

Video Matrix Platform (M60)

User's Manual



Foreword

General

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.

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
V1.0.0	First release.	January 2022

Privacy Protection Notice

As the device user or data controller, you might collect the personal data of others such as their face, 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



- This is a class A product. In a domestic environment this may cause radio interference in which case you may be required to take adequate measures.
- 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.



- 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.
- The power supply must conform to the requirements of ES1 in IEC 62368-1 standard and be no higher than PS2. Please note that the power supply requirements are subject to the device label.

Operation Requirements



- Do not ingest battery to avoid chemical burn hazard.
- The remote control supplied with this product contains a coin/button cell battery. If the coin/button cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death.
- If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.
- Keep new and used batteries away from children.
- If the battery compartment does not close securely, stop using the product and keep it away from children.
- Please do not place the product in moist place to avoid shock hazard.



- Use the device under the allowed humidity and temperature conditions.
- Use the device within the rated range of power input and output.
- Operating temperature: $-10\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ ($14\text{ }^{\circ}\text{F}$ to $122\text{ }^{\circ}\text{F}$).
- 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.
-  IEC 60417-6042 (2010-11) and  IEC 60417-6172 (2012-09).
- Optional.

Maintenance Requirements



- 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.

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1 Overview

1.1 Introduction

Based on Advanced Telecommunications Computing Architecture (ATCA), the Device is a modern telecommunication-level device which combines DVR, decoder, analog matrix, and video wall controller. It is suitable for different types of network monitoring environments.

1.2 Functions

The Device is a digital video matrix system that offers a variety of functions such as centralized management, distributed deployment, switching between videos, and multiple operation access levels. It can switch between the analog signal, digital signal, HD network signal and HD digital video signal, and displays HD images on the video wall.

The Device supports video signal encoding and decoding, centralized data storage, live view, networks, plans, logs, user permission management, functions for device maintenance, and more. When connected with the video conference system, HD video command and dispatch becomes available.

Main functions:

- Fits inside a blade enclosure, which can hold multiple blade servers, providing services such as power, cooling, networking, various interconnects and management.
- Connect analog, HD-SDI and IP cameras.
- Perform functions such as matrix switching, encoding and decoding through connecting to the HDMI port.
- Display the live view.

1.2.1 Structure

- 19-inch 7U and 12U standard rack case for universal use.
- Card-type ATCA structure with strong expansibility and flexibility.
- Seven fans in three groups that are designed for intelligent temperature control, and for stabilizing air passage to balance the internal temperature.
- Redundant power supply to ensure the Device works without interruption.
- A stripped-down structure with a modular design optimized to minimize the use of physical space and energy.

1.2.2 Hardware

- Adopts the Intel x86 platform for device expansibility and to ensure the system performs normally even when overloaded.
- The high-speed connector on the compression card, x8 PCI-E gen2, 12 VDC power supply and 5 GIO ensure that data flows at high speeds..

- The hot swapping button and indicator on the compression card make it easy for you to know the working status of the compression card.
- Various ports on the compression card help ensure the Device functions normally, and simplify the operation and debugging of the Device. These ports include USB port, serial port, Internet port, HDMI port, BNC port, DVI port and more.
- With its industrial embedded micro-processor, each function card works independently to balance system work load and ensure the normal functioning of the system.
- The rear panel has been designed to be high speed and to have a non-blocking design, allowing the device to meet the demands of large volume audio and video data transmission.

1.2.3 Software

With its embedded Linux operating system, the Device is stable, performs efficiently, and is safe to use and easy to develop and maintain.

Audio and Video Encoding and Decoding

- Audio and video encoding card supports 32-channel BNC, 16-channel HD-SDI, 16-channel optical fiber, 8-channel DVI (support DVI, VGA, HDMI signal), and 16-channel HDCVI.
- Audio and video decoding card supports maximum 384-channel D1 real-time decoding or 96-channel HD1080p decoding output.

Network Functions

- Supports up to eight RJ-45 ports, with each RJ-45 port supporting networks that can run at 1000 Mbps. It also supports eight optical ports, where RJ-45 ports and optical ports can be used at the same time.
- Supports device cascading and extending the video processing and networking abilities of the Device. This produces a multilevel video surveillance system.
- Supports TCP/IP protocol stack, such as TCP, UDP, RTP, RTSP, DHCP, DNS, DDNS, NTP, and SADP protocols.
- Supports remote management, such as switching between analog and digital videos on video walls. Supports being controlled by keyboard.
- Supports remotely receiving and configuring parameters, restarting the Device, and exporting and importing parameters.

Video Management

- Supports HD and SD digital matrix. After the video stream is digitized, it can be directly exchanged without need for coding and compression. This eliminates the issue of image quality reduction after switching the video signal multiple times.
- Supports HD and SD IPC matrix.
- Supports digital video full-cross switching matrix, based on different compression card combinations, forming digital video full-cross switching matrix with different specifications.
- The audio and video decoding card supports HDMI, DVI, VGA and BNC ports, and the device supports up to 1080p (1920×1080p) resolution output.
- Displays different images from different presets on the same screen in sequence.

- Supports favorites for splicing images, and this simplifies the operations on multiple video channels.

Other Functions

- Generates logs on operations, alarms, errors and recordings to facilitate maintenance.
- User permission management makes it easier to use and control operations on the device.
- Supports remote online upgrade to ensure the system is updated regularly..
- Supports cascading and network storage to adapt to large and medium-sized monitoring systems.
- The device supports multiple users logging into multiple clients, making it convenient for you to view videos and managing monitored scenes at any time and place.

Figure 1-1 Connection



1.3 Introduction to Compression Cards

Table 1-1 System cards

Name	Model	Functional Module	Description	Note
Platform Host	M60-12U	Video matrix platform host	• One 12U host that supports 10 function cards. • One MBC0050 main control card. • Two built-in power adapters (redundant).	Standard

Name	Model	Functional Module	Description	Note
	M60-7U		- One 7U host that supports 5 function cards. - One MBC0050 main control card. - Two built-in power adapters (power redundancy).	
Input Module	VEC3204FB	SD BNC video encoding card	32-channel video input (BNC). - Two DVI audio input ports (32 channels). 2-channel RS-485 port.	Optional
	VEC1604HS	HD-SDI video encoding card (16 channels)	16-channel HD-SDI video input (BNC). - One DVI audio input port (16 channels). 2-channel RS-485 port.	Optional
	VEC0804HD	HD DVI video encoding card	8-channel DVI video input. - One VGA audio input port (eight channels). 2-channel RS-485 port.	Optional (support DVI,VGA, HDMI)
	VEC1604HF	16-channel HD optical fiber video encoding card	16-channel SFP video input (optical fiber). - One DVI audio input port (16 channels). 2-channel RS-485 port.	Optional
	VEC1604HC	16-channel HDCVI encoding card	16-channel BNC video input (HDCVI). - One DVI audio input (16 channels). 2-channel RS-485 port.	Optional
	VEC0804US	HD 3G-SDI encoding card (eight channels)	8-channel 3G-SDI video input (BNC). - One DVI audio input port (eight channels). 2-channel RS-485 port.	Optional
	VEC1605UH	16-channel UHD encoding card	16-channel HDMI video input. 4-channel VGA video input. - Two VGA audio input ports (16 channels). 1-channel RS-485 port.	Optional

Name	Model	Functional Module	Description	Note
	VEC0805UH	8-channel UHD encoding card	8-channel HDMI video input. 2-channel VGA video input. - One VGA audio input port (eight channels). 1-channel RS-485 port.	Optional
Output Module	VDC0905H	9-channel HDMI decoding card	9 HDMI video output ports.	Optional
	VDC1205H	12-channel HDMI decoding card	12 HDMI video output ports.	Optional
	VDC1505H	15-channel HDMI decoding card	15 HDMI video output ports.	Optional
	VDC1805H	18-channel HDMI decoding card	18 HDMI video output ports.	Optional
Platform Card	DSS	Platform Card	- Four RJ-45 ports that support 10/100/1000 Mbps network data. Two optical ports (10 gigabit). - Four USB ports. - One standard RS-232 port. - One VGA port and one HDMI port. - One audio talk port.	Optional

1.4 Host System

1.4.1 12U Host System Case

The 19-inch 12U host system case includes function card slots, power ports and intelligent temperature-controlling fans. The indicators on the front panel indicate the working status of the Device.

- A dust filter is designed behind the air intake plastic shell.
- Three groups of intelligent temperature-controlling fans that support the hot swapping function.
- Ten function card slots are labeled in sequence and used to install function cards.
- The main control card slots are marked with "M".
- Dual power module supports 220 VAC and 48 VAC power supply.

Figure 1-2 Appearance of 12U host system case



Figure 1-3 12U case indicators

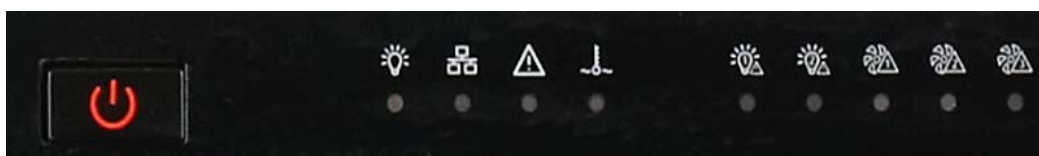


Table 1-2 12U case indicators description

Indicator	Function
	Power button.
	Running status indicator. - Red: The Device is not running after it has been powered on. - Red-blue: The device is running.
	Network indicator. - Red: The Device network is abnormal. - Off: The Device network is normal.
	Alarm indicator. - Red: Error occurred on the Device. - Off: The Device is normal.
	Temperature indicator. - Red: The compression card temperature is too high. - Off: The compression card temperature is normal.
	Power module indicator. - Red: The corresponding power module is abnormal. - Off: The corresponding power module is normal.
	Fan indicator. - Red: The corresponding fan is abnormal. - Off: The corresponding fan is normal.

1.4.2 7U Host System Case

The 19-inch 7U host system case includes function card slots, power ports and intelligent temperature-controlling fans. The indicators on the front panel indicate the working status of the Device.

- Single fan box with a dust filter, and the air intake is at the side of the Device.
- Three groups of intelligent temperature-controlling fans that support the hot swapping function.
- Five function card slots are labeled in sequence and used to install function cards.
- The main control card slots are marked with "M".
- Dual power module supports 220 VAC power supply.

Figure 1-4 Appearance of 7U host system case

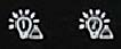


Figure 1-5 7U case indicators



Table 1-3 7U case indicators

Indicator	Function
	Power supply indicator. It is green when the device is powered on normally.
	Running status indicator. • Red: The Device is not running after it has been powered on. • Red-blue: The Device is running.
	Network indicator. • Red: The Device network is abnormal. • Off: The Device network is normal.
	Alarm indicator. • Red: Error occurred on the Device. • Off: The Device is normal.
	Temperature indicator. • Red: The compression card temperature is too high. • Off: The compression card temperature is normal.

Indicator	Function
	Power module indicator. - Red: The corresponding power module is abnormal. - Off: The corresponding power module is normal.
	Fan indicator. - Red: The fan is abnormal. - Off: The fan is normal.
	Infrared remote control signal receiving port.

1.4.3 Main Control Card

1.4.3.1 Port Introduction

Figure 1-6 Function panel of main control card

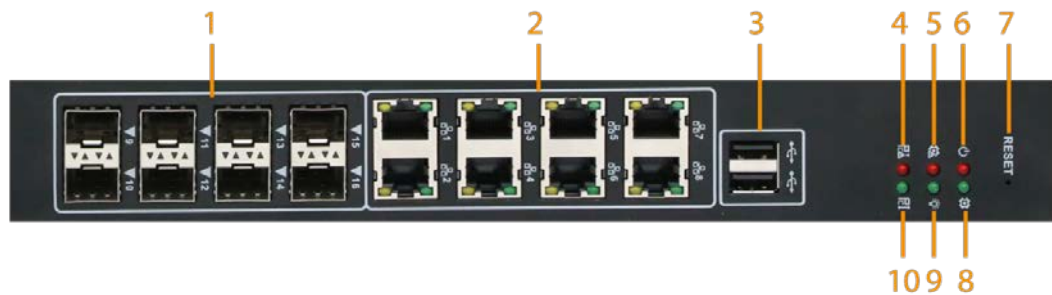


Figure 1-7 Port panel of main control card



Table 1-4 Introduction to ports of main control panel

No.	Port	Function
1	Gigabit SFP Port	Connects to the optica fiber.
2	RJ45 Port	Transmits audio and video data and network signals.
3	USB Port	Connects to the mouse, keyboard, and USB drive.
4	PCIE Error Indicator	It is on when the PCIE (Peripheral Component Interconnect Express) link is abnormal.
5	CPU Working Status Indicator	Diaplays the working status of the CPU.
6	Power Indicator	Displays the power status of the Device.
7	Reset Button	Press the button to reset the Device to its factory settings.

No.	Port	Function
8	CPU Power Indicator	Displays the power status of the CPU.
9	Run Indicator	Visualizes and monitors the running status of the system.
10	PCIE Link Indicator	It is on when the PCIE link is normal.
11	VGA	Local display output port used to connect the LCD screen.
12	RS-232 Serial Port	Connects other devices to the Device with RS-232 serial ports.
13	USB Port	Connects the mouse, keyboard, and USB drive.
14	Audio Input	Audio communication.
15	Audio Output	

1.4.3.2 Features

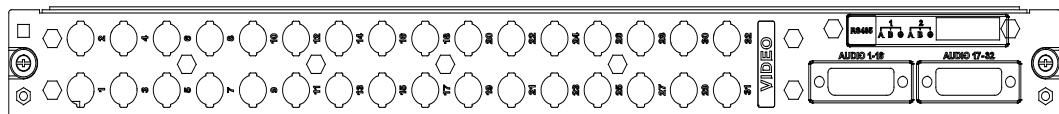
- High speed connector with x80 PCIE gen2, 12 VDC power, 3x10 GIO (3 GIO/operational card), IIC and 5 GIO.
- Four memory slots and two channels.
- Fan port and power/rotation rate control (CPU).
- Six indicators (PCIE Error Indicator, PCIE Link Indicator, CPU Working Status Indicator, Power Indicator, Run Status Indicator, and CPU Power Indicator).

1.5 Function Card

Function cards with blade modular design are mainly used for analog and digital image input, centralized encoding compression, live view, network centralized storage, centralized management and centralized decoding.

1.5.1 VEC3204FB SD Audio and Video Encoding Card

Figure 1-8 VEC3204FB SD audio and video encoding card



1.5.1.1 Main Features and Functions

Features

- 32-channel BNC video port input (1.0 Vp-p, 75 ohms).
- 32-channel audio input.
- 2-channel RS-485 port.
- One power button.
- Five indicators (power, PCIE, PCIE error, and encoding chip working indicators).
- High speed connector with x8 PCIE gen2, 12 VDC power and 5 GIO.

Functions

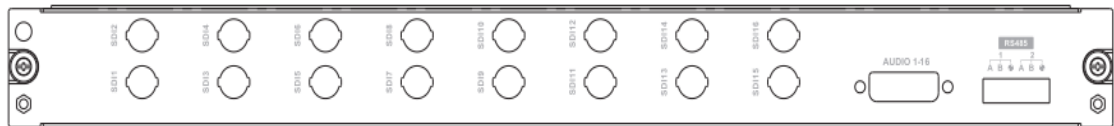
- PAL/NTSC signal input.
- H.264 video compression.
- G711a, PCM and G711u audio compression standards.
- Parameters for video encoding can be configured for each channel, including resolution, frame rate, bit stream rate, image quality and more.
- Each channel supports configuring two types of parameters for video compression: schedule video and event video.
- Supports composite stream encoding and bit stream encoding. The audio and video can be synchronized in composite stream encoding.
- Dual stream technology.
- Images in the JPEG format that have 4CIF or CIF resolution can be compressed and exported to other locations.
- Watermark technology.

1.5.1.2 Port Introduction

- AIN audio input port, DB29 port.
- VIN video input port, BNC port.

1.5.2 VEC1604HS 16-CH HD SDI Encoding Card

Figure 1-9 VEC1604HS 16-channel HD SDI encoding card



1.5.2.1 Main Features and Functions

Features

- 16-channel HD-SDI video input port.
- 16-channel audio input.
- 2-channel RS-485 port.
- 1080p, 30 fps.
- One power button.
- Seven indicators (power, PCIE, PCIE error, and encoding chip working indicators).
- High speed connector with x8 PCIE gen2, 12 VDC power and 5 GIO.

Functions

- H.264 video compression.

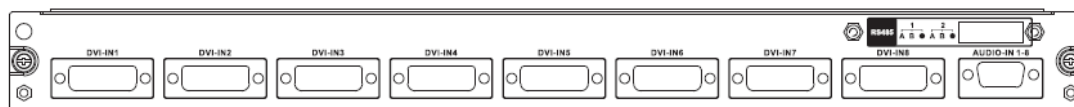
- G711a, PCM and G711u audio compression standards.
- Parameters for video encoding can be configured for each channel, including resolution, frame rate, bit stream rate, image quality and more.
- Each channel supports configuring two types of parameters for video compression: schedule video and event video.
- Supports composite stream encoding and bit stream encoding. The audio and video can be synchronized in composite stream encoding.
- Dual stream technology.
- Images in the JPEG format that have 4CIF or CIF resolution can be compressed and exported to other locations.
- Watermark technology.

1.5.2.2 Port Introduction

- AIN audio input port, DB29 port.
- VIN video input port, BNC port.

1.5.3 VEC0804HD HD DVI Encoding Card

Figure 1-10 VEC0804HD HD DVI encoding card



1.5.3.1 Main Features and Functions

Features

- 8-channel DVI-I video port input that supports DVI, VGA and HDMI input.
- 8-channel audio input.
- 2-channel RS-485 port.
- One power button.
- Seven indicators (power, PCIE, PCIE error, and encoding chip working indicators).
- High speed connector with x8 PCIE gen2, 12 VDC power and 5 GIO.

Functions

- Supports 1920 × 1080@60 Hz, 1680 × 1050@60 Hz, 1440 × 900@60 Hz, 1366 × 768@60 Hz, 1280 × 1024@60 Hz, 1280 × 960@60 Hz, 1280 × 800@60 Hz, 1280 × 720@60 Hz, 1152 × 864@60 Hz, 1024 × 768@60 Hz, 800 × 600@60 Hz.
- H.264 video compression.
- G711a, PCM and G711u audio compression standards.
- Parameters for video encoding can be configured for each channel, including resolution, frame rate, bit stream rate, image quality and more.

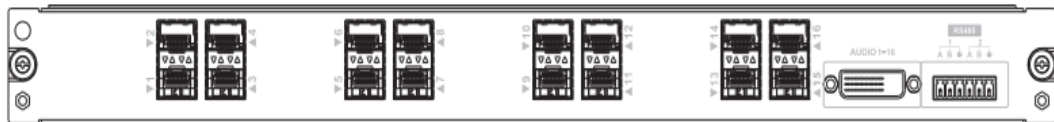
- Each channel supports configuring two types of parameters for video compression: schedule video and event video.
- Supports composite stream encoding and bit stream encoding. The audio and video can be synchronized in composite stream encoding.
- Dual stream technology.
- Images in the JPEG format that have 4CIF or CIF resolution can be compressed and exported to other locations.
- Watermark technology.

1.5.3.2 Port Introduction

- AIN audio input port, DB15 port.
- VIN video input port, DVI-I port.

1.5.4 VEC1604HF 16-channel Optical Fiber Encoding Card

Figure 1-11 1.5.4 VEC1604HF 16-channel optical fiber encoding card



1.5.4.1 Main Features and Functions

Features

- 16-channel SFP video port input that supports optical fiber signal input.
- 16-channel audio input, including external input and built-in input.
- 2-channel RS-485 port.
- Reverse control.
- Supports forward signaling transmission channel.
- One power button.
- Seven indicators (power, PCIE, PCIE error, and encoding chip working indicators).
- High speed connector with x8 PCIE gen2, 12 VDC power and 5 GIO.

Functions

- Supports 1080p@30 Hz, 1080p@25 Hz, 720P@60 Hz, 720P@50 Hz, 720P@30 Hz, 720P@25 Hz, 1080i@60 Hz, 1080i@50 Hz.
- H.264 video compression.
- G711a, PCM and G711u audio compression standards.
- Parameters for video encoding can be configured for each channel, including resolution, frame rate, bit stream rate, image quality and more.

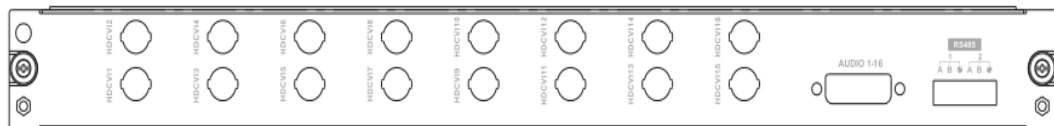
- Each channel supports configuring two types of parameters for video compression: schedule video and event video.
- Supports composite stream encoding and bit stream encoding. The audio and video can be synchronized in composite stream encoding.
- Dual stream technology.
- Images in the JPEG format that have 4CIF or CIF resolution can be compressed and exported to other locations.
- Watermark technology.

1.5.4.2 Port Introduction

- AIN audio input port, DB29 port.
- VIN video input port, SFP port.

1.5.5 VEC1604HC 16-channel HDCVI Encoding Card

Figure 1-12 VEC1604HC 16-channel HDCVI encoding card



1.5.5.1 Main Features and Functions

Features

- 16-channel BNC video input port. HDCVI signal input.
- 16-channel audio input, including external input and built-in input.
- 2-channel RS-485 port.
- Reverse control.
- One power button.
- Seven indicators (power, PCIE, PCIE error, and encoding chip working indicators).
- High speed connector with x8 PCIE gen2, 12 VDC power and 5 GIO.

Functions

- Supports 1080p@30 Hz, 1080p@25 Hz, 720P@60 Hz, 720P@50 Hz, 720P@30 Hz, 720P@25 Hz.
- H.264 video compression.
- G711a, PCM and G711u audio compression standards.
- Parameters for video encoding can be configured for each channel, including resolution, frame rate, bit stream rate, image quality and more.
- Each channel supports configuring two types of parameters for video compression: schedule video and event video.
- Supports composite stream encoding and bit stream encoding. The audio and video can be synchronized in composite stream encoding.

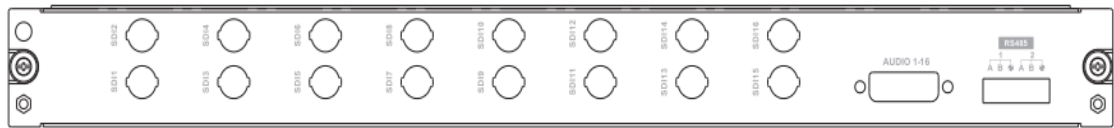
- Dual stream technology.
- Images in the JPEG format that have 4CIF or CIF resolution can be compressed and exported to other locations.
- Watermark technology.

