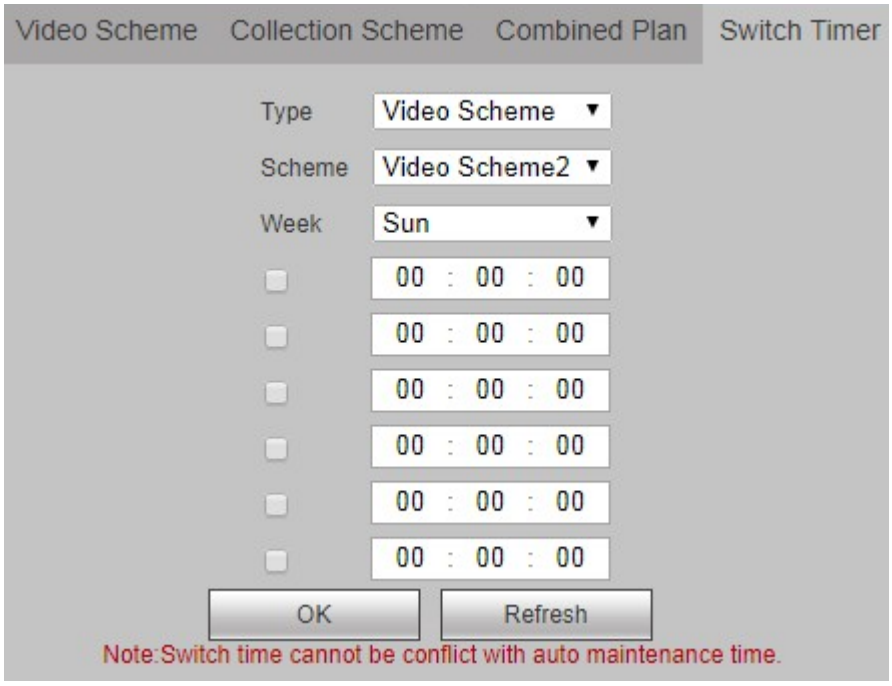
4.3.4.1.4 Switch Timer

If a switch time is set for a scheme, the system will switch to this scheme automatically at the switch time.

Procedure

Step 1 On the **Screen** page, select **Scheme** > **Switch Timer**.

Figure 4-13 Switch timer



Step 2 Select **Type** , **Scheme** and **Week**, and then configure switch time.

- Select the checkbox, and then the time point will take effect.
- Two scheme time periods shall not be the same.

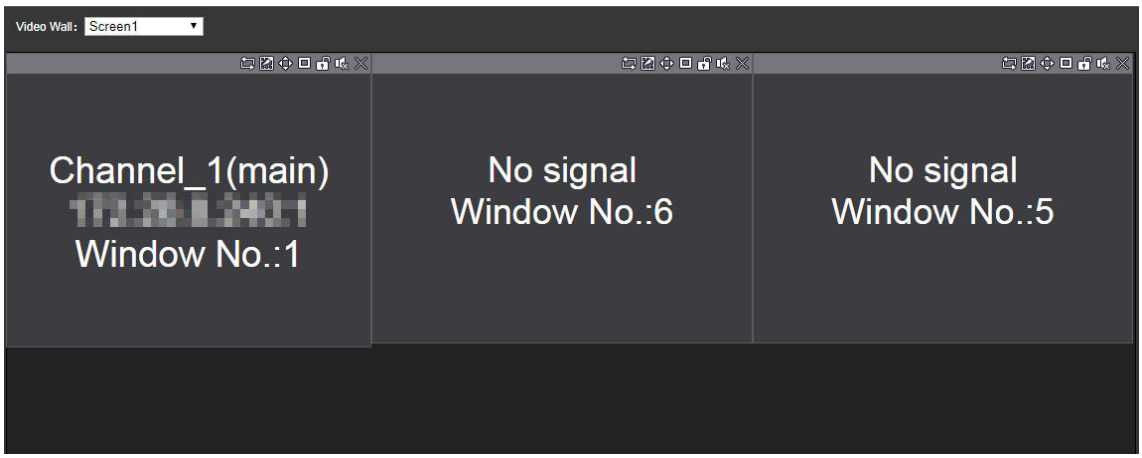
Step 3 Click **OK**.

4.3.4.2 Auto-align

At the bottom of the **Screen** page, click **Auto Align**, and all windows will be automatically aligned in the following way.

- Each window size is equal, under the precondition of filling the entire video wall.
- Windows are arranged horizontally from top to bottom.

Figure 4-14 Auto align



4.3.4.3 Window Split

You can split a block or a window according to the split plan of the system, or you can enter a split number manually.

4.3.4.3.1 Block Division

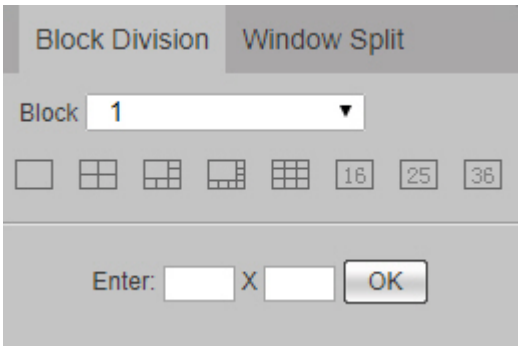
When you are splitting a block, the system clears previous block division, and splits the block according to the selected split. After block division, previous windows will be closed, and previous signal will not be kept.

Procedure

Step 1 On the **Screen** page, select **Window Split** > **Block Division**.

Step 2 Select a block from the block list.

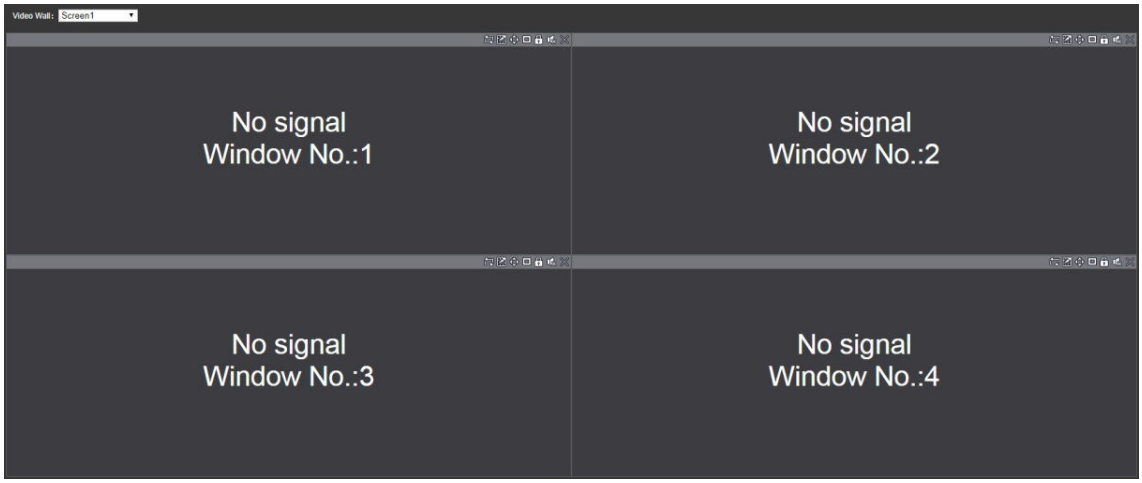
Figure 4-15 Block division



Step 3 Select the fixed split or enter the split number manually (for example, 3×3 represents 9-split).

Step 4 Click **OK** , and then click **OK** in the prompt box.

Figure 4-16 Block division display



After block division, the window is locked by default. Click to unlock the window if you need to adjust window position and size.

4.3.4.3.2 Splitting a Window

Select a window and split it into several sections. The previous signal remains in the first window after splitting.

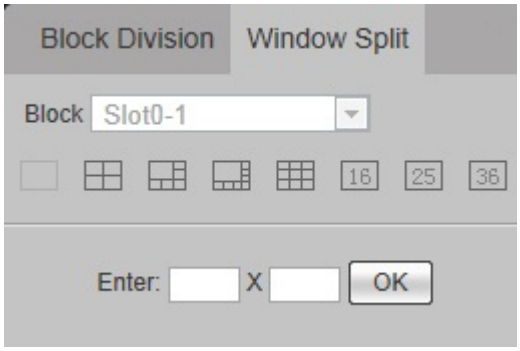
Procedure

Step 1 Select a signal window.

We recommend that you do not select a tour window for window split.

Step 2 Select **Window Split** > **Window Split**.

Figure 4-17 Window split



Step 3 Select the fixed split or enter the split number manually (for example, 3×3 represents 9-split).

Step 4 Click **OK**.

Figure 4-18 Window split display

After window split, the previous signal remains in the first window, and other windows display **No signal**.

4.3.4.4 Refreshing Video Wall

Click **Refresh Video Wall** to refresh the channel preview and layout information of the current video wall.

4.3.4.5 Clearing Screen

Click **Clear Screen** to clear all of the windows on the screen.

4.3.4.6 Screen Management

You can manage the screen, including controlling screen power, controlling power switch and adjusting screen parameters.

Procedure

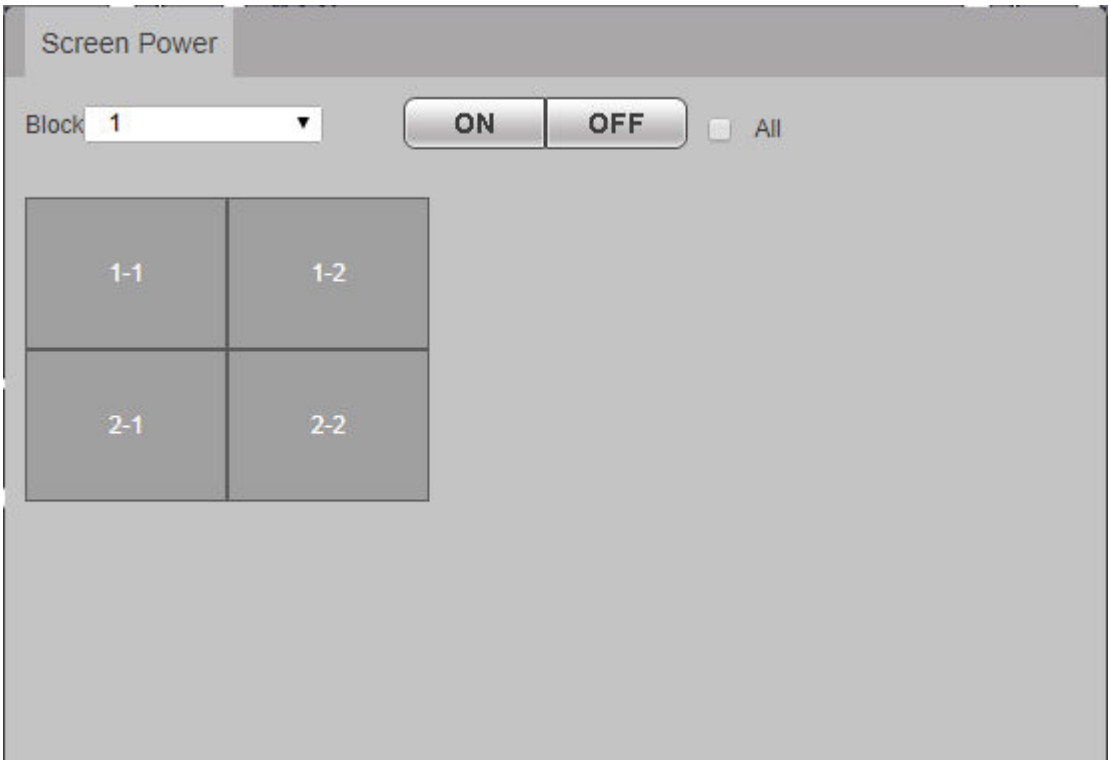
Step 1 On the **Screen** page, select **Screen Management** > **Screen Power**.

Step 2 Select a block from the **Block** list, and then select one or more screens.

Step 3 Click **ON** or **OFF** to power on or power off the selected screens.

Select the **ALL** checkbox to select all of the screens or blocks.

Figure 4-19 Screen power



4.3.4.7 Locking Video Wall

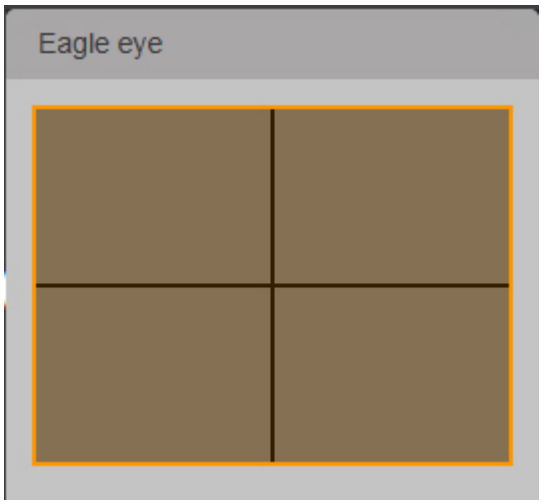
At the bottom of the **Screen** page. click **Lock Video Wall**. The video wall will be locked, and you cannot adjust the windows on this video wall. Click it again to unlock the video wall.

4.3.4.8 Eagle Eye

Eagle eye map, also known as thumbnail, is used to adjust the display size and display area of the main window of the web screen.

Click **Eagle eye**, and you can adjust the area box size in the eagle eye map with mouse or wheel button to change the main window display area size. Drag area box position in the eagle eye map to change main window display area.

Figure 4-20 Eagle eye



4.3.4.9 Advanced Functions

You can configure advanced functions, including PTZ control, virtual LED, background, OSD, decoding strategy and showing the screen ID.

4.3.4.9.1 PTZ Control

PTZ control is to turn the PTZ device (up, down, left, right, upper-left, lower-left, upper-right and lower-right), carry out the focus, zoom and iris operations.

Configure PTZ parameters and ensure correct wiring before you control PTZ with local serial port.

Figure 4-21 PTZ control

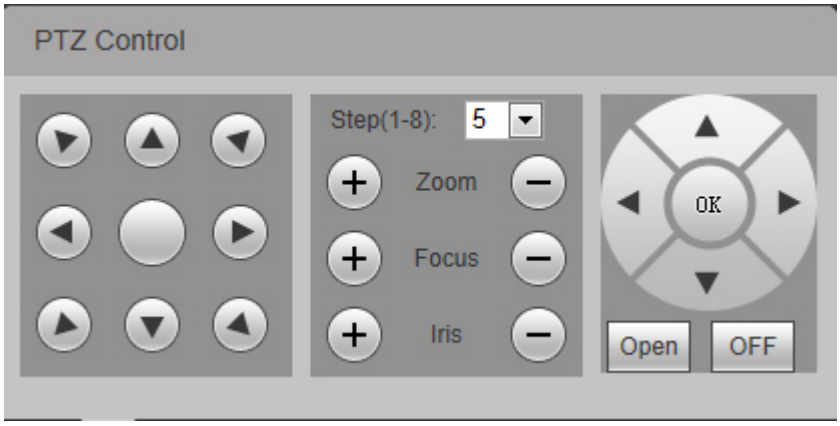


Table 4-3 PTZ control parameter description

Parameter	Description
Direction control	Control PTZ to turn in eight directions, including up, down, left, right, top left, bottom left, top right and bottom right.
Step	Control PTZ turning speed. 1–8 steps can be configured.
Zoom	Click ⊕ or ⊖ to adjust zoom.
Focus	Click ⊕ or ⊖ to adjust definition.
Iris	Click ⊕ or ⊖ to adjust brightness.
PTZ menu	• Click **Open** to open PTZ menu of preview page. Then, select different functions with direction key, to operate PTZ. • Click **OFF** to turn off the PTZ menu of preview page.

4.3.4.9.2 Virtual LED

Divide a customized area on the video wall, enter any characters, and display them on the screen.

Procedure

Step 1 On the **Screen** page, select **Advanced** > **Virtual LED**.

Step 2 Click 

, and then configure parameters.

Figure 4-22 Configure the parameters

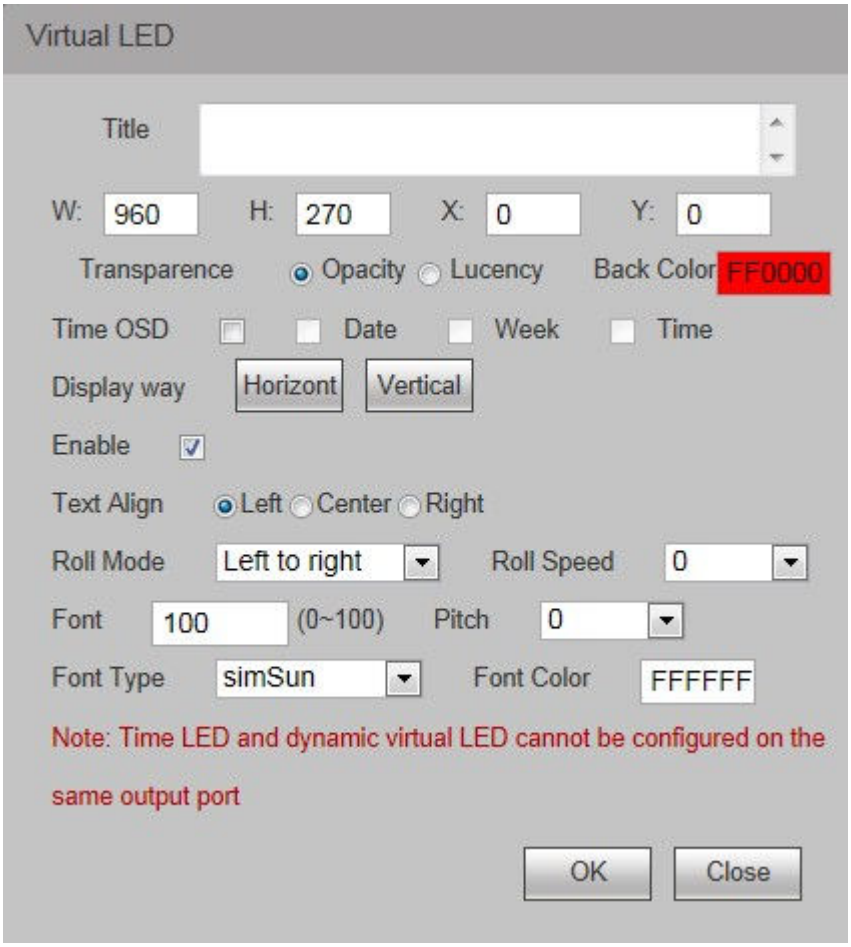


Table 4-4 Virtual LED parameter description

Parameter	Description
Title	Enter the text which will be displayed on the video wall.
W/H	Enter the width and height of the background of the virtual LED.
X/Y	Enter the coordinate of the virtual LED.
Transparence	Configure the transparency of virtual LED. You can enter the 6-digit RGB values manually, or click the color area to select a color.
Back color	Configure the background color of virtual LED. You can enter 6-digit RGB value manually, or click the color area to select.
Time OSD	Select the checkbox to enable the function. **Date** , **Week** and **Time** are displayed by default. You can select time display type according to your need. Select at least one item from **Date** , **Week** and **Time**.
Display way	Configure the display way of the title, including **Horizontal** and **Vertical**.

Parameter	Description
Enable	• Select the checkbox and then click **OK**. The title will be displayed on the video wall. • Clear the check box and click **OK**. The title will be displayed on web, rather than video wall.
Text align	Configure the alignment of the title, including **Left** , **Center** and **Right**.
Roll mode	Configure the roll mode of virtual LED title on the screen, including **Left to right** , **Right to left**, **Top to bottom** and **Bottom to top**.
Roll speed	Configure the roll speed of the title, ranging from 0 to 5. It is static text when the roll speed is 0.
Font	Configure the title font from 0 to 100.
Pitch	Configure the title character distance from 0 to 5.
Font type	Configure the font type of the title, including **simSun** and **simHei**.
Font color	Configure the title color. You can enter the 6-digit RGB value manually, or click the color area to select.

Step 3 Click **OK**.

- Select and hold the virtual LED, and you can move it to the desired position.
- Click the virtual LED, and drag any direction control point to resize it.

Figure 4-23 Effect

4.3.4.9.3 Background

You can upload a picture to the system, and configure it to be the screen background.

Prerequisites

Make sure that you have uploaded pictures to the system.

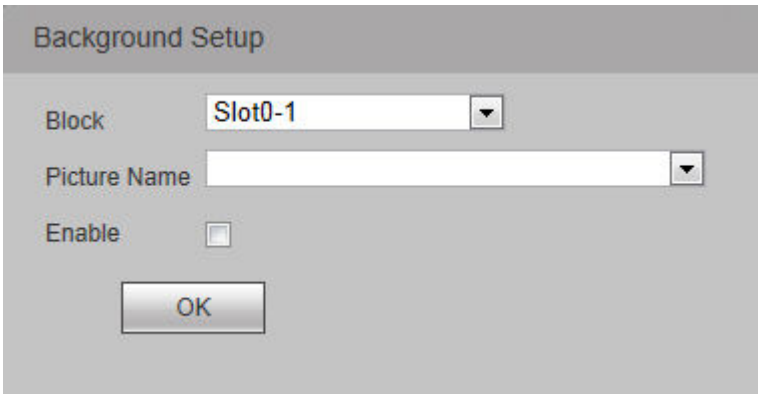
Procedure

Step 1 On the **Screen** page, select **Advanced** > **Background**.

Step 2 Select a block and a picture from the **Block** and **Picture Name** lists, and then select **Enable**.

Step 3 Click **OK**.

Figure 4-24 Add background



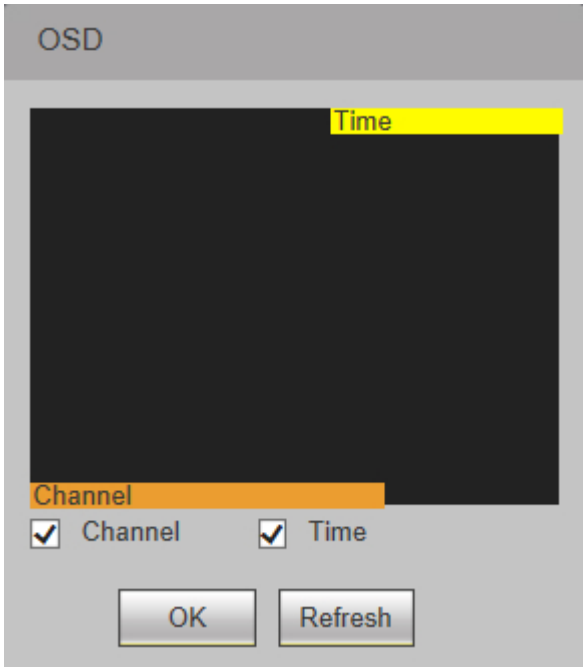
4.3.4.9.4 OSD

Overlay time title and channel title onto video. OSD only applies to local signal.

