dahua HDCVI Camera User Manual

HDCVI Camera
User Manual

Contents

Foreword

General

This manual introduces the functions and operations of the HDCVI camera (hereinafter referred to as “the

device”).

Safety Instructions

The following categorized signal words with defined meaning might appear in the manual.

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

Revision History

Version	Revision Content	Release Time
V1.0.0	First release.	Jun-20

About the Manual

- The manual is for reference only. If there is an inconsistency between the manual and the actual product, the actual product shall prevail.
- We are not liable for any loss caused by the operations that do not comply with the manual.
- The manual would be updated according to the latest laws and regulations of related jurisdictions. For detailed information, refer to the paper manual, CD-ROM, QR code, or our official website. If there is an inconsistency between the paper manual and the electronic version, the electronic version shall prevail.
- All the designs and software are subject to change without prior written notice. The product updates might cause some differences between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.
- There still might be deviations in technical data, functions, and operations description, or errors in print. If there is any doubt or dispute, we reserve the right to a final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks, and the company names in the manual are the properties of their respective owners.
- Please visit our website, and contact the supplier or customer service if there is any problem occurring when

using the device.

- If there is any uncertainty or controversy, we reserve the right to a final explanation.

Important Safeguards and Warnings

Electrical Safety

- All installation and operation should conform to your local electrical safety codes.
- The power source shall conform to the requirement of the Safety Extra Low Voltage (SELV) standard, and supply power with rated voltage which conforms to the Limited power Source requirement according to ICE62368-1. Note that the power supply requirement is subject to the device label.
- A readily accessible disconnect device shall be incorporated in the building installation wiring.
- Make sure that the power adapter meets the device operating voltage requirement before powering up the device (The material and length of the power cable might influence the device voltage).
- Prevent the power cable from being trampled or pressed, especially the plug, power socket, and junction extruded from the device.
- We assume no liability or responsibility for all the fires or electrical shock caused by improper handling or installation.

Operating Requirements

- Do not aim the device at strong light to focus, such as lamp light and sunlight.
- Transport, use, and store the device within the range of allowed humidity and temperature.
- Keep the device away from water or other liquid to avoid damage to the internal components.
- Keep sound ventilation to avoid heat accumulation.
- Heavy stress, violent vibration, or water splash are not allowed during transportation, storage, and installation.
- Pack the device with standard factory packaging or the equivalent material when transporting the device.
- You are recommended to use the device together with a lightning arrester to improve the lightning protection effect.
- You are recommended to ground the device to enhance reliability.
- You are recommended to use qualified video transmission cable to improve video quality and use RG59 coaxial cable or higher standard.

WARNING

- Use standard components or accessories provided by the manufacturer and make sure that the device is installed and maintained by professional engineers.
- The surface of the image sensor should not be exposed to laser beam radiation in an environment where a laser beam device is used.
- Do not provide two or more power supply sources for the device; otherwise, it might damage the device.
- If a PoC power supply is used, do not connect any other device between the device and PoC transceiver including UTC, Balun, optical transceiver, distributor and converter, and so on; otherwise, the device might get

burned.

- PoC supply voltage is up to 52V. Do not dismantle the device during normal operation; otherwise, it might cause danger to both device and users due to high voltage.

Overview

Introduction

The devices comply with the HDCVI standard and support the transmission of video and control signals over coaxial cable. The devices produce video signals with megapixel resolution and require connected XVRs to achieve high-speed, long-distance, and zero-lag transmission of the signal. They are applicable to various scenes, such as roads, warehouses, underground parking lots, bars, pipelines, and gas stations.