1.5.5.2 Port Introduction

- AIN audio input port, DB29 port.
- VIN video input port, BNC port.

1.5.6 VEC0804US 8-channel 3G-SDI Encoding Card

Figure 1-13 VEC0804US 8-channel 3G-SDI encoding card



1.5.6.1 Main Features and Functions

Features

- 8-channel 3G-SDI video input port.
- 8-channel audio input.
- 2-channel RS-485 port.
- 1080p, 60 fps.
- One power button.
- Seven indicators (power, PCIE, PCIE error, and encoding chip working indicators).
- High speed connector with x8 PCIE gen2, 12 VDC power and 5 GIO.

Functions

- H.264 video compression.
- G711a, PCM and G711u audio compression standards.
- Parameters for video encoding can be configured for each channel, including resolution, frame rate, bit stream rate, image quality and more.
- Each channel supports configuring two types of parameters for video compression: schedule video and event video.
- Supports composite stream encoding and bit stream encoding. The audio and video can be synchronized in composite stream encoding.
- Dual stream technology.
- Images in the JPEG format that have 4CIF or CIF resolution can be compressed and exported to other locations.
- Watermark technology.

1.5.6.2 Port Introduction

- AIN audio input port, DB29 port.
- VIN video input port, BNC port.

1.5.7 VEC1605UH 16-channel UHD Encoding Card

Figure 1-14 VEC1605UH 16-channel UHD Encoding Card



1.5.7.1 Main Features and Functions

Features

- 16-channel HDMI video input port, and 4-channel VGA video input port.
- 16-channel HDMI built-in audio input, and 16-channel external audio input port.
- 1-channel RS-485 port.
- 8-channel 4K (4096 × 2160@24 or 3840 × 2160@30) and 12-channel 1080p (1920 × 1080@60).
- One power button.
- Ten indicators (power, PCIe, PCIe error, and encoding chip working indicators).

Functions

- H.264/H.265 video compression.
- PCM audio compression standards.
- Parameters for video encoding can be configured for each channel, including resolution, frame rate, bit stream rate, image quality and more.
- Each channel supports configuring two types of parameters for video compression: schedule video and event video.
- Supports composite stream encoding and bit stream encoding. The audio and video can be synchronized in composite stream encoding.
- Dual stream technology.

1.5.7.2 Port Introduction

- AIN audio input port, DB15 port.
- VIN video input port, HDMI and VGA port.

1.5.8 VEC0805UH 8-channel UHD Encoding Card

Figure 1-15 VEC0805UH 8-channel UHD encoding card



1.5.8.1 Main Features and Functions

Features

- 8-channel HDMI video input port, and 2-channel VGA video input port.
- 8-channel HDMI built-in audio input, and 8-channel external audio input port.
- 1-channel RS-485 port.
- 4-channel 4K (4096x2160@24 or 3840x2160@30) and 6-channel 1080p (1920x1080@60).
- One power button.
- Six indicators (power, PCIE, PCIE error, and encoding chip working indicators).

Functions

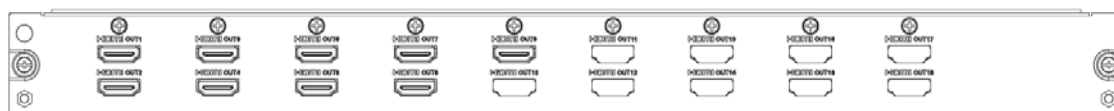
- H.264/H.265 video compression.
- PCM audio compression standards.
- Parameters for video encoding can be configured for each channel, including resolution, frame rate, bit stream rate, image quality and more.
- Each channel supports configuring two types of parameters for video compression: schedule video and event video.
- Supports composite stream encoding and bit stream encoding. The audio and video can be synchronized in composite stream encoding.
- Dual stream technology.

1.5.8.2 Port Introduction

- AIN audio input port, DB15 port.
- VIN video input port, HDMI and VGA port.

1.5.9 VDC0905H 9-channel HD HDMI Decoding Card

Figure 1-16 VDC0905H 9-channel HD HDMI decoding card



1.5.9.1 Main Features

- 9-channel HDMI digital video port output.
- 9-channel audio output.
- 2-channel RS-485 port.
- 4-channel alarm input port.
- 2-channel alarm output port.
- One power switch.
- Eight indicators (power, PCIe, and decoding chip working indicators).

1.5.9.2 Port Introduction

- AOUT audio output port, DB15 port.
- VOUT video output port, HDMI port.

1.5.10 VDC1205H 12-channel HD HDMI Decoding Card

Figure 1-17 VDC1205H 12-channel HD HDMI decoding card



1.5.10.1 Main Features

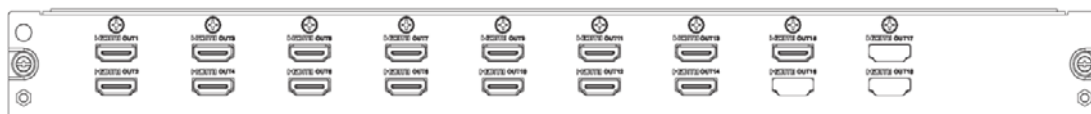
- 12-channel HDMI digital video port output.
- 12-channel audio output.
- 2-channel RS-485 port.
- 4-channel alarm input port.
- 2-channel alarm output port.
- One power switch.
- Ten indicators (power, PCIe, and decoding chip working indicators).

1.5.10.2 Port Introduction

- AOUT audio output port, DB15 port.
- VOUT video output port, HDMI port.

1.5.11 VDC1505H 15-channel HD HDMI Decoding Card

Figure 1-18 VDC1505H 15-channel HD HDMI decoding card



1.5.11.1 Main Features

- 15-channel HDMI digital video port output.
- 15-channel audio output.
- 2-channel RS-485 port.
- 4-channel alarm input port.
- 2-channel alarm output port.
- One power switch.
- 12 indicators (power, PCIE, and decoding chip working indicators).

1.5.11.2 Port Introduction

- AOUT audio output port, DB15 port.
- VOUT video output port, HDMI port.

1.5.12 VDC1805H 18-channel HD HDMI Decoding Card

Figure 1-19 VDC1805H 18-channel HD HDMI decoding card



1.5.12.1 Main Features

- 18-channel HDMI digital video port output.
- 18-channel audio output.
- 2-channel RS-485 port.
- 4-channel alarm input port.
- 2-channel alarm output port.
- One power switch.
- 14 indicators (power, PCIE, and decoding chip working indicators).

1.5.12.2 Port Introduction

- AOUT audio output port, DB15 port.

- VOUT video output port, HDMI port.

2 Installation

2.1 Unpacking and Checking

When you receive the Device, check it according to the following steps.

Step 1 Check whether there is obvious damage on the Device appearance.

The packing materials are specially selected to protect the Device from becoming damaged during transportation.

Step 2 Check whether the accessories are complete against the packing list.

After confirming that all parts are included, you need to remove the protective film on the Device.

Step 3 Open the Device case to check the data cable and the power cord on the front panel, and check whether the connection between the main control card and the port pannel is tight.

Check whether the main control card, control card and function card are securely inserted.



Keep the label at bottom of the box well. You might need to present the serial number on the label for after-sales service.

2.2 Device Installation

2.2.1 Installation Requirements

The Device is usually used in the central machine rooms of monitoring systems. Its installation location must meet the national and local machine room construction standards.

The Device is a standard rack-mounted device that is attached to a cabinet. During the installation, make sure that:

- The cabinet is sturdy and able to support the weight of the Device and its accessories. During installation, avoid the danger of an uneven mechanical load.
- There is a sufficient amount of space available to install the audio and video cables. The bending radius of the cables must not be less than 5 times the outer diameter of the cables.
- The Device is well ventilated to ensure it can function safely. We recommend installing it higher than 50 cm above the ground.
- The temperature in the cabinet is between 0 °C and +50 °C.
- The humidity in the room is between 10% (RH) and 90% (RH).

Power Supply Requirements

The rated current of the device is 10 A / 5 A, and its rated power is up to 800 W. The rated voltage for The 12U product is 100–127 VAC/200–240 VAC, and for the 7U product is 100–240 VAC.

Anti-interference Requirements

- Make sure to put through all necessary anti-interference measures for the on-site power supply system.
- Do not share the working place with the ground device or lightning protection device of electrical devices, and keep them away as far as possible.
- Ground devices and lightning protection devices of electrical devices cannot be installed next to the Device. Make sure to keep them far away from the Device.
- If necessary, adopt electromagnetic shielding methods to resist interference.

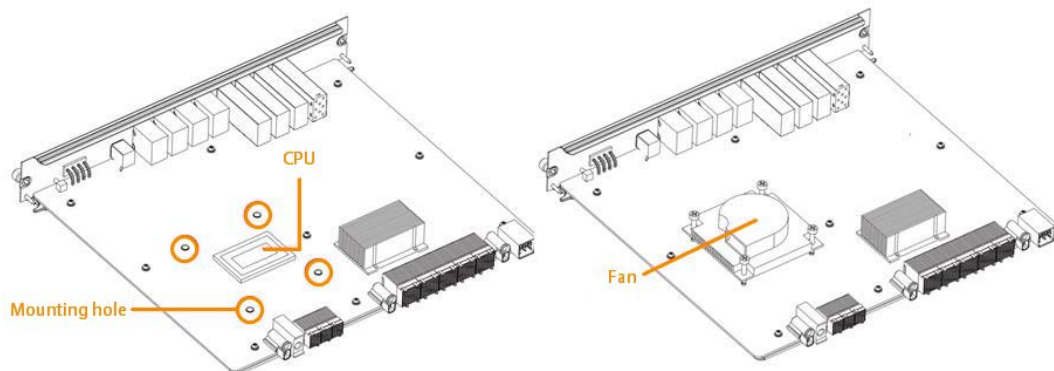
2.2.2 Installation Procedures

Step 1 Align the four mounting rings of the fan with the mounting holes of the main control card, and then attach the fan to the CPU of the main control card with screws.



- The fan and the main control card are separate, but their wires are connected, because the fan is very heavy and can damage the CPU during transportation if transported together. Please handle with care.
- Make the air outlet of CPU fan upward after main control card is inserted into the case.

Figure 2-1 Install the fan

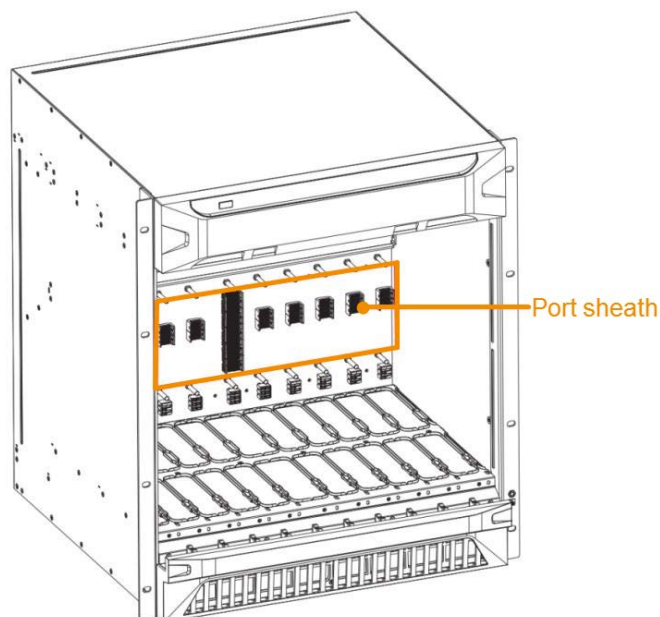


Step 2 Remove the port sheath from the rear panel of the chassis.



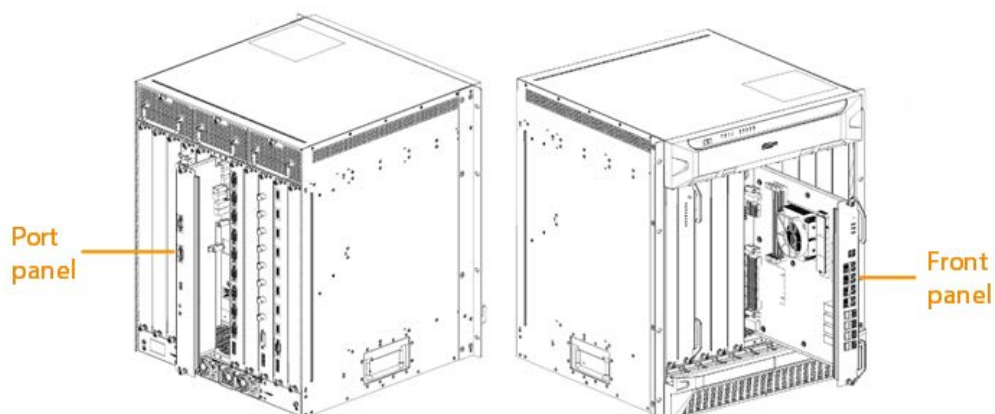
Before you insert the compression card, remove the black port sheath first.

Figure 2-2 Remove sheath



Step 3 Insert the port panel and the front panel of the main control card into the "M" slot of the chassis, and then tighten the screws.

Figure 2-3 Install board card



- Insert the port panel, tighten the set screws, and then insert the front panel.
- When inserting the main control card and control panel, pull the extraction tool, and then insert the panel in place by pushing the extraction tool inward.

Step 4 Insert the port panel and front panel of the function card, and then tighten the screws. The installation is the same as that of the main control card.

Step 5 Connect a local monitor to any VGA or DVI port on the port panel of the main control card.

Output port for local operation



For personal safety and the safety of the Device, the Device and other devices connected to the Device with cables, such as screens and computers, must be grounded.

Figure 2-5 Grounding

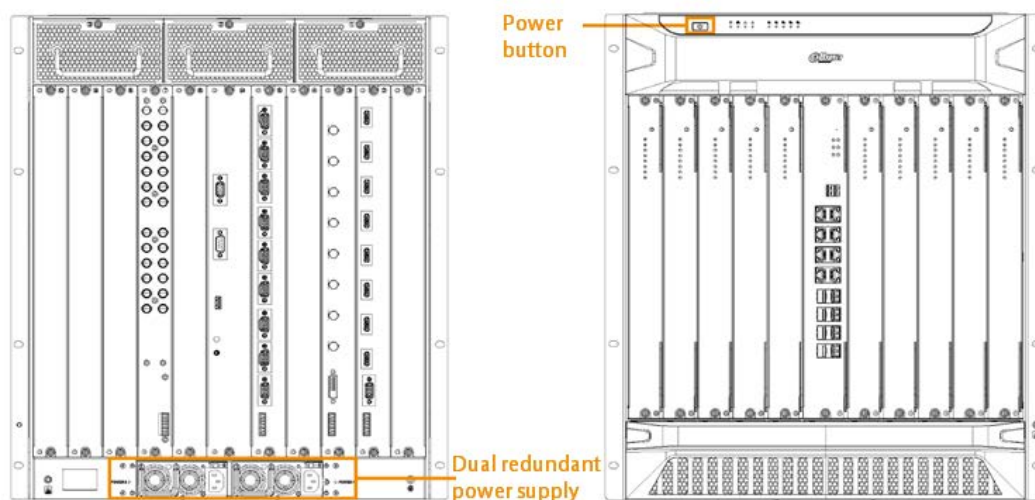


For devices with power supplies that are correctly grounded, their grounding terminals do not have to be grounded.

Step 7 Connect the network cable, VGA cable and other cables.

Step 8 Plug in the Device power cord and press the power button to power on the Device.

Figure 2-6 Power on



2.2.3 Powering On and Off

2.2.3.1 Powering On

Power on the Device, and then press the power button on the front panel, and the power indicator will light up. The whole process takes about 90 seconds depending on the number of cards.

When powering on the Device:

- Make sure that the supplied voltage is within 100-240 VAC, and 47 Hz-63 Hz. Before you press the power button, make sure that the power cord is properly connected.
- We recommend that you use a power supply with stable voltage and little interference (refer to the international standard) ensure that the device functions stably, and to extend its service life. This will also help external connected devices, such as cameras, to perform well. We highly recommend installing a UPS if possible.

2.2.3.2 Powering Off

There are two ways to power off the Device.

- Method 1: On the **Main Menu** page, click **Shut down System**, and select **Shut down Device**.
- Method 2: Press and hold the power button on the panel for 5s.



- We recommend that you use method 1 to protect the Device from damages caused by unexpected outages.
- Stop all operations of the Device before you unplug the Device.

2.2.3.2.1 Outage Recovery

In case of a sudden power outage or force shutdown while the Device is running, the Device will automatically save and restore to its previous working status after it is powered on again.

2.2.3.2.2 Replace Button Battery



Export and save your configurations before replacing the battery to avoid losing your configurations.

We recommend that you use the same type of button battery. The button battery should be replaced once a year to ensure that the system performs well and remains accurate.

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

Step 1 Power on the Device and press the power button.

Step 2 On the software license agreement page, select **I have read and agree to all terms**, and then click **Next**.

Step 3 Enter and confirm the new 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 password strength prompt.

Figure 3-1 Device initialization

Device Initialization

User admin

Password

(Min 8-digit containing letter(s) and number(s))

Confirm Password

OK

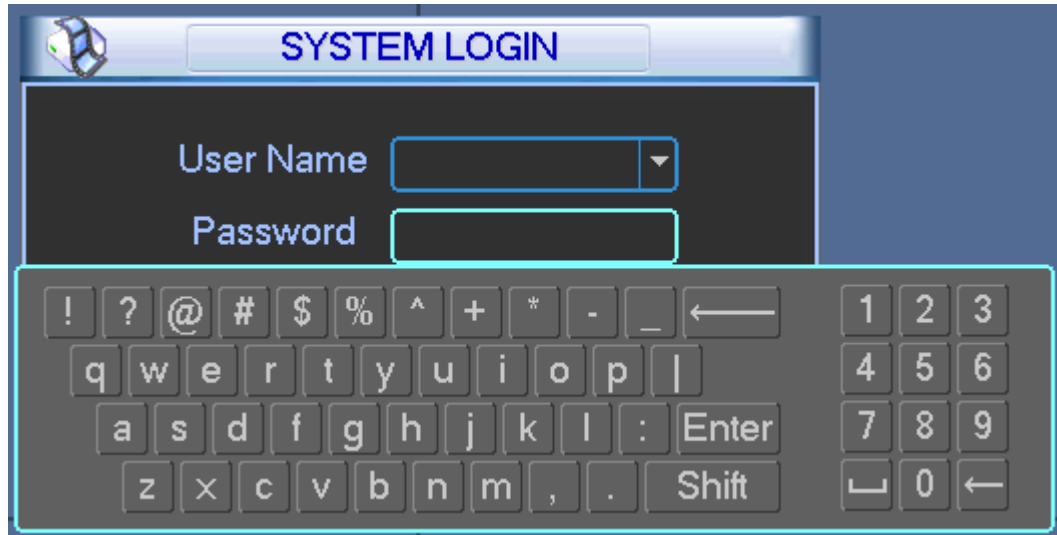
Step 4 Click **OK**.

Step 5 Right-click the page. Enter the username and password.



The account will be locked after five failed login attempts in 30 minutes.

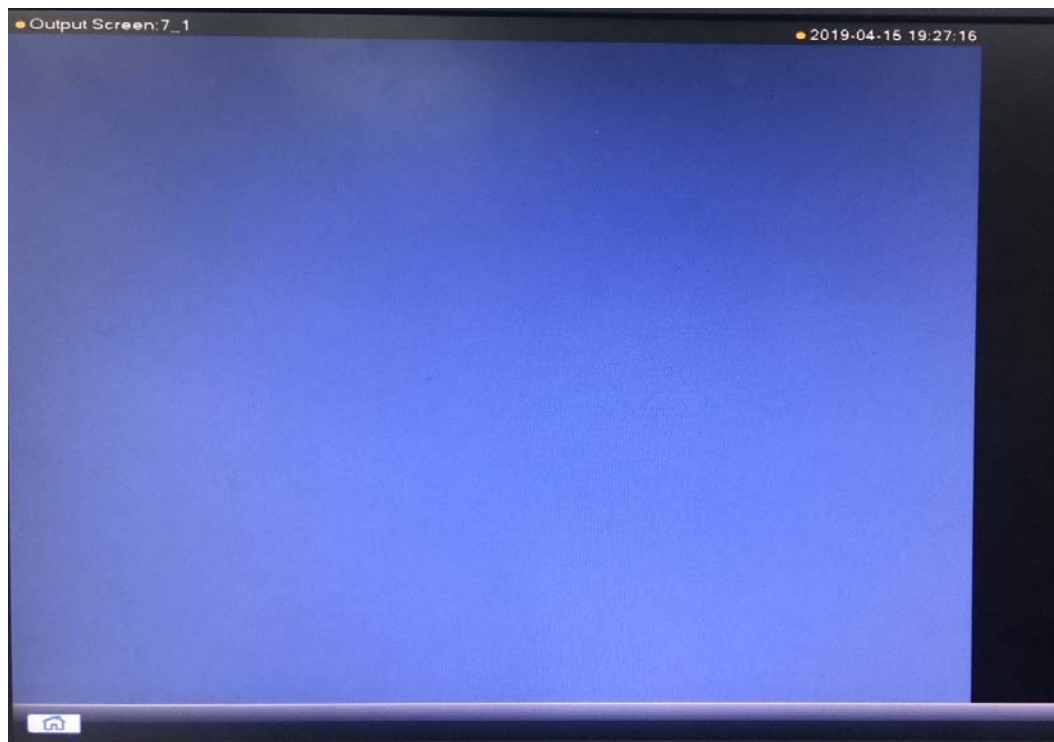
Figure 3-2 System login



The image shows a 'SYSTEM LOGIN' window. At the top left is a small icon of a server rack. The title 'SYSTEM LOGIN' is in a blue bar. Below it are two input fields: 'User Name' with a dropdown arrow and 'Password'. A large, semi-transparent keyboard overlay is positioned in front of the bottom half of the login window, showing keys like !, @, #, \$, %, ^, +, *, -, _, ←, 1-9, 0, ←, and Shift.