Procedure

Step 1 Select a local signal window, and then click **OSD**.

Figure 4-25 OSD



Step 2 Select **Channel** and **Time** according to your needs.

Step 3 Click **OK**.

Click **Refresh** to refresh the page.

4.3.4.9.5 Decoding Strategy

Move the slider to adjust window fluency, and thus balance the real-time decoding and fluency.

Background Information

Only network signal supports this function.

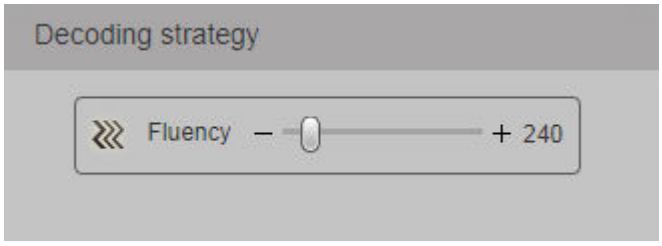
Procedure

Step 1 Select a network signal window, and then select **Advanced** > **Decoding Strategy** .

Step 2 Drag the slider to adjust the window fluency.

Greater fluency value represents lower definition of the image.

Figure 4-26 Decoding strategy



4.3.4.9.6 Showing Screen ID

At the bottom of the **Screen** page, click **Show ScreenID** to show the screen ID on the video wall. Click it again to hide the screen ID.

4.4 Preview

Click **Preview**, and then the preview page is displayed.

Figure 4-27 Preview

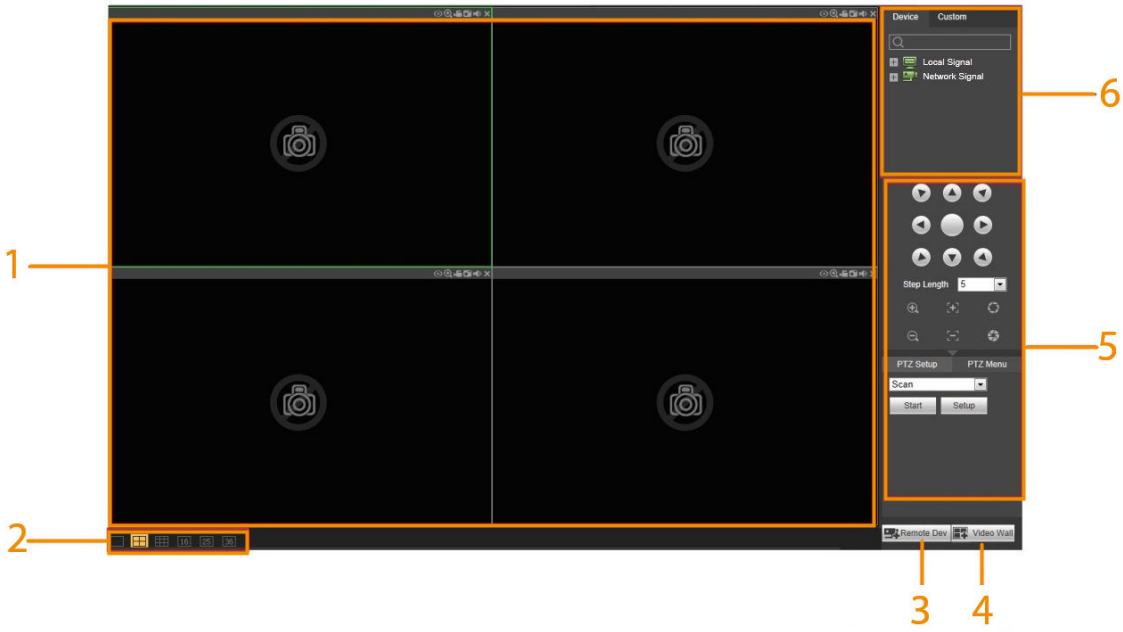


Table 4-5 Function description of preview page

No.	Name	Description
1	Live window	Preview video in the window.
2	Window split	You can split the window into several sections, including single, 4-split, 9-split, 16-split, 25-split and 36-split of the window.
3	Remote device	Click **Remote Dev** to go to **Network Signal** page. You can add, modify and delete device.
4	Video wall	Click **Video Wall** to go to **Video Wall Setup** page. You can add, modify and delete video wall.
5	PTZ control area	Operate cameras with PTZ function.
6	Signal configuration area	Configure local signals and network signals.

4.4.1 Window Function

Click the icons at the upper-right corner of the window to adjust the window.

Figure 4-28 Window function

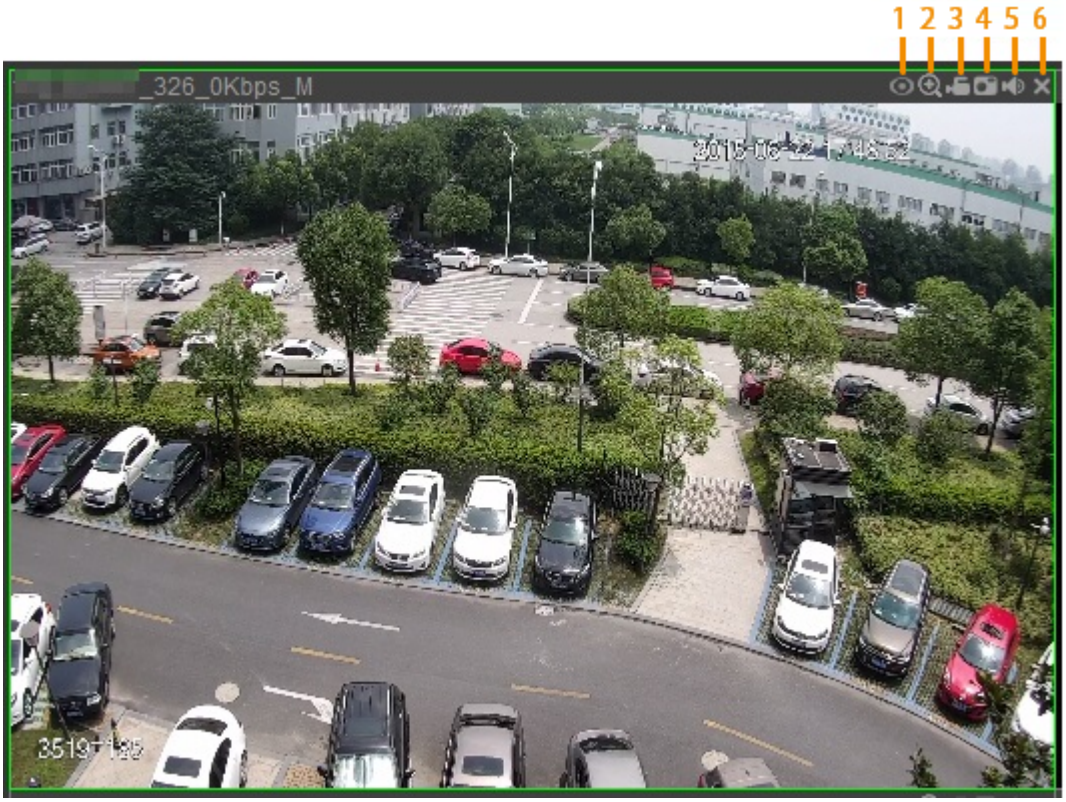


Table 4-6 Function description

No.	Name	Description
1	Fisheye	Click this icon to preview the video from fisheye device.
2	Partial zoom in	• When the video is in the original status, click the icon, press and hold left mouse button to select any area. The selected area will be zoomed in. When the video is zoomed in, press and hold on left mouse button to drag the video image. Click right mouse button to restore original status. • Click the icon to zoom in and zoom out the video image with wheel button.
3	Local record	Click the icon to record the video. The recorded video file is saved in the recorded video path as configured in "4.5.1.11 Storage Path."
4	Snapshot	Click the icon to take a snapshot. The snapshot file is saved in the snapshot path as configured in "4.5.1.11 Storage Path."
5	Sound	Click the icon to turn on the sound of the video.
6	Close Video	Click the icon to close this window.

4.4.2 Preview Signal Configuration

You can view signal information or the added signal group information, and configure the signal preview. For details, see "4.3.3 Signal Configuration".

4.4.3 PTZ Control Panel

PTZ control is used to adjust the direction of the PTZ. You can configure the scan, preset, tour, pattern and other settings. For details, see "4.3.4.9.1 PTZ Control".

Figure 4-29 PTZ Control

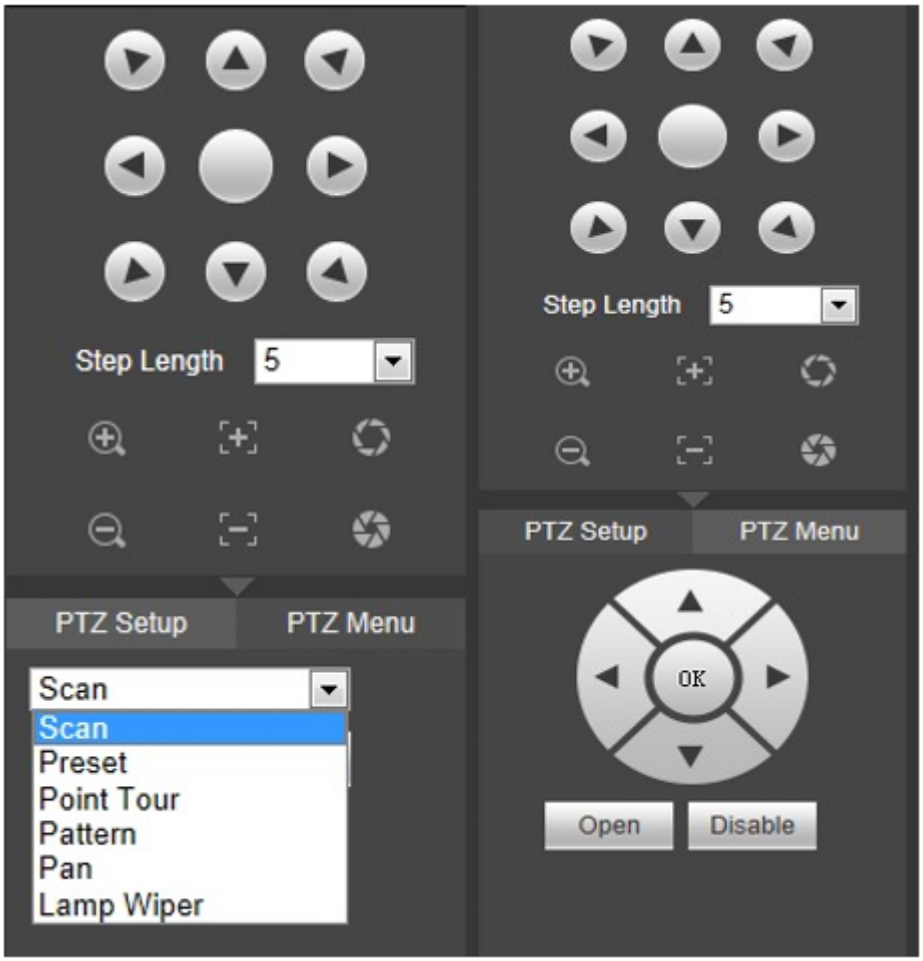


Table 4-7 PTZ control parameters description

Parameter	Description
Scan	• Click **Setup** on the lower right corner of the page, turn the camera with direction buttons, and click **Set Left Border** and **Set Right Border** to set left and right borders of PTZ scan. • Click **Start** , and PTZ starts to scan. Click **Stop**, and PTZ stops scanning.
Preset	• Click **Add** to add a preset point. • In the input box, enter the preset number, and then click **View** ; the camera moves to the location of preset point.

Parameter	Description
Point Tour	• In the input box, enter tour number, and then click **Start** to start the tour. Click **Stop** to stop the tour. • Enter preset number, and then click **Add** to add this preset to this tour.
Pattern	• Enter the pattern number, and then click **Start** to start the pattern. Click **Stop** to stop the pattern. • Click **Add** , and you can configure a new pattern with **Start Record** and **Stop Record**.
Pan	• Click **Start**, and PTZ starts to pan. • Click **Stop**, and PTZ stops panning.
Lamp Wiper	• Click **Enable** to enable the lamp and wiper. • Click **Disable** to disable the lamp and wiper.

4.5 Setup

4.5.1 System Configuration

You can complete general setting of the system.

4.5.1.1 General

You can configure the basic information of the device, such as the device information and system date.

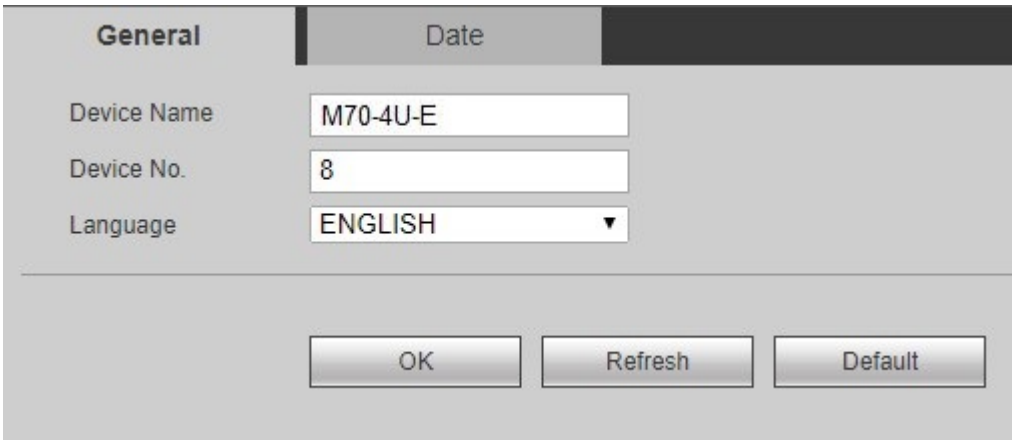
4.5.1.1.1 Configuring the General Information

You can configure the device name and number.

Procedure

Step 1 Select **Setup** > **System Config** > **General** > **General**.

Figure 4-30 General



Step 2 Configure the parameters.

Table 4-8 General parameters description

Parameter	Description
Device Name	Customize the device name and number to differentiate the Device from other devices.
Device No.	
Language	System language is determined by program package, and cannot be configured here.

Step 3 Click **OK**.

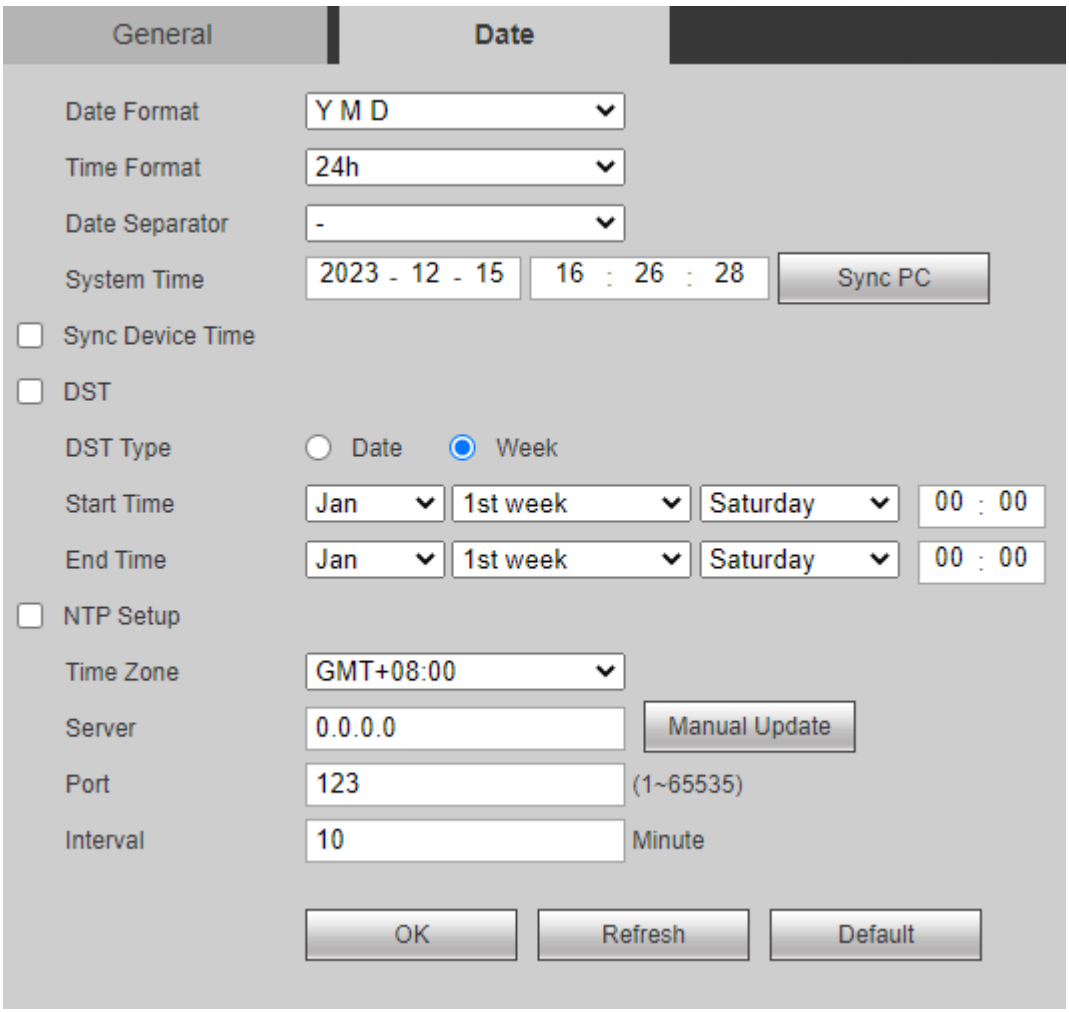
4.5.1.1.2 Date

You can configure the system date, and choose to enable Network Time Protocol (NTP) or not. After enabling NTP function, device can automatically synchronize time with the NTP server.

Procedure

Step 1 Select **Setup** > **System Config** > **General** > **Date**.

Figure 4-31 Date



Step 2 Configure the parameters.

Table 4-9 Parameter description of the date

Parameter	Description
Date Format	Select date and time display format.
Time Format	
Date Separator	Select the date separator.
System Time	Configure the system time. Click **Sync PC** to synchronize with current computer time.
Sync Device Time	Select the checkbox to enable function to synchronize with remote device time.
DST	Select the checkbox to enable Daylight Saving Time (DST).
DST Type	Select the DST type, including **Date** and **Week**.
Start Time/End Time	• When DST Type is **Date**, enter year, month, day, start time and end time. • When DST Type is **Week**, select month, week, start time and end time from the drop-down list.
NTP Setup	Select the checkbox to enable NTP sync function.
Time Zone	Select time zone.
Server	Enter server address or domain name.
Port	Enter the port number of NTP server.
Interval	Configure the interval to update NTP server.

Step 3 Click **OK**.

4.5.1.2 User Management

User management adopts two-level management mode: User and user group. You can manage basic information. Only those with user management authority can operate user management.

- User name and group name support maximum 6 characters and can only be consisted of letter, number, and underline (_).
- 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 ' " ; : &). The user with authority can modify not only his/her own password, but also modify the password of other users.
- According to factory defaults, maximum user quantity is 64, and maximum user group quantity is 20.
- Group name and user name shall be unique. One user can only belong to one group.
- Current user cannot modify his/her own authority.
- During initialization, there is 1 default user—admin. Admin is defined as high-authority user when leaving factory.

4.5.1.2.1 Adding Users

You can add, modify and delete users, and modify user password.

Procedure

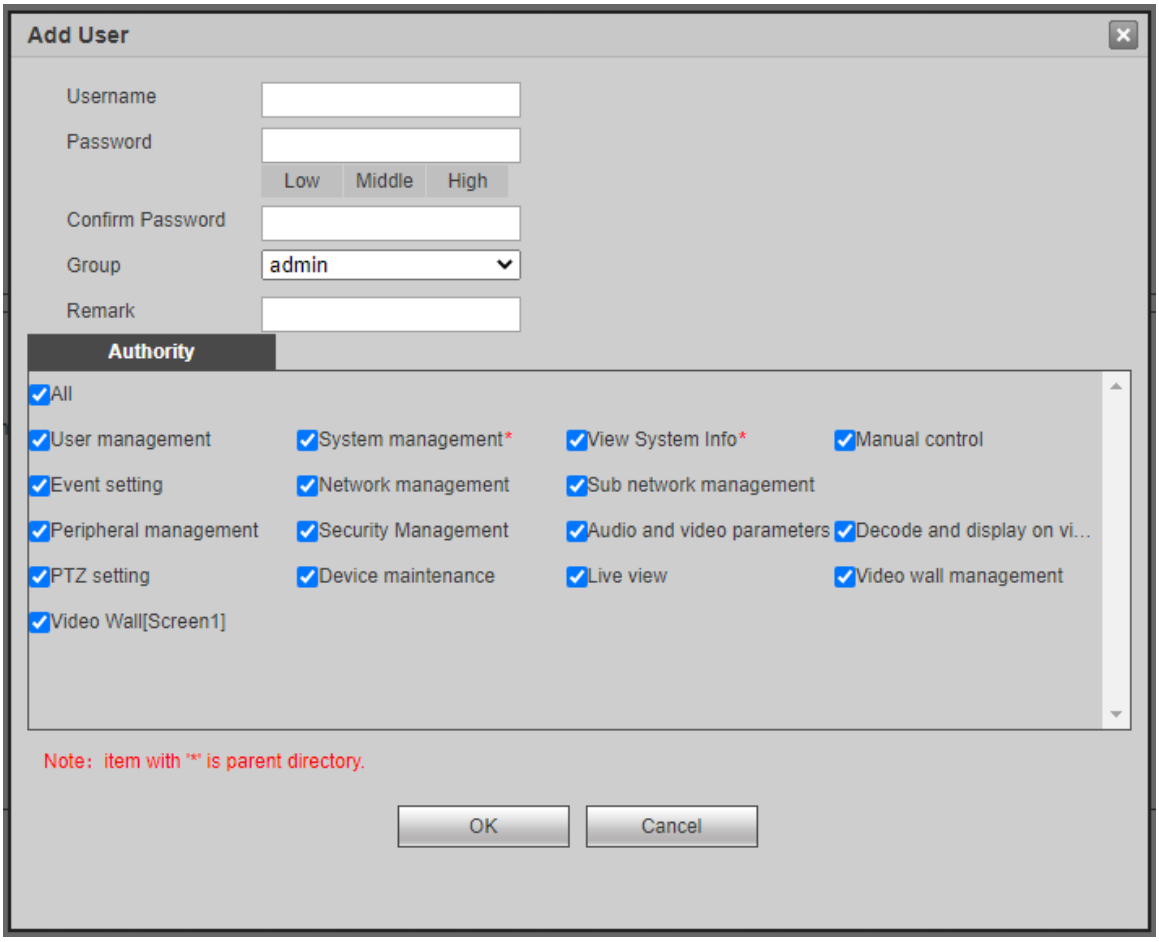
Step 1 Select **Setup** > **System Config** > **User Management** > **User**.