Application

Figure 1-1 Application scenario

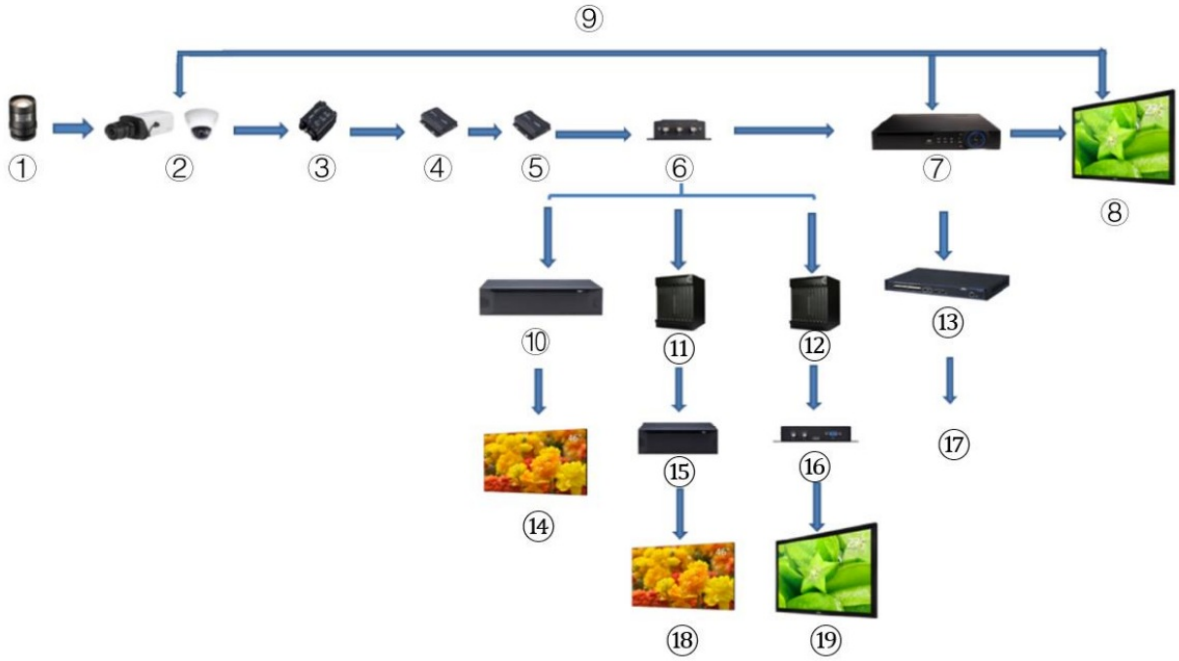


Table 1-1 Application scenario

No.	Name	No.	Name	No.	Name
1	(Optional) Lens	8	Display Screen	15	Splicer
2	HDCVI Products	9	Direct Connection	16	Convertor
3	(Optional) Surge Protection Device	10	Integrated Video Platform	17	Ethernet
4	(Optional) Optical Transceiver (Send)	11	Matrix	18	Splicing Screen
5	(Optional) Optical Transceiver (Receive)	12	Matrix	19	Display Screen
6	(Optional) Distributor	13	Switch	—	—
7	HCVR Products	14	Splicing Screen	—	—

Transmission Distance

Table 1-2 Transmission distance

Cable		**720P**	**1080P**	**4MP/4K**
Coaxial Cable	RG6 (75-5)	1200 m	800 m	700 m
	RG59 (75-3)	800 m	500 m	500 m
UTP	CAT6	450 m	300 m	300 m

Table 1-3 Transmission distance of PoC HDCVI powered by PoC XVR

PoC XVR Series	PoC Mode	RG59	RG6
Full series	AT	100 m	100 m
	AF	200 m	200 m

Cable Connection


Cable types might vary with different cameras, and the actual product shall prevail.

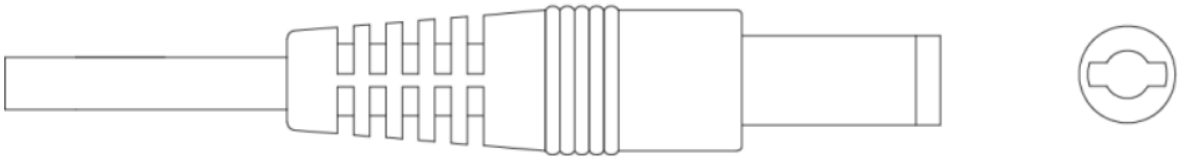
Power Output

Supplies 12V DC power.

- Ensure that the power consumption of devices connected to this port is below 2W.

- Ensure that the supply frequency of devices connected to this port is higher than 1MHz, such as sound pick-up, temperature/humidity sensor, and other devices without power consumption change. It might cause image flickering if this port is connected to devices with a supply frequency less than 1MHz, such as fans, Hall sensors, loudspeakers, motors,s and other electromechanical devices with power consumption change.

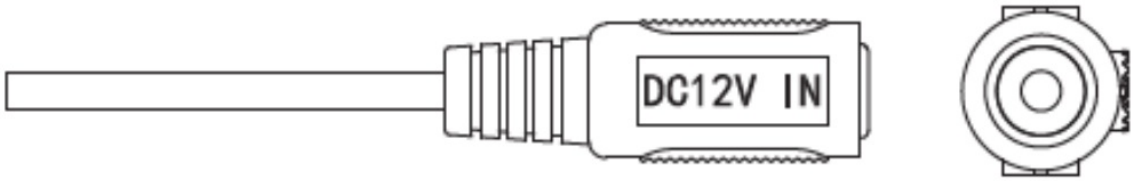
Figure 2-1 Power output



12V DC Power Input Port

⚠ Device abnormity or damage could occur if power is not supplied correctly for 12V DC power input port. Be sure to supply power as instructed in the manual.

Figure 2-2 12V DC power input port



24V AC Power Input Port

Inputs 24V AC power.

⚠ Device abnormity or damage could occur if power is not supplied correctly. Please be sure to supply power as instructed in the manual.

Figure 2-3 24V AC power input port

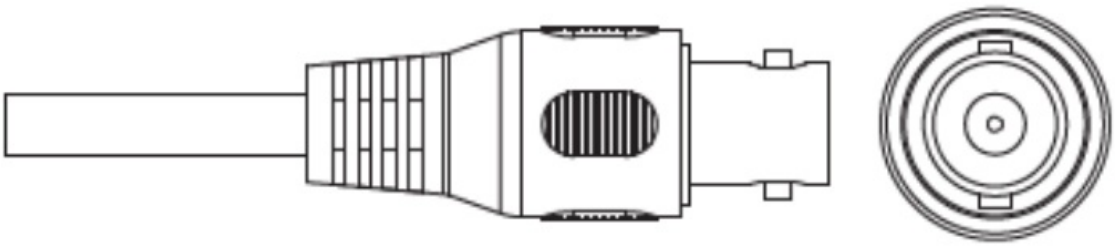
Video Output Port

Connects to the XVR to the output video signal.