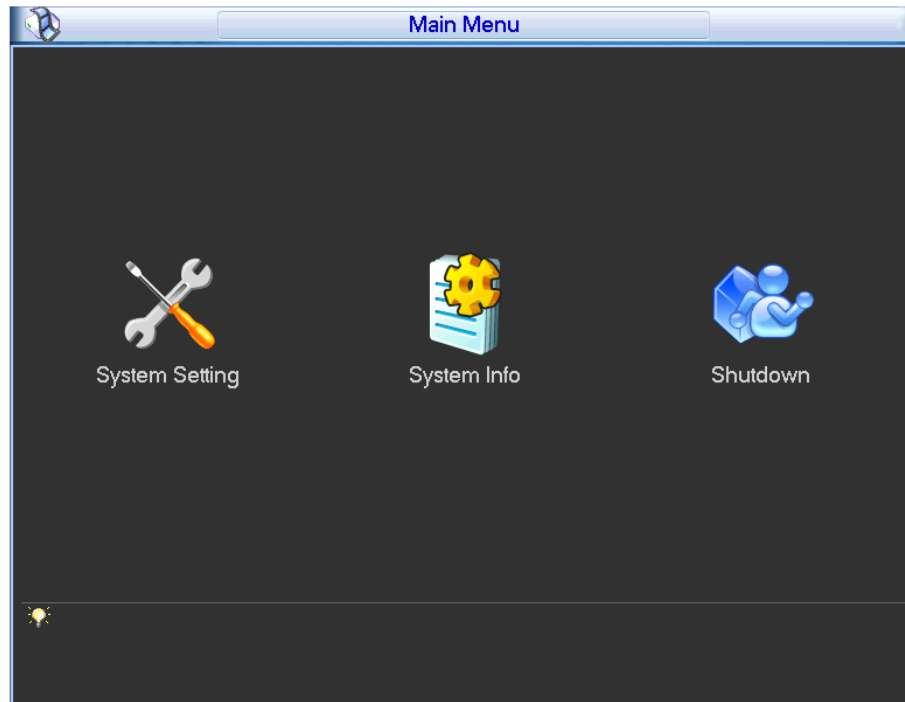
Step 6 Click **OK** to log in to the system

Figure 3-3 Home page



Step 7 Right-click the home page, and then select **MAIN MENU**.

Figure 3-4 Main menu



3.2 Menu Operations

- The sub-menu settings will only take effect after you save them.
- The checkbox is selected when it is filled with ■ or has a check mark. This note applies to the whole document.

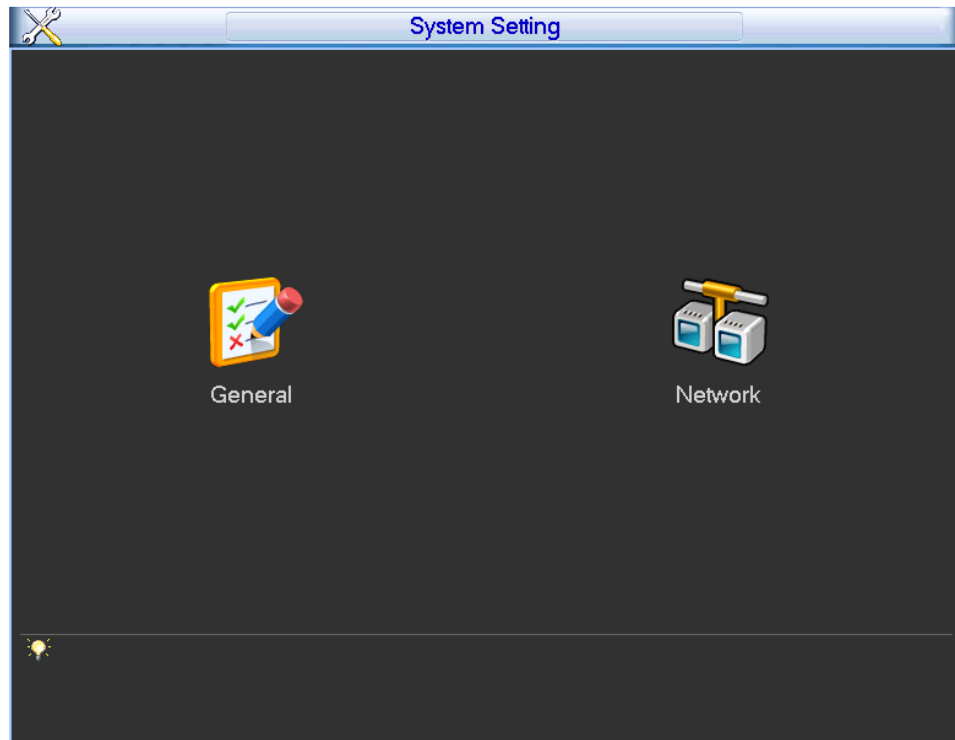
3.2.1 System Settings

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



System settings can only be configured by authorized users.

Figure 3-5 System setting

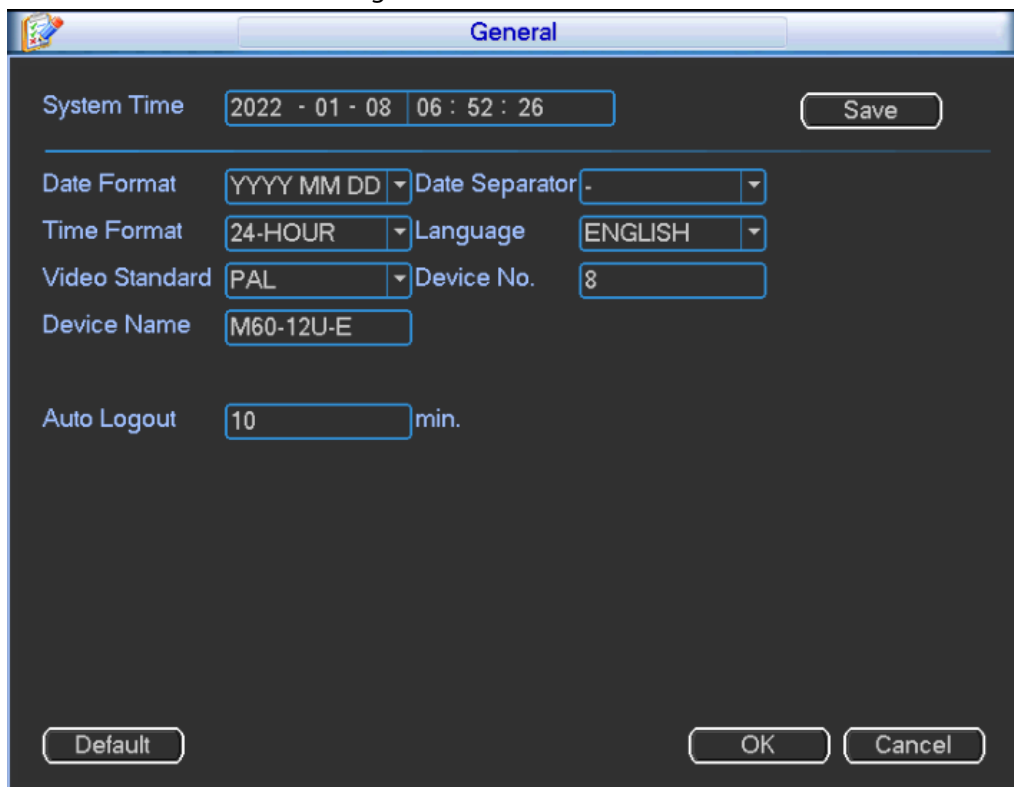


3.2.1.2 General

You can configure basic information for the Device.

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

Figure 3-6 General



Step 2 Configure parameters.

Table 3-1 General parameters description

Parameter	Description
System Time	Modify the current system date and time, and then click Save.  System time can only be changed when it is not recording time or when the recording has stopped, otherwise you cannot search for the recoded video.
Date Format	Select date display format from 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	Change the language of the menu from Simplified Chinese to English, or vice versa.
Video Standard	Select the video standard. It is PAL by default.
Device No.	Customize the Device number and Device name to make it easy to identify it.
Device Name	
Auto Logout	Menu standby time can be set from 0 minutes to 60 minutes. - There is no standby time when it is set to 0 minutes. Also, the system will not log out automatically. - If the standby time is set, the system will log out the current user if there is no operation within the selected time. You need to log in again to use the menu.

Step 3 Click **OK**.

3.2.1.3 Network

Configure the Device network parameters, so that the Device can communicate with other devices on the same network.

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

Figure 3-7 Network

Net Mode: Fault Toleranc

Network Device Name: Bond1

IP Version: IPv4

IP Address: 0.0.0.0

Subnet Mask: 0.0.0.0

Gateway: 0.0.0.0

TCP Port: 37777

UDP Port: 37778

Max Connection: 128

HTTP Port: 80

RTSP Port: 554

☐ DHCP

Default Save Cancel

Step 2 Configure parameters.

Table 3-2 Network parameters description

Parameter	Description
Net Mode	The default setting is Fault Tolerance .
MAC Address	Click the icon to display the MAC address.
Network Device Name	It is Bond1 by default.
IP Version	It is IPv4 by default.
IP Address	Enter numbers to change the IP address, and then configure its subnet mask and gateway.
Subnet Mask	
Gateway	
	The IP address and gateway must be on the same network segment.
DHCP	Select the DHCP checkbox to allow the system to automatically get the IP address for you. When the DHCP function is enabled, the IP address, gateway, and subnet mask cannot be set manually. - If DHCP is enabled, the information that it gets will be displayed in the IP address box, subnet mask box and gateway box. If DHCP is not enabled, all the field boxes will contain a 0. - When DHCP is disabled, the static IP information will restore to default settings. You need to configure IP again.

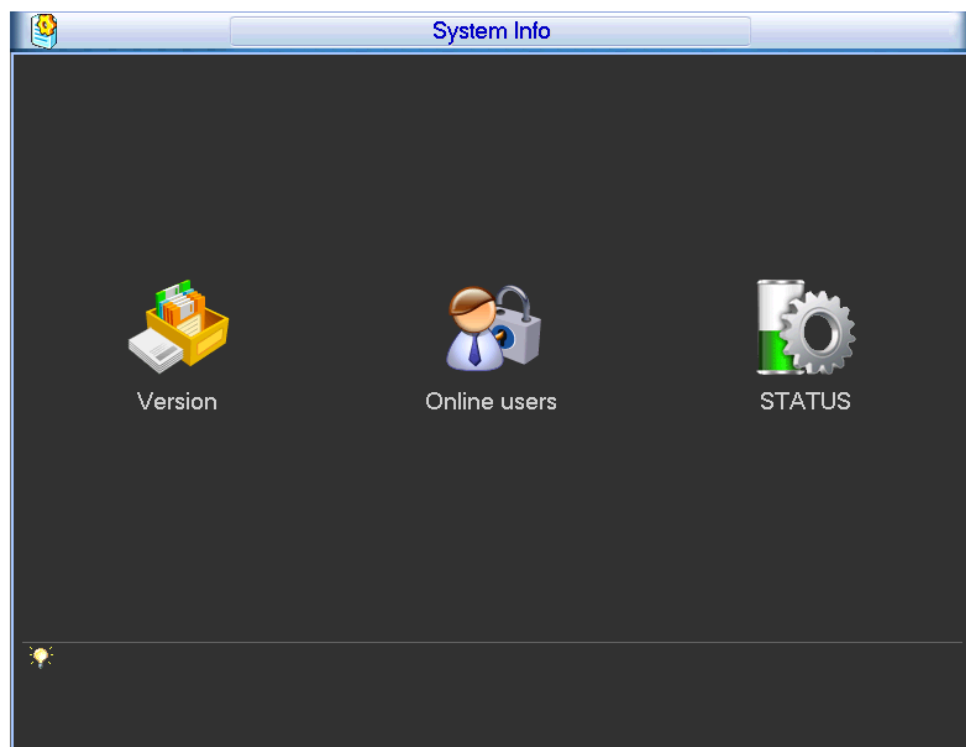
Parameter	Description
TCP Port	Keep the default settings. No need to change them.
HTTP Port	
UDP Port	
RTSP Port	
Max Connection	The number of connections ranges from 0 to 128. If it is 0, network users are not allowed to connect. The maximum number of connections is 128.

Step 3 Click **Save**.

3.2.2 System Information

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

Figure 3-8 System information



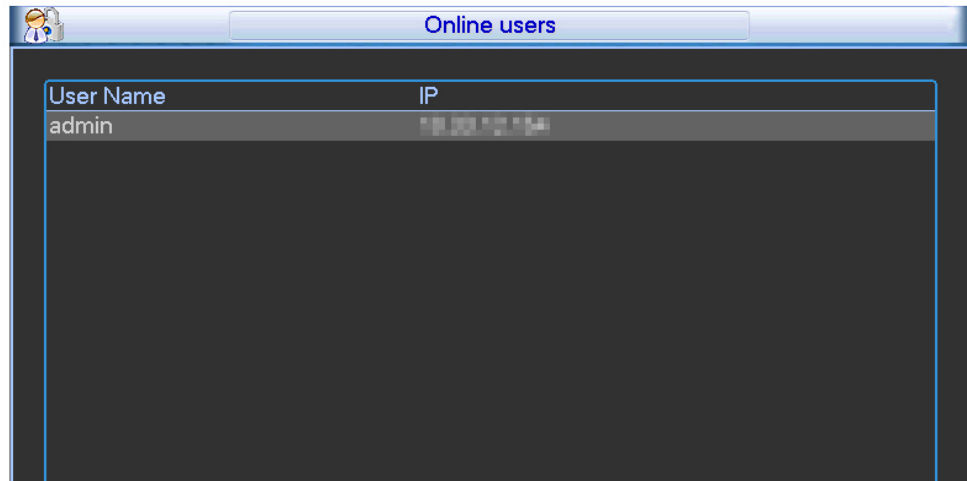
3.2.2.2 Version

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

3.2.2.3 Online Users

On the main menu, select **System Info > Online users**, and then you will be able to view the online users that remotely visit the Device.

Figure 3-9 Online users



3.2.2.4 Status

On the main menu, select **System Info > Status**, you will be able to view the fan speed, card information, temperature and source information, device time, net percentage, CPU percentage and memory percentage.

Figure 3-10 Status



Table 3-3 System status description

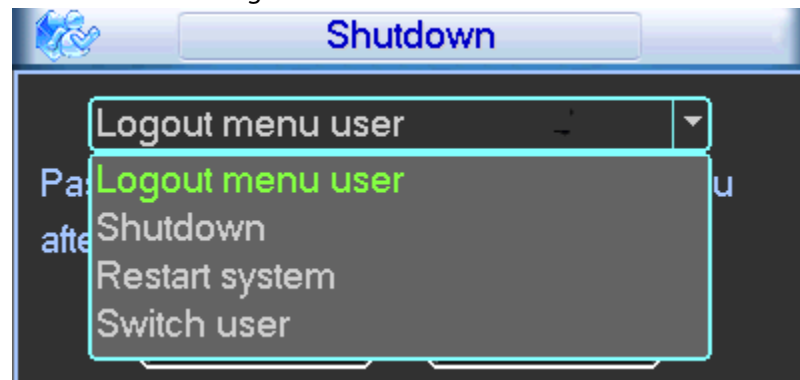
Parameter	Description
Fan Speed	Displays the speed of the fans.

Parameter	Description
Card Information	Displays information on cards in the slots, and the present operating status.
Temperature Information	Displays the present temperature and status of cards.
Source Information	Displays the status of two powers.
Time	Displays the system time of the Device.
Net Percentage	Displays the receiving and transmitting rate of each network port.
CPU Percentage	Displays CPU usage.
Memory Percentage	Displays the disk space usage.

3.2.3 Shutting down the Device

On the main menu, select **Shutdown**, and you can log out of menu user, switch users, shutdown the system or restart the system.

Figure 3-11 Shutdown



- Logout menu user: Exits the menu. You need to enter the password again if you want to log back in.
- Shutdown: Exits the system, and powers off the Device.
- Restart system: Exits the system, and restarts the system.
- Switch user: Logs out of the current user, and switches to another user.

4 Web Operations

4.1 Network Connection

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, refer to "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

Step 1 Enter IP address of the Device in the address bar of the browser.

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.

Figure 4-1 Device initialization

Device Initialization

Username admin

Password

Low Middle High

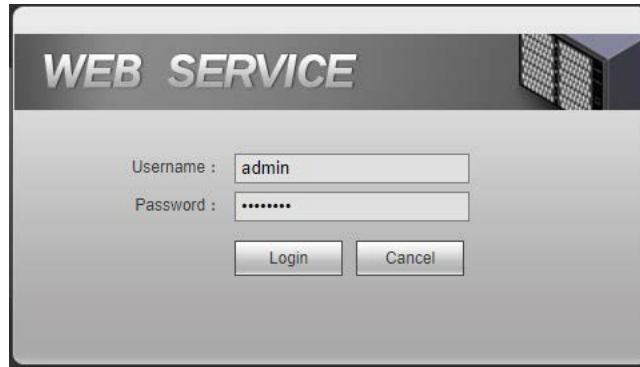
Confirm Password

OK

Step 3 Click **OK**.

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

Figure 4-2 Login



The image shows a web service login interface. At the top, it says "WEB SERVICE" in a stylized font. Below this, there are two input fields: "Username :" with the text "admin" entered, and "Password :" with a masked password "*****". Below the password field are two buttons: "Login" and "Cancel".

Step 5 View the points for attention and highlights.



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

Figure 4-3 Operation interface



Step 6 Install or load plug-in as prompted by the system.



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

4.3 Screen

Figure 4-4 Screen

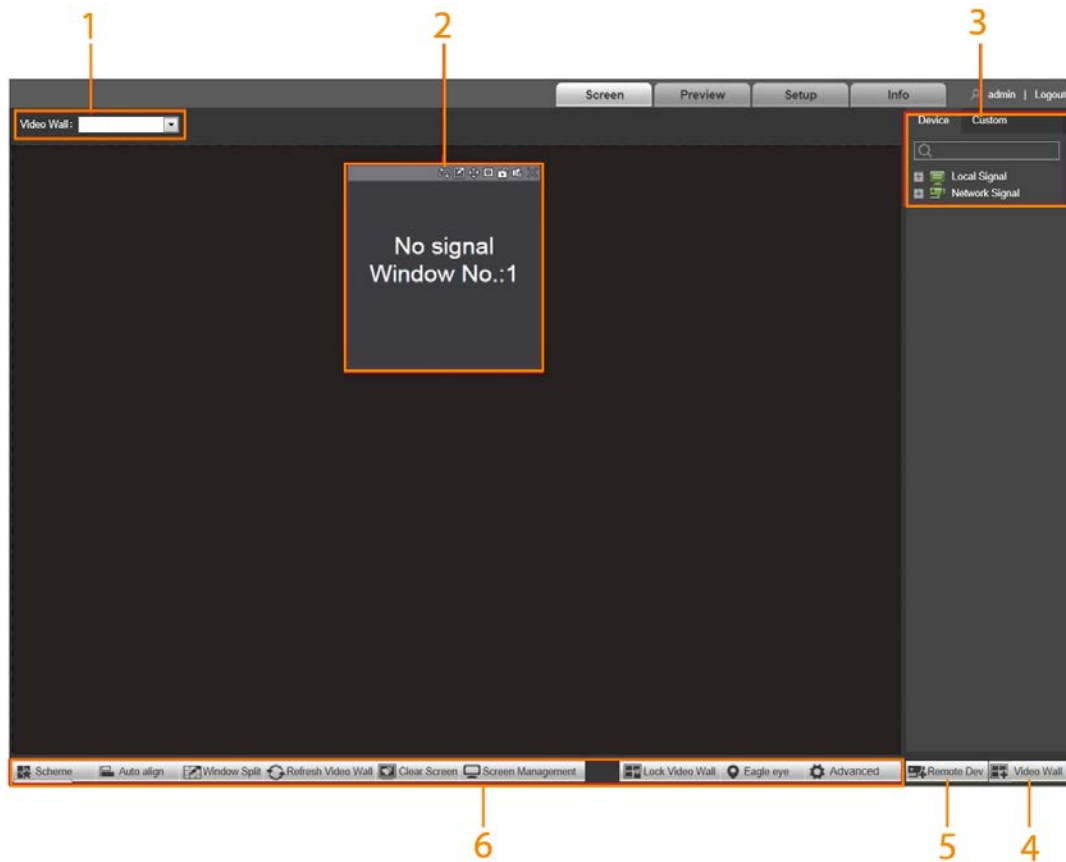


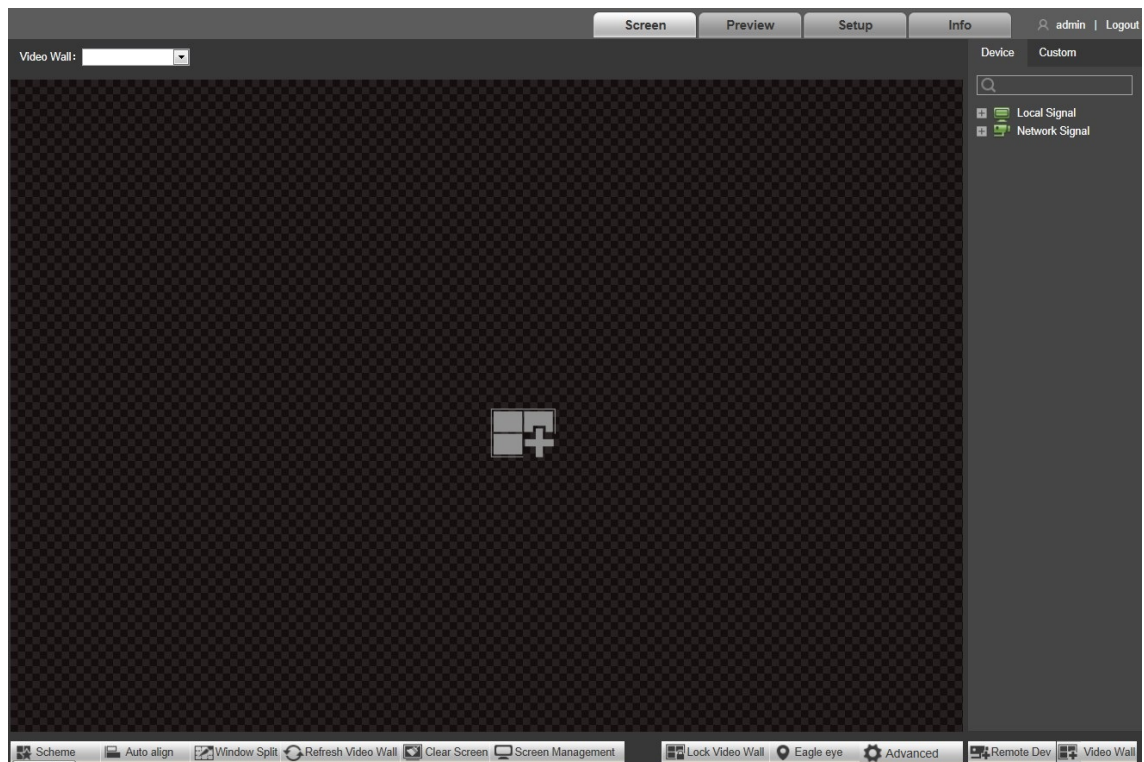
Table 4-1 Screen function description

No.	Name	Description
1	Video wall selection area	After you add a video wall, you can select the video wall in the Video Wall list.
2	Window configuration	You can add windows, adjust windows, put the window at the bottom and turn off the signals. For details, see "4.3.2 Window Configuration".
3	Signal management	- Click the Device tab, you can view local signal and channel information, preview and display the signals on the video wall. - Click the Custom tab, 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, and you can add, modify and delete video walls. For details, see "4.5.5.1 Adding Video Walls".
5	Network signal	Click Remote Dev to go to Network Signal page, and you can add, modify and delete devices. For details, see "4.5.4.1 Network Signal".
6	Video wall management	You can manage all of the video walls. For details, see "4.3.4 Video Wall Management".