Step 2 Click **Add User**.

Step 3 Enter the username, password, confirm password, and then select a group.

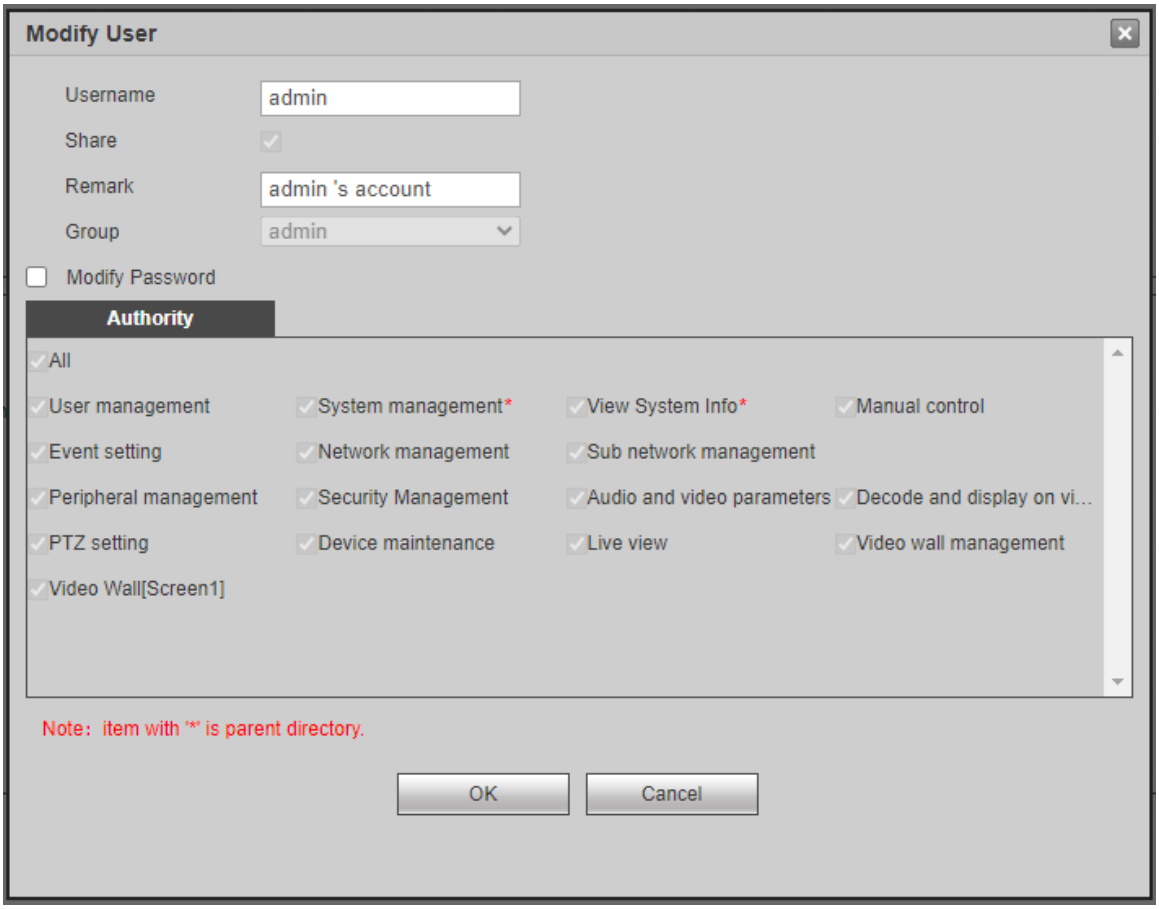
- When selecting a group for a user, authority of the user can only be a subset of the group, and should be no higher than the group authority.
- To conveniently manage the user, we recommend that general user authorities must be lower than high-level user authorities.

Figure 4-32 Add user



Step 4 Click corresponding to the user you want to modify.

Figure 4-33 Modify user



Step 5 Modify user information.

Step 6 (Optional) Select **Modify Password**.

Step 7 (Optional) Enter old password, new password and confirm password.

Step 8 Click **OK**.

4.5.1.2.2 Group

Different users might have different authorities to access the device. You can divide the users with the same authority into one group, for you to maintain and manage the user information easily. You can add and delete group, and modify group password. For details, see "4.5.1.2.1 Adding Users".

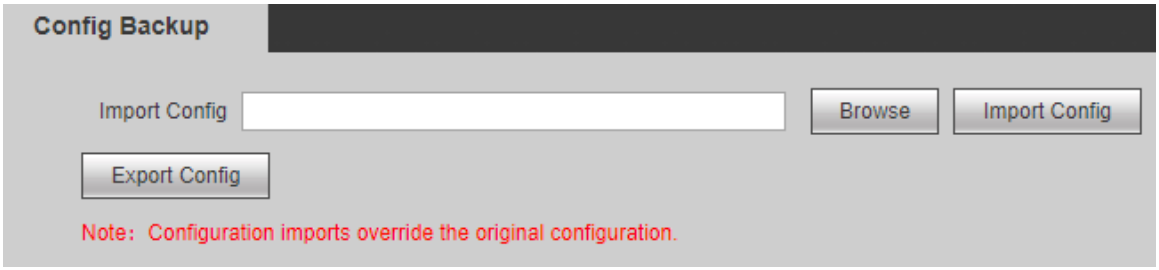
Select **Setup** > **System Config** > **User Management** > **Group**.

Figure 4-34 Group

4.5.1.3 Configuring Backup

Select **Setup** > **System Cofig** > **Config Backup**, and you can export the Device configuration file to the local computer for backup. When the Device goes wrong, you can import the configuration file to restore configuration quickly.

Figure 4-35 Configure backup

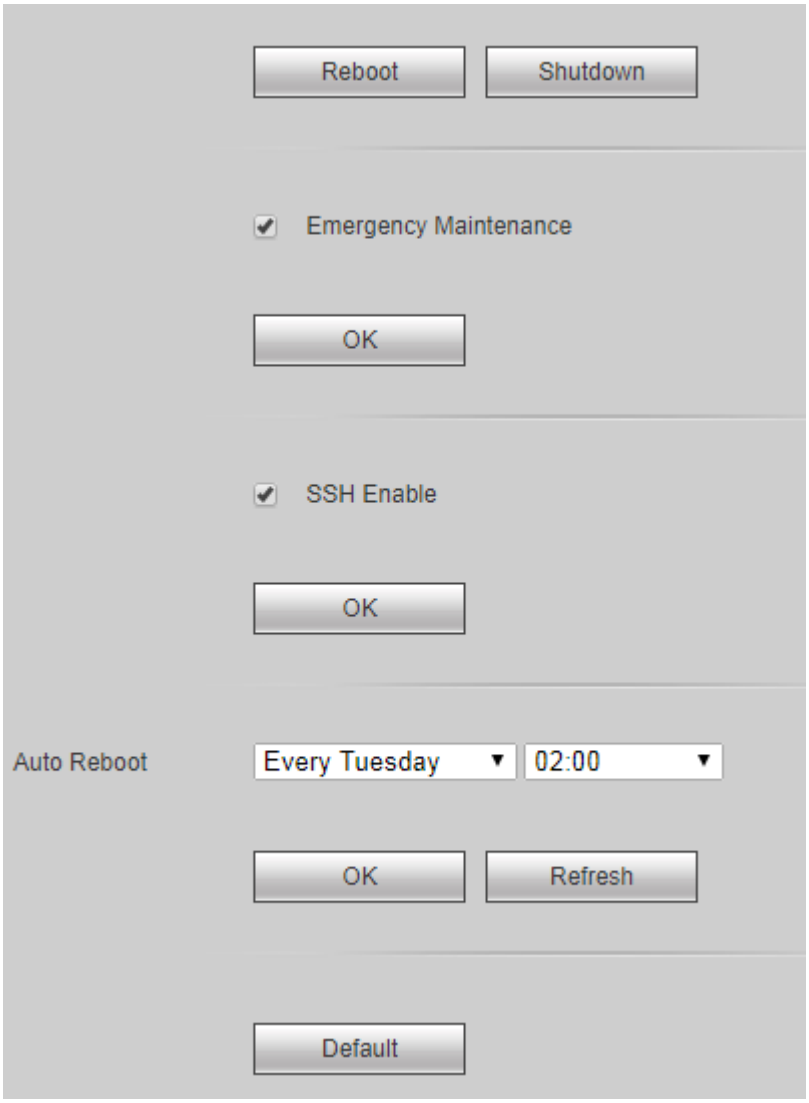


- Click **Browse** , select configuration file (.backup), and then click **Import Config** to import the configuration file.
- Click **Export Config**, and then select storage path to export configuration file for backup.

4.5.1.4 Auto Maintenance

Select **Setup** > **system Config** > **Auto Maintenance**, you can maintain and operate the system, including shutdown, SSH enable and more.

Figure 4-36 System maintenance



- Click **Reboot** to restart the Device at once. Click **Shutdown** to shut down the Device at once.
- Select **SSH Enable** and click **OK** to open background debugging port for technicians.
- Select auto reboot time, and then click **OK** to restart the Device automatically according to the configured time. Click **Refresh** to refresh the configured time.

⚠

Click **Default** to restore the Device to default settings, and your current configurations will be lost.

4.5.1.5 System Upgrade

You can import upgrade file to upgrade the system version.

Prerequisites

Make sure that the upgrade file has been stored in computer that is associated with the Device.

Procedure

Step 1 Select **Setup** > **System Cofig** > **System Upgrade**.

Figure 4-37 System upgrade

Step 2 Click **Import**, and select the upgrade file.

Step 3 Click **Upgrade**. There is progress bar during upgrading.

After upgrade file is uploaded according to system prompt, the Device will restart. Keep the power on until the system is automatically restarted.

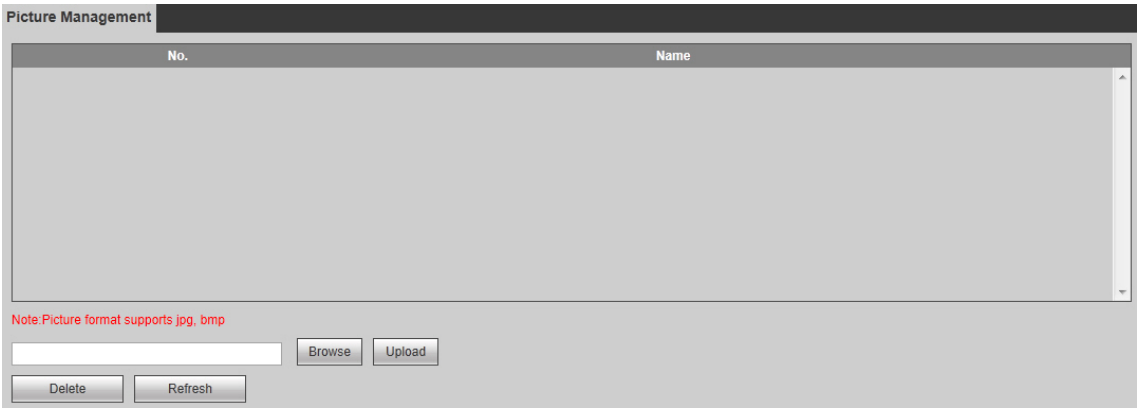
4.5.1.6 Picture Management

You can upload a picture to the system, and set the uploaded picture to be screen background.

Procedure

Step 1 Select **Setup** > **System Config** > **Picture Management**.

Figure 4-38 Picture management



Step 2 Click **Browse** to select a local picture.

Step 3 Click **Upload** to upload a local picture.

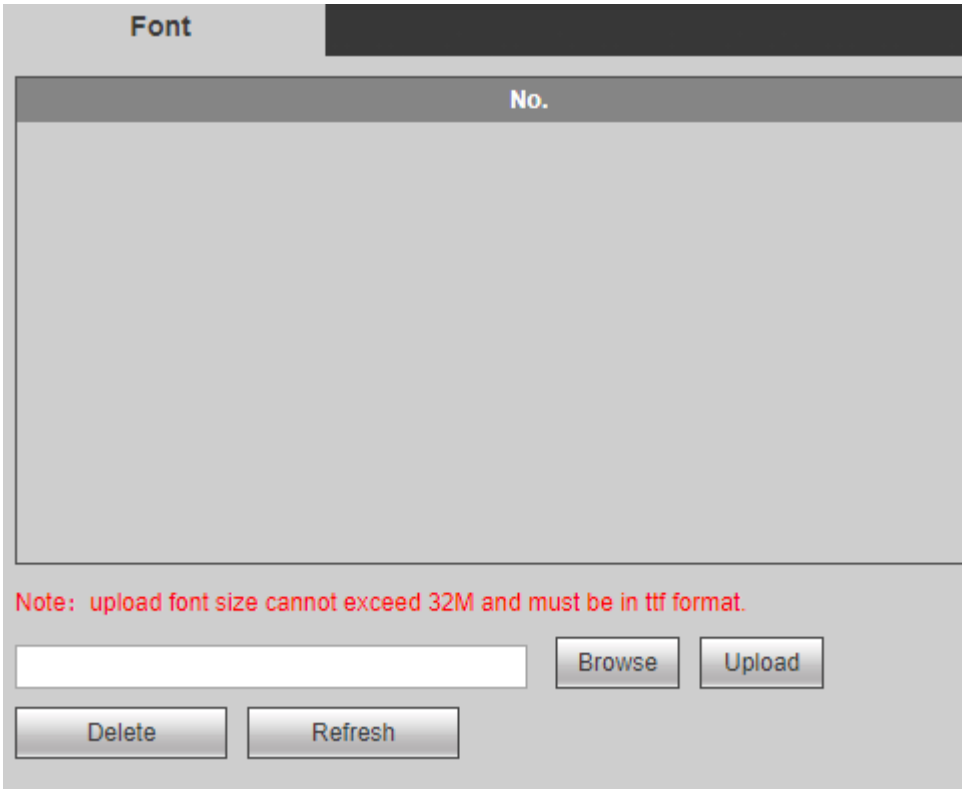
- Select one picture, and click **Delete** to delete the picture.
- After the background picture is uploaded successfully, select the background in video wall configuration. See "4.3.4.9.3 Background".

4.5.1.7 Font Management

You can upload the font to the system, and set the uploaded font to be screen font.

Select **Setup** > **System Config** > **Font**, click **Browse** to select the font package and then click **Upload**.

Figure 4-39 Font



4.5.1.8 Fan Control

You can configure fan temperature control and buzzer alarm.

4.5.1.8.1 Fan Temperature Control

You can configure different temperature ranges for fan speed. The system will trigger different fan speed levels according to the different temperature ranges. The higher the temperature, the faster the fan speed.

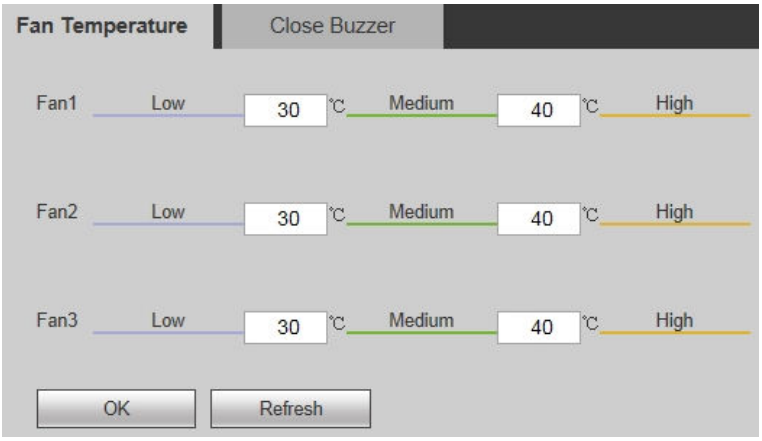
Procedure

Step 1 Select **Setup** > **System Config** > **Fan Control** > **Fan Temperature**.

Step 2 Configure the temperature at which each fan triggers different speed levels.

There are three levels: low speed, medium speed, and high speed. Different temperature ranges correspond to different speeds.

Figure 4-40 Fan control-fan temperature



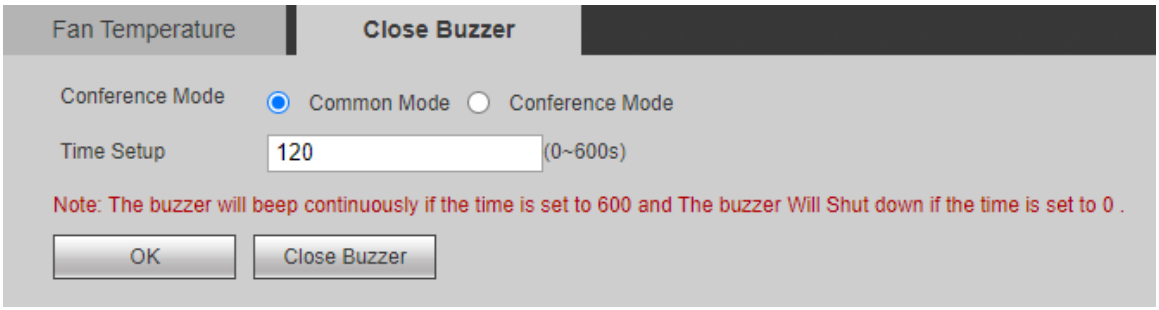
4.5.1.8.2 Close Buzzer

You can configure buzzer time. In case of alarm, the system will beep continuously according to the set period.

Procedure

Step 1 Select **Setup** > **System Config** > **Fan Control** > **Close Buzzer**.

Figure 4-41 Fan control–close buzzer



Step 2 Configure the conference mode and time period.

Step 3 Click **OK**.

Click **Close Buzzer** to close the buzzer alarm function.

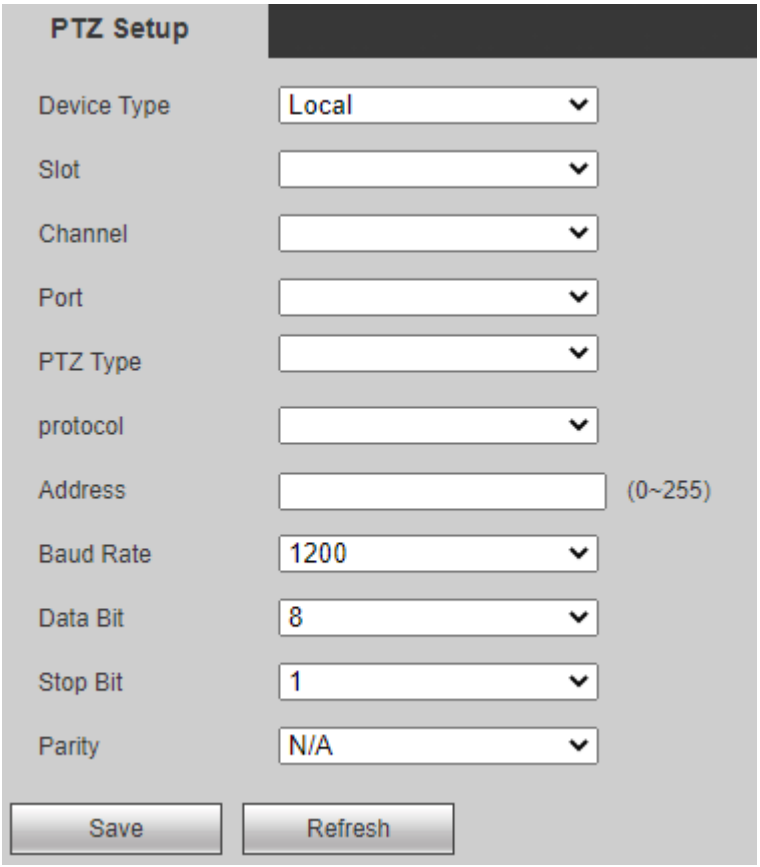
4.5.1.9 PTZ Setup

PTZ is a mechanical platform that carries camera and protective hood, and provides remote all-round control. PTZ moves horizontally and vertically, and thus gives the camera an all-round and multi-angle view. In order to control PTZ, device protocol, baud rate, address and parity shall be the same as camera protocol, baud rate, address and parity.

Procedure

Step 1 Select **Setup** > **System Config** > **PTZ Setup**.

Figure 4-42 PTZ setup



Step 2 Configure the parameters.

Table 4-10 PTZ parameter description

Parameter	Description
Device Type	Select device type to be controlled, including **Local** and **Analog**. It is **Local** by default.
Slot	Select corresponding slot.
Channel	Select channel to be configured.
Port	Select corresponding port.
PTZ Type	Support local PTZ only.
Protocol	Select device protocol; keep consistent with camera.
Address	Set device address, ranging from 0 to 255.
Baud Rate	Set baud rate of device; keep consistent with camera.
Data Bit	Set device data bit, including 5, 6, 7 and 8.
Stop Bit	Set device stop bit, including stop bit 1 and stop bit 2.
Parity	Include odd, even, flag parity and empty parity. Keep the parity the same as the camera parity.

Step 3 Click **Save**.

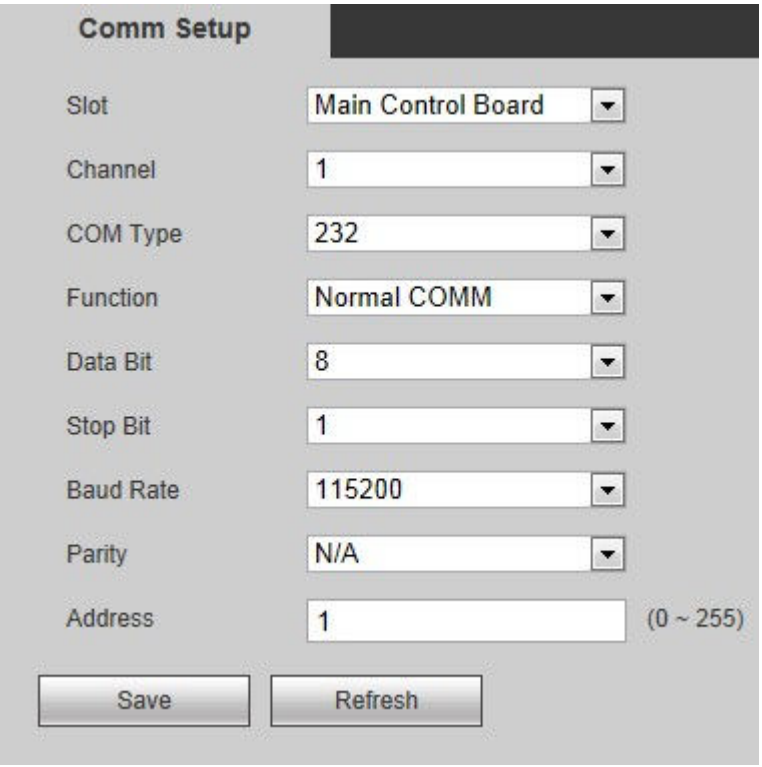
4.5.1.10 Comm Setup

After comm parameters are set, the video matrix platform can connect to other devices through comm ports, for the purpose of debugging and operation.