WARNING

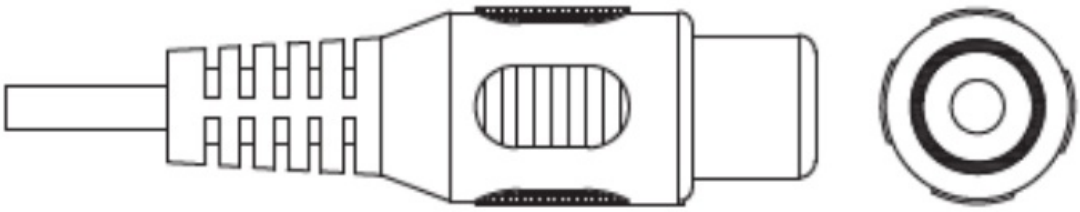
- When the device is in the condition of PoC power supply, do not connect any other device between the device and PoC XVR or PoC transceiver including UTC, Balun, optical transceiver, distributor and convertor, and so on; otherwise, the device might get burned.
- PoC power supply is with high voltage. Do not dismantle the device during normal operation; otherwise, it might cause danger to both device and users due to high voltage.

Figure 2-4 Video output port



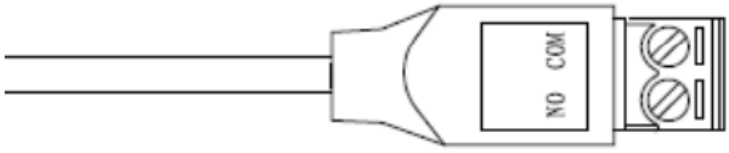
Audio Input Port
Connects to sound pickup devices to receive the analog audio signals.

Figure 2-5 Audio input port



Alarm Output Port
Connects to external alarm devices such as sirens to trigger alarms.

Figure 2-6 Alarm output port



DIP Switch
Dial switches to change output mode. Switch up indicates “ON”, and switch down indicates “OFF.”3

Figure 2-7 DIP switch

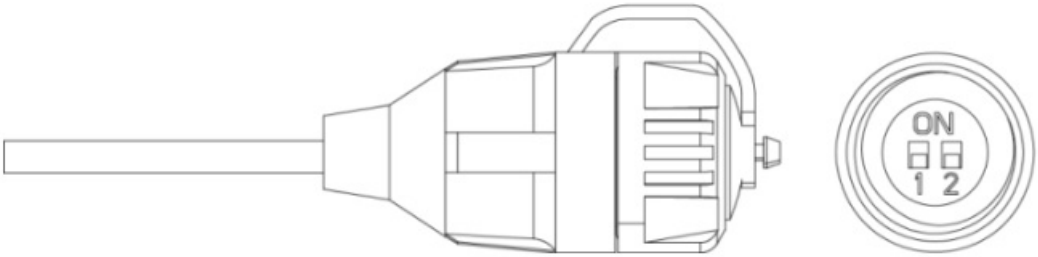


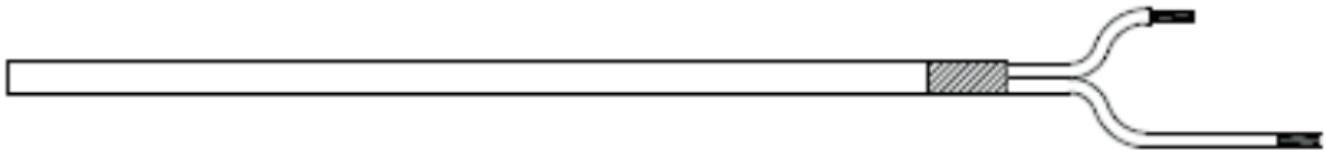
Table 2-1 Operation of DIP switch

Switch1	Switch2	Output Mode
OFF	OFF	CVI
ON	ON	CVBS
ON	OFF	AHD
OFF	ON	TVI

HD/SD Switch Control Cable

When the HD/SD switch control cable forms a short circuit, the video output mode switches from HD to SD. On the contrary, it will switch back to HD video output when the cable forms an open circuit.

Figure 2-8 HD/SD switch control cable



The HD/SD switch control cable is available on select models.

HDCVI Aviation Connector

Aviation connectors could strengthen the connection of mobile devices and provide four ports for your convenience.

Figure 2-9 HDCVI aviation connector

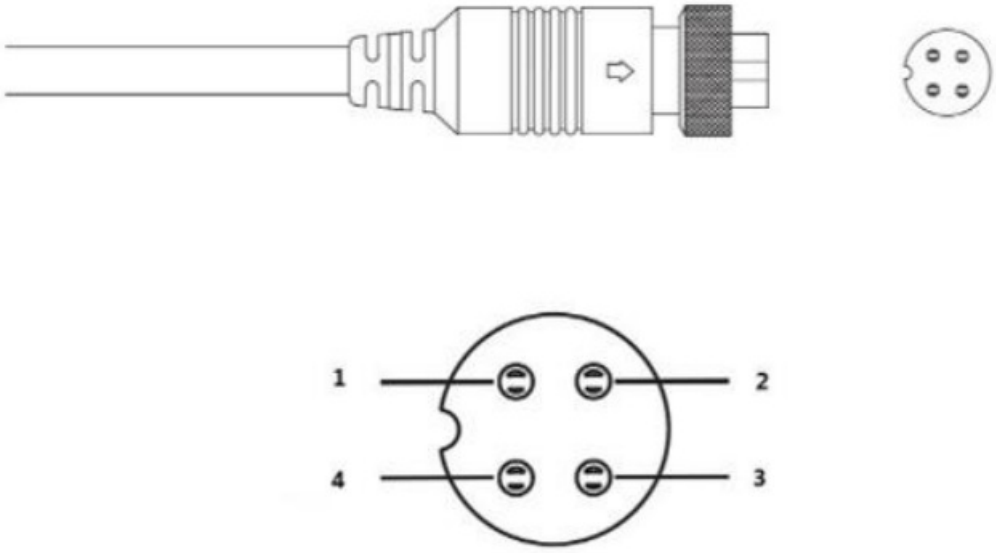


Table 2-2 HDCVI aviation connector components

No.	Name	No.	Name
1	(Yellow): Video	3	(White): Video Ground
2	(Black): Power Ground	4	(Red): Power

General Configuration and Operation

Power up the device and connect it to the XVR with a coaxial cable, and then the live interface is displayed. Then you can start configuring HDCVI cameras on the XVR.