4.3.1 Adding Video Walls

For first time login, you need to click  to add a video wall. For details, see "4.5.5.1 Adding Video Walls".

Figure 4-5 Adding video wall

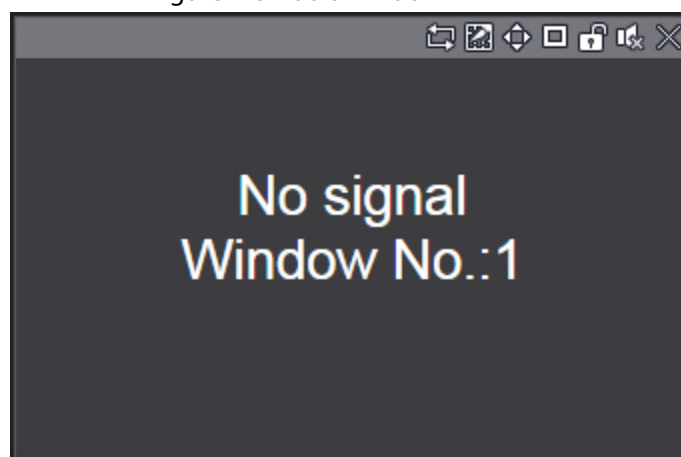


4.3.2 Window Configuration

4.3.2.1 Adding a Window

Press and hold the left mouse button, and then drag the mouse to add a window.

Figure 4-6 Add 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 signals, 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	Description
	• Click the icon to start a signal tour, and the icon becomes . • Click  to stop a signal tour. For details about configuring a signal tour, see "4.3.3.4 Signal Tour".
	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 becomes . Select and hold the icon to drag the window anywhere.
	Click the icon to paste the window to the screen, and you cannot adjust the window.
	Click the icon to maximize the window without overlapping other windows.
	Click the icon to lock the window, and then the window position and size cannot be adjusted.  Click  to unlock the window.
	Click the icon to turn on/off the audio.
	Click the icon to close the window.

4.3.2.3 Configuring Window Information

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

Prerequisites

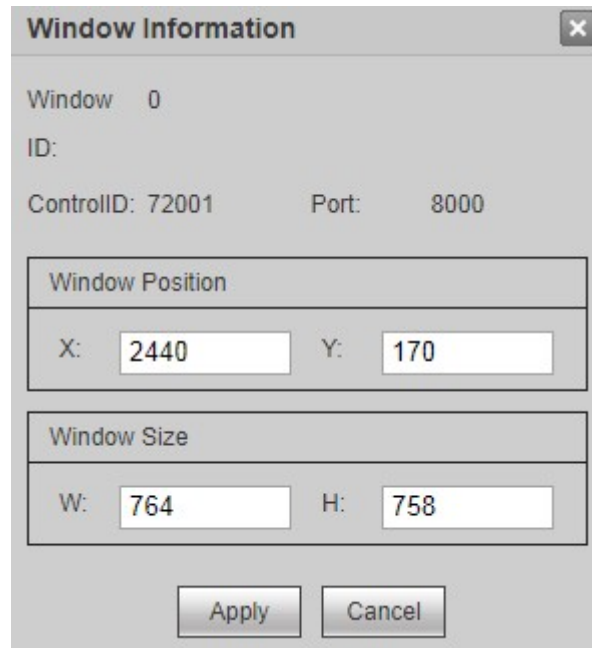
Manual setting window wide and height function has been enabled. For details, see "4.5.5.3.2 Global Setup".

Procedure

Step 1 Double-click the window.

Step 2 Configure the window position and window size.

Figure 4-7 Window information



The screenshot shows a 'Window Information' dialog box. At the top, it says 'Window 0'. Below that, 'ID:' is followed by 'ControllID: 72001' and 'Port: 8000'. There are two main sections: 'Window Position' and 'Window Size'. The 'Window Position' section has 'X: 2440' and 'Y: 170'. The 'Window Size' section has 'W: 764' and 'H: 758'. At the bottom, there are 'Apply' and 'Cancel' buttons.

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

Step 1 Select a window on the video wall, or drag a window to the video wall.

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

Figure 4-8 Select signal



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. For details, see "4.5.4.3 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.

The window starts the signal tour automatically.

Step 3 Click  at the bottom of the page.

All signal information in the window is displayed.

Figure 4-9 Signal information

No.	IP	Channel Name	Stay Time :	Stream Type	Operation
1	192.168.1.100	Channel_1	10	Sub Stream1	  

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



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

Step 5 Click  at the upper-right corner of window to stop the 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.

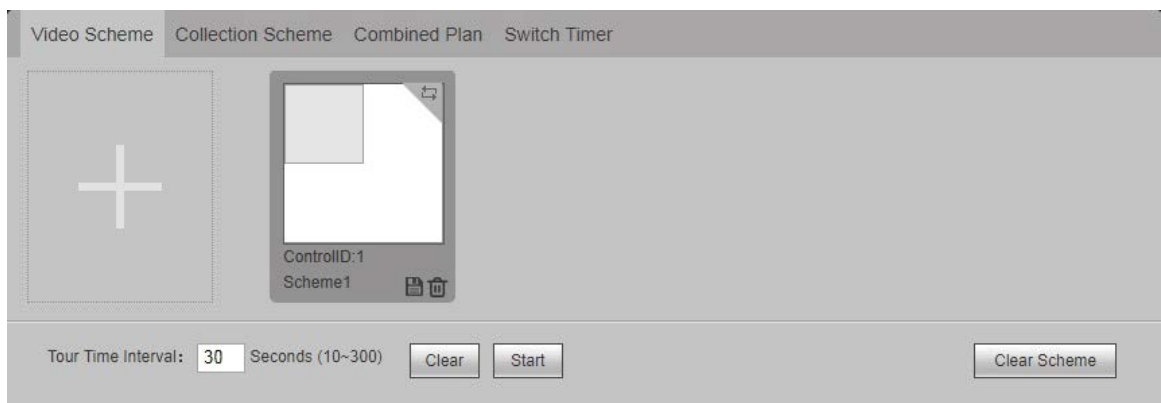
4.3.4.1.1 Video Scheme

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.

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

Step 2 Click  to save the scheme.

Figure 4-10 Video scheme



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



Click **Clear Scheme** to clear all schemes.

Step 4 Set tour time interval.

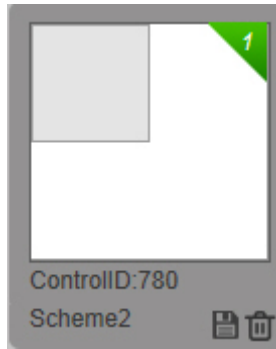
Step 5 Click  at the upper-right corner of each scheme to add the scheme to the tour queue.

 turns into a number, meaning its sequence in tour queue.



Double-click the control ID and scheme name, and you can change them. The control ID is used to distinguish different schemes when the central control device issues commands.

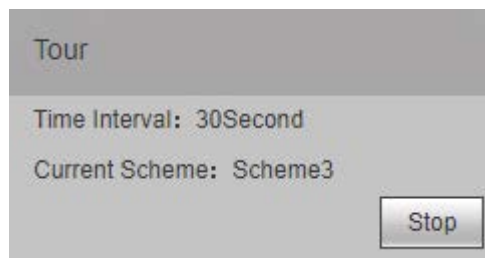
Figure 4-11 Set tour sequence.



Step 6 Click **Start**.

Scheme tour starts, and tour information is displayed at the lower-right corner of the page.

Figure 4-12 Tour information



- Click **Stop** to stop the tour.
- During scheme tour, you cannot operate on the **Screen** page.
- Click **Clear** to clear all of the scheme tours.

4.3.4.1.2 Collection Scheme

You can save virtual LED and background configuration to be a collection scheme. Multiple collection schemes can be displayed on the video wall in turn.



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

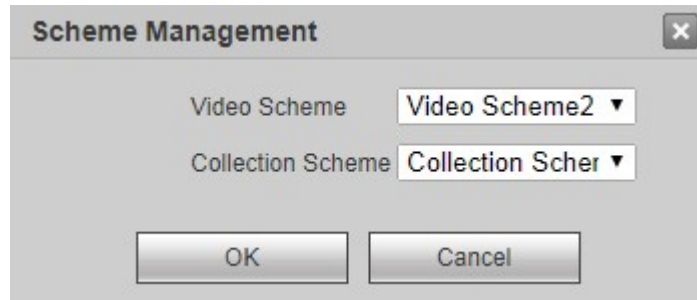
4.3.4.1.3 Combined Plan

You can combine the video scheme and collection scheme into a combined plan, and then display it on the video wall.

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

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

Figure 4-13 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.

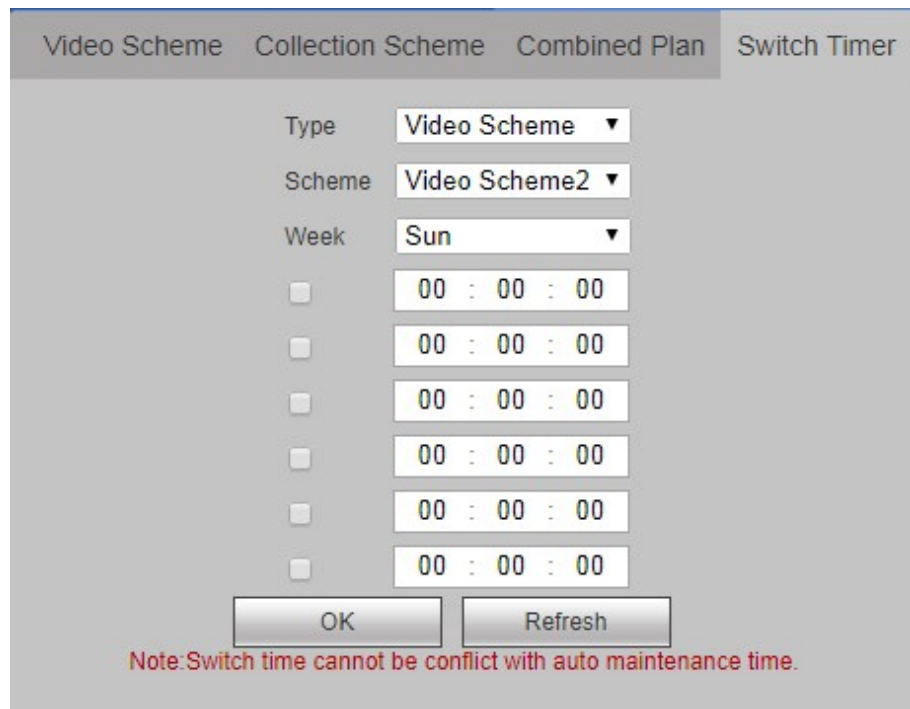
Step 1 At the bottom of the **Screen** page, select **Scheme > Switch Timer**.

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



- Select the checkbox, and the corresponding time takes effect.
- Two scheme time periods cannot be the same.

Figure 4-14 Switch timer



Step 3 Click **OK**.

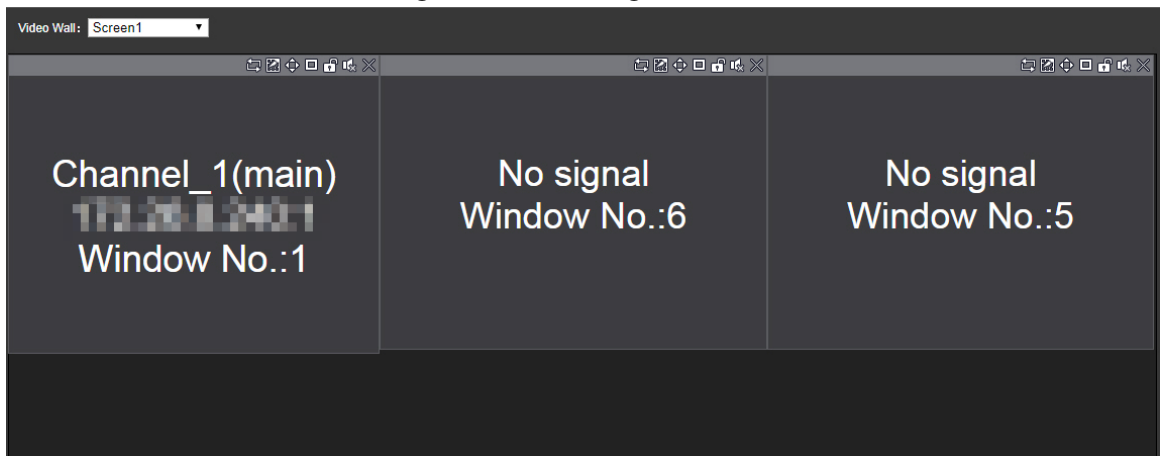
4.3.4.2 Auto-align

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 4-15 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.

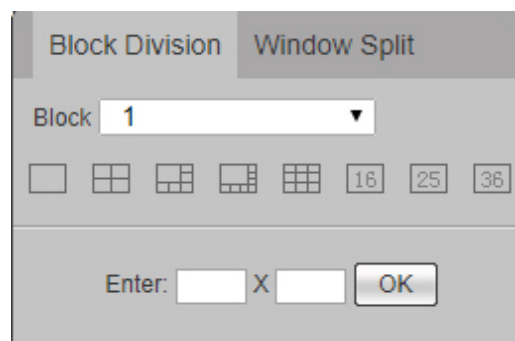
4.3.4.3.1 Splitting a Block

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.

Step 1 At the bottom of the **Screen** page, select **Window Split > Block Division**.

Step 2 Select a block from the **Block** list.

Figure 4-16 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 you are prompted a confirmation on the division.

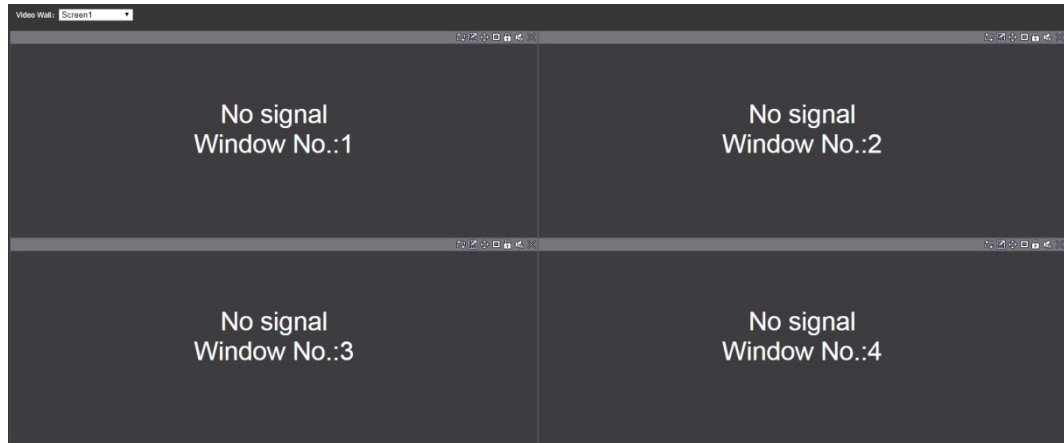
Step 5 Click **OK**.

The split blocks are displayed.



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

Figure 4-17 Block division display



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.

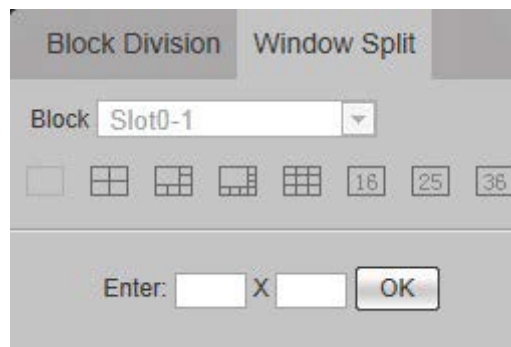
Step 1 Select a signal window.



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

Step 2 At the bottom of the **Screen** page, select **Window Split > Window Split**.

Figure 4-18 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**.

The split windows are displayed.



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

Figure 4-19 Window split display



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.



Only DH-LED-N protocol supports controlling the power switch and adjusting screen. LED-CLT protocol only supports power switch function. For screen protocol configuration, see "4.5.5.2.1 Screen Setup".

4.3.4.6.1 Screen Power

Connect the Device with the screen serial cable properly, and you can turn on or turn off the screen. The screen will be black if it is turned off.

Step 1 At the bottom of the **Screen** page, select **Screen Management > Screen Power**.

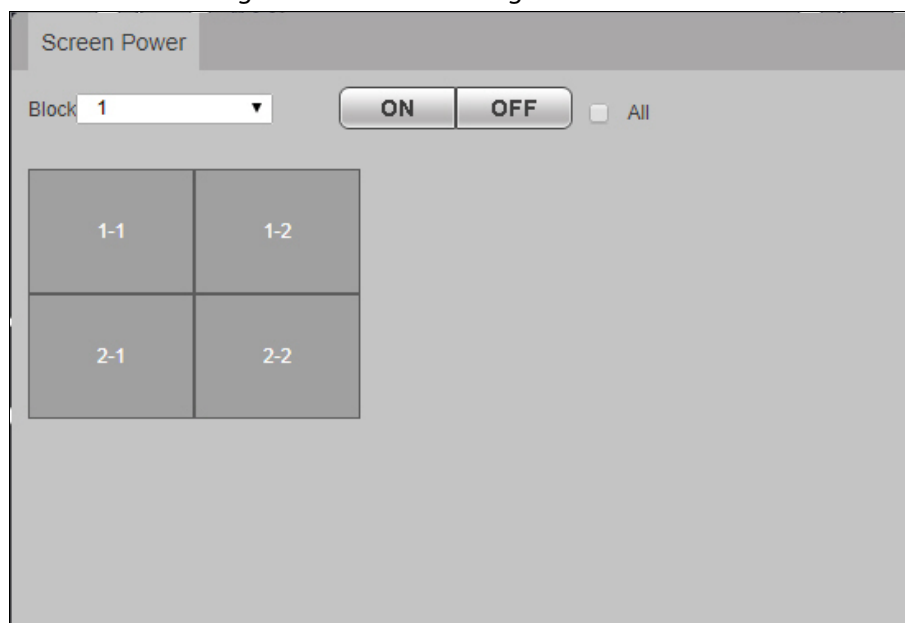
Step 2 Select a block from the **Block** list, and then select one or more screens.

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.

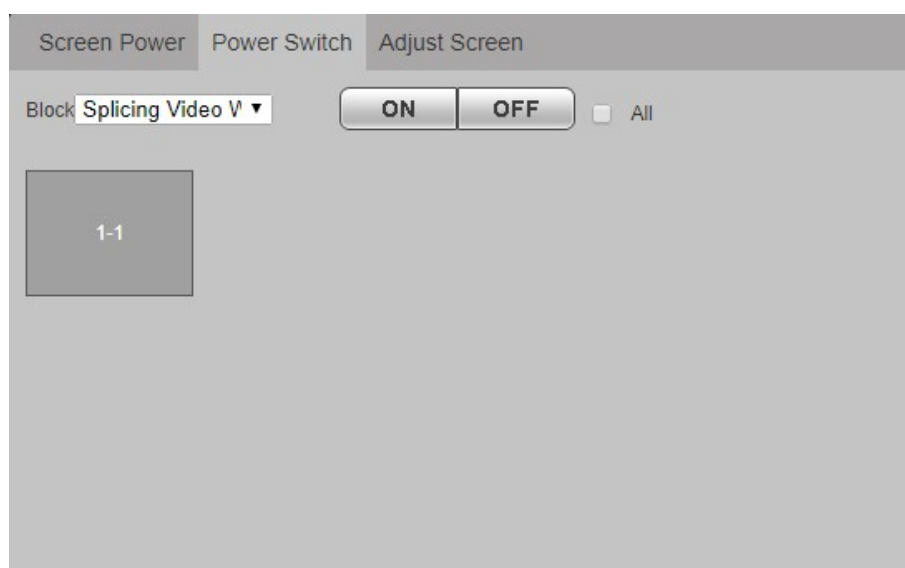
Figure 4-20 Screen management



4.3.4.6.2 Power Switch

Connect the Device with the serial cable of LED screen to control the power of LED screen. The operation of the power switch is similar to that of the screen power. For details, see "4.3.4.6.1 Screen Power".

Figure 4-21 Power switch



4.3.4.6.3 Adjust Screen

You can configure brightness, color temperature and other parameters of the LED screen, and adjust the screen display.

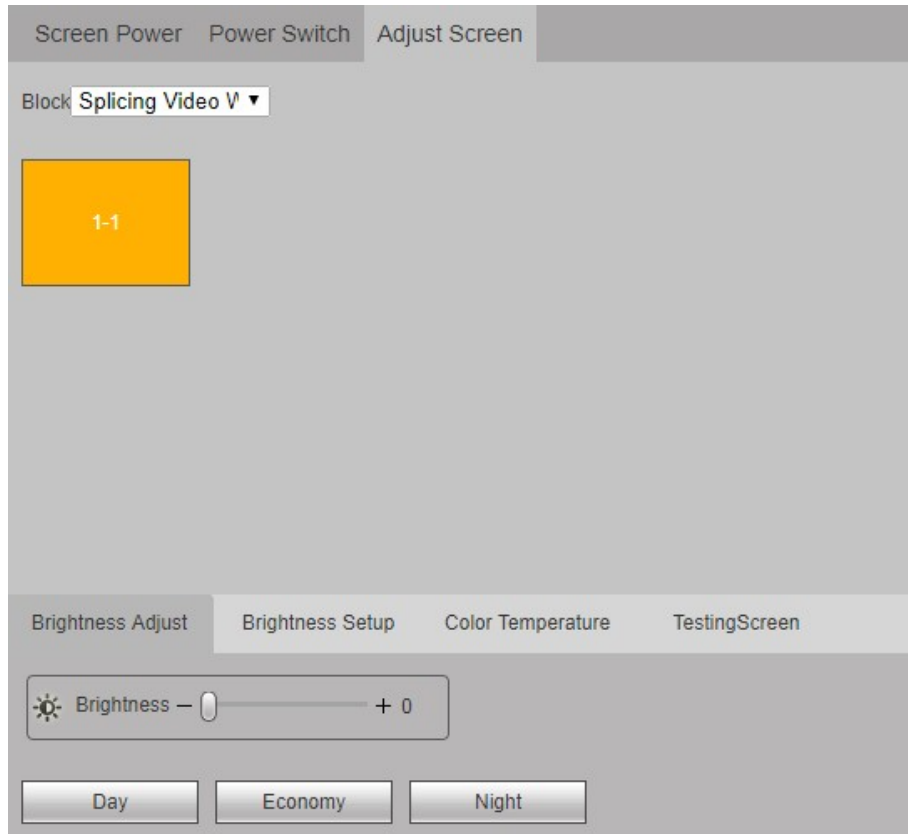
Prerequisites

Make sure that the screen manufacturer protocol is DH-LED-N.