Procedure

Step 1 Select **Setup** > **System Config** > **Comm Setup**.

Figure 4-43 Comm setup



Step 2 Configure the parameters.

Table 4-11 Comm parameters description

Parameter	Description
Slot	Select the slot and channel you want to configure.
Channel	
COM Type	It is RS-232 by default.
Function	Configure the serial port function.
Data Bit	Select a data bit. The options include 5, 6, 7 and 8.
Stop Bit	Select the stop bit of the serial port including 1 and 2.
Baud Rate	Configure the baud rate of the serial port. It must be consistent with the device that will be connected.
Parity	Select a parity mode from **N/A** , **Odd**,**Even**, **Flag Parity** and **Empty Parity**.
Address	Configure the serial port address, which ranges from 0 to 255.

Step 3 Click **Save**.

4.5.1.11 Security Management

You can configure the system service, and enable the HTTPS function to strengthen system security management.

4.5.1.11.1 Firewall

You can set a firewall for the Device to prevent network attacks after the Device is connected to the network.

Procedure

Step 1 Select **Setup** > **System Config** > **Security Management** > **Firewall**.

Figure 4-44 Firewall

Step 2 Select **Type**. Three types are available at present:

- **Network Access** : Configure the firewall by adding trusted list and restricted list.
- **Forbid Ping** : After it is enabled, all network access will be forbidden.
- **Semi Join** : After it is enabled, network connection probability is 50%.

Step 3 Select the check box of **Enable**.

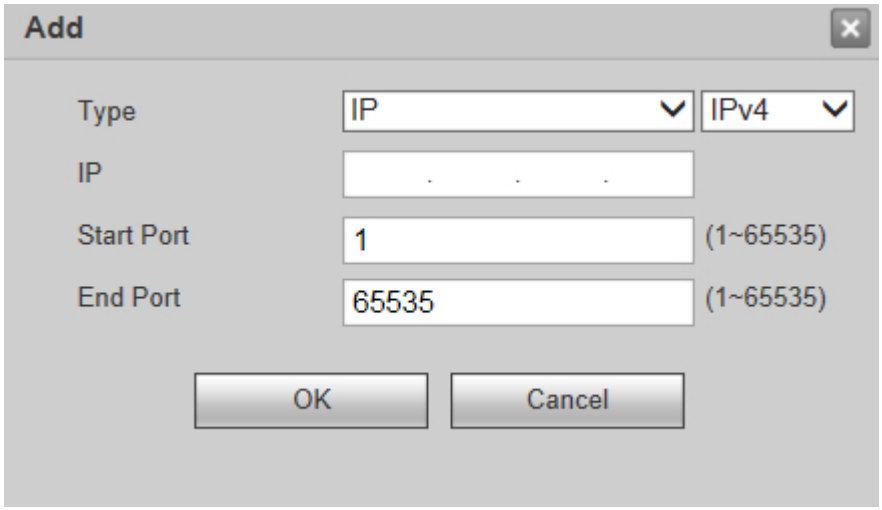
Step 4 (Optional) Select **Mode** , and configure **Allowlist** and **Blocklist**.

- **Allowlist** : Only source hosts with the configured IP/MAC address can access the device port through network connection.
- **Blocklist** Source hosts with the configured IP/MAC address are forbidden from accessing the device port through network connection.

- Only the **Network Access** type supports the allowlist and blocklist configurations.
- The **Allowlist** and **Bloclist** can be configured in the same way. This section uses allowlist configuration as an example.

1. Select **Allowlist** in **Mode**.
2. Click **Add**.

Figure 4-45 Add



3. Select **Type** , and then configure **IP**, **Start Port** and **End Port**.

   Type supports **IP** , **IP Segment** and **MAC Address**. Configure the parameters according to actual situation.

4. Click **OK**.

Step 5 Click **OK**.

Click **Refresh** to clear unsaved information.

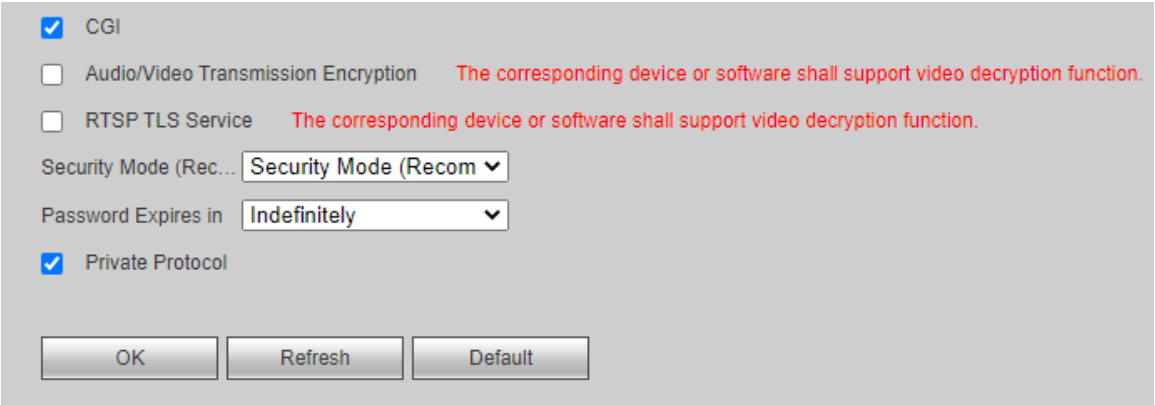
4.5.1.11.2 System Service

You can configure system service to ensure system security.

Procedure

Step 1 Select **Setup** > **System Config** > **Security Management** > **System Service**.

Figure 4-46 System service



Step 2 Select and enable the system service according to actual situation.

Table 4-12 System service parameters description

Parameter	Description
CGI	Common Gateway Page (CGI) is an page between external application programs and web server.

Parameter	Description
Audio/Video Transmission Encryption	Encrypt the audio and video during transmission.
Password Expires in	Configure the valid time of the password, and you can select from the drop-down list or customize the time.
RTSP TLS Service	Encrypt before requesting video service from video server.

Step 3 Click **OK**.

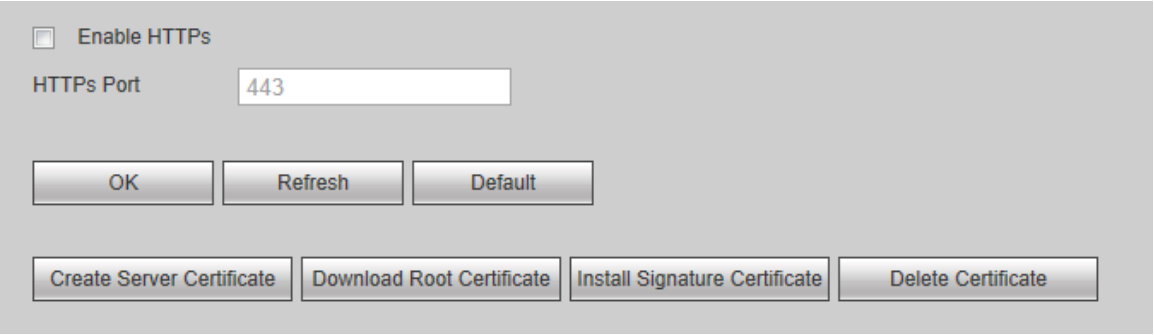
4.5.1.11.3 HTTPS

Through creating server certificate or downloading root certificate on the HTTPS page, you can log in to the PC by HTTPS, to ensure the security of communication data, and guard the users' information and device security with stable technology measure.

Procedure

Step 1 Select **Setup** > **System Config** > **Security Management** > **HTTPS**.

Figure 4-47 HTTPS



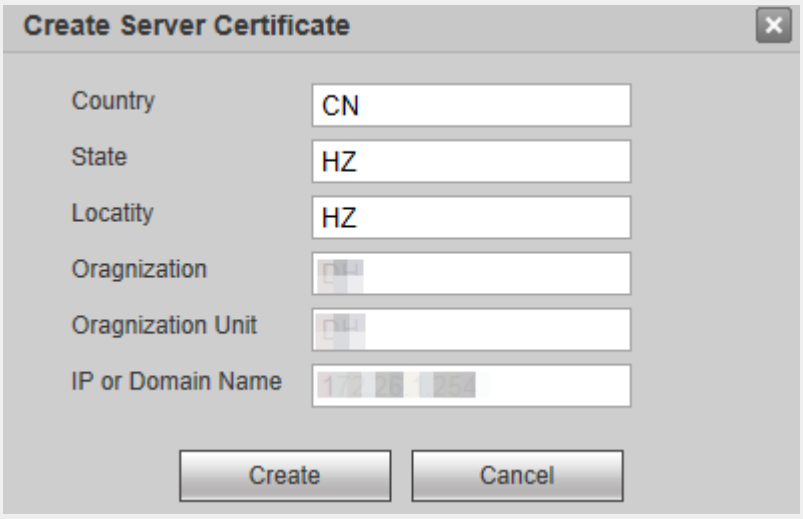
Step 2 Select the **Enable HTTPs** check box.

Step 3 Configure the HTTPs port.

Step 4 Click **OK**.

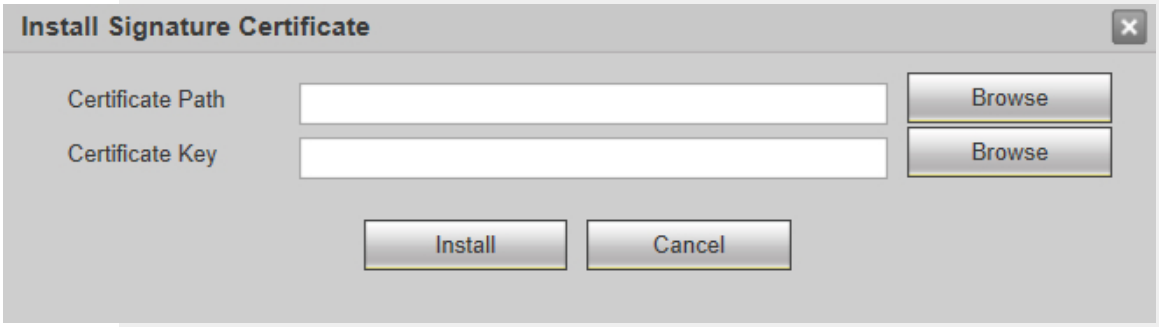
- For the first time to use this function or after changing IP address of the device, you need to create server certificate.

Figure 4-48 Create server certificate



- For first time use HTTPS after changing a computer, you need to click **Download Root Certificate** to download root certificate.
- If a local signature certificate already exists, click **Install Signature Certificate**, and then upload the certificate.

Figure 4-49 Install signature certificate



- HTTPS enable status will take effect after reboot.

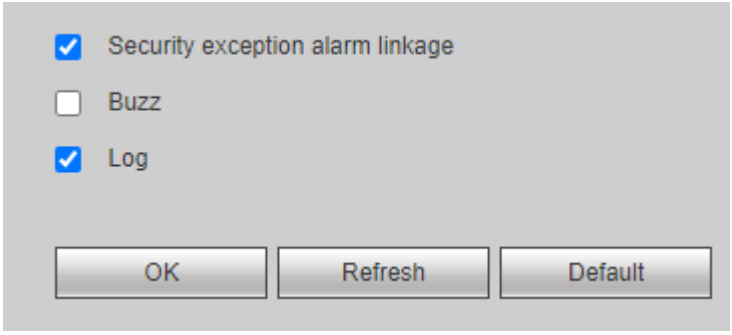
4.5.1.11.4 Security Exception Linkage

You can configure linkage actions when an abnormal event occurs.

Procedure

Step 1 Select **Setup** > **System Config** > **Security Management** > **Security Exception Linkage**.

Figure 4-50 Security exception linkage



Step 2 Select the check box of **Security exception alarm linkage** to enable it.

Step 3 Select alarm linkage mode, including **Buzz** and **Log**.

Both alarm linkage modes can be selected at the same time.

Step 4 Click **OK** to complete.

4.5.1.11.5 Static ARP Bind

You can bind the IP and MAC address of the Device to reduce the risk of ARP (Address Resolution Protocol) deception.

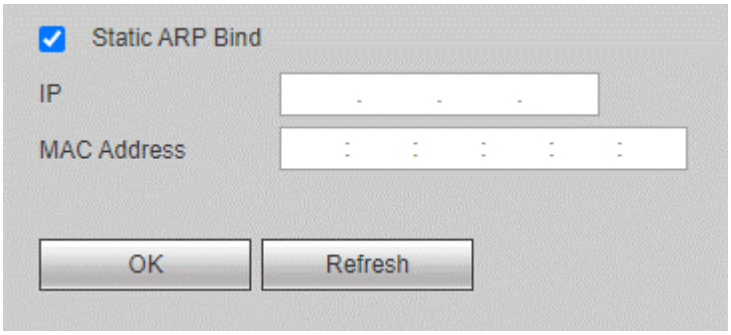
Procedure

Step 1 Select **Setup** > **System Config** > **Security Management** > **Static ARP Bind**.

Step 2 Enable **Static ARP Bind**.

Step 3 Enter the IP and MAC addresses of the Device.

Figure 4-51 Static ARP Bind



4.5.2 Network

4.5.2.1 TCPIP

You can bind the IP and MAC address of the Device to reduce the risk of ARP (Address Resolution Protocol) deception.

4.5.2.2 Port

You can configure the maximum connections and port to access the Device through client (including web client and computer client).

Procedure

Step 1 Select **Setup** > **Network** > **Port** > **Connection Setup**.

Step 2 Configure the maximum connection and port number.

Figure 4-52 Connection setup

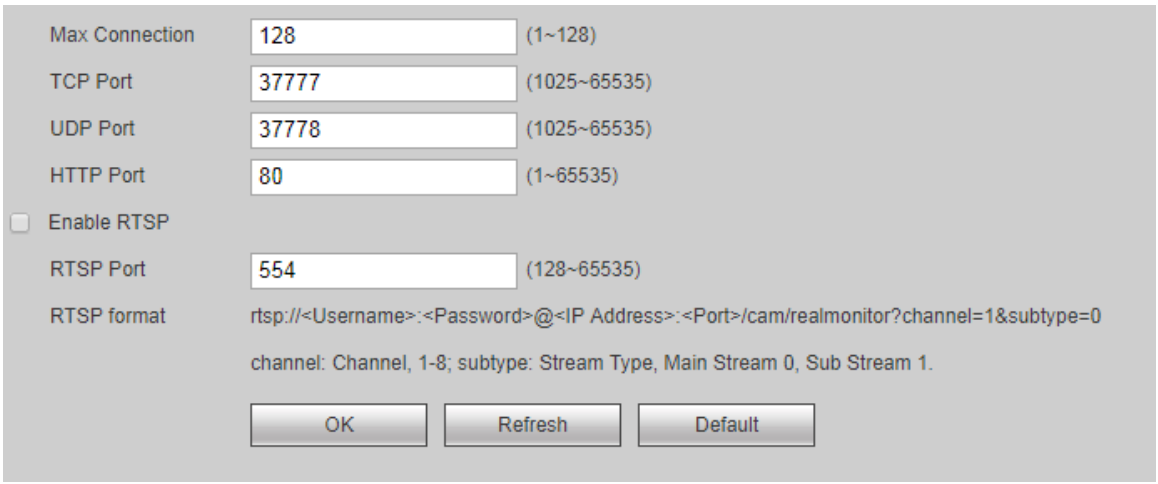


Table 4-13 Port parameters description

Parameter	Description
Max Connection	The allowable maximum number of clients accessing the Device at the same time, such as web, platform, and mobile phone. The default value is 128.

Parameter	Description
TCP Port	TCP service port. The default setting is 37777. You can configure this parameter.
UDP Port	User Datagram Protocol port. The default value setting is 37778. You can enter the value.
HTTP Port	Hyper Text Transfer Protocol port. The default setting is 80. You can enter the value according to actual situation, and in this case, add the modified port number after the address when you log in to the Device on the browser.
RTSP Port	Select **Enable RTSP**. • Real Time Streaming Protocol port. Keep the default value 554 if it is displayed. If you play live view through Apple's QuickTime or VLC, the following format is available. • Username: username, for example admin. • Password: password, for example admin. • IP: The Device IP • Port: It is 554 by default. Keep it as default. • Channel: channel number, starting from one. In case of channel 2, channel=2. • Subtype: stream type. The main stream is zero (subtype=0), the sub stream is one (subtype=1). For example, if you acquire the sub stream of channel two from a certain device, then the URL should be: rtsp://admin:admin@192.168.1.1/cam/realmonitor?channel=2&subtype=1 If certification is not required, you do not need to specify the username and password. Use the following format: rtsp://ip:port/cam/realmonitor?channel=1&subtype=0

Step 3 Click **OK**.

Except **Max Connection**, modifications of other parameters will take effect after restart.

4.5.2.3 Synchronizing IP

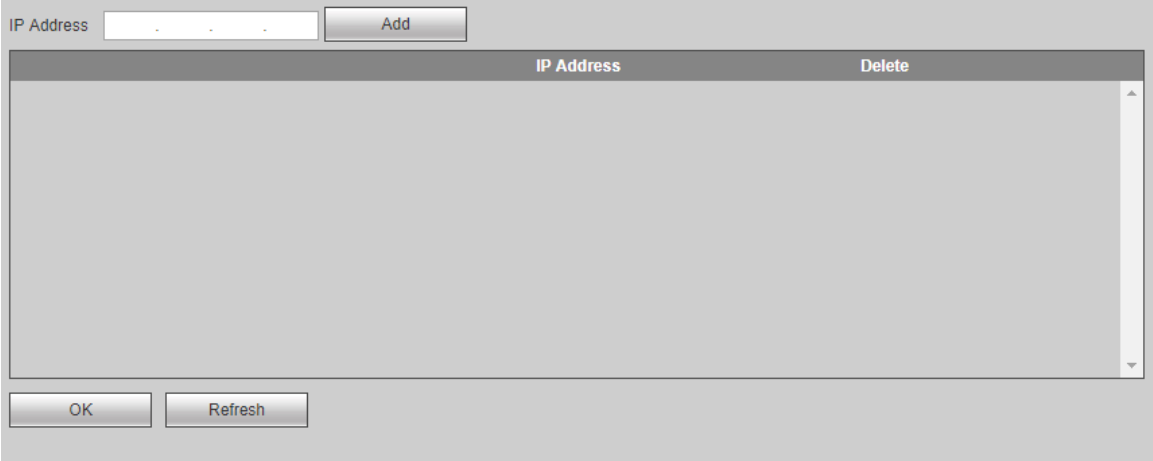
You can add computer IP to synchronize system time, and ensure that the system time is correct.

Procedure

Step 1 Select **Setup** > **Network** > **Sync IP**.

Step 2 Enter the IP address, and then click **Add**

Figure 4-53 Sync IP



Step 3 Click **OK**.

4.5.3 Event Management

Manage abnormal events. Set alarm linkage actions when an abnormal event occurs, and the system executes alarm linkage actions.

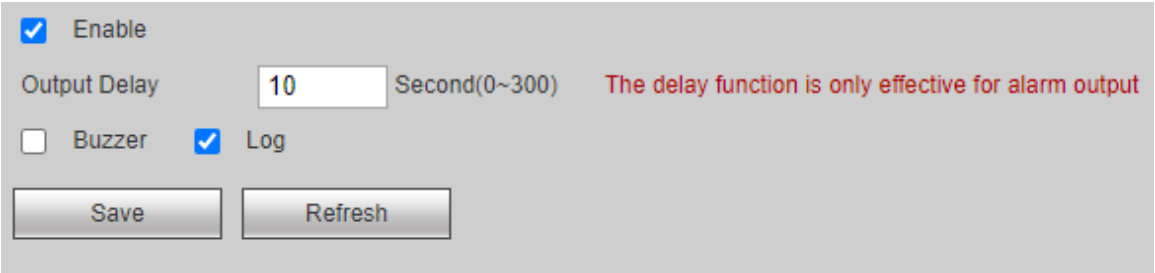
Procedure

Step 1 Select **Setup** > **Event Management** > **Abnormal**.

Figure 4-54 Network offline

Figure 4-55 IP conflict

Figure 4-56 MAC conflict



Step 2 Select **Enable** to enable the alarm function.

Step 3 Configure the parameters.

Table 4-14 Abnormal parameters description

Parameter	Description
Output Delay	After the alarm is stopped, the alarm output is delayed for some time, ranging from 0 seconds through 300 seconds.
Buzzer	The system activates a buzzer alarm when an alarm event occurs.
Log	The log records alarm information when an alarm event occurs.

Step 4 Click **Save**.

4.5.4 Signal Management

You can manage network signal, local signal and signal group.

4.5.4.1 Network Signal

You can add devices in the network, preview and display network signals on the video wall, and also control remote devices.

Prerequisites

The device must have a decoding card, so the network signal can be decoded and displayed on the video wall.

Procedure

Step 1 Select **Setup** > **Signal Management** > **Network Signal**.

Step 2 Add channels.

- Add Manually
  1. Click **Manual Add**.
  2. Configure the parameters.

Figure 4-57 Network signal

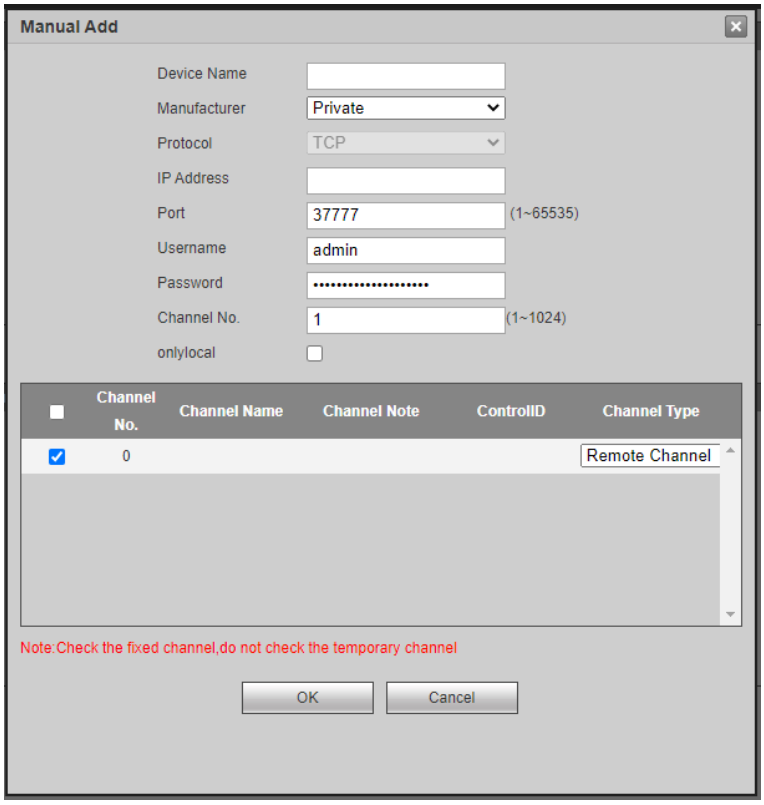


Table 4-15 Parameters description

Parameter	Description
Device Name	Enter the name that identifies the added device.
Manufacturer	Device manufacturer.
Protocol	It is TCP by default.
IP address	Device IP address.
Ports	The port number of the added device. The default setting is 37777.
Username	The username and password to log in to the added device.
Password	
Channel Number	Channel number of the added device.
ControlID	It is used to search for the channel in the keyboard.