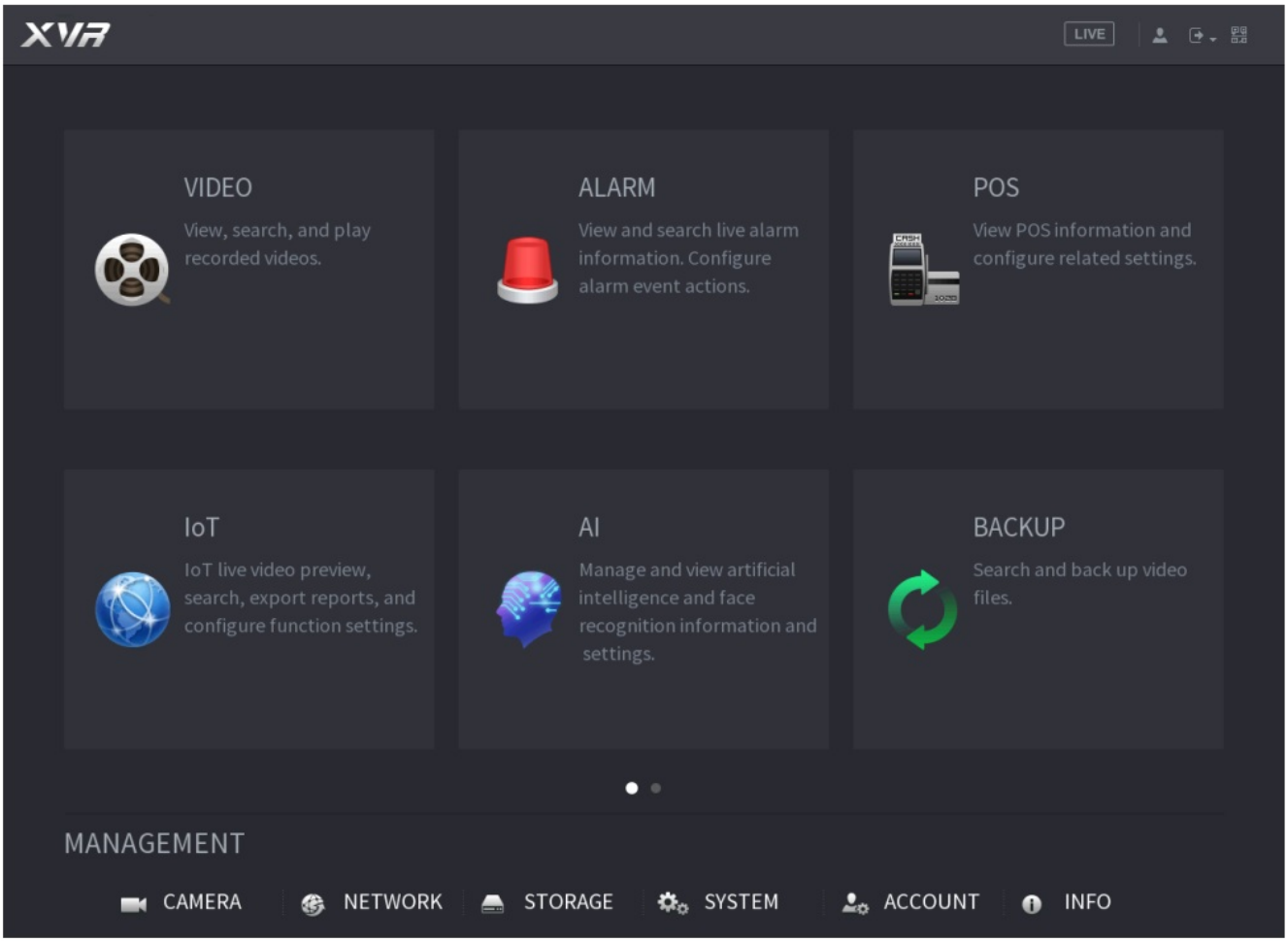
- The No. of the coaxial ports on XVR will display at the lower-left corner of each window to indicate the corresponding camera.

  Ports might vary depending on the XVR models, and the actual product shall prevail.

Entering XVR Main Menu

step1 Right-click on the live interface, and the shortcut menu is displayed.
step2 Click Main Menu and then log in to the system. The main menu of XVR is displayed.