Procedure

- Step 1 At the bottom of the **Screen** page, select **Screen Management > Adjust Screen**.
- Step 2 Select a block from the **Block** list, and then select one or more screens.
- Step 3 Configure screen display parameters depending on the hardware of display device.

Figure 4-22 Adjust screen



4.3.4.7 Locking Video Walls

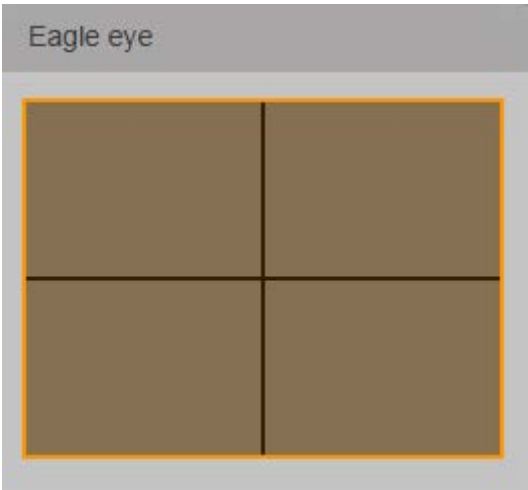
At the bottom of the **Screen** page, click **Lock Video Wall**. The video wall will be locked, and you cannot adjust the windows on this video wall. Click it again to unlock the video wall.

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 4-23 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. For details, see "4.5.1.8 PTZ Setup".

Figure 4-24 PTZ control

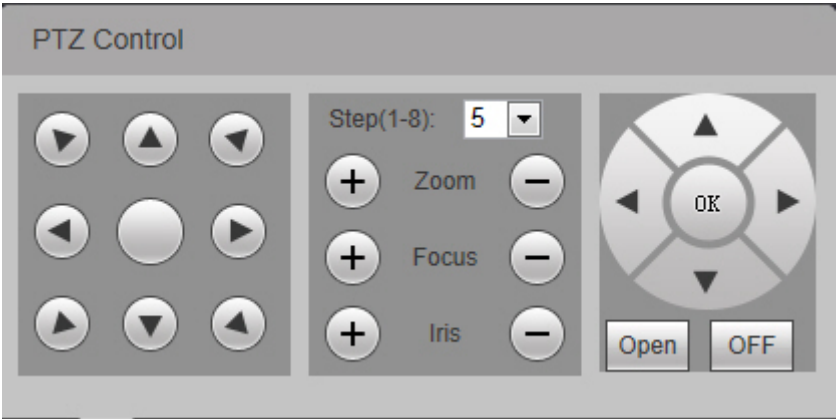


Table 4-3 PTZ control parameter description

Parameter	Description
Direction control	Controls PTZ to move in eight directions.
Step	Controls PTZ turning speed. 1–8 steps can be set.
Zoom	Click  or  to adjust the zoom.

Parameter	Description
Focus	Click  or  to adjust the focus.
Iris	Click  or  to adjust the iris.
PTZ menu	- Click  to open the PTZ menu of the preview page. Then you can select different functions with direction keys to operate PTZ. - Click  to turn off the PTZ menu of the preview page.

4.3.4.9.2 Virtual LED

You can enter any characters, and display them on the video wall.

Step 1 At the bottom of the **Screen** page, select **Advanced > Virtual LED**.

Step 2 Click , and configure parameters.

Figure 4-25 Virtual LED

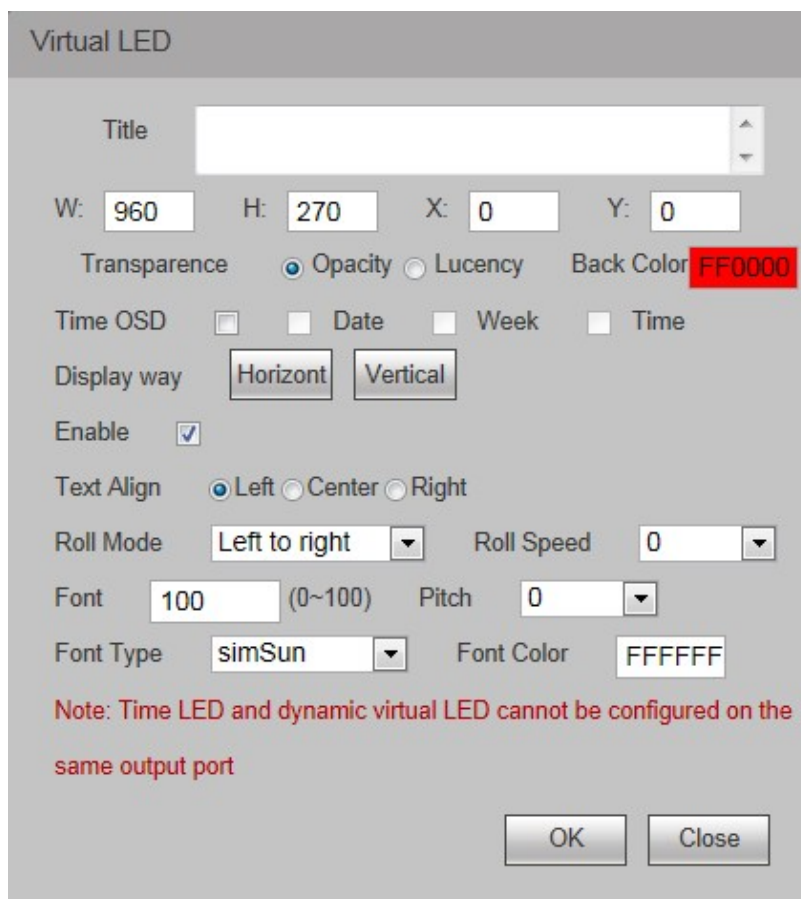


Table 4-4 Virtual LED parameter description

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.

Parameter	Description
X/Y	Enter the coordinate of the virtual LED.
Transparence	Configure the transparency of the virtual LED, which can be set to Opacity or Lucency .
Back color	Configure the background color of virtual LED. You can enter the 6-digit RGB values manually, or click the color area to select a color.
Time OSD	Select to enable the function. Date, Week and Time are displayed by default. You can select the time display type.  Select at least one item from Date, Week and Time.
Display way	Configure the display way of the title, including Horizontal or Vertical .
Enable	- Select the checkbox and click OK. The title will be displayed on the video wall. - Clear the checkbox and click OK. The title will be displayed on the web client, but not on the video wall.
Text align	Configure the alignment of the title, including Left , Center and Right .
Roll mode	Configure the roll mode of title text 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, which can be set from zero through five.  The title is static when the roll speed is 0.
Font	Configure the title font, which can be set from 0 through 100.
Pitch	Configure the title character distance, which can be set from zero through five.
Font type	Configure the title font type, including simSun and simHei .
Font color	Configure the title color. You can enter the 6-digit RGB values manually, or click the color area to select a color.

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 4-26 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. For details, see "4.5.1.6 Picture Management".

Procedure

- Step 1 At the bottom of the **Screen** page, select **Advanced > Background**.
- Step 2 Select a block and a picture from the **Block** and **Picture Name** lists.
- Step 3 Select **Enable**.

Figure 4-27 Add background

A screenshot of the 'Background Setup' dialog box. It contains fields for 'Block' (set to 'Slot0-1'), 'Picture Name' (empty), and an 'Enable' checkbox (unchecked). An 'OK' button is at the bottom.

- Step 4 Click **OK**.

4.3.4.9.4 OSD

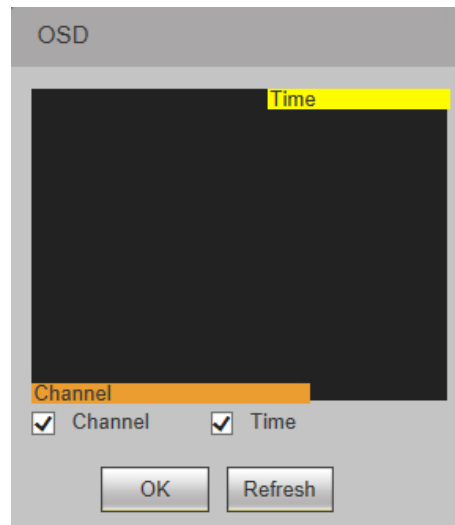
Overlay time title and channel title onto the video wall.



OSD only applies to local signal.

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

Figure 4-28 OSD



Step 2 Select **Channel** and **Time** as you want.

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.



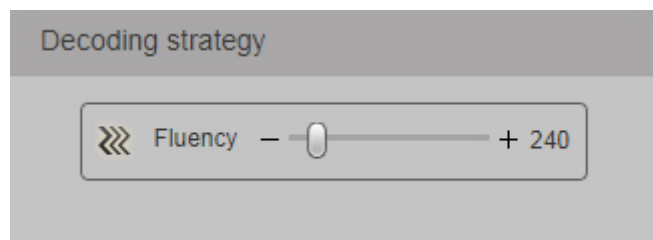
Only network signal supports this function.

Step 1 Select a network signal window, and then click **Decoding strategy**.

Step 2 Drag the slider to adjust window fluency.

Greater fluency value represents lower definition of the image.

Figure 4-29 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 Live View

Click the **Preview** tab, and the **Preview** page is displayed.

Figure 4-30 Preview

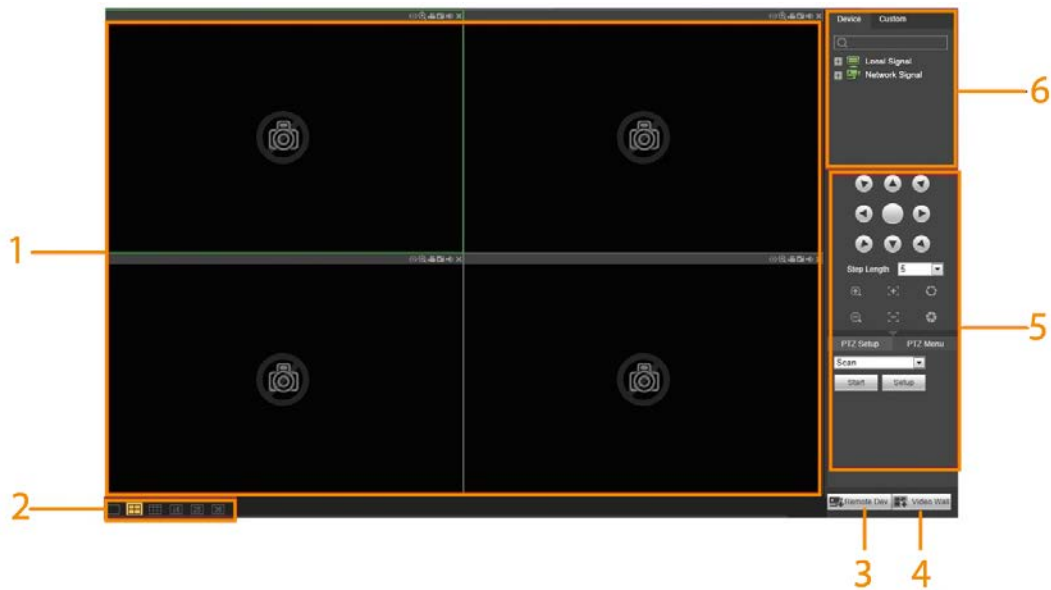


Table 4-5 Function description of preview interface

No.	Name	Description
1	Live window	View the video. For details, see "4.4.1 Window Function".
2	Window split	You can split the window into several sections.
3	Remote device	Click Remote dev to go to the Network Signal page. You can add, modify and delete devices. For details, see "4.5.4.1 Network Signal".
4	Video wall	Click Video Wall to go to the Video Wall Setup page. You can add, modify and delete video walls. For details, see "4.5.5.1 Adding Video Walls".
5	PTZ control area	PTZ functions. For details, see "4.4.3 PTZ Control".
6	Signal configuration area	Configure local signals and network signals. For details, see "4.4.2 Signal Configuration".

4.4.1 Window Functions

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

Figure 4-31 Window function

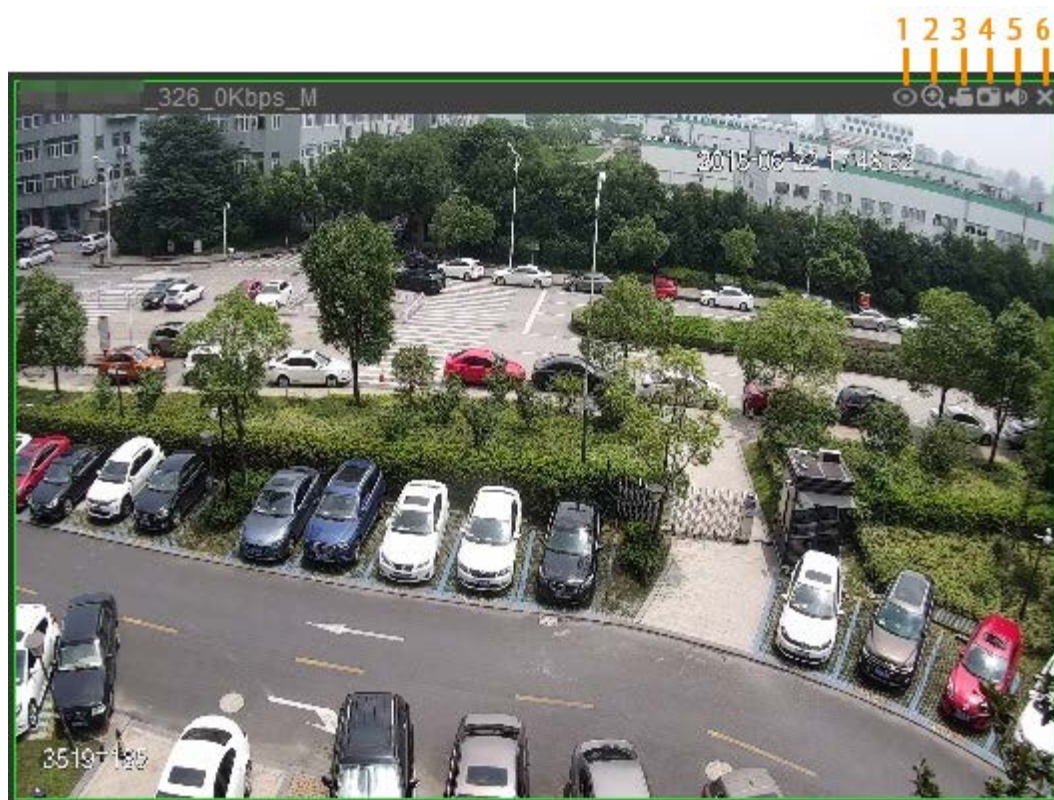


Table 4-6 Functional description

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 the left mouse button to select an area. The selected area will be zoomed in. When the video is zoomed in, you can press and hold left mouse button to drag it. Click the right mouse button to restore to 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 under the directory as configured in "4.5.1.11 Storage Path".
4	Snapshot	Click the icon to take a snapshot. The snapshot file is saved under the directory 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 "4.3.3Signal 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 4-32 PTZ Control



Table 4-7 PTZ parameters description

Parameter	Description
Scan	- Click Setup, turn the camera with direction buttons, and click Set Left Border and Set Right Border to set the 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. - In the input box, enter the preset number, and then click View. The camera moves to the location of preset.
Point Tour	- In the input box, enter the preset number, and then click Add to add this preset to this tour. - In the input box, enter the tour number, and click Start to start the tour. Click Stop to stop the 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.

Parameter	Description
Lamp Wiper	- Click Enable to enable the lamp and wiper function. - Click Disable to disable the lamp and wiper function.

4.5 Setup

4.5.1 System Configuration

You can complete general setting of the system.

4.5.1.1 General Settings

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

4.5.1.1.1 Setting of General Information

You can configure the device name and number.

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

Step 2 Configure parameters.

Figure 4-33 General

Table 4-8 General parameters description

Parameter	Description
Device Name	Customize the device name and number to identify the Device from other devices.
Device No.	
Language	System language is determined by program package.

Step 3 Click **OK**.

4.5.1.1.2 Date

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

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

Step 2 Configure parameters.

Figure 4-34 Date

The screenshot shows the 'Date' configuration tab. It includes fields for Date Format, Time Format, Date Separator, System Time, Sync Device Time, DST, DST Type, Start Time, End Time, NTP Setup, Time Zone, Server, Port, and Interval. There are also buttons for Sync PC, Manual Update, OK, Refresh, and Default.

Table 4-9 Date parameters description

Parameter	Description
Date Format	Select date and time display format.
Time Format	
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 automatic time correction of remote devices.
DST	Select the checkbox to enable DST (Daylight Saving Time).
DST Type	Select DST type, including Date and Week .
Start Time/End Time	- When the 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 the server address or domain name.
Port	Enter the port number of NTP server.

Parameter	Description
Interval	Configure the interval to update NTP server.

Step 3 Click **OK**.

4.5.1.2 User Management

User management uses two-level management mode: user and user group. You can manage their basic information if you have user management authority.

- User name and group name can be up to 6 characters, and can only consist of letters, number, and underlines.
- 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 ' " ; : &). Accounts with user management authority can change their password, and also modify the password of other users.
- You can add up to 64 users and 20 user groups.
- Group name and user name must be unique. One user can only belong to one group.
- Current users cannot modify their own permissions.
- Admin is the default account with full permissions.

4.5.1.2.1 Adding Groups

Different users might have different authorities to access the Device. You can divide the users with the same authority into one group. It is easy for you to maintain and manage the user information.

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

Step 2 Click **Add Group**.

Step 3 Customize the group name and remark.

Step 4 Select the group authorities.

- Select the check box to enable the authority.
- Select **All** to select all authorities.

Figure 4-35 Group

Add Group

Group Name

Remark

Authority

- ☒ All
- ☒ User management
- ☒ System management*
- ☒ View System Info*
- ☒ Manual control
- ☒ Event setting
- ☒ Network management
- ☒ Sub network management
- ☒ Peripheral management
- ☒ Security Management
- ☒ Audio and video parameters
- ☒ Decode and display on vid...
- ☒ PTZ setting
- ☒ Device maintenance
- ☒ Live view
- ☒ Video wall management

OK Cancel

Step 5 Click **OK**.

4.5.1.2.2 Adding Users

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

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 4-36 User

Add User

Username: admin

Password:
Low Middle High

Confirm Password:

Group: admin

Remark:

Authority

- ☒ All
- ☒ User management
- ☒ System management*
- ☒ View System Info*
- ☒ Manual control
- ☒ Event setting
- ☒ Network management
- ☒ Sub network management
- ☒ Peripheral management
- ☒ Security Management
- ☒ Audio and video parameters
- ☒ Decode and display on vid...
- ☒ PTZ setting
- ☒ Device maintenance
- ☒ Live view
- ☒ Video wall management

Note : item with "*" is parent directory.

OK Cancel

Step 4 Click **OK**.

4.5.1.3 Configuration Backup

Select **Setup > System Config > 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 4-37 Configuration backup

Config Backup

Import Config: Browse Import Config

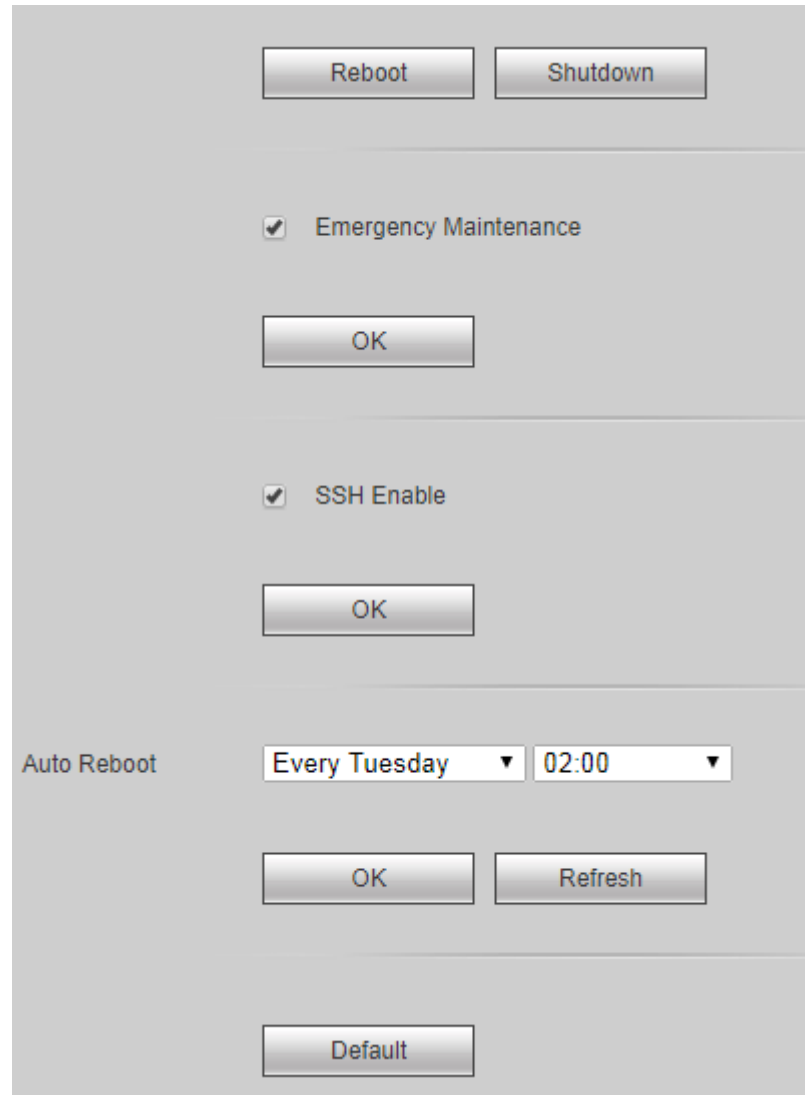
Export Config

- 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 4-38 System maintenance



The image shows a system maintenance configuration window with a light gray background. At the top, there are two buttons: 'Reboot' and 'Shutdown'. Below these, there is a section with a checked checkbox labeled 'Emergency Maintenance' and an 'OK' button. The next section has a checked checkbox labeled 'SSH Enable' and an 'OK' button. Below that, the 'Auto Reboot' section features a dropdown menu set to 'Every Tuesday' and a time dropdown set to '02:00'. Underneath are 'OK' and 'Refresh' buttons. At the very bottom is a 'Default' button.