3. Click **OK**.

- Search and Add

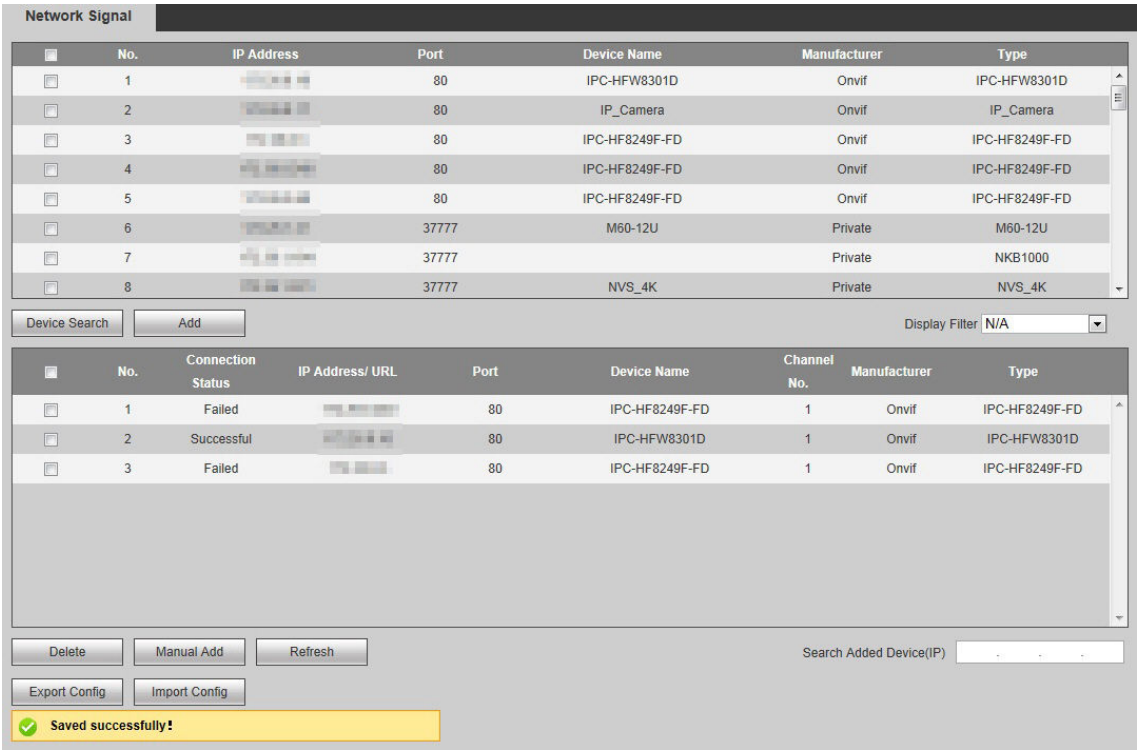
1. Click **Device Search**.

   The system starts to search all of the network signals in the LAN.

Figure 4-58 Searching signals

2. Select the network signal, and then click **Add**.
   - ◇ If the device is under normal use, **Connection Status** will change from **Failed** to **Successful** after several seconds.
   - ◇ If the **Connection Status** remains **Failed**, the device might not be started, or a blocklist has been configured, or it is not included in an allowlist.

Figure 4-59 Adding signals



Related Operations

- Click **Import Config** to import the preset devices information into the system.
- Click **Export Config** to export configuration file and save it in local device for backup.
- Select a network signal from the added signal list, and click **Delete** to delete the network signal.
- Click each attribute field, and will appear on the right of the field, meaning the network signal is arranged in descending order. Click it again, and the icon turns into , meaning the network signal is arranged in ascending order.

4.5.4.2 Local Signal

You can configure local signal, including input title, input channel setup and encode setup.

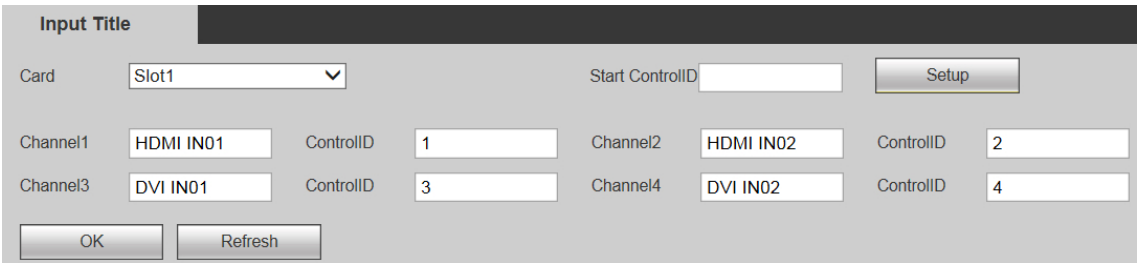
4.5.4.2.1 Input Title

You can configure the input title and control ID of every channel of every function card. The control ID can be bound with the source (such as keyboard) to display the source on a video wall.

Procedure

Step 1 Select **Setup** > **Signal Management** > **Local Signal** > **Input Title**.

Figure 4-60 Input title



Step 2 Select the card, configure channel name and control ID for each channel.

Enter **Start Control ID** and click **Setup**, so control ID of channels will start from the **Start Control ID**.

Step 3 Click **OK**.

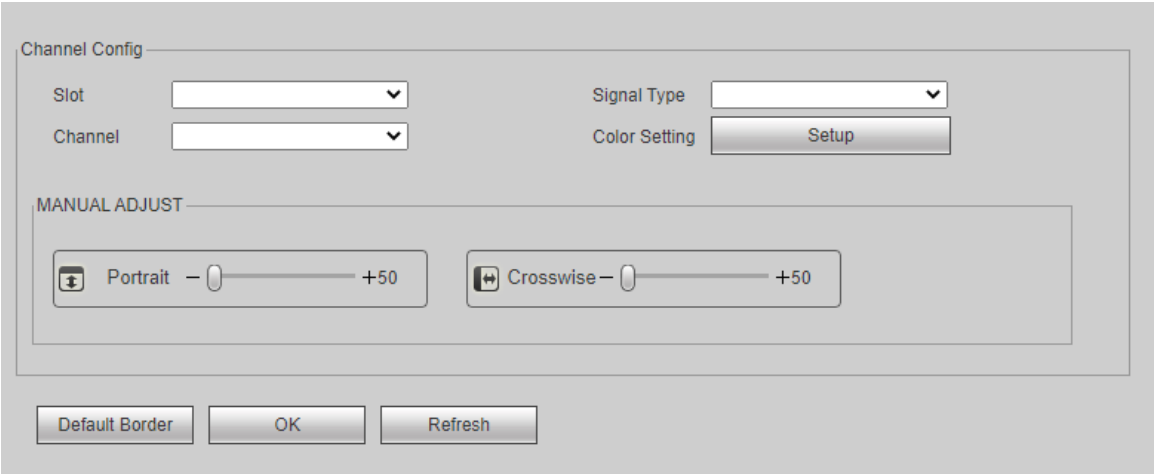
4.5.4.2.2 Input Channel Setup

You can configure the slot, signal type and the color of the channel.

Procedure

Step 1 Select **Setup** > **Signal Management** > **Local Signal** > **Input Channel Setup**.

Figure 4-61 Input channel setup



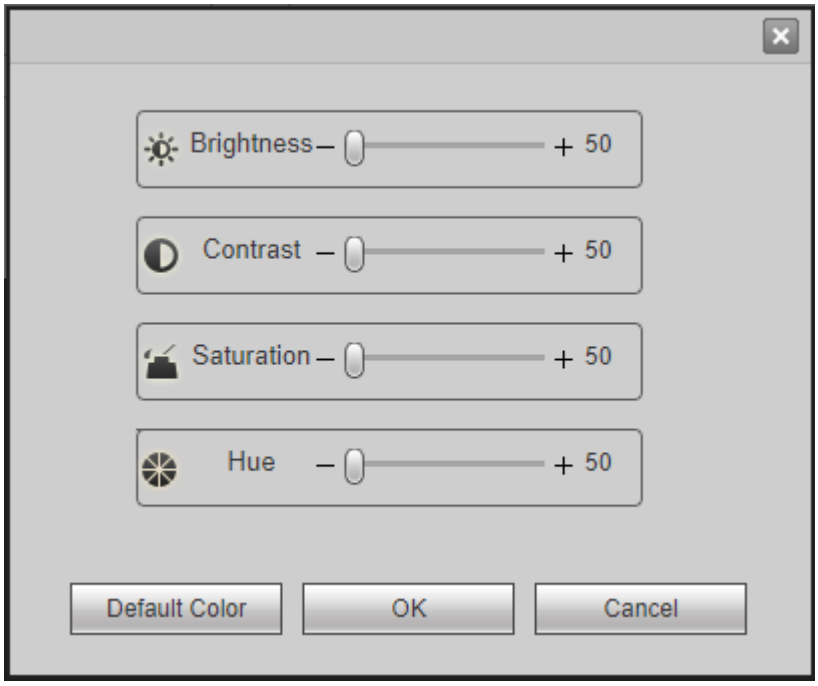
Step 2 Configure the parameters.

Table 4-16 Input channel setup parameters description

Parameter	Description
Slot	Select the slot.
Channel	Select the channel.

Parameter	Description
Signal Type	Select signal source type.
Color Setting	Click **Setup** to set image brightness, contrast, saturation and hue. Range is 0–100. Drag the slider to set values. Click **Default Color**, so the system will restore default values.
Manual Adjust	• Portrait: Manually tune image displaying position in portrait direction, ranging from 0 to 4095. • Crosswise: Manually tune image displaying position crosswise, ranging from 0 to 4095.

Figure 4-62 Color setting



Step 3 Click **OK**.

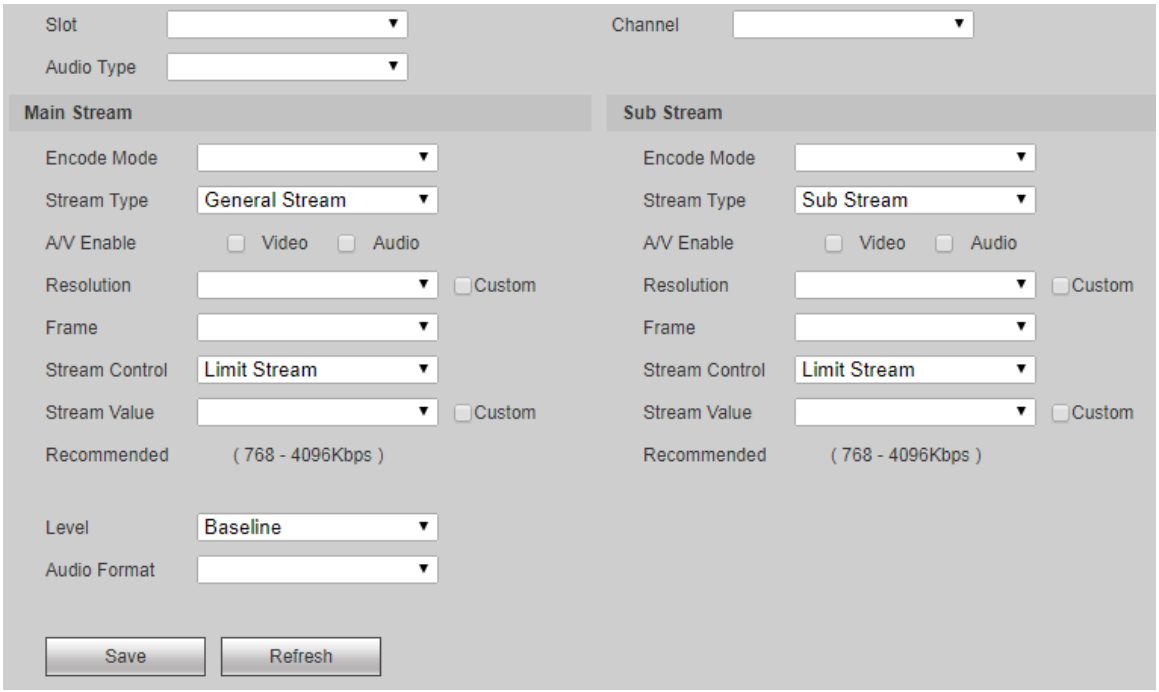
4.5.4.2.3 Encode Setup

You can configure the encode parameters of local audio and video signals, including encode mode, stream type and resolution.

Procedure

Step 1 Select **Setup** > **Signal Management** > **Local Signal** > **Encode Setup**.

Figure 4-63 Encode setup



Step 2 Configure the parameters.

Table 4-17 Encode setup parameters description

Parameter	Description
Slot	Select the slot and channel.
Channel	
Encode Mode	H.264: Main Profile encode mode.
Stream Type	Main stream includes two kinds: general stream and dynamic stream. And only one sub stream is supported. Select different streams for different recording events.
A/V Enable	Determine whether audio or video is captured during recording. The main stream video is enabled by default.
Resolution	It includes a variety of resolution types. Every type corresponds to different recommended stream value. Select **Custom**, and you can customize the resolution.
Frame	Configure video frame per second. The higher frame rate is, the more natural and smooth the video will be.
Stream Control	Include limit stream and VBR. Picture quality can be set in VBR mode only.

Parameter	Description
Stream Value	• In VBR mode, this value is the upper limit of stream. • In limit stream mode, this value is a fixed value. Select **Custom** to enter stream value manually.
Recommended	According to the configured resolution and frame, the system recommends a reasonable stream value range to you.
Level	**Baseline** and **Main** are available.
Audio Format	Audio encoding format includes G.711A, PCM, and G.711Mu. The default format is G.711A. Audio format here is effective to audio stream.

Step 3 Click **OK**.

4.5.4.2.4 OSD Custom

You can customize OSD effect of the local signal to display the time and channel title on the video wall.

Procedure

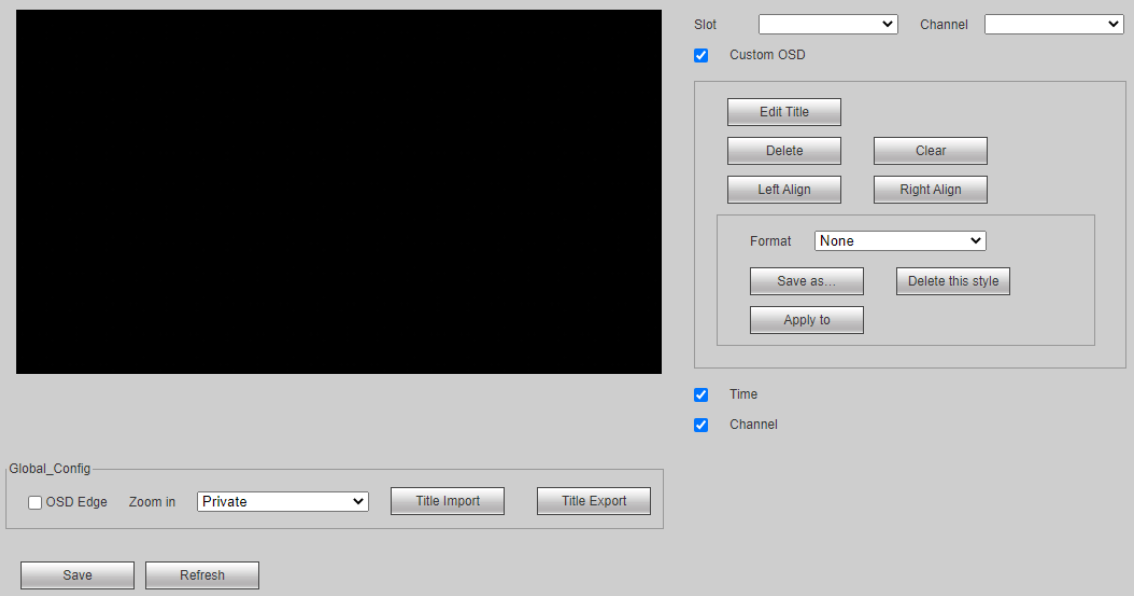
Step 1 Select **Setup** > **Signal Management** > **Local Signal** > **OSD Custom**.

Step 2 Select a slot and a channel.

Step 3 Select **Custom OSD**, and then edit the OSD.

- Click **Edit Title**, and then enter the title content to be displayed. Up to six titles can be displayed at the same time.
- In the preview box, select and hold the title to drag it to the desired position.
- In the preview box, select the title (the title color changes to red) and click **Delete** to delete the title.
- Click **Clear** to clear all titles except the time title and channel title.
- In the preview box, select a title and click **Left Align** or **Right Align** to align all titles to the left or right according to the selected title. Except for the time title and channel title.
- Click **Save as** and enter the name to save the current display as a format.
- Select a format from the **Format** list to apply this format. Click **Delete this style** to delete the selected format.
- Only custom formats can be deleted.
- Click **Apply to** to apply the current format to other slots.

Figure 4-64 OSD custom



Step 4 Select **Time**, and then the time title will be displayed on the vide wall. You can select and hold the time title to drag it to the desired position.

Step 5 Select **Channel**, and the channel title will be displayed on the vide wall. You can select and hold the channel title to drag it to the desired position.

Step 6 Configure the **Global Config**.

Figure 4-65 Global Configuration

Table 4-18 Global configuration description

Parameter	Description
OSD Edge	Select **OSD Edge**, and then there is a black edge around the font.
Zoom in	**Private** and **Standard** are available. It is **Private** by default. **Standard** mode zooms in more than that of private mode.
Title Import	Import a configuration table to configure OSD in batches.
Title Export	Export a configuration table, and then enter all channel titles.

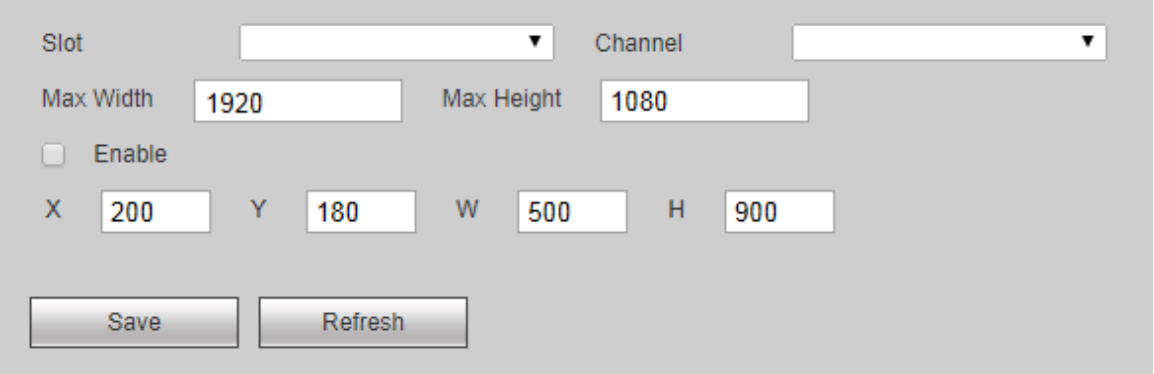
4.5.4.2.5 Capture Custom

The captured image can be cut according to designated size, and displayed on the output screen according to the configured coordinate.

Procedure

Step 1 Select **Setup** > **Signal Management** > **Local Signal** > **Capture Custom**.

Figure 4-66 Capture custom



Step 2 Select the slot and channel.

Step 3 Enter the maximum width and height.

For example, the resolution of the captured video is 1080p, and the cut video is 500×900. The maximum width and height are 1920 and 1080 respectively. During encoding, the system automatically stretches the 500×900 video to encode at 1080p resolution.

Step 4 Select **Enable** to enable the capture custom function.

Step 5 Configure the coordinate, width and height.

X/Y refers to starting pixel coordinate, and W/H refers to width and height. The unit is pixel.

Step 6 Click **Save**.

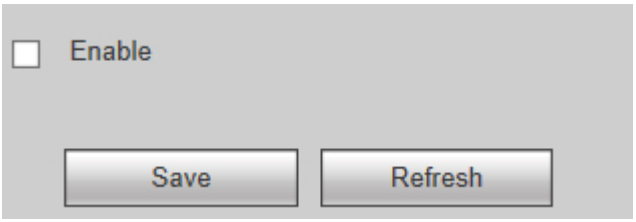
4.5.4.2.6 Ultra-high-resolution Data

The captured channels can be bound into one group. Channels in the group can be spliced, and then multiple videos can be displayed synchronously.

Procedure

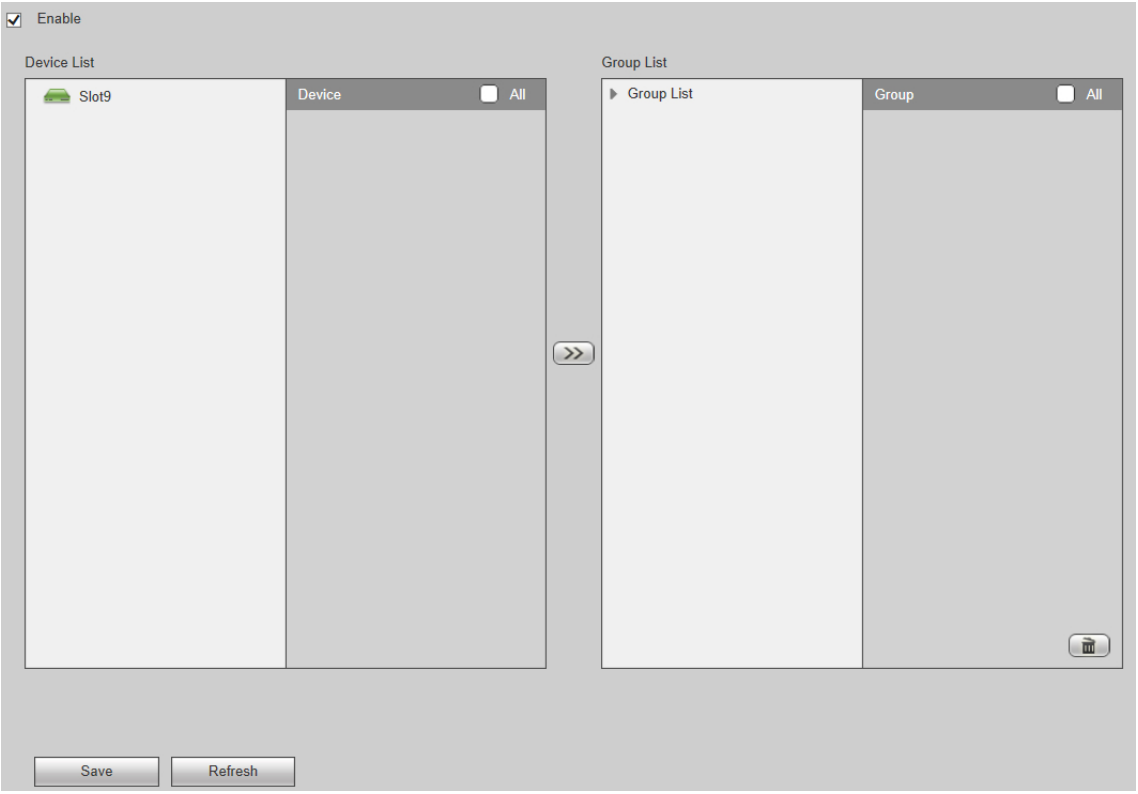
Step 1 Select **Setup** > **Signal Management** > **Local Signal** > **Ultra-high-resolution data**.