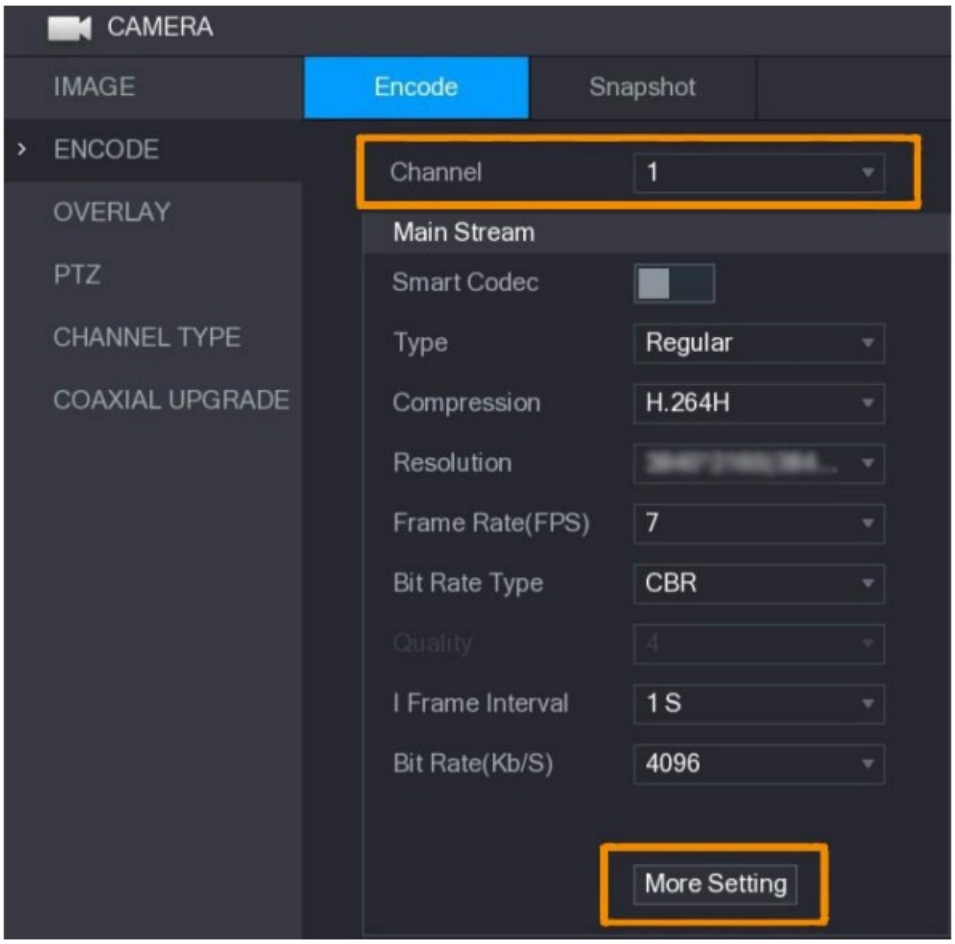
Figure 3-1 XVR main menu



Setting Audio Input

Audio input is available on select models.
Step1 On the Main Menu interface, select CAMERA > ENCODE > Encode.
Step1 On the Channel l drop-down list, select the device that you want to configure according to the coaxial port No.
Step3 Under Main Stream, click More Setting.

Figure 3-2 Encode setting



Step4 On the More Setting interface, enable the Audio Encode function and then configure the audio settings. In the Audio Format list, leave it as default; in the Audio Source list, select HDCVI.
Step5 Click Save.

Figure 3-3 More setting

Step 6 On the Encode interface, click Apply.

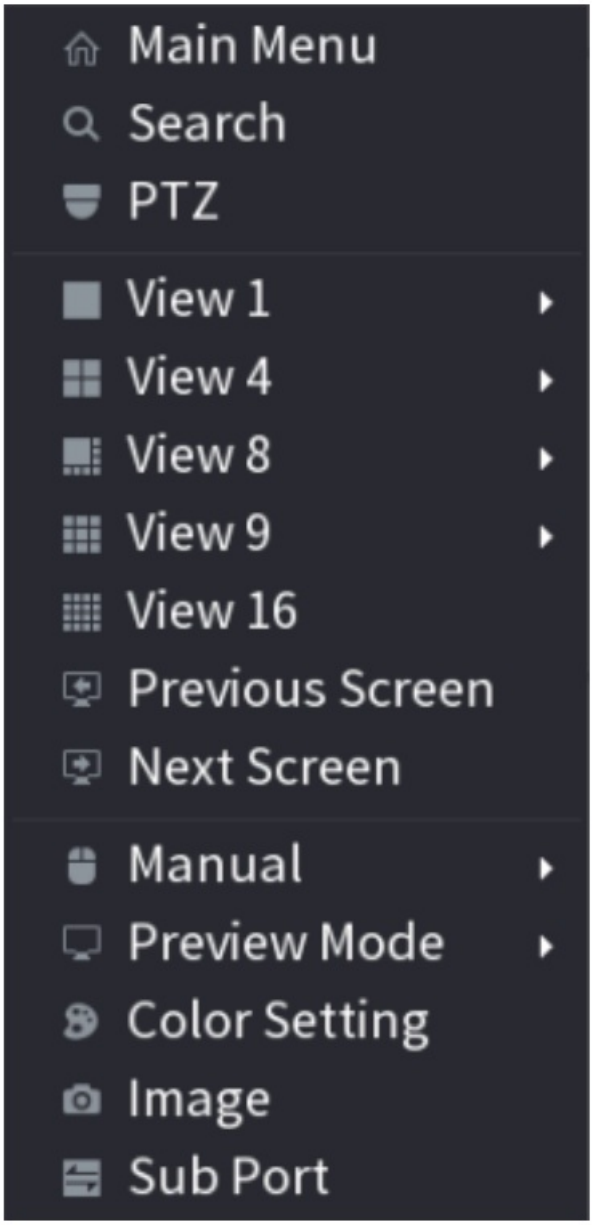
Operating PTZ Control Panel

3.3.1 Operating OSD Menu

- The OSD menus of different cameras might vary, and the actual product shall prevail.
- When you use the OSD menu to restore the device to default settings, the resolution, mode, frame rate, and language of the device will not be restored.