- 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 Config > System Upgrade**.

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

Step 3 Click **Upgrade**. There is a progress bar during upgrade.

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

Figure 4-39 System upgrade



4.5.1.6 Picture Management

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

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

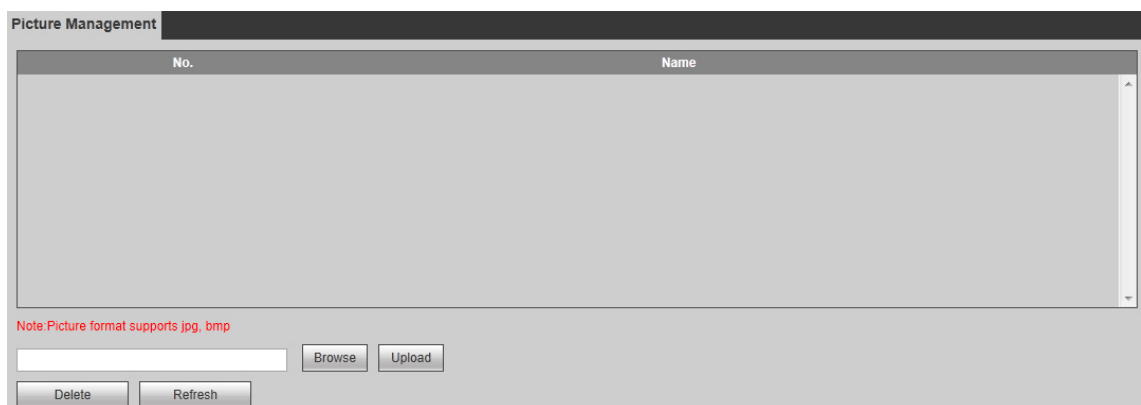
Step 2 Click **Browse** to select a local picture.

Step 3 Click **Upload** to upload the picture.



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

Figure 4-40 Picture management



4.5.1.7 Fan Control

You can configure fan temperature control and buzzer alarm.

4.5.1.7.1 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.

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 4-41 Fan control–Fan temperature

Fan	Low (°C)	Medium (°C)	High (°C)
Fan1	30	40	
Fan2	30	40	
Fan3	30	40	

4.5.1.7.2 Close Buzzer

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

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

Step 2 Configure the time setup.

Figure 4-42 Fan control–Close Buzzer

Time Setup: 120 (0~600s)

Note: The buzzer will beep continuously if the time is set to 600 and The buzzer Will Shut down if the time is set to 0 .

Step 3 Click **OK**.



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

4.5.1.8 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, the Device protocol, baud rate, address and parity must be the same as those of the camera.

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

Step 2 Configure PTZ parameters.

Figure 4-43 PTZ setup

The image shows a 'PTZ Setup' configuration window. It has a title bar 'PTZ Setup' and a list of parameters, each with a dropdown menu. The parameters and their current values are: Device Type (Local), Slot (3), Channel (Channel1), Port (1-1), PTZ Type (Local), protocol (NONE), Address (1), Baud Rate (9600), Data Bit (8), Stop Bit (1), and Parity (N/A). The Address field has a range '(0~255)' next to it. At the bottom, there are two buttons: 'Save' and 'Refresh'.

Parameter	Value
Device Type	Local
Slot	3
Channel	Channel1
Port	1-1
PTZ Type	Local
protocol	NONE
Address	1 (0~255)
Baud Rate	9600
Data Bit	8
Stop Bit	1
Parity	N/A

Table 4-10 PTZ parameter description

Parameter	Description
Device Type	Select device type to be controlled. It is Local by default.
Slot	Select corresponding slot.
Channel	Select channel to be configured.
Port	Select corresponding port.
PTZ Type	Supports local PTZ only.
Protocol	Select the Device protocol, and keep it consistent with that of the camera.
Address	Configure the Device address, which ranges from 0 through 255.
Baud Rate	Configure baud rate of the Device, and keep them consistent with those of the camera.
Data Bit	Configure the Device data bit, including 5, 6, 7 and 8.
Stop Bit	Configure the Device stop bit, including stop bit 1 and stop bit 2.
Parity	Include odd, even, flag parity and empty parity. Keep it consistent with the camera parity.

Step 3 Click **Save**.

4.5.1.9 Serial Port Setup

After serial port parameters are set, the Device can be connected with other devices through serial ports, for the purpose of debugging and operation.

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

Step 2 Configure parameters.

Figure 4-44 Serial port setup

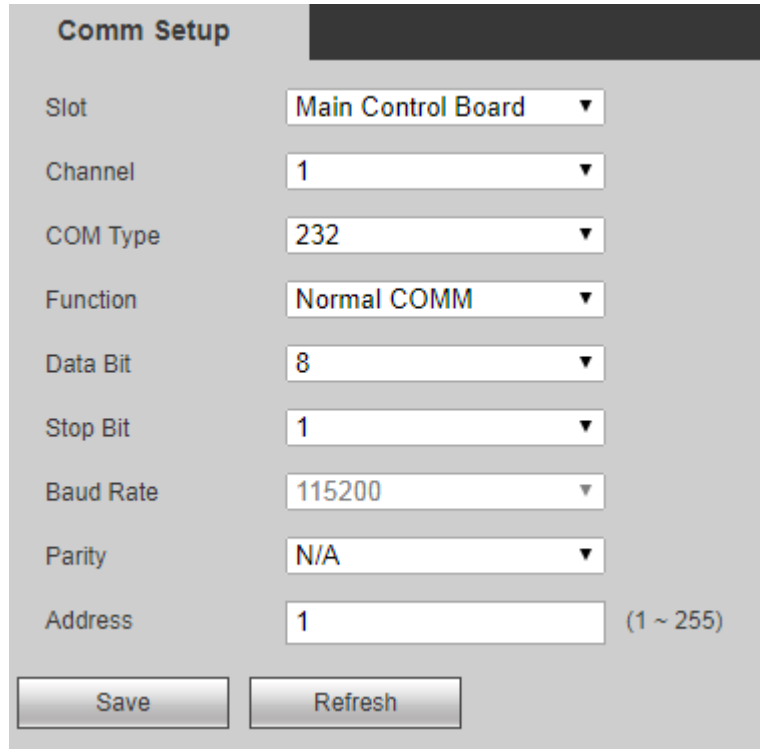


Table 4-11 Serial port parameters description

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 functions.
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 .  When you set the function as Normal Comm , the Baud Rate is 115200 by default and cannot be changed.
Address	Configure the serial port address, which ranges from 0 through 255.

Step 3 Click **Save**.

4.5.1.10 Security Management

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

4.5.1.10.1 Firewall

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

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

Figure 4-45 Firewall

Host IP/MAC	Port	Edit	Delete
-------------	------	------	--------

Step 3 Select **Enable**.

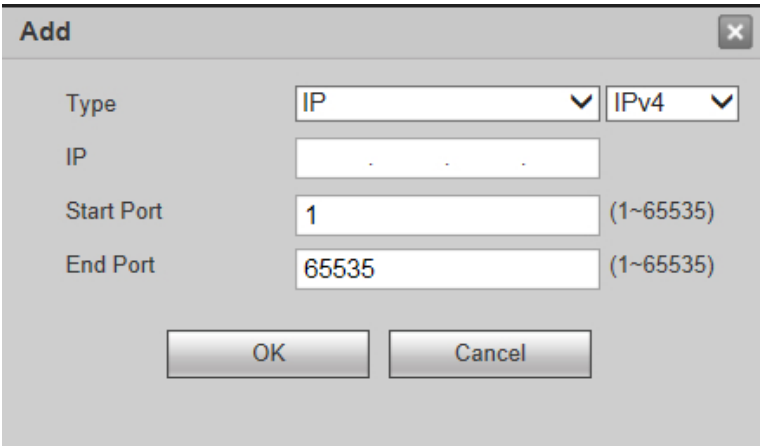
Step 4 (Optional) Select **Mode**, and configure the **Allowlist** and **Blocklist**.

- **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 the network connection.



- Only the **Network Access** type supports the allowlist and blocklist configurations..
- The **Allowlist** and **Blocklist** can be configured in the same way. Take allowlist configuration as an example.
 - 1) Set the mode as **Allowlist**.
 - 2) Click **Add**.
 - 3) Select **Type**, and then configure **IP**, **Start Port** and **End Port**.
Type supports **IP**, **IP Segment** and **MAC Address**. Configure parameters according to the actual situation.

Figure 4-46 Add

A dialog box titled "Add" with a close button (X) in the top right corner. It contains four input fields: "Type" with a dropdown menu showing "IP", "IP" with a text box containing "1", "Start Port" with a text box containing "1" and a range "(1~65535)", and "End Port" with a text box containing "65535" and a range "(1~65535)". At the bottom are "OK" and "Cancel" buttons.

4) Click **OK**.

Step 5 Click **OK**.



Click **Refresh** to clear unsaved information.

4.5.1.10.2 System Service

You can configure system service to ensure system security.

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

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

Figure 4-47 System service

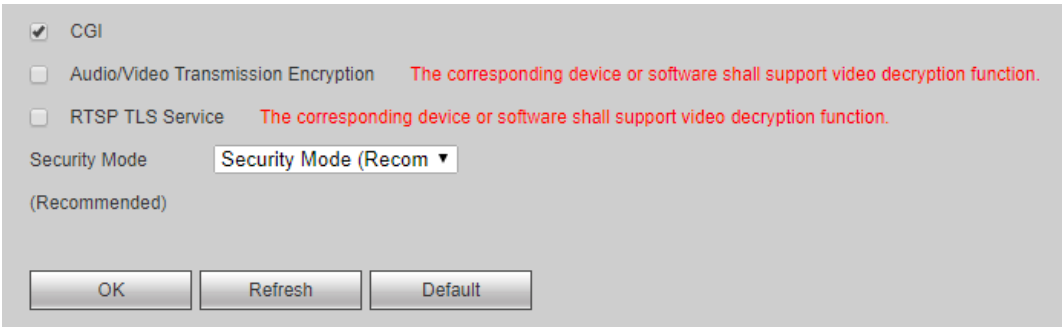
A configuration window for system services. It has a list of services with checkboxes: "CGI" (checked), "Audio/Video Transmission Encryption" (unchecked), and "RTSP TLS Service" (unchecked). Red text next to the unchecked services says "The corresponding device or software shall support video decryption function." Below the list is a "Security Mode" dropdown menu set to "Security Mode (Recom)". Below that is the text "(Recommended)". At the bottom are "OK", "Refresh", and "Default" buttons.

Table 4-12 System service parameters description

Parameter	Description
CGI	Common Gateway Interface (CGI) is an interface between external application programs and web server.
Audio/Video Transmission Encryption	Encrypt the audio and video during transmission.
RTSP TLS Service	Encrypt before requesting video service from video server.

Step 3 Click **OK**.



- Click **Refresh** to clear unsaved information.
- Click **Default** to restore to default settings.

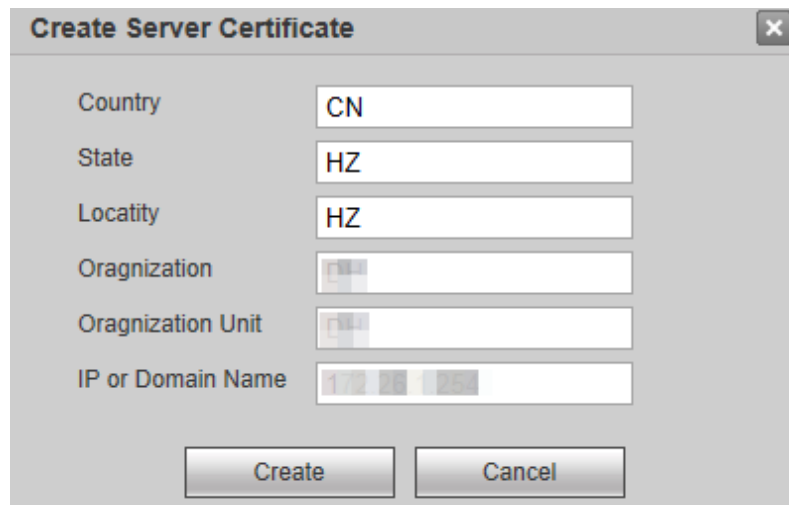
4.5.1.10.3 HTTPS

Through creating server certificates or downloading root certificates, the computer can log in by HTTPS, which ensures the security of communication data, and guard the user information and device security with stable technology measure.

Background Information

- For first time use of this function or after changing IP address of the Device, you need to click **Create Server Certificate** to create a server certificate.

Figure 3-18 Create server certificate



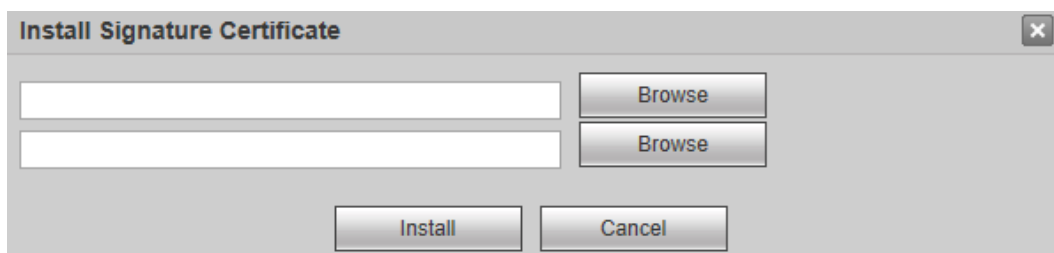
The 'Create Server Certificate' dialog box contains the following fields and buttons:

Field	Value
Country	CN
State	HZ
Locality	HZ
Organization	
Organization Unit	
IP or Domain Name	

Buttons: Create, Cancel

- For first time use of HTTPS after changing a computer, you need to click **Download Root Certificate** to download root certificate.
- If you have a certificate on your computer, click **Install Signature Certificate** and then upload your certificates.

Figure 3-19 Upload certificates



The 'Install Signature Certificate' dialog box contains the following fields and buttons:

Field	Value
File Path 1	
File Path 2	

Buttons: Browse, Browse, Install, Cancel

- HTTPS status will take effect after restart.

Procedure

- Step 1 Select **Setup > System Config > Security Management > HTTPS**.
- Step 2 Enable HTTPSs
- Step 3 Enter the HTTPSs port.
- Step 4 Click **OK**.

Figure 4-48 HTTPS



- If HTTPS is enabled, you cannot access the Device through HTTP. The system will switch to HTTPS if you access the Device through HTTP.
- The deletion of created and installed certificates cannot be restored..

4.5.1.10.4 Security Exception Linkage

You can configure linkage actions when an abnormal event occurs.

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

Figure 4-49 Security exception linkage

Table 3-5 Security exception linkage parameters

Parameter	Description
Security exception alarm linkage	Select the checkbox to enable this function.
Buzz	The system activates a buzzer alarm when an alarm occurs.
Log	Select the Log checkbox and the alarm information will be recorded on the local computer.

Step 2 Click **OK**.

4.5.1.10.5 Static ARP Bind

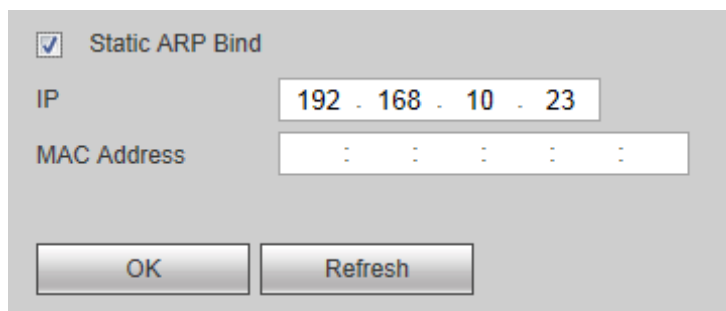
You can bind the IP and MAC address of the Device to reduce the risk of ARP (Address Resolution Protocol) deception.

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 4-50 Static ARP bind

A configuration window titled "Static ARP Bind". It has a checked checkbox labeled "Static ARP Bind". Below it, there are two input fields: "IP" with the value "192 . 168 . 10 . 23" and "MAC Address" with five empty slots separated by dots. At the bottom, there are two buttons: "OK" and "Refresh".

Step 4 Click **OK**.

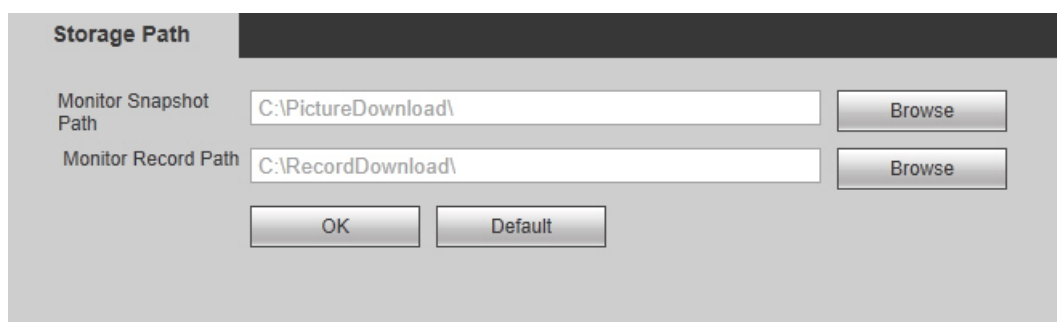
4.5.1.11 Storage Path

You can select the storage path for snapshots and records.

Step 1 Select **Setup > System Config > Storage Path**.

Step 2 Click **Browse** to select the storage path for snapshots and records respectively.

Figure 4-51 Storage path

A configuration window titled "Storage Path". It has two input fields: "Monitor Snapshot Path" with the value "C:\PictureDownload\" and "Monitor Record Path" with the value "C:\RecordDownload\". Each input field has a "Browse" button to its right. At the bottom, there are two buttons: "OK" and "Default".

Step 3 Click **OK**.



Click **Default** to restore default path. The default storage path of snapshots and recordings are C:\PictureDownload and C:\RecordDownload respectively.

4.5.2 Network

4.5.2.1 TCP/IP

You can configure the device IP address, DNS server information and other information according to network plan

Prerequisites

- Before configuring network parameters, make sure that the device is connected to the network properly.
- If there is no routing device in the network, distribute the IP address on the same network segment.

- If there is a routing device in the network, you only need to configure the gateway and subnet mask.

Procedure

Step 1 Select **Setup > Network > TCP/IP**.

Step 2 Configure TCP/IP parameters.

- **IP Version:** Select IP version. It is IPv4 by default.
- **Default Net Card:** Select default Ethernet card from the list.

Figure 4-52 TCP/IP

Ethernet Card Name	IP Address	Network Mode	Ethernet Composition	Edit	Cancel Binding
Net Card Bind1		Fault-tolerance	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16		

IP Version:

Default Net Card:

OK Refresh Default

Step 3 Click  to edit the Ethernet card information.

Figure 4-53 Edit

Ethernet Card: Net Card Bind1

Ethernet Mode: ☐ Single NIC ☒ Fault-tolerance ☐ Load-balance ☐ LinkAgg

Ethernet Composition: ☒ Net Card1 ☒ Net Card2 ☒ Net Card3 ☒ Net Card4 ☒ Net Card5
☒ Net Card6 ☒ Net Card7 ☒ Net Card8 ☒ Fiber Card9 ☒ Fiber Card10
☒ Fiber Card11 ☒ Fiber Card12 ☒ Fiber Card13 ☒ Fiber Card14
☒ Fiber Card15 ☒ Fiber Card16

IP Version:

MAC Address:

Mode: ☒ Static ☐ DHCP

IP Address:

Subnet Mask:

Default Gateway:

OK Cancel

Table 4-13 Ethernet card parameters description

Parameter	Description
Ethernet Mode	The default setting is single NIC. - Single NIC: Several Ethernet cards are used independently. You need to configure one default card (net card 1 by default) to request network services launched by the Device, including DHCP, Email and FTP. During network status detection, the network is deemed to be disconnected if one net card is disconnected. - Fault tolerance: Several Ethernet cards use one IP address, and only one Ethernet card works under normal conditions. If working Ethernet card breaks down, another Ethernet card is enabled automatically to ensure smooth network. It is deemed that the network is disconnected only when all of the Ethernet cards are disconnected during network status check. All of the Ethernet cards need to be in the same LAN. - Load balance: Several Ethernet cards use one IP address, and all of them work together to bear network load; the bound network throughputs are basically the same. If one Ethernet card breaks down, the other Ethernet cards work normally. It is deemed that the network is disconnected only when all of the Ethernet cards are disconnected during network status check. All of the Ethernet cards need to be in the same LAN. - Link aggregation: The system uses NIC bonding to realize communication function. All bonded NICs are working together and bearing the network load. The system allocates the corresponding ports to the specified switches according to the port load setting. Once one port link malfunctions, the system stops sending out data from current port. The system can calculate the new load and specify the new port(s) to send out data. The system calculates again to specify the port(s) once the malfunction port becomes available.  Single NIC Device does not support Ethernet mode selection.
IP Version	It is IPv4 by default.
MAC Address	Displays the MAC address of the Device.
Mode	- Static Manually enter the IP address, subnet mask and gateway. - DHCP Select the DHCP checkbox, 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 enabled, the obtained information will be displayed in the IP address box, subnet mask box and gateway box. If DHCP is not enabled, all the field boxes will contain a 0. ◇ When DHCP is disabled, the static IP information will be restored to default settings. You need to configure IP again.

Parameter	Description
IP Address	Enter numbers to change the IP address, and then configure its Subnet Mask and Default Gateway .  IP address and default gateway must be on the same network segment.
Subnet Mask	
Default Gateway	

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

Step 5 Click **OK** to complete configuration.