Figure 4-67 Ultra-high-resolution data



Step 2 Select **Enable** , and then click **Save**.

Figure 4-68 Ultra-high-resolution



Step 3 Create a capture and splicing group.

Step 4 Click **Save**.

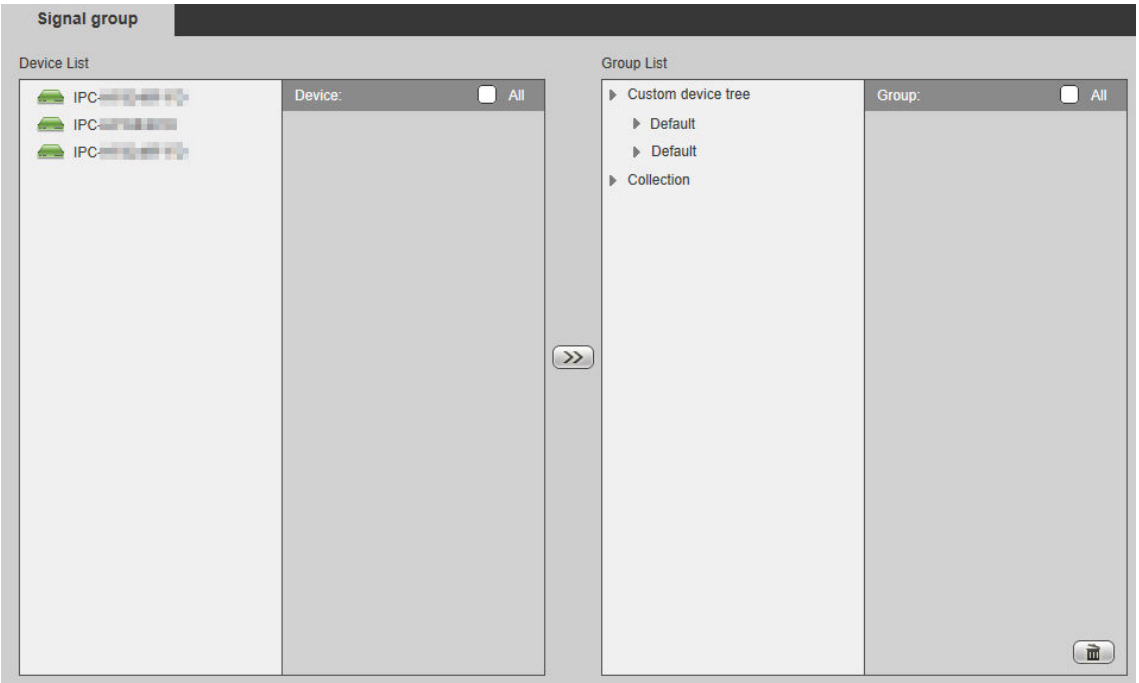
4.5.4.3 Signal Group

You can customize a signal groups and drag it to the window to display in sequence all of the signals in this group.

Procedure

Step 1 Select **Setup** > **Signal Management** > **Signal Group**.

Figure 4-69 Signal group



Step 2 Create a group.

1. Hover over the **Custom device tree** or **Collection** or in **Group list**, and then click +.
2. Enter the group name, and then click **OK**.
3. Hover over the group name, and click + to create a sub-group under this group.

Sub-group cannot be created under **Collection** group.

Step 3 Select signals.

1. Select a device from the **Device List**.
2. Select one signal or multiple signals.

Step 4 Select a group from group list.

Step 5 Click >>.

4.5.5 Display Management

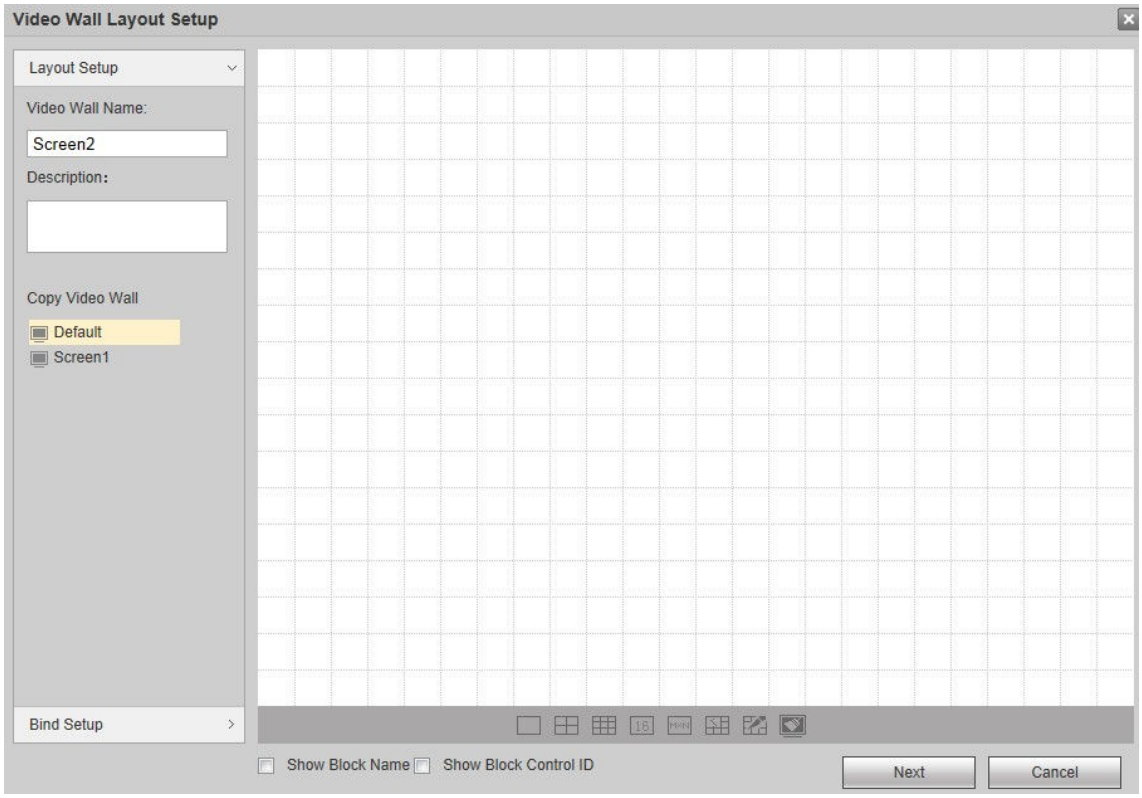
You can configure video wall, manage screen, configure output display and output name, and configure structured information.

4.5.5.1 Adding Video Wall

Procedure

Step 1 Click **Add Video Wall**.

Figure 4-70 Video wall layout setup



Step 2 Configure the layout.

1. Customize **Video Wall Name** and **Description**.
2. Click icons at the bottom of the page, to add single screen and split screen quickly.

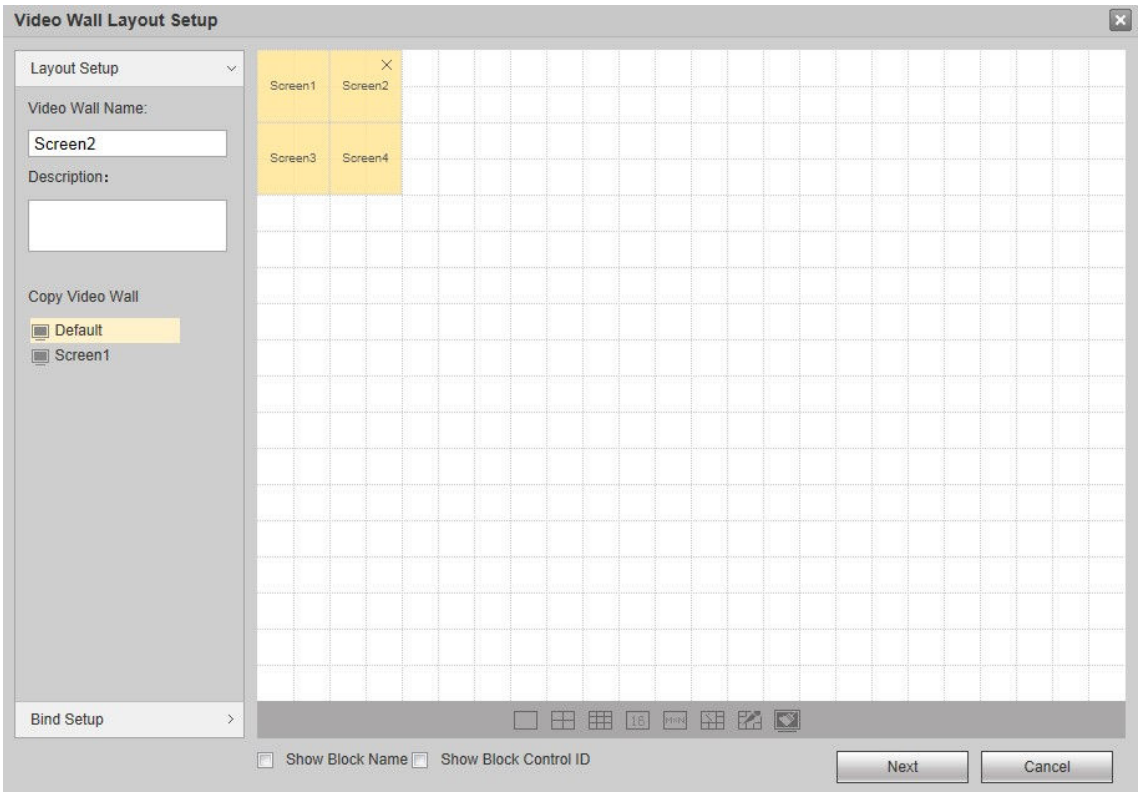
Figure 4-71 Add screens

Table 4-19 Parameters description

No.	Name	Description
1	Single Screen	Click to add single screen.
2	4-split Screen	Click to add a 4-split screen.
3	9-split Screen	Click to add a 9-split screen.
4	16-split Screen	Click to add a 16-split screen.
5	Custom	Click this icon, enter row and column number in the pop-up **User Custom** page, and you can add a custom screen.

No.	Name	Description
6	Splicing	Select separate screens, and click this icon to splice them. ● Splicing screen cannot be selected. ● Single screens shall be connected horizontally or vertically.
7	Cancel Splicing	Select splicing screens, and click this icon to cancel their splicing.
8	Clear Screen	Clear all screens on the video wall.

Figure 4-72 Add screen



You can select existing video wall from **Copy Video Wall** zone on the left of the page, and then layout of video wall is displayed on the right of the page. You can modify the layout directly.

Step 3 (Optional) Select **Show Block Name** or **Show Block Control ID**, and every splicing screen will show a block name or a block ID.

- **Show Block Name** and **Show Block Control ID** cannot be selected at the same time.
- Double-click the block name to modify it.

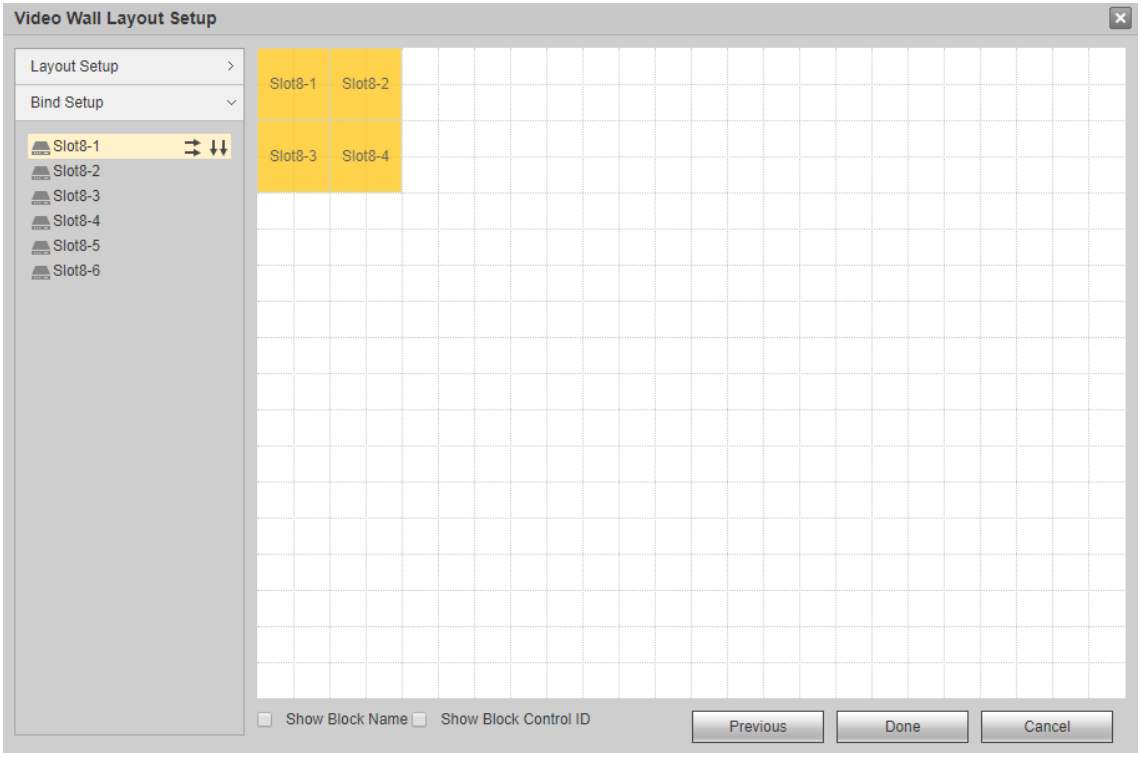
Step 4 Click **Bind Setup** or **Next**.

Step 5 Select one slot, drag the slot to the screen, and bind the slot channel with the screen.

- All of the screens on the video wall must be bound with channels. Otherwise, when you click **Done** , the system will prompt **There is sub screen without bound decoding channel in screen!**"

- A slot cannot be bound repeatedly. In case of error, drag a correct slot channel to the screen, to cover it directly.
- Click to automatically bind the slot with single screen horizontally.
- Click to automatically bind the slot with single screen vertically.

Figure 4-73 Slot binding



Step 6 Double-click a new video wall block and configure the parameters.

Figure 4-74 Block setup

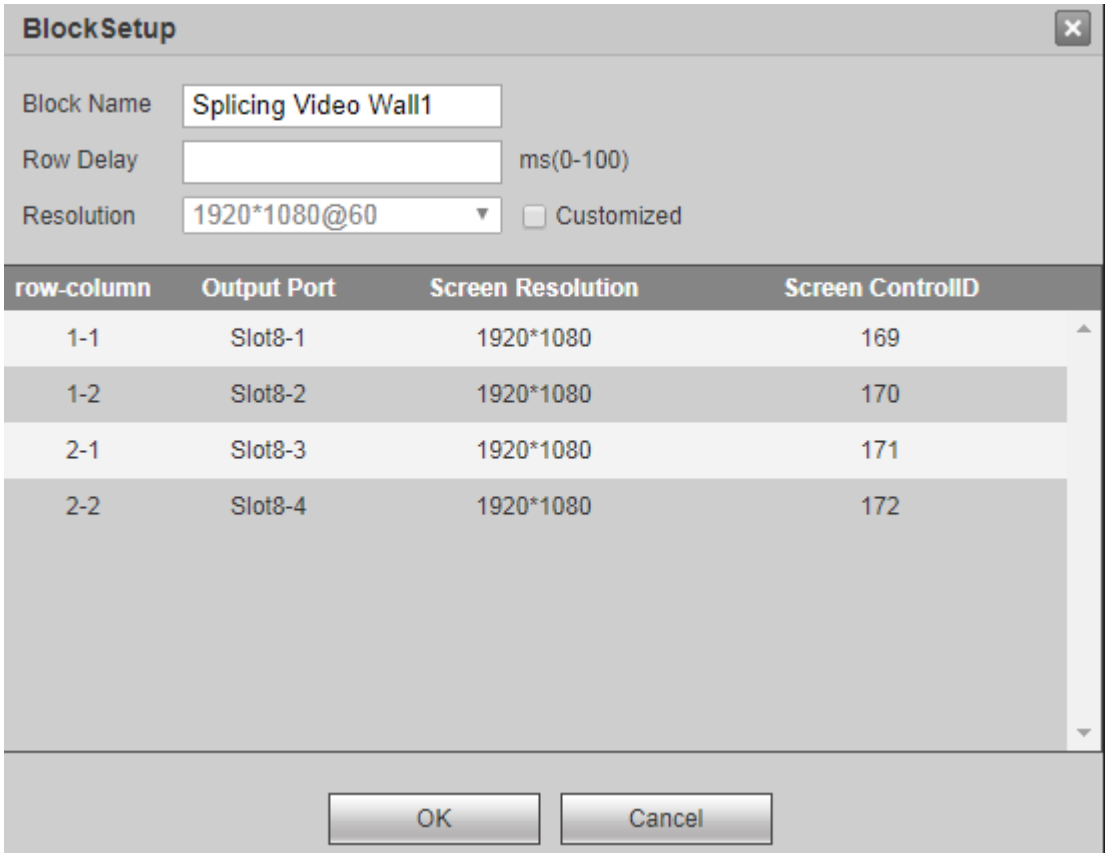


Table 4-20 Block setup parameters description

Parameter	Description
Name	Configure block name.
Row Delay	Configure row delay ranging from 0ms to 100ms.
Resolution	Select **Customized** to configure resolution of output screen corresponding to each slot.

Step 7 Click **OK**.

Step 8 Click **Done**.

New video wall is **ON** by default. You can turn on or off the video wall by configuring the video wall status to be **ON** or **OFF**.

4.5.5.2 Screen Management

You can configure screen parameters to turn on and turn off the screen.

4.5.5.2.1 Screen Setup

You can configure manufacturer, serial port and serial port address for every output screen, in order to realize communications between screen and Device. The serial port address must be the same with the DIP address of connected screen.

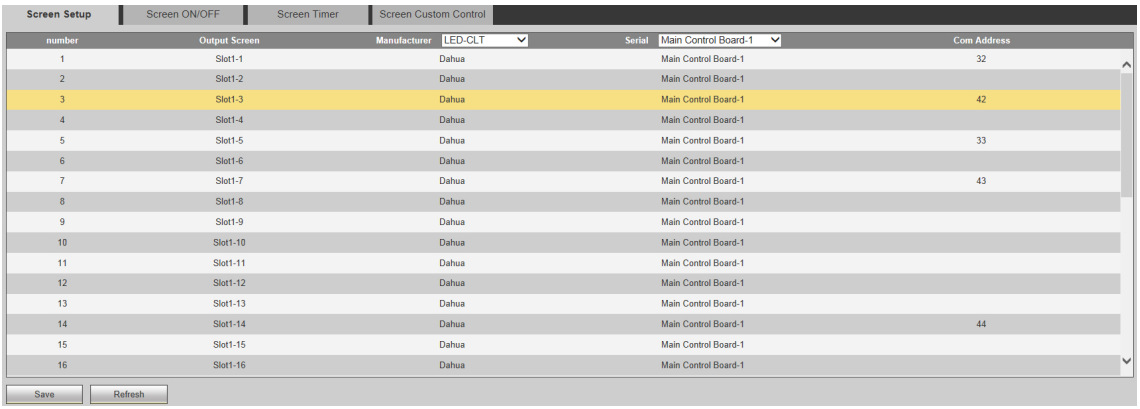
Procedure

Step 1 Select **Setup** > **Display Management** > **Screen Management** > **Screen Setup**.

Step 2 Configure the screen parameters.

- The information configured must be the same with the actual information of the screen.
- Click drop-down list at the top to configure manufacturer and serial port in batches..

Figure 4-75 Screen setup



Step 3 Click **Save**.

4.5.5.2.2 Screen ON and OFF

According to preset interval and time, the Device sends ON/OFF commands to all screens continuously, and ensures that each screen receives commands and turns ON/OFF.

Procedure

Step 1 Select **Setup** > **Display Management** > **Screen Management** > **Screen ON/OFF**.

Step 2 Configure the parameters.

Figure 4-76 Screen on and off

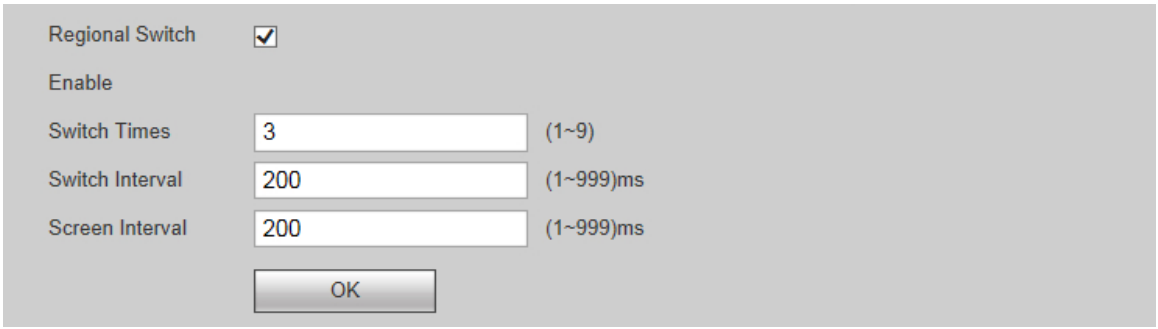


Table 4-21 Parameter description

Parameter	Description
Regional Switch Enable	Select the checkbox to enable regional switch function.
Switch Times	The times of sending ON/OFF command.
Switch Interval	The interval of sending ON/OFF command.
Screen Interval	The interval for every screen to receive ON/OFF command.