Step 1 On the live interface, right-click the device that you want to configure. The shortcut menu is displayed.

Figure 3-4 Shortcut menu



Step 2 Click PTZ and click  to extend the menu.

Figure 3-5 PTZ setting options

step3 Click. The MENU OPERATION panel is displayed.

Figure 3-6 Menu Operation panel

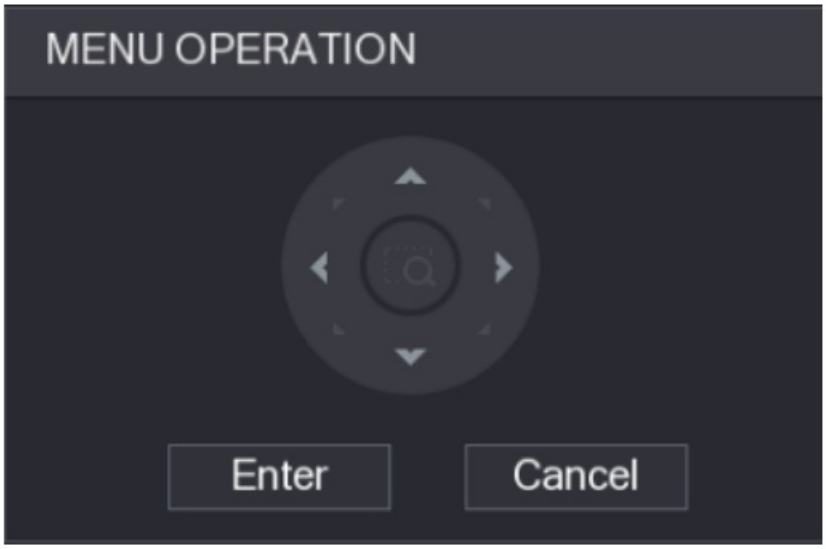
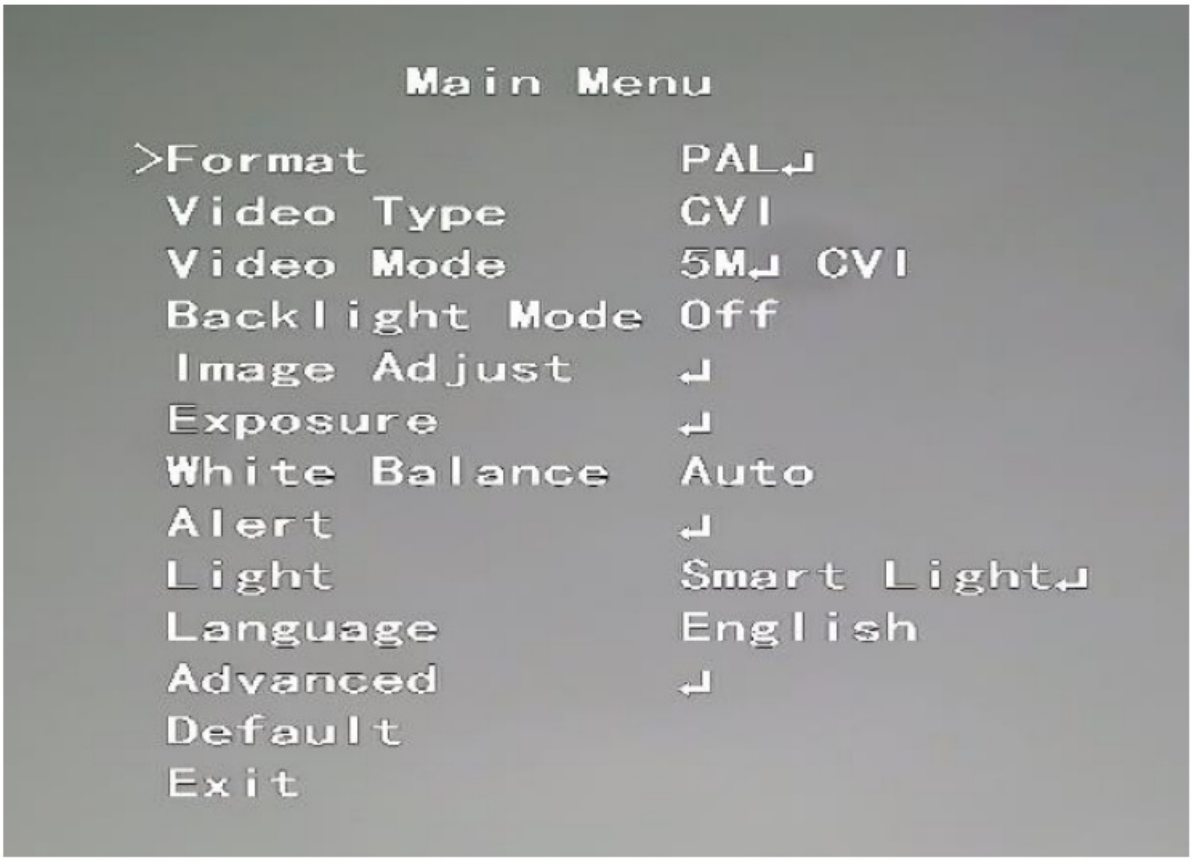


Table 3-1 Menu operation panel function

Button	Function	Button	Function
Enter	Enter or confirm an item	,	Select item
Cancel	Exit OSD menu	,	Change item value

The OSD menu of the corresponding device is displayed on the live interface. If the value of the OSD item is “← “, click Enter to go to the next level of this item. Click Return to go back to the previous level. Click Cancel to exit the OSD menu without saving the modifications.