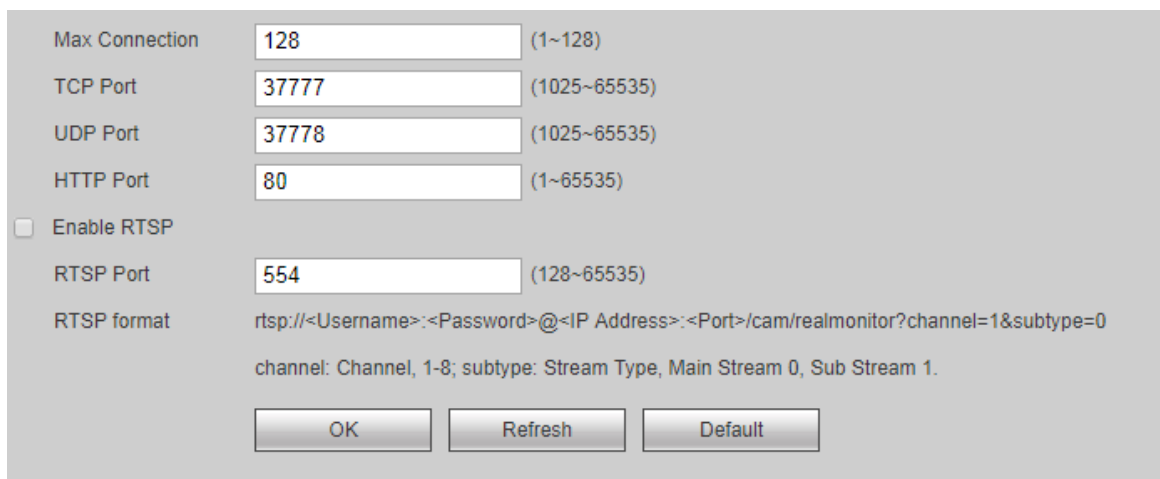
4.5.2.2 Port

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

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

Step 2 Configure the maximum connection and port.

Figure 4-54 Connection setup



Max Connection: 128 (1~128)

TCP Port: 37777 (1025~65535)

UDP Port: 37778 (1025~65535)

HTTP Port: 80 (1~65535)

☐ Enable RTSP

RTSP Port: 554 (128~65535)

RTSP format: rtsp://<Username>:<Password>@<IP Address>:<Port>/cam/realmonitor?channel=1&subtype=0
channel: Channel, 1-8; subtype: Stream Type, Main Stream 0, Sub Stream 1.

OK Refresh Default

Table 4-14 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. It is 128 by default.
TCP Port	TCP service port. It is 37777 by default.
UDP Port	User Datagram Protocol port. The default value setting is 37778.
HTTP Port	Hyper Text Transfer Protocol port. It is 80 by default. You can enter the value according to your actual situation, and in this case, add the modified value after the address when logging in to the Device on the browser.

Parameter	Description
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. - When the URL format requiring RTSP, you need to specify channel number and bit stream type in the URL, and also username and password if needed. URL format is described as below: rtsp://username:password@ip:port/cam/realmonitor?channel=1&subtype=0 - 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.

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

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

Figure 4-55 Sync IP

Step 3 Click **OK**.

4.5.3 Event Management

You can configure alarm linkage actions when an event occurs.

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

Select the abnormal type, including **Network Offline**, **IP Conflict**, and **MAC Conflict**.

Step 2 Select **Enable** to enable the alarm function, and then configure the parameters.

The three types of abnormal events can be configured in the same way. Take the **Network Offline** as an example.

Figure 4-56 Network offline

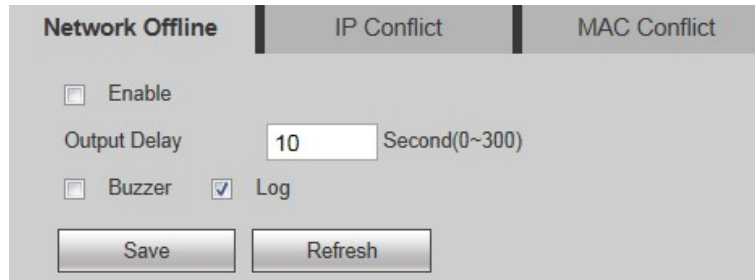


Table 4-15 Abnormal parameters description

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	Select Log to enable the Device to record a local alarm log when an alarm event occurs.

Step 3 Click **Save**.

4.5.4 Signal Management

You can manage network signals, local signals and signal groups.

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 parameters.

Figure 4-57 Manual add

Manual Add

Device Name

Manufacturer

Private

Protocol

TCP

IP Address

Port

37777

(1~65535)

Username

admin

Password

Channel No.

0

(1~1024)

Channel No.

Channel Name

Channel Note

ControlID

Channel Type

Note: Check the fixed channel, do not check the temporary channel

OK

Cancel

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

Network Signal							
☐	No.	IP Address	Port	Device Name	Manufacturer	Type	
☐	1	192.168.1.1	80	IPC-HFW8301D	Onvif	IPC	HD
☐	2	192.168.1.2	80	IPC-HFW8301D	Onvif	IPC	HD
☐	3	192.168.1.3	80	IPC-HFW8301D	Onvif	IPC	HD
☐	4	192.168.1.4	80	IPC-HFW8301D	Onvif	IPC	HD
☐	5	192.168.1.5	80	IPC-HFW8301D	Onvif	IPC	HD
☐	6	192.168.1.6	37777	IPC-HFW8301D	Private	IPC	HD
☐	7	192.168.1.7	37777	IPC-HFW8301D	Private	IPC	HD
☐	8	192.168.1.8	37777	IPC-HFW8301D	Private	IPC	HD

Device Search Add Display Filter N/A

- 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

Network Signal								
☐	No.	IP Address	Port	Device Name	Manufacturer	Type		
☐	1	192.168.1.1	80	IPC-HFW8301D	Onvif	IPC	HD	IPC-HFW8301D
☐	2	192.168.1.2	80	IPC-HFW8301D	Onvif	IPC	HD	IPC-HFW8301D
☐	3	192.168.1.3	80	IPC-HFW8301D	Onvif	IPC	HD	IPC-HFW8301D
☐	4	192.168.1.4	80	IPC-HFW8301D	Onvif	IPC	HD	IPC-HFW8301D
☐	5	192.168.1.5	80	IPC-HFW8301D	Onvif	IPC	HD	IPC-HFW8301D
☐	6	192.168.1.6	37777	IPC-HFW8301D	Private	IPC	HD	IPC-HFW8301D
☐	7	192.168.1.7	37777	IPC-HFW8301D	Private	IPC	HD	IPC-HFW8301D
☐	8	192.168.1.8	37777	IPC-HFW8301D	Private	IPC	HD	IPC-HFW8301D

Device Search Add Display Filter N/A

☐	No.	Connection Status	IP Address/ URL	Port	Device Name	Channel No.	Manufacturer	Type
☐	1	Failed	192.168.1.1	80	IPC-HFW8301D	1	Onvif	IPC-HFW8301D
☐	2	Successful	192.168.1.2	80	IPC-HFW8301D	1	Onvif	IPC-HFW8301D
☐	3	Failed	192.168.1.3	80	IPC-HFW8301D	1	Onvif	IPC-HFW8301D

Delete Manual Add Refresh Search Added Device(IP) . . .

Export Config Import Config

✓ Saved successfully!

Related Operation

- 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.

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

Step 2 Select the card, and 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**.

Figure 4-60 Input title

Card	Slot1	Start ControlID		Setup
Channel1	HDMI IN01	ControlID	1	
Channel2	HDMI IN02	ControlID	2	
Channel3	DVI IN01	ControlID	3	
Channel4	DVI IN02	ControlID	4	

OK Refresh

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.

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

Step 2 Select a slot and a channel.

Step 3 Select a signal source type according to the actual situation.

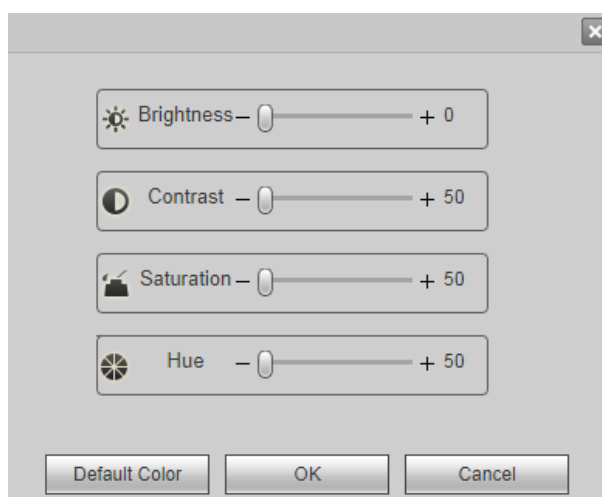
Figure 4-61 Input channel setup

Channel Config

Slot		Signal Type	
Channel		Color Setting	Setup

OK Refresh

Step 4 Click **Setup** to configure the brightness, contrast, saturation and hue.



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

Step 6 Click **OK** to save the channel settings.

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.

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

Step 2 Configure parameters.

Figure 4-62 Encode setup

Table 4-16 Encode setup parameters description

Parameter	Description
Slot	Select a slot and a channel.
Channel	
Audio Type	Select the audio type.
Encode Mode	H.264: Main Profile encode mode.

Parameter	Description
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	Determines whether the audio or video is captured during recording.
Resolution	Includes a variety of resolution types. Every type corresponds to different recommended stream value.  Select Custom , and you can customize the resolution.
Frame	Configure the video frame. The higher the frame rate is, the more natural and smooth the video will be.
Stream Control	It includes limit stream and VBR.  Picture quality can be set in VBR mode only.
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, G.711Mu, AAC and MPEG2-Layer2. It is G.711A by default.  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.

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

Step 2 Select a slot and a channel.

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

- Click **Edit Title**, 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.

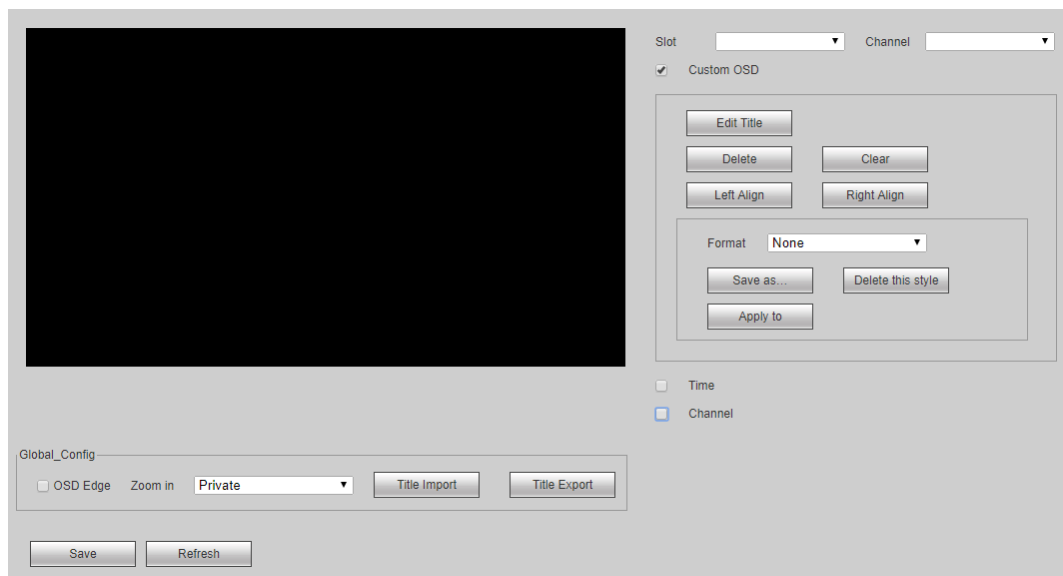
- Select a format from the **Format** list to apply this format. Click **Delete this style** to delete the selected format.



Only custom formats can be deleted.

- Click **Apply to** to apply the current format to other slots.

Figure 4-63 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 4-64 Global configuration

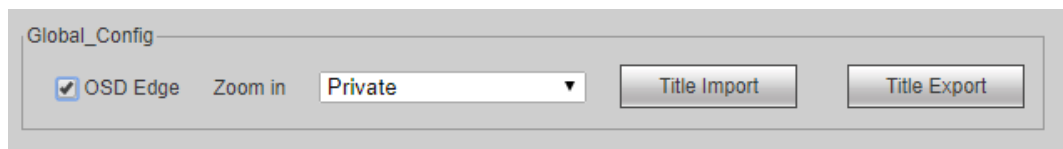


Table 4-17 Global configuration description

Parameter	Description
OSD Edge	Select OSD Edge , and 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 configured size, and displayed on the output screen according to the configured coordinate.

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

Figure 4-65 Capture custom

Step 4 Select **Enable**.

Step 5 Configure the coordinate, width and height.

X/Y refers to the starting pixel coordinate, and W/H refers to the width and height of the image. 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.

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

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

Figure 4-66 Ultra-high-resolution

Step 3 Create a capture and splicing group. For details, see "4.5.4.3 Signal Group".

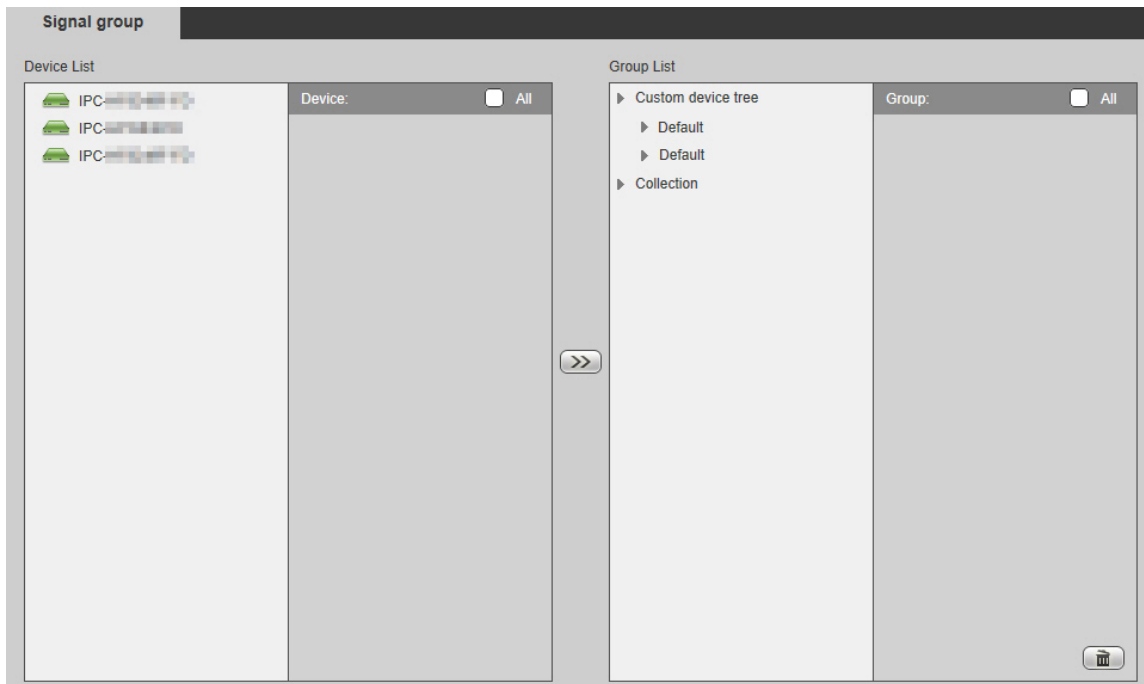
Step 4 Click **Save**.

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.

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

Figure 4-67 Signal group



Step 2 Create a group.

- 1) Hover over the Custom device tree or Collection 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 form the group list.

Step 5 Click .

Signals are added to the selected group.

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 Walls

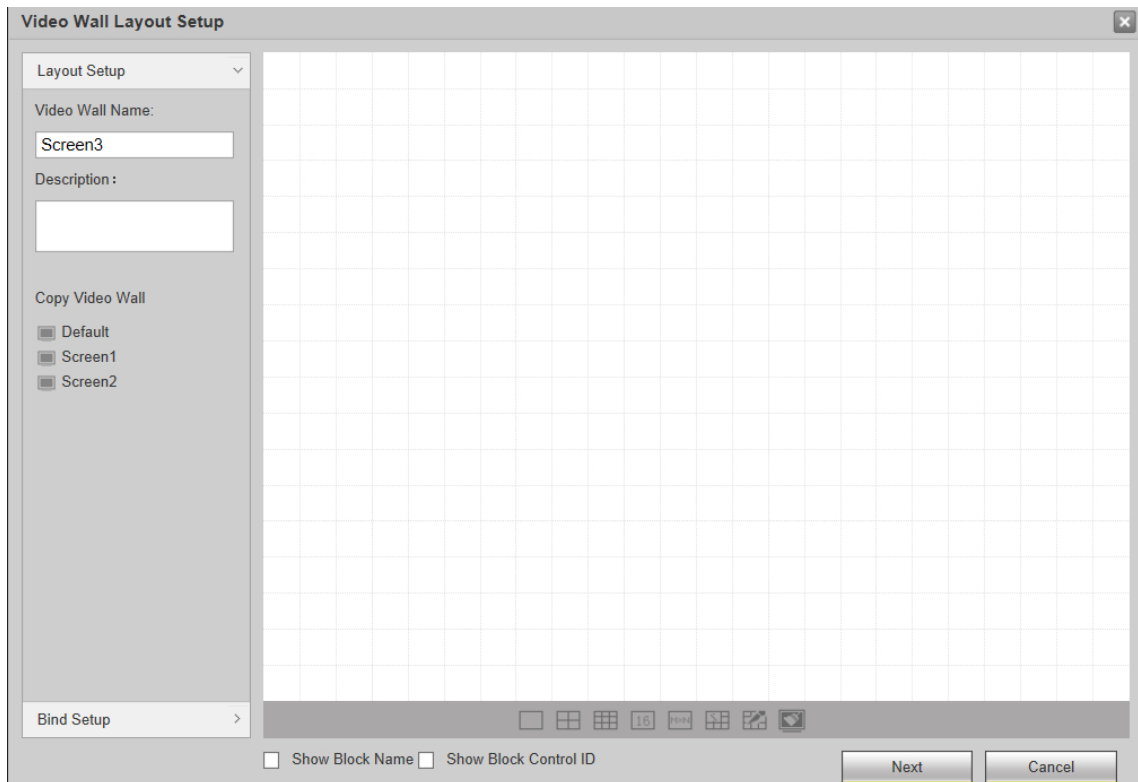
You can configure video walls according to the actual quantity and splitting of screens, so that the signals can be displayed on video walls.

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

Step 2 Click **Add Video Wall**.

Step 3 Configure the layout.

Figure 4-68 Video wall layout setup



- 1) Customize the video wall name and description.
- 2) Click icons at the bottom of the window to add and split a screen quickly.



Press and hold the left mouse button to drag the screen to the desired position.

Figure 4-69 Add screens

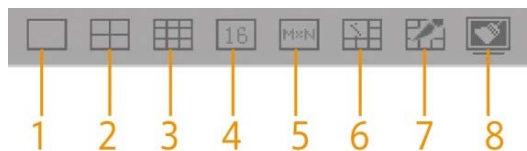
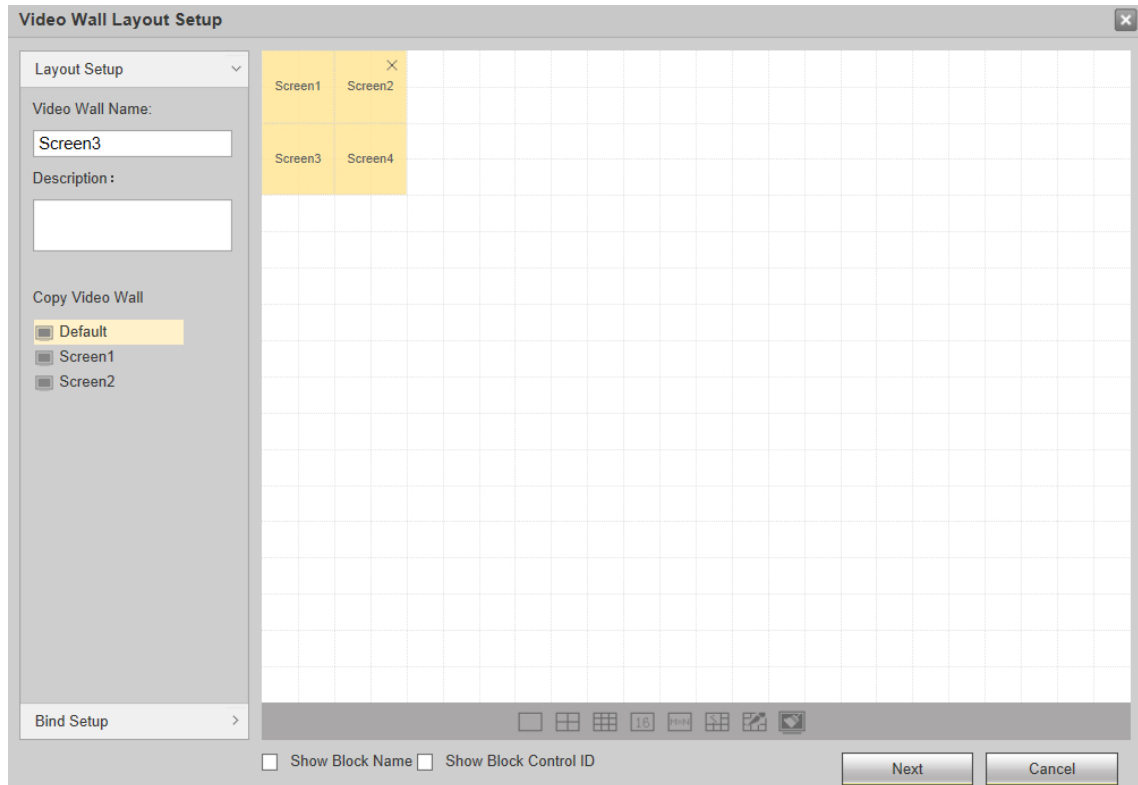


Table 4-18 Parameters description

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 the icon, and enter the row and column number in the User Custom window to add a custom screen.

No.	Name	Description
6	Splicing	Select separate screens, and click this icon to splice them. - The splicing screen cannot be selected. - Single screens must 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 4-70 Add screen



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

Step 4 (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.