Step 3 Click **OK**.

4.5.5.2.3 Screen Timer

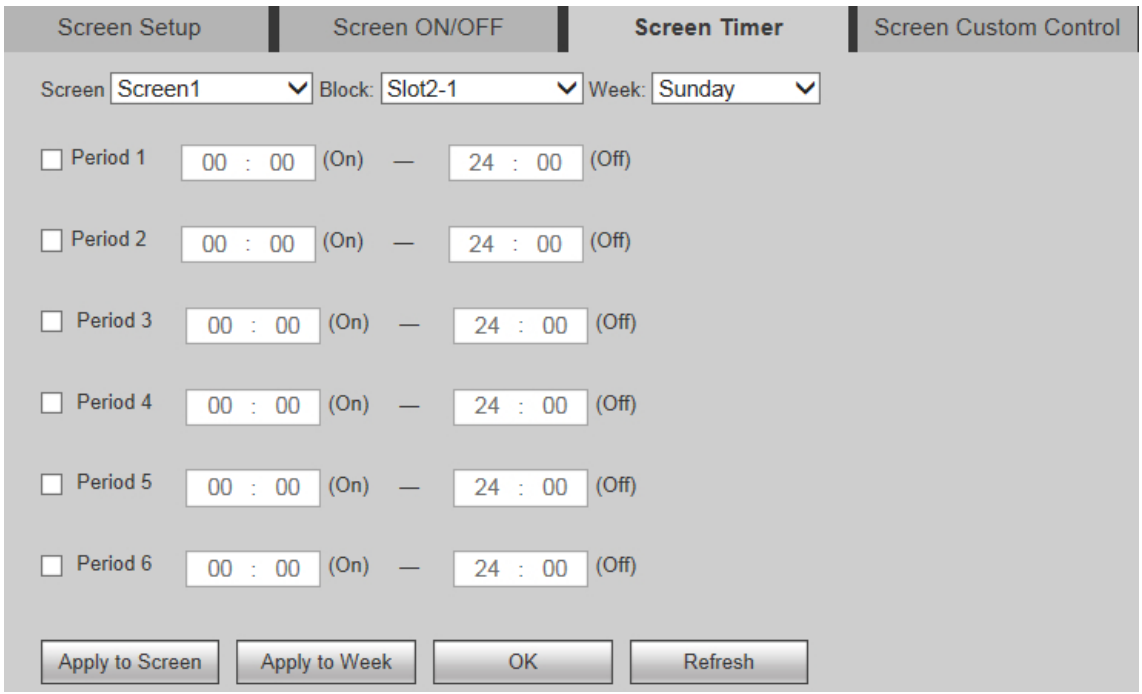
Configure fixed ON/OFF time for every screen. Within the configured period, every screen will be turned ON/OFF at the fixed time.

Procedure

Step 1 Select **Setup** > **Display Management** > **Screen Management** > **Screen Timer**.

Step 2 Select **Screen** , **Block** and **Week**.

Figure 4-77 Screen timer



Step 3 Select period and configure ON/OFF time.

Step 4 Click **OK**.

Related Operations

- Click **Apply to Screen**, and select another slot in the pop-up page to apply this configuration to the slot.
- Click **Apply to Week**, and select another week in the pop-up page to apply this configuration to the week.

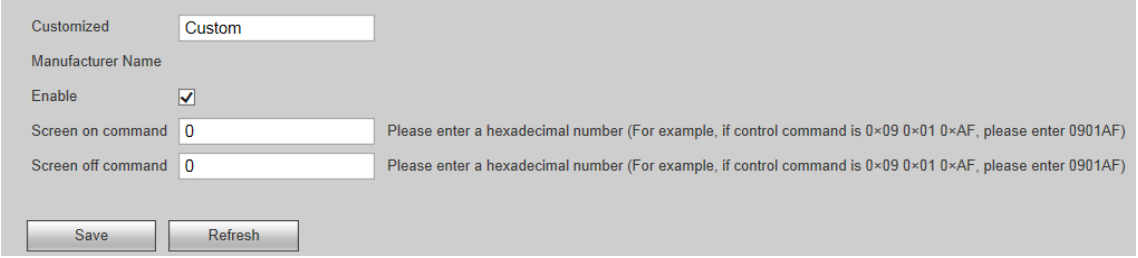
4.5.5.2.4 Screen Custom Control

You can customize screen on and off commands.

Procedure

Step 1 Select **Setup** > **Display Management** > **Screen Management** > **Screen Custom Control**.

Figure 4-78 Screen custom control



Step 2 Enter the **Customized Manufacturer Name**.

Step 3 Select **Enable**.

Step 4 Configure **Screen on command** and **Screen off command**.

Configure a hexadecimal number.

Step 5 Click **Save**.

4.5.5.3 Display Setup Configuration

You can configure the display parameters, and enable the main/sub stream auto switch, and window prompt information.

4.5.5.3.1 Display Setup

You can configure the resolution, video mode, hue, brightness and other parameters of the display.

Procedure

Step 1 Select **Setup** > **Display Management** > **Display Setup** > **Display Setup**.

Step 2 Configure the parameters.

Figure 4-79 Display setup

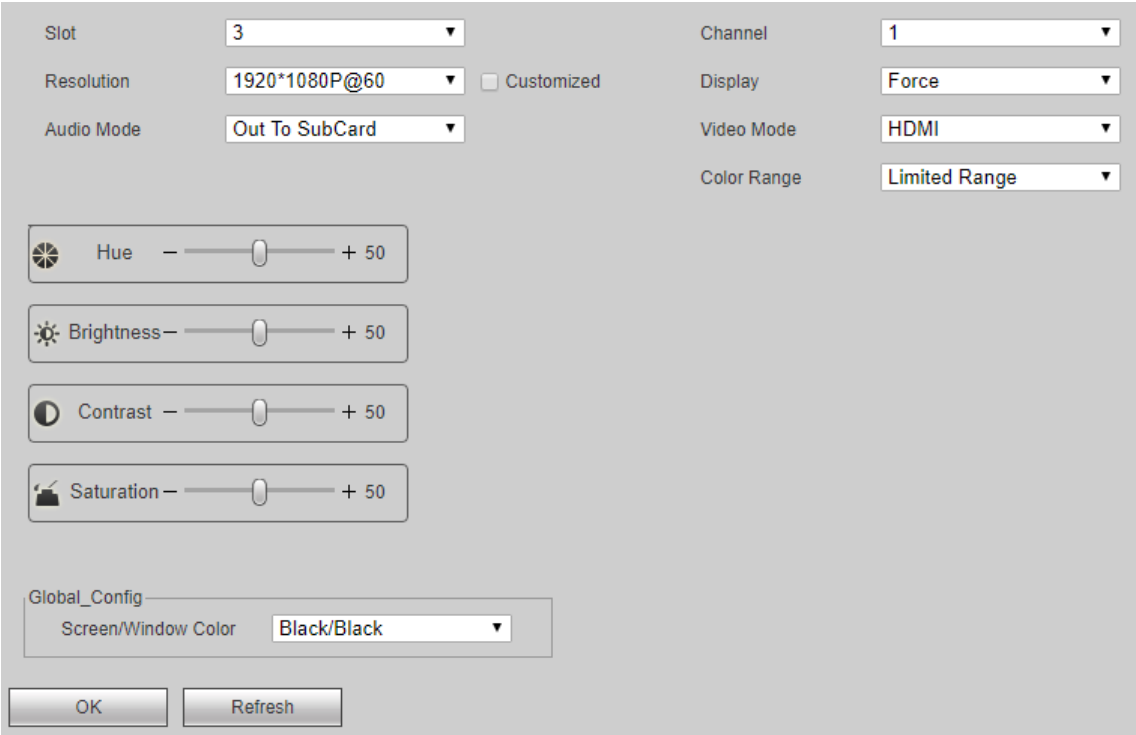


Table 4-22 Parameter description

Parameter	Description
Slot	Select the slot and channel of display.
Channel	
Resolution	Configure the resolution of display. Customize the resolution after you select **Customized**.
Display	Configure output mode of the display, including **Force** and **Hot Swap**. ● Hot swap: Images are output only when output port of the device is connected with the display. ● Force: Images are output even when output port of the device is not connected with the display.
Audio Mode	Configure audio output mode, including **Out To SubCard** , **Out To MainCard**, and **Both**. ● Out To SubCard: Decoding sound is output from audio output port of sub-card. ● Out To MainCard: Decoding sound is output from audio output port of main card. ● Both: Decoding sound is output from audio output port of sub-card and main card at the same time.
Video Mode	Video output mode includes DVI and HDMI.
Hue	Drag the slider to adjust the image hue and saturation.

Parameter	Description
Brightness	Drag the slider to adjust the image brightness through linear adjustment. The bigger the value is, the brighter the image will become. And vice versa. However, the image is likely to become dim if the value is too big.
Contrast	Drag the slider to adjust the image contrast. The bigger the value is, the more obvious the contrast between the light area and dark area will become. And vice versa. However, if the value is too big, the dark area is likely to become darker and the light area will be over exposed. If the value is too small, the image is likely to become dim.
Saturation	Drag the slider to adjust the color shades. The bigger the value is, the heavier the color will become. And vice versa. This value does not affect the overall brightness of image.
Screen/Window Color	Configure screen and window color, including **Black/Black** and **Blue/Black**.
Color Range	You can select **Limited Range** or **Full Range** according to your needs.

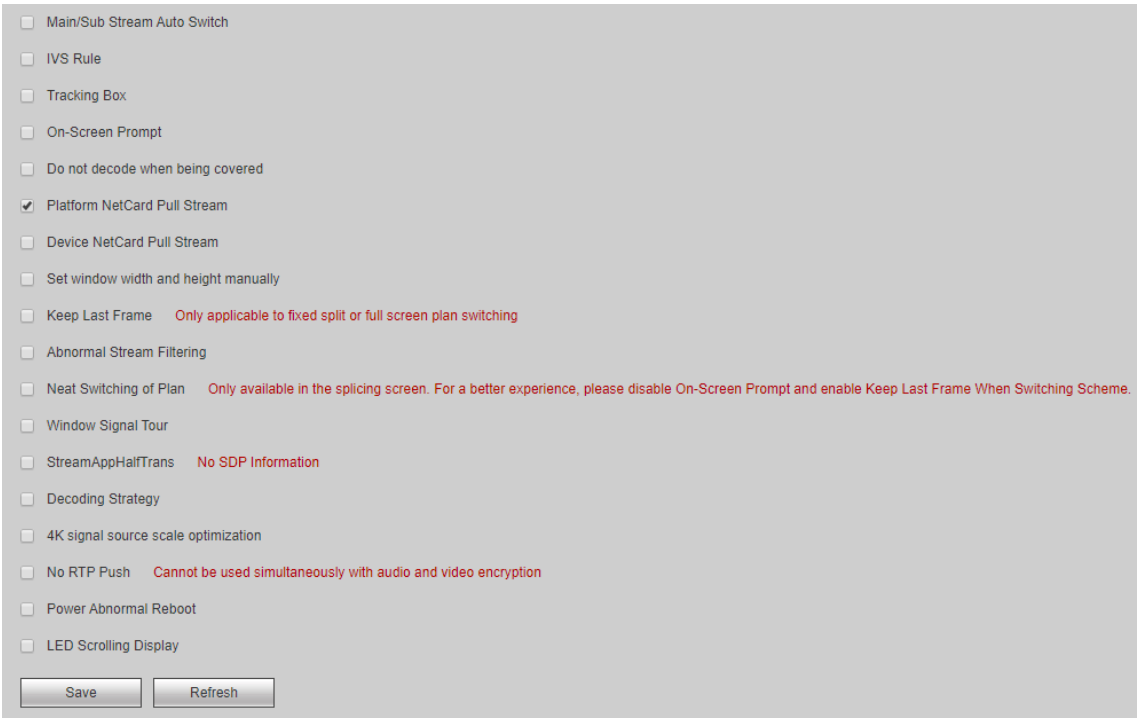
Step 3 Click **OK**.

4.5.5.3.2 Global Setup

Procedure

Step 1 Select **Setup** > **Display Management** > **Display Setup** > **Global Setup**.

Figure 4-80 Global setup



Step 2 Select the checkboxes to enable corresponding functions according to your needs.

Table 4-23 Global setup parameters description

Parameter	Description
Main/Sub Stream Auto Switch	If main stream is displayed on the window, when the resolution is lower than D1, main stream will automatically switch to sub stream.
IVS Rule	After the camera enables IVS rule function, rule line turns red and flickers if a moving object enters the alarm zone of blue rule line.
Tracking Box	After the camera enables tracking box function, the system selects and tracks moving objects with a green box on the output page.
On-Screen Prompt	Prompt information will be displayed on the window.
Do not decode when being covered	The covered window will pause decoding.
Platform NetCard Pull Stream	Enable platform netcard pull stream function.
Device NetCard Pull Stream	Enable device netcard pull stream function.
Set window width and height manually	Double click window on the video wall to adjust window coordinate and size.
Keep Last Frame	Keep the last frame when switching schemes to avoid black screen.
Abnormal Stream Filtering	The system checks and filters abnormal stream, in order to prevent green screen.
Neat Switching of Plan	Plan stream will be switched synchronously and neatly, to enhance visual effect.
Window Signal Tour	Multiple signals can be toured and displayed on a window.
StreamAppHalf Trans	The stream media library does not encapsulate streams but pass streams to devices for decoding.
Decoding Strategy	Select the check box. Fluency adjustment zone is displayed. You can drag the slider to adjust window fluency. You can only adjust fluency of network signal.
4K signal source scale optimization	Capture and decode 4K signals for image output, which optimizes display performance.
No RTP Push	After you enable this function, streams without RTP head can be decoded and displayed on the wall. This function cannot be used together with audio/video encryption.
Power Abnormal Reboot	After you enable this function, the device automatically restarts when MCU detects power exceptions.
LED Scrolling Display	After you enable this function, the device will enable zoom and needs to restart.

Step 3 Click **Save**.

4.5.5.4 Output Name

You can configure output name and control ID of each channel. Control ID can correspond to the binding source, so the binding source can be displayed on the video wall.

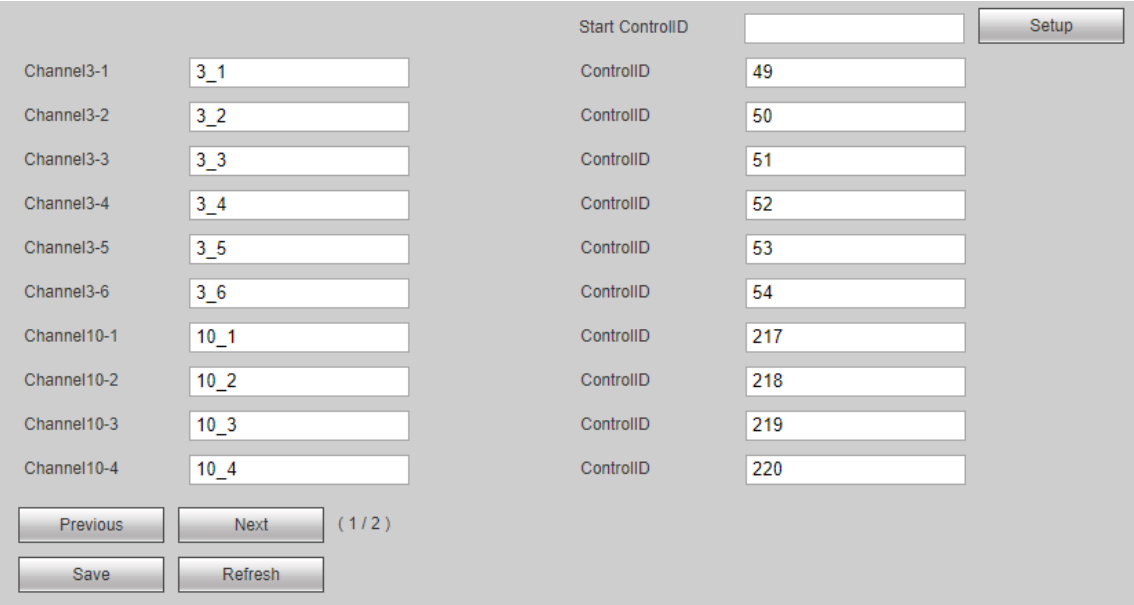
Background Information

- Output name is only used to distinguish channels.
- Select output screens through control ID, and you can configure video wall display of keyboard or other devices.

Procedure

Step 1 Select **Setup** > **Display Management** > **Output Name**.

Figure 4-81 Output name



Step 2 Configure output name and control ID for each channel.

Enter **Start Control ID** and click **Setup**, so control ID of channels will start from the **Start Control ID**.

Step 3 Click **Save**.

4.5.5.5 Structured Information

Background Information

Receive structured data info about face, motor vehicle, non-motor vehicle and crowd density, and then display the data on the video wall.

- Face structure: After camera enables target recognition function and video matrix platform enables face structure function, the camera collects video stream and detects face info in the stream. The face info can be displayed on the screen through video matrix platform.
- Human, motor vehicle and non-motor vehicle structure: After camera enables human, motor vehicle and non-motor vehicle recognition function and video matrix platform enables human, motor vehicle and non-motor vehicle structure function, the camera collects video stream and

detects human, motor vehicle and non-motor vehicle info in the stream. The human, motor vehicle and non-motor vehicle info can be displayed on the screen through video matrix platform.

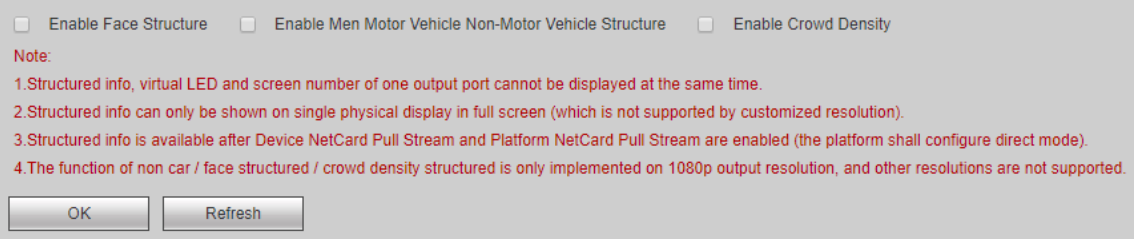
- Crowd density: After camera enables crowd density recognition function and video matrix platform enables crowd density structure function, the camera collects video stream and detects crowd density info in the stream. The video stream can be displayed on the screen through video matrix platform. Crowd density is indicated with blue spots. The denser blue spots become, the higher crowd density will be.

Procedure

Step 1 Select **Setup** > **Display Management** > **Structured Info**.

Step 2 Select the structure information according to actual needs

Figure 4-82 Structured info



Step 3 Click **OK**.

4.6 Information

4.6.1 Viewing Device Information

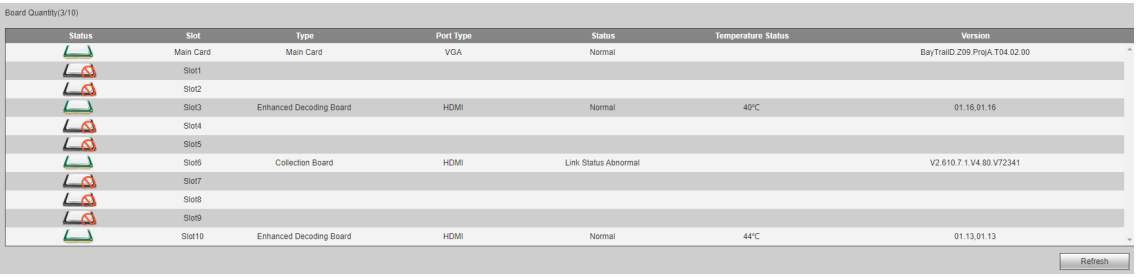
You can view the device information, including card information, decode information, device information, system status, system log and online users.

4.6.1.1 Card Information

Select **Info** > **Device Info** > **Card Info**, and you can view the card status, type, port type and temperature status of the Device.

- : This slot has a card.
- : This slot does not have a card.

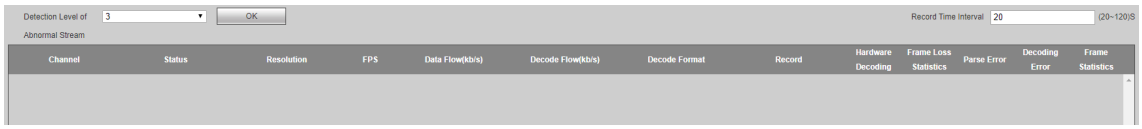
Figure 4-83 Card info



4.6.1.2 Decode Information

Select **Info** > **Device Info** > **Decode Info**, and then you can view the decoding status, resolution, FPS, data flow and decoding flow of the decoding channel.

Figure 4-84 Decode info



4.6.1.3 Device Information

4.6.1.3.1 Getting the Device Information

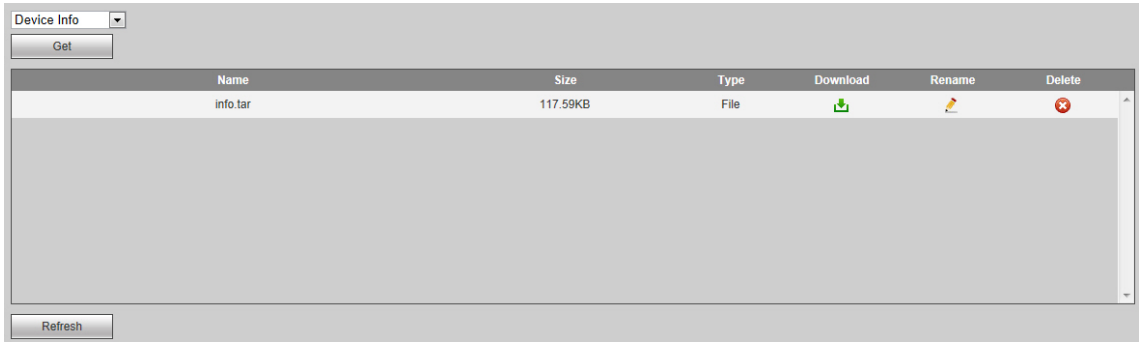
You can view the device information and card log of the Device.

Procedure

Step 1 Select **Info** > **Device Info** > **Device Info**.

Step 2 Select **Device Info** or **Card Log**, and click **Get**.

Figure 4-85 Get device info or card log



Related Operations

- Click to download information file or card log of the device.
- Click to rename the information file or card log of the device.
- Click to delete records on the information file or card log page. If you delete it by mistake, you can get it again.

4.6.1.3.2 Network Sniffer

Background Information

Network sniffer is to intercept, resend, edit and transfer the data received and sent through the network, so you can inspect the network security.