Figure 3-7 OSD menu



3.3.2 Operating Auto Focus (AF)

Table 3-2 Parameter of AF

Parameter	Description
Zoom	: Zoom out. : Zoom in.
Focus	: Focus far. : Focus near.
Iris	: Autofocus. : Open the OSD menu.
PTZ movement	Supports eight directions.
	Click and then you can control the four directions (left, right, up, and down) of PTZ through mouse operation.
	Click to unfold the PTZ control panel.

Smart Light Camera Configuration

This chapter introduces how to configure the working modes of smart light, including auto and manual. Smart light will change the brightness of white light automatically according to the ambient lighting condition to avoid over-exposure. The smart light is only available for full-color cameras.

Enabling/Disabling Smart Light
The smart light is enabled by default. To switch the mode of smart light, enter the OSD menu (Figure 37) and select Light > Smart Light.

Configuring Smart Light Adjustment
In the smart light mode, configure the maximum brightness level of the smart light, and the device will change brightness automatically according to the ambient lighting condition. You can also configure the sensitivity of the smart light.

Configuring Brightness Level

Step 1 On the OSD menu, select Light > Smart Light > Level.
Step 2 Select from 1 to 5 to configure the maximum brightness level.

The maximum brightness level is 5 by default.

Step 3 Click Return and then Exit to exit the configuration.

You can also configure the brightness level manually in Light > Manual > Level.

Configuring Sensitivity

Step 1 Select Light > Smart Light > Sensitivity.
Step 2 Select from 1 to 5 to configure the sensitivity value of the smart light.

The higher the value is, the easier the smart light will be woken up.
The sensitivity value is 3 by default.
Step 3 Click Return and then Exit to exit the configuration.

Temperature and Humidity Camera Configuration

The temperature and humidity cameras can measure the ambient temperature and humidity and display the value on the live interface.

Enabling/Disabling Temperature and Humidity
On the OSD menu (Figure 3-7), select Advanced > Temp. & Humidity to enable and disable the function. You can view real-time temperature and humidity in the image.

Configuring Temperature Measure Mode
The temperature and humidity camera supports temperature correction under strong light outdoors. You can change the temperature measurement mode.
step1 Enable Temp. & Humidity.
step 2 Select Standard or Sunlight in the Measure Mode to change the temperature measure mode. Standard is set by default.

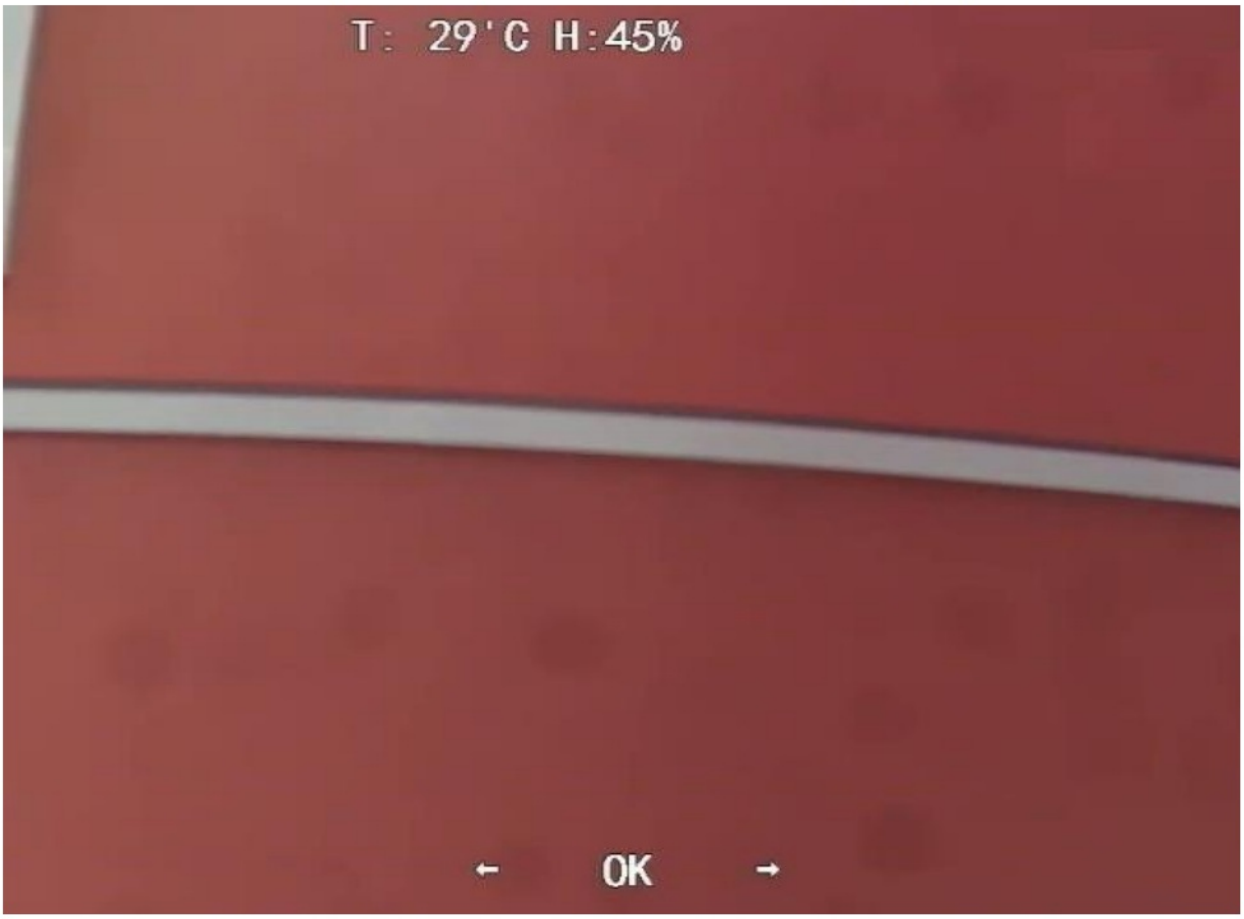
You are recommended to change the mode into Standard or Sunlight when it is used indoors or outdoors respectively.