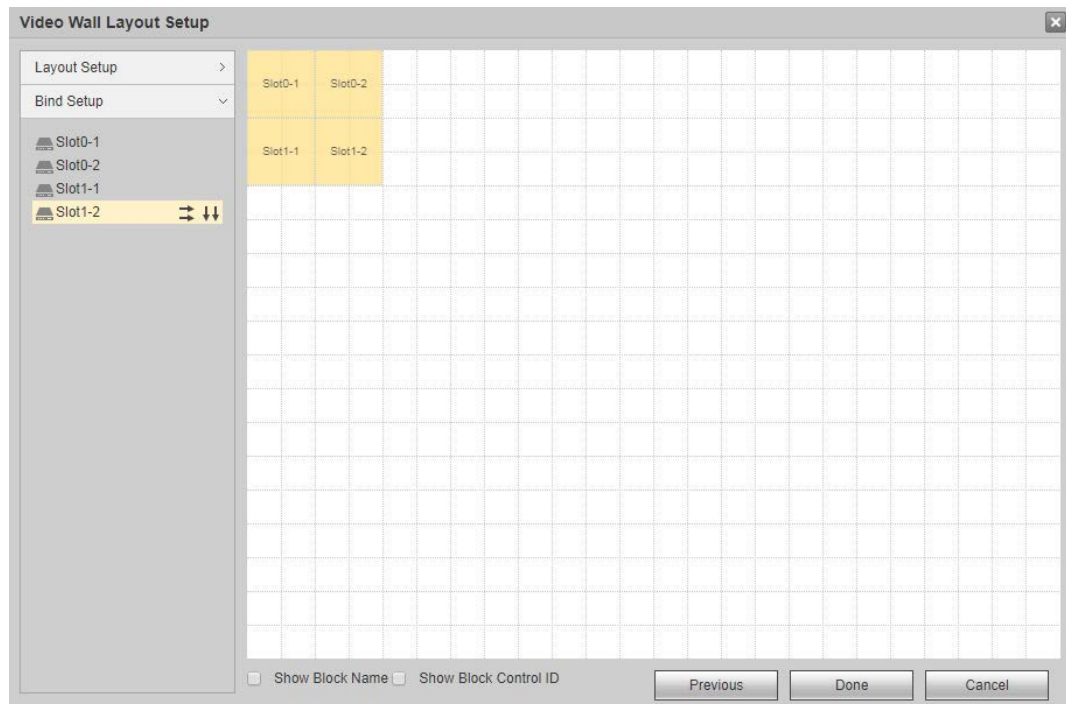
Step 5 Click **Bind Setup** or **Next**.

Step 6 Select one slot, drag the slot onto 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 slot with single screen vertically.

Figure 4-71 Slot binding



Step 7 Double-click a new video wall and configure parameters.

Figure 4-72 Block setup

row-column	Output Port	Screen Resolution	Screen ControlID
1-1	Slot1-1	1920*1080	1
1-2	Slot1-2	1920*1080	2
2-1	Slot1-3	1920*1080	3
2-2	Slot1-4	1920*1080	4

Table 4-19 Block setup parameters description

Parameter	Description
Name	The block name that identifies the block.

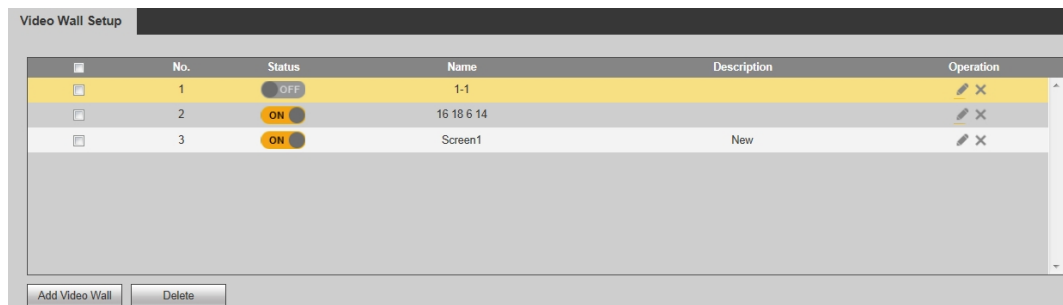
Parameter	Description
Row Delay	The row delay ranges from 0ms to 100ms.
Resolution	Select Customized to configure resolution of output screen corresponding to each slot.

Step 8 Click **OK**.

Step 9 Click **Done**.

The system exits **Video Wall Layout Setup** page.

Figure 4-73 Adding is completed



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.

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

Step 2 Configure 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 4-74 Screen setup

number	Output Screen	Manufacturer	Serial	Com Address
1	Slot1-1	Dahua	Main Control Board-1	32
2	Slot1-2	Dahua	Main Control Board-1	
3	Slot1-3	Dahua	Main Control Board-1	42
4	Slot1-4	Dahua	Main Control Board-1	
5	Slot1-5	Dahua	Main Control Board-1	33
6	Slot1-6	Dahua	Main Control Board-1	
7	Slot1-7	Dahua	Main Control Board-1	43
8	Slot1-8	Dahua	Main Control Board-1	
9	Slot1-9	Dahua	Main Control Board-1	
10	Slot1-10	Dahua	Main Control Board-1	
11	Slot1-11	Dahua	Main Control Board-1	
12	Slot1-12	Dahua	Main Control Board-1	
13	Slot1-13	Dahua	Main Control Board-1	
14	Slot1-14	Dahua	Main Control Board-1	44
15	Slot1-15	Dahua	Main Control Board-1	
16	Slot1-16	Dahua	Main Control Board-1	

Step 3 Click **Save**.

4.5.5.2.2 Screen ON/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.

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

Step 2 Configure the parameters

Figure 4-75 Screen ON/OFF

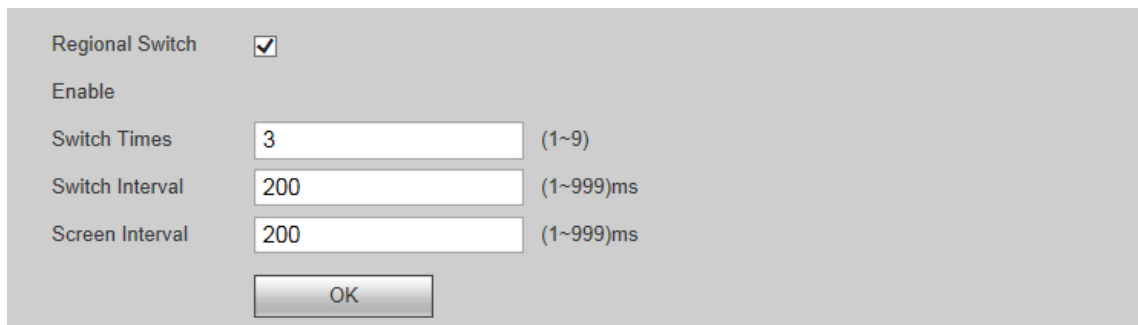


Table 4-20 Parameters description

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 4-76 Screen timer

Screen: Block: Week:

☐ Period 1 (On) — (Off)

☐ Period 2 (On) — (Off)

☐ Period 3 (On) — (Off)

☐ Period 4 (On) — (Off)

☐ Period 5 (On) — (Off)

☐ Period 6 (On) — (Off)

Step 3 Select period and configure ON/OFF time.

Step 4 Click **OK**.

Related Operation

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

4.5.5.2.4 Screen Custom Control

You can customize screen on and off commands.

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

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

Figure 4-77 Screen custom control

Customized:

Manufacturer Name:

Enable: ☒

Screen on command: Please enter a hexadecimal number (For example, if control command is 0×09 0×01 0×AF, please enter 0901AF)

Screen off command: Please enter a hexadecimal number (For example, if control command is 0×09 0×01 0×AF, please enter 0901AF)

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

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.

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

Step 2 Configure the parameters.

Figure 4-78 Display setup

Slot Channel

Slot Display

Resolution ☐ Customized Video Mode

Audio Mode

Hue + 50

Brightness + 50

Contrast + 50

Saturation + 50

Left + 50

Right + 50

Up + 50

Down + 50

Global_Config

Screen/Window Color

OK Refresh

Table 4-21 Parameter description

Parameter	Description
Slot	Select a slot and a channel.
Channel	
Display	- 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.
Resolution	Configure the resolution of display. Customize the resolution after you select Customized .
Audio Mode	- Out to SubCard: Decoding sound is output from audio output port of the sub-card. - Out to MainCard: Decoding sound is output from audio output port of the main card. - Both: Decoding sound is output from audio output port of the sub-card and main card at the same time.

Parameter	Description
Video Mode	Video output mode includes DVI and HDMI.
Hue	Drag the slider to adjust the image hue and saturation.
Brightness	Drag the slider to adjust the image brightness through linear adjustment. The higher the value is, the brighter the image will become. The image is likely to become dim if the value is too high.
Contrast	Drag the slider to adjust the image contrast. The higher the value is, the more obvious the contrast between the light area and dark area will become. If the value is too high, the dark area will become darker and the light area will be over exposed. If the value is too low, the image is likely to become dim.
Saturation	Drag the slider to adjust the color shades. The higher the value is, the heavier the color will become. This value does not affect the overall brightness of image.
Screen/Window Color	Configure the screen and window color, including black/black and blue/green .

Step 3 Click **OK**.

4.5.5.3.2 Global Setup

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

Step 2 Select the checkboxes according to the actual situation.

Figure 4-79 Global setup

The screenshot shows a 'Global Setup' window with a list of configuration options, each with a checkbox. The options are as follows:

- ☐ Main/Sub Stream Auto Switch
- ☐ IVS Rule
- ☐ Tracking Box
- ☐ Window Prompt Info
- ☒ Do not decode when being covered
- ☒ Platform NetCard Pull Stream
- ☐ Device NetCard Pull Stream
- ☐ Set window width and height manually
- ☐ Scheme Switch Keep Last Frame Only applicable to fixed split or full screen plan switching
- ☐ Abnormal Stream Filtering Note: Halve the post-energy performance
- ☐ Neat Switching of Plan Only supported by splicing screen.
- ☐ Window Signal Tour
- ☐ StreamAppHalfTrans Note : No SDP Information
- ☐ Decoding Strategy
- ☐ 4K signal source scale optimization
- ☐ No RTP Push Note: Cannot be used simultaneously with audio and video encryption
- ☐ Close GUI When decoding 8K video and requiring 4K display output, please turn off GUI function
- ☐ Power Abnormal Reboot

At the bottom of the window, there are two buttons: 'Save' and 'Refresh'.

Table 4-22 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, the system will automatically switch the main stream to sub stream.
IVS Rule	If the IVS rule function is enabled on the camera, the rule line will turn red and flicker if a moving object enters the alarm area.
Tracking Box	If the tracking box function is enabled on the camera, the system selects and tracks moving objects with a green box.
Window Prompt Info	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 the platform net card to pull stream.
Device NetCard Pull Stream	Enable the Device net card to pull stream.
Set window width and height manually	Double click window on the video wall to adjust window coordinate and size. See "4.3.2.3 Configuring Window Information".
Scheme Switch Keep Last Frame	When the scheme is switched, display the last frame to avoid black screen.
Abnormal Stream Filtering	The system checks and filters abnormal stream to avoid green screen.
Neat Switching of Plan	The scheme stream will be switched synchronously and neatly to enhance visual effect.
Decoding Strategy	Select the checkbox, and the fluency adjustment zone is displayed. You can drag the slider to adjust window fluency.  Only network signal supports decoding strategy.
4K Signal Source Scale Optimization	Capture and decode 4k signals for picture output, which can optimize display performance.
No RTP Push	The stream type without RTP header can also be normally decoded and displayed on the video wall.  This function cannot be used with the audio and video encryption at the same time
Close GUI	The output screen can only display the video. The screen ID and virtual LED cannot be displayed. Turn off the GUI function if you need to decode a 8K video and display it in 4K.
Power Abnormal Reboot	When abnormal power is detected, the device automatically restarts.

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 (such as keyboard), so the binding source can be displayed on the video wall.

- 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.

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

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



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

Figure 4-80 Output name

Channel	Output Name	Control ID
Channel10-1	10_1	217
Channel10-2	10_2	218
Channel10-3	10_3	219
Channel10-4	10_4	220
Channel10-5	10_5	221
Channel10-6	10_6	222
Channel10-7	10_7	223
Channel10-8	10_8	224
Channel10-9	10_9	225
Channel10-10	10_10	226

Start ControlID: [] Setup

Previous Next (1 / 2)

Save Refresh

Step 3 Click **Save**.

4.5.5.5 Structured Information

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

- Face structure: After the face image recognition function is enabled on the camera, and Device enables face structure function, the camera collects video stream and detects face information in the stream. The face information can be displayed on the screen through the Device.
- Human, motor vehicle and non-motor vehicle structure: After camera enables human, motor vehicle and non-motor vehicle recognition function and the Device enables human, motor vehicle and non-motor vehicle structure function, the camera collects video stream and detects human, motor vehicle and non-motor vehicle information in the stream. The human, motor vehicle and non-motor vehicle information can be displayed on the screen through the Device.
- Crowd density: After camera enables crowd density recognition function and the Device crowd density structure function, the camera collects video stream and detects crowd density information in the stream. The video stream can be displayed on the screen through the Device. Crowd density is indicated with blue spots. The denser blue spots become, the higher crowd

density will be.

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

Step 2 Select the structure information according to the actual situation.

Figure 4-81 Structured info

☐ Enable Face Structure ☐ Enable Men Motor Vehicle Non-Motor Vehicle Structure ☐ Enable Crowd Density

Note:

- 1. Structured info, virtual LED and screen number of one output port cannot be displayed at the same time.
- 2. Structured info can only be shown on single physical display in full screen (which is not supported by customized resolution).
- 3. Structured info is available after Device NetCard Pull Stream and Platform NetCard Pull Stream are enabled (the platform shall configure direct mode).
- 4. The function of non car / face structured / crowd density structured is only implemented on 1080p output resolution, and other resolutions are not supported.

Step 3 Click **OK**.

4.6 Information

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

4.6.1 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 4-82 Card information

Board Quantity(0/10)						
Status	Slot	Type	Port Type	Status	Temperature Status	Version
	Main Card	Main Card	VGA	Normal	50°C	Z...09
	Slot1					
	Slot2					
	Slot3					
	Slot4					
	Slot5					
	Slot6					
	Slot7					
	Slot8					
	Slot9					
	Slot10					

Refresh

4.6.2 Decoding Information

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

Figure 4-83 Decoding information

Record Time Interval 20 (20~120)S						
Channel	Status	Resolution	FPS	Data Flow(kb/s)	Decode Flow(kb/s)	Record
405-144_1_1	Monitor	3840 * 2160	25	7623	8277	

You can configure **Record Time Interval** at the upper-right corner of the page, and then click . The system records this channel according to the time interval.

4.6.3 Device Information

4.6.3.1 Getting the Device Information

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

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

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

Figure 4-84 Get device info or card log

Name	Size	Type	Download	Rename	Delete
info.tar	117.59KB	File			

4.6.3.2 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 parameters.

Figure 4-85 Network sniffer

Table 4-23 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	Configure the network port.

Step 3 Click **Start Sniffer**.

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

4.6.3.3 Ping

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

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

Step 2 Enter the IP address and ping times, and 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 4-86 Information display

4.6.3.4 Log Level

You can configure the level of printing the debugging logs.

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

Step 2 Configure log level.

Figure 4-87 Log level

Device Info | Network Sniffer | ping | **Log Level**

Log Level: Trace

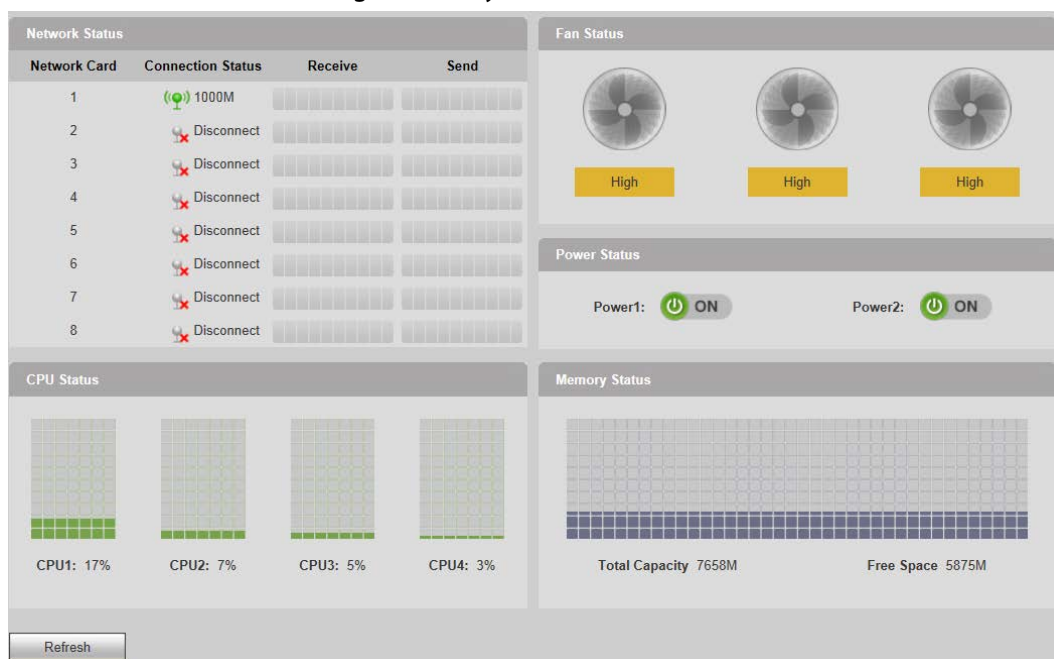
OK Refresh

Step 3 Click **OK**.

4.6.3.5 System Status

Select **Info > Device Info > System Status**, and you can view the network status, fan status, power status, CPU status and memory status of the Device.

Figure 4-88 System status



- Network status: Displays connection status, data receiving and sending of the network adapter.
- CPU status: Displays CPU status of all the inserted function cards.
- Fan status: Displays fan status.
- Power status: Displays status of the two power supplies.
- Memory status: Displays the disk space status.

4.6.3.6 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.

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

Step 2 Configure **Start Time**, **End Time** and **Type**, and then click **Search**.
The searched logs are displayed.

Figure 4-89 System log



- 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 back up the searched system log information to the PC under use.

4.6.3.7 Online User

Select **Info > Device Info > Online User**, and you can view online users' usernames, groups, IP addresses and other basic information.

Figure 4-90 Online user

	No.	Username	User Group	IP Address	User Login Time
☐	1	admin	admin	192.168.1.1	2022-01-09 09:07:42
☐	2	admin	admin	192.168.1.1	2022-01-09 09:20:40

Refresh

4.6.3.8 About

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

5 Platform Software Operation

Remote control can be realized with the DSS Pro system and the CVCS system. For details, see the user's manual of the two systems.

Appendix 1 Mouse Operation

Plug a mouse with the Device through the USB port to operate the menu functions.

Appendix Table 1-1 Mouse operation description

Operation	Description
Click	The system prompts password input dialogue box if you have not logged in. During live surveillance, click to enter the main menu or open the navigation bar.
	Click the functional menu icon to enter the menu.
	Implement the control operation.
	Modify status of the checkbox or motion detection block.
	Click to prompt a pull-down list.
	 means backspace and  means space key. Click Shift to switch the input method. • In English input mode: Space key means to input a space. Backspace key means to clear one character. • In numerical input mode: Space key means to clear all of the number. Backspace key means to clear the last number. • In special symbol input mode: Space key means to input a space. Backspace key means to clear one symbol.
Double-click	Implement special control operation.
	In multi-image mode, double-click one channel image to make it full screen. Double-click it again to restore multi-image mode.
Click the right mouse button	In real-time monitoring mode, click the right mouse button to prompt the shortcut menu. The manual differs depending on the device version.
	Leave the current menu without saving the modification.
Scroll the wheel button	In numerical input box: Increase or decrease the numerical value.
	Switch items in the list.
	Page up or page down.
Move mouse	Select and move one item.
Drag mouse	Select a motion detection area with a frame.
	Select cover-area.

Appendix 2 Cybersecurity Recommendations

Mandatory actions to be taken for basic device network security:

1. Use Strong Passwords

Please refer to the following suggestions to set passwords:

- The length should not be less than 8 characters.
- Include at least two types of characters; character types include upper and lower case letters, numbers and symbols.
- Do not contain the account name or the account name in reverse order.
- Do not use continuous characters, such as 123, abc, etc.
- Do not use overlapped characters, such as 111, aaa, etc.

2. Update Firmware and Client Software in Time

- According to the standard procedure in Tech-industry, we recommend to keep your device (such as NVR, DVR, IP camera, etc.) firmware up-to-date to ensure the system is equipped with the latest security patches and fixes. When the device is connected to the public network, it is recommended to enable the "auto-check for updates" function to obtain timely information of firmware updates released by the manufacturer.
- We suggest that you download and use the latest version of client software.

"Nice to have" recommendations to improve your device network security:

1. Physical Protection

We suggest that you perform physical protection to device, especially storage devices. For example, place the device in a special computer room and cabinet, and implement well-done access control permission and key management to prevent unauthorized personnel from carrying out physical contacts such as damaging hardware, unauthorized connection of removable device (such as USB flash disk, serial port), etc.

2. Change Passwords Regularly

We suggest that you change passwords regularly to reduce the risk of being guessed or cracked.

3. Set and Update Passwords Reset Information Timely

The device supports password reset function. Please set up related information for password reset in time, including the end user's mailbox and password protection questions. If the information changes, please modify it in time. When setting password protection questions, it is suggested not to use those that can be easily guessed.

4. Enable Account Lock

The account lock feature is enabled by default, and we recommend you to keep it on to guarantee the account security. If an attacker attempts to log in with the wrong password several times, the corresponding account and the source IP address will be locked.

5. Change Default HTTP and Other Service Ports

We suggest you to change default HTTP and other service ports into any set of numbers between 1024–65535, reducing the risk of outsiders being able to guess which ports you are using.

6. Enable HTTPS

We suggest you to enable HTTPS, so that you visit Web service through a secure communication channel.

7. MAC Address Binding

We recommend you to bind the IP and MAC address of the gateway to the device, thus reducing the risk of ARP spoofing.

8. Assign Accounts and Privileges Reasonably

According to business and management requirements, reasonably add users and assign a minimum set of permissions to them.

9. Disable Unnecessary Services and Choose Secure Modes

If not needed, it is recommended to turn off some services such as SNMP, SMTP, UPnP, etc., to reduce risks.

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

- SNMP: Choose SNMP v3, and set up strong encryption passwords and authentication passwords.
- SMTP: Choose TLS to access mailbox server.
- FTP: Choose SFTP, and set up strong passwords.
- AP hotspot: Choose WPA2-PSK encryption mode, and set up strong passwords.

10. Audio and Video Encrypted Transmission

If your audio and video data contents are very important or sensitive, we recommend that you use encrypted transmission function, to reduce the risk of audio and video data being stolen during transmission.

Reminder: encrypted transmission will cause some loss in transmission efficiency.

11. Secure Auditing

- Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.
- Check device log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.

12. Network Log

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

13. Construct a Safe Network Environment

In order to better ensure the safety of device and reduce potential cyber risks, we recommend:

- Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.
- The network should be partitioned and isolated according to the actual network needs. If there are no communication requirements between two sub networks, it is suggested to use VLAN, network GAP and other technologies to partition the network, so as to achieve the network isolation effect.
- Establish the 802.1x access authentication system to reduce the risk of unauthorized access to private networks.
- Enable IP/MAC address filtering function to limit the range of hosts allowed to access the device.