In case of network error, you can carry out sniffer operation on this page, and download the sniffer file to the local computer for network status analysis.

Procedure

Step 1 Select **Info** > **Device Info** > **Device Info** > **Network Sniffer**.

Step 2 Configure the parameters.

Figure 4-86 Network sniffer

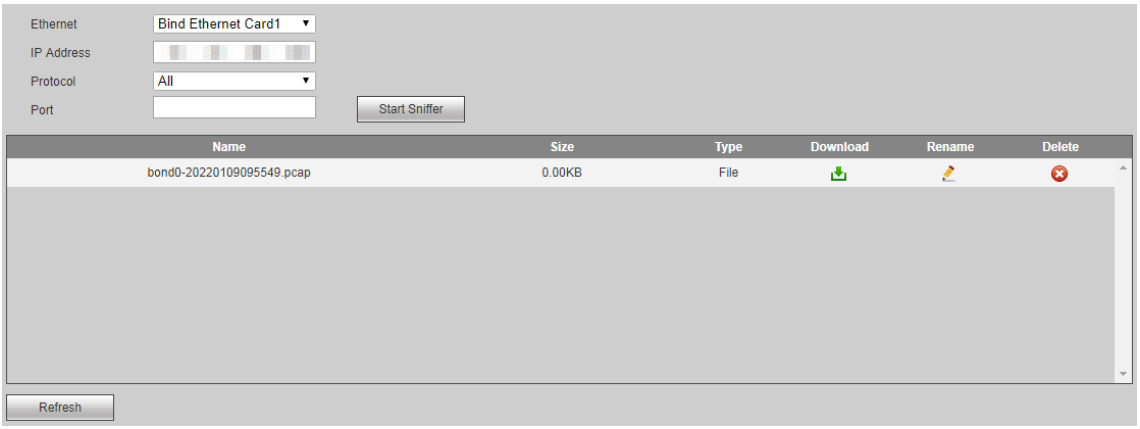


Table 4-24 Network sniffer parameter description

Parameter	Description
Ethernet	Select the net card that has been bound.
IP Address	Set network IP address.
Protocol	Select network protocol, including All, TCP and UDP.
Port	Set network port.

Step 3 Click **Start Sniffer**.

Step 4 After a while, click **Stop Sniffer**.

4.6.1.3.3 Ping

With ping command, you can check whether the camera and the Device is connected normally.

Procedure

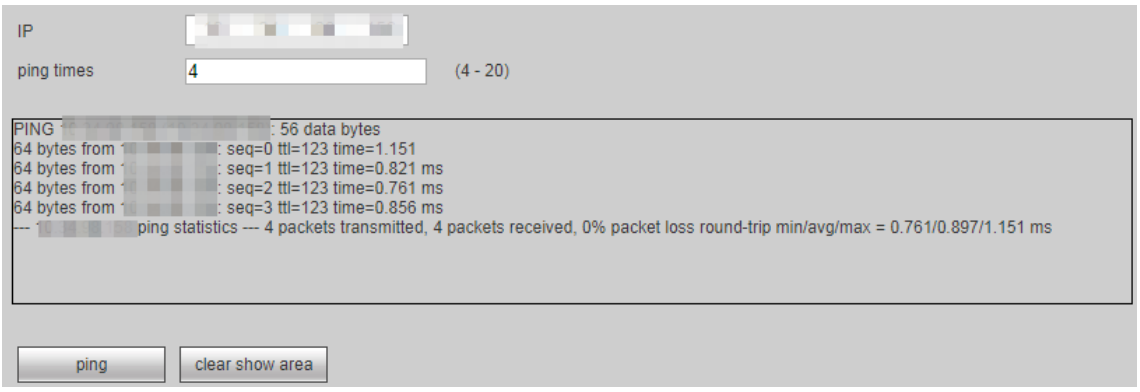
Step 1 Select **Info** > **Device Info** > **Device Info** > **Ping**.

Step 2 Enter the IP address and ping times, and then click **Ping**.

After several seconds, ping info is displayed.

When ping function is enabled, you can open only one web client. Otherwise, ping information might not be displayed completely.

Figure 4-87 Information display



4.6.1.3.4 Log Level

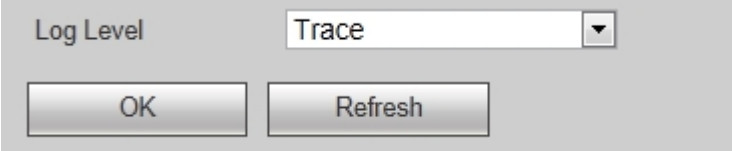
You can configure the level of printing the debugging logs.

Procedure

Step 1 Select **Info** > **Device Info** > **Device Info** > **Log Level**.

Step 2 Configure the log level.

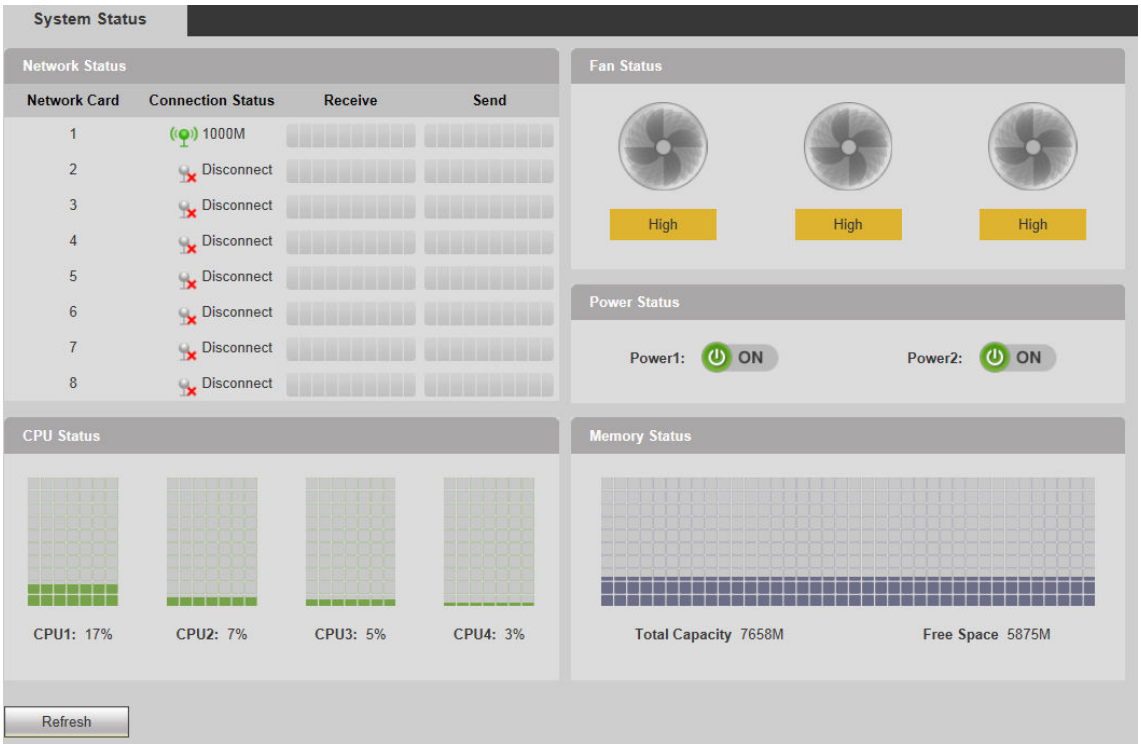
Figure 4-88 Log level



Step 3 Click **OK**.

4.6.1.4 System Status

Figure 4-89 System status



- Network status: Display connection status, data receiving and sending of network card.
- CPU status: Display CPU status of all inserted board cards.
- Fan status: Display fan status.
- Power status: Display status of two power supplies.
- Memory status: Display memory status.

4.6.1.5 System Log

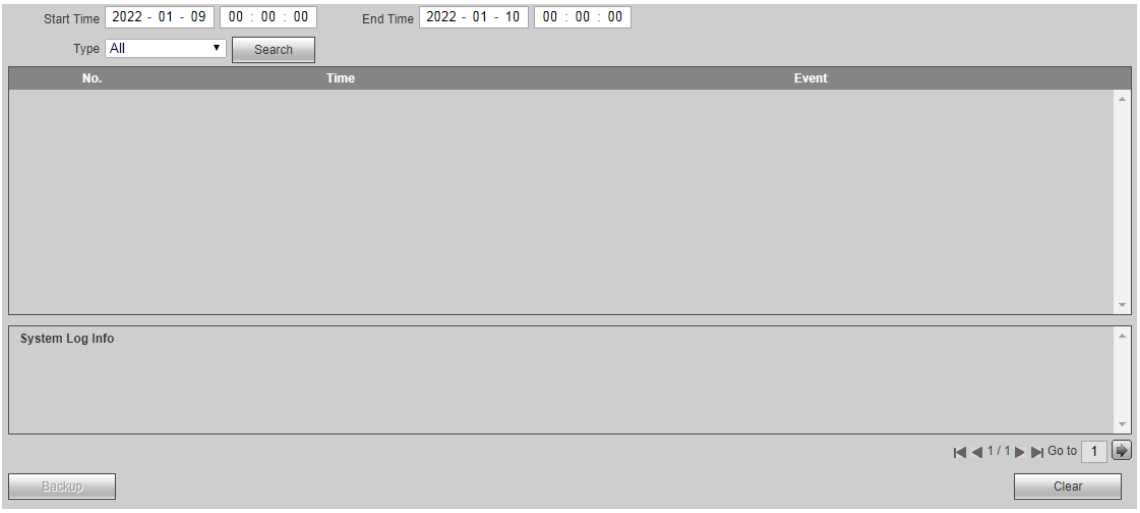
You can search for and view system log information about the Device according to the time and log type, and backup the log to local computer.

Procedure

Step 1 Select **Info** > **Device Info** > **System Log**.

Step 2 Configure **Start Time** , **End Time** and **Type**, and then click **Search**.

Figure 4-90 System log



Related Operations

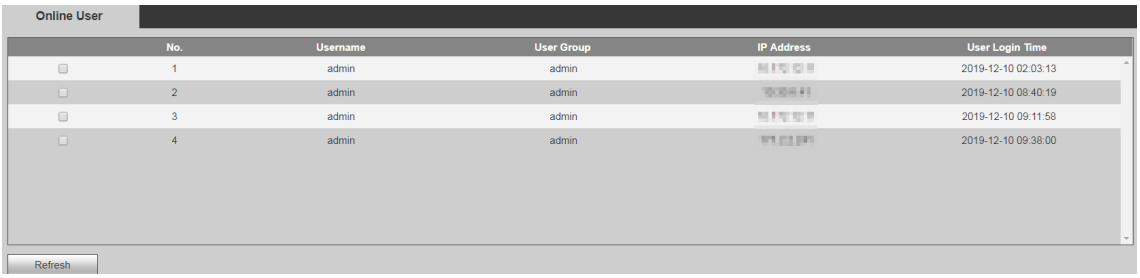
- Click the log to show details.
- Click **Clear** to clear all log information of the device. Log information cannot be cleared according to types.
- Click **Backup** to save the found system log information to the PC under use.

4.6.1.6 Online User

You can view online users' usernames, groups, IP addresses and other basic information.

Select **Info** > **Device Info** > **Online User**.

Figure 4-91 Online user



4.6.1.7 About

Select **Info** > **Device Info** > **About**, and you can view version information about this device.

4.6.2 Help

In the **Info** > **Help** > **User's Manual**, you can read user's manual online, and you can click **Download** to download the user's manual.

5 Platform Software Operation

Besides web, remote control can be realized with Digital Surveillance System (DSS) and Professional Surveillance System (PSS). For specific operations, please refer to the user's manual of Digital Surveillance System (DSS) and Professional Surveillance System (PSS).

5.1 FAQ

- I cannot boot up the device properly after connecting it to power supply.

  In case that the device does not boot up after normal shutdown and connection with power supply, please press the Power Button on front panel.
- Device buzzer turns on when I press the Power Button.

  The device supports dual power, so it alarms if only one power cable is plugged.

  ◇ Insert the other power cable.
  ◇ Press the red button beside power module socket to cancel buzzer alarm.
- There is no local operation display after the device is connected with power supply and booted up.

  This may be due to:

  ◇ It takes some time to boot up after connection with power supply. During the period, the screen is black. Booting progress bar appears after a while.
  ◇ The page board is not in good contact with mainboard, so signals of local operation page are not output to the page board. Please pull out and plug the page board again.
  ◇ Upgrade error. Please upgrade the program again.
  ◇ Program configurations have changed, so the program cannot boot up. Please press RESET hole on main control panel with a needle or equivalent for a few seconds, until the device is rebooted. At this time, configurations have been cleared.
  ◇ X86 board breaks down.
- After the device is booted up, it cannot output decoded images or preview images.

  This may be due to:

  ◇ There is no output by default. Images will be output after relevant output channels are configured.
  ◇ Front panel is not in good contact with page board, so signals are not output to the page board. Please pull out and plug the front panel again.
  ◇ There is an error in front-end device.
  ◇ Configured screen and observed screen are not the same one.
  ◇ The display does not support the output resolution of decoding channel.
  ◇ Network error.
- There is no video output whether it is one-channel, multiple-channel or all-channel output.

  This may be due to:

  ◇ The program is incompatible with front-end third-party manufacturers' devices. Upgrade correct program again.
  ◇ Video source error.
  ◇ Hardware failure.
- Real-time image problem. For example, video image color and brightness are distorted seriously.

  This may be due to:

- ◇ The device is incompatible with the monitor resistance; ground connection is inconsistent.
- ◇ Video transmission distance is too far or attenuation of video transmission cable is too large.
- ◇ Color and brightness setups are incorrect.

- Decoding and output to video wall are not fluent.

  This may be due to:

  - ◇ Poor network environment.
  - ◇ Setup (frame rate) or failure of front-end device.
  - ◇ Limitations in decoding capacity of decoding channel.
  - ◇ Decoding channel failure.
- Images on the wall flicker or they are interfered by stripes.

  This may be due to:

  - ◇ Display and video matrix platform have no common grounding.
  - ◇ Video cable quality is poor or it is too long.
- There is no audio during monitoring.

  This may be due to:

  - ◇ It is not an active pickup.
  - ◇ It is not an active sound device.
  - ◇ Audio cable breaks down.
  - ◇ Hardware failure.
- There is audio during monitoring, but no audio during playback.

  This may be due to:

  - ◇ Setting issue: Audio is not enabled.
  - ◇ Corresponding channel is not connected with video. Playback is not continuous in case of blue screen.
- Time display is not correct

  This may be due to:

  - ◇ Wrong setup.
  - ◇ Bad contact or low voltage of the battery.
  - ◇ Bad crystal oscillator.
- Device cannot control PTZ

  This may be due to:

  - ◇ Front-end PTZ failure.
  - ◇ Incorrect PTZ installation.
  - ◇ Incorrect wiring.
  - ◇ PTZ parameter setups in the device are incorrect.
  - ◇ PTZ protocol doesn't match the device.
- Motion detection function does not work

  This may be due to:

  - ◇ Period setup is incorrect.
  - ◇ Motion detection zone setup is incorrect.
  - ◇ Sensitivity is too low.
- I cannot login client-end or web

  This may be due to:

  - ◇ ActiveX control has been not enabled.

- Network connection error.
- Network setup error.
- Username or password is invalid.
- Client-end version is incompatible with program version. Clear C:\Program Files\webrec in PC.

- There is mosaic or no video when preview video in the network

  This may be due to:

  - Network is not stable.
  - The client is subject to resource constraints.
  - There is area tampering in the device.
  - The user doesn't have monitoring authority.
  - The device has problems in outputting real-time images.
- Network connection is not stable

  This may be due to:

  - Network is not stable
  - IP address conflict.
  - MAC address conflict.
  - LAN switch malfunction or configuration problem.
  - Network page card breaks down.
- Alarm signal cannot be disarmed

  This may be due to:

  - Alarm setup is incorrect.
  - Alarm output has been enabled manually.
  - Input device breaks down or connection is incorrect.
  - Some program versions may have this problem. Please upgrade your program.
- Alarm function doesn't work

  This may be due to:

  - Alarm setup is incorrect
  - Alarm wiring is incorrect
  - Alarm input signal is incorrect
  - Two loops are connected with one alarm device at the same time
- Record storage period is not enough

  This may be due to:

  - Front-end camera has low quality; lens is dirty. it is installed at backlight position; lens has not been adjusted well, leading to large stream
  - HDD capacity is not enough
  - HDD breaks down
- I cannot play the downloaded file

  This may be due to:

  - There is no video player
  - DXB8.1 or higher graphic acceleration software has not been installed
  - There is no DivX503Bundle.exe control when you play the AVI file via media player
  - DivX503Bundle.exe and ffdshow-2004 1012.exe haven't been installed in Windows XP System.

5.2 Use and Maintenance

- Prevent foreign matters entering the device, so as to avoid failure.
- Do not hang the panels downwards during handling and transportation.
- Please complete electrical wiring carefully. Violation in connection procedures will damage the device.
- All external wirings shall prevent short circuit.
- After all cable connections have been completed, connect the power cable.
- After connection, all cables shall be tied with a wiring harness, so as to prevent short circuit, heating and electrical shock risks.
- During wiring, make sure to dismantle (-) binding post of the battery.
- Protect the device from water or excessive dampness, since water and excessive dampness may lead to short circuit, fire or other failures.
- Do not install the device at a position exposed to sunlight during installation. Guarantee well ventilation.
- Damp dust on the circuit board leads to short circuit, affects normal operation or even damages the device. For the purpose of long-term stable operation, please regularly remove dust from the circuit board, connector assembly and case with a brush.
- Guarantee good grounding, protect video-audio signals from interference, and protect the device from static electricity or induced voltage.
- AV signal cable, RS232 and RS485 ports shall avoid hot plugging, which damages them easily.
- Keep the device away from high-temperature heat sources and places.
- Guarantee horizontal fixed installation of the device; ensure normal operation of internal anti-vibration components.
- Carry out regular systematic inspections.

Appendix 1 Mouse Operation

This part illustrates mouse operation with right hand.

Plug a mouse with USB port into USB port of the device, so as to operate the menu functions.

Click left mouse button	System pops up password input dialogue box if you have not logged in
Click left mouse button	Click one functional menu icon with left mouse button, to enter the menu.
	Implement the control operation.
	Modify status of check box or motion detection block.
	Click combo box to pop up pull-down list.
	 means backspace and means space key. Click **Shift** to switch upper/lower cases, Chinese/English.
Double click left mouse button	Implement special control operation.
	In multi-image mode, double click one channel image with left mouse button, to make it full screen. Double click it again to restore multi-image mode.
Click right mouse button	In real-time monitoring mode, pop up a shortcut menu: Close Video, Composite, Input Group, Scheme, Main Menu and Shutdown. "Close Video" means to close the configured input in the selected window; "Composite" means to merge output channels, and combine on-wall images into one video wall; "Input Group" means to group the input devices, so as to facilitate operation in case of multiple input channels. 
	Exit current menu without saving the modification.
Scroll Mouse Wheel	In numerical input box: Increase or decrease numerical value.
	Switch items in the combo box.
	Page up or page down.
Move mouse	Select and move the control or one item of the control under current coordinate.
Drag mouse	Select a motion detection area with a frame.
	Select cover-area.
	Drag an input channel into the designated output channel.

Appendix 2 Security Recommendation

Account Management

1. **Use complex 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: 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 repeating characters, such as 111, aaa, etc.
2. **Change passwords periodically**

   It is recommended to periodically change the device password to reduce the risk of being guessed or cracked.
3. **Allocate accounts and permissions appropriately**

   Appropriately add users based on service and management requirements and assign minimum permission sets to users.
4. **Enable account lockout function**

   The account lockout function is enabled by default. You are advised to keep it enabled to protect account security. After multiple failed password attempts, the corresponding account and source IP address will be locked.
5. **Set and update password reset information in a timely manner**

   The device supports password reset function. To reduce the risk of this function being used by threat actors, if there is any change in the information, please modify it in time. When setting security questions, it is recommended not to use easily guessed answers.

Service Configuration

1. **Enable HTTPS**

   It is recommended that you enable HTTPS to access web services through secure channels.
2. **Encrypted transmission of audio and video**

   If your audio and video data contents are very important or sensitive, it is recommended to use encrypted transmission function in order to reduce the risk of your audio and video data being eavesdropped during transmission.
3. **Turn off non-essential services and use safe mode**

   If not needed, it is recommended to turn off some services such as SSH, SNMP, SMTP, UPnP, AP hotspot etc., to reduce the attack surfaces.

   If necessary, it is highly recommended to choose safe modes, including but not limited to the following services:

   - SNMP: Choose SNMP v3, and set up strong encryption and authentication passwords.
   - SMTP: Choose TLS to access mailbox server.
   - FTP: Choose SFTP, and set up complex passwords.
   - AP hotspot: Choose WPA2-PSK encryption mode, and set up complex passwords.
4. **Change HTTP and other default service ports**

   It is recommended that you change the default port of HTTP and other services to any port between 1024 and 65535 to reduce the risk of being guessed by threat actors.

Network Configuration

1. **Enable Allow list**

   It is recommended that you turn on the allow list function, and only allow IP in the allow list to access the device. Therefore, please be sure to add your computer IP address and supporting device IP address to the allow list.
2. **MAC address binding**

   It is recommended that you bind the IP address of the gateway to the MAC address on the device to reduce the risk of ARP spoofing.
3. **Build a secure network environment**

   In order to better ensure the security of devices and reduce potential cyber risks, the following are recommended:

   - Disable the port mapping function of the router to avoid direct access to the intranet devices from external network;
   - According to the actual network needs, partition the network: if there is no communication demand between the two subnets, it is recommended to use VLAN, gateway and other methods to partition the network to achieve network isolation;
   - Stablish 802.1x access authentication system to reduce the risk of illegal terminal access to the private network.

Security Auditing

1. **Check online users**

   It is recommended to check online users regularly to identify illegal users.
2. **Check device log**

   By viewing logs, you can learn about the IP addresses that attempt to log in to the device and key operations of the logged users.
3. **Configure network log**

   Due to the limited storage capacity of devices, the stored log is limited. If you need to save the log for a long time, it is recommended to enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

Software Security

1. **Update firmware in time**

   According to the industry standard operating specifications, the firmware of devices needs to be updated to the latest version in time in order to ensure that the device has the latest functions and security. If the device is connected to the public network, it is recommended to enable the online upgrade automatic detection function, so as to obtain the firmware update information released by the manufacturer in a timely manner.
2. **Update client software in time**

   It is recommended to download and use the latest client software.

Physical Protection

It is recommended that you carry out physical protection for devices (especially storage devices), such as placing the device in a dedicated machine room and cabinet, and having access control

and key management in place to prevent unauthorized personnel from damaging hardware and other peripheral equipment (e.g. USB flash disk, serial port).