Adjusting Temperature and Humidity Display

Step1 Select Advanced > Temperature & Humidity > Location on the OSD menu.

Make sure that the temperature and humidity function is enabled.
step2 Click the direction buttons on the PTZ menu to change the display location.
step3 Click Enter to save the configuration.

Figure 5-1 Adjust temperature and humidity display

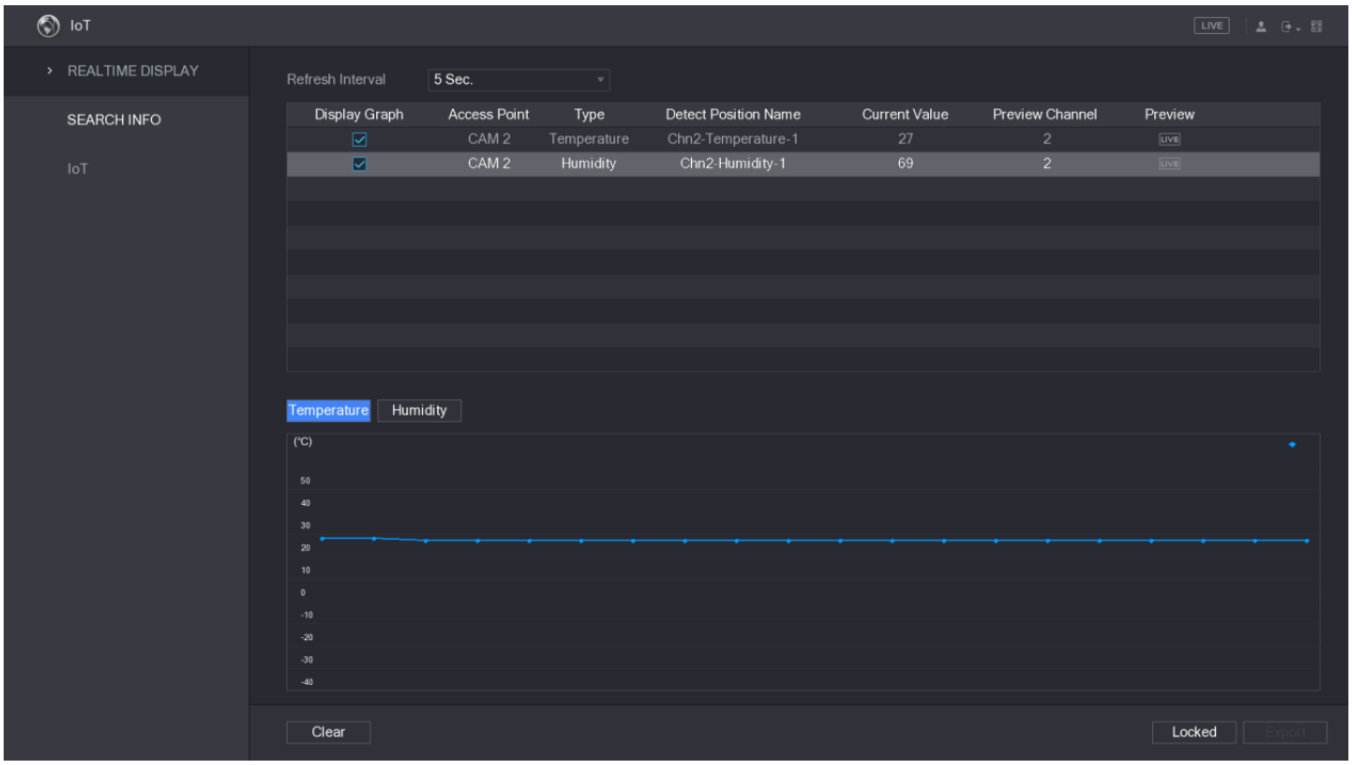


Right-click anywhere on the monitoring image to return to the previous interface after all the settings are completed.

Viewing Temperature and Humidity

step1 Right-click on the live interface to enter XVR main menu (Figure 3-1).
step2 Select IoT > REALTIME DISPLAY, and then you can view the real-time temperature and humidity.

Figure 5-2 View temperature and humidity



For details, see XVR user's manual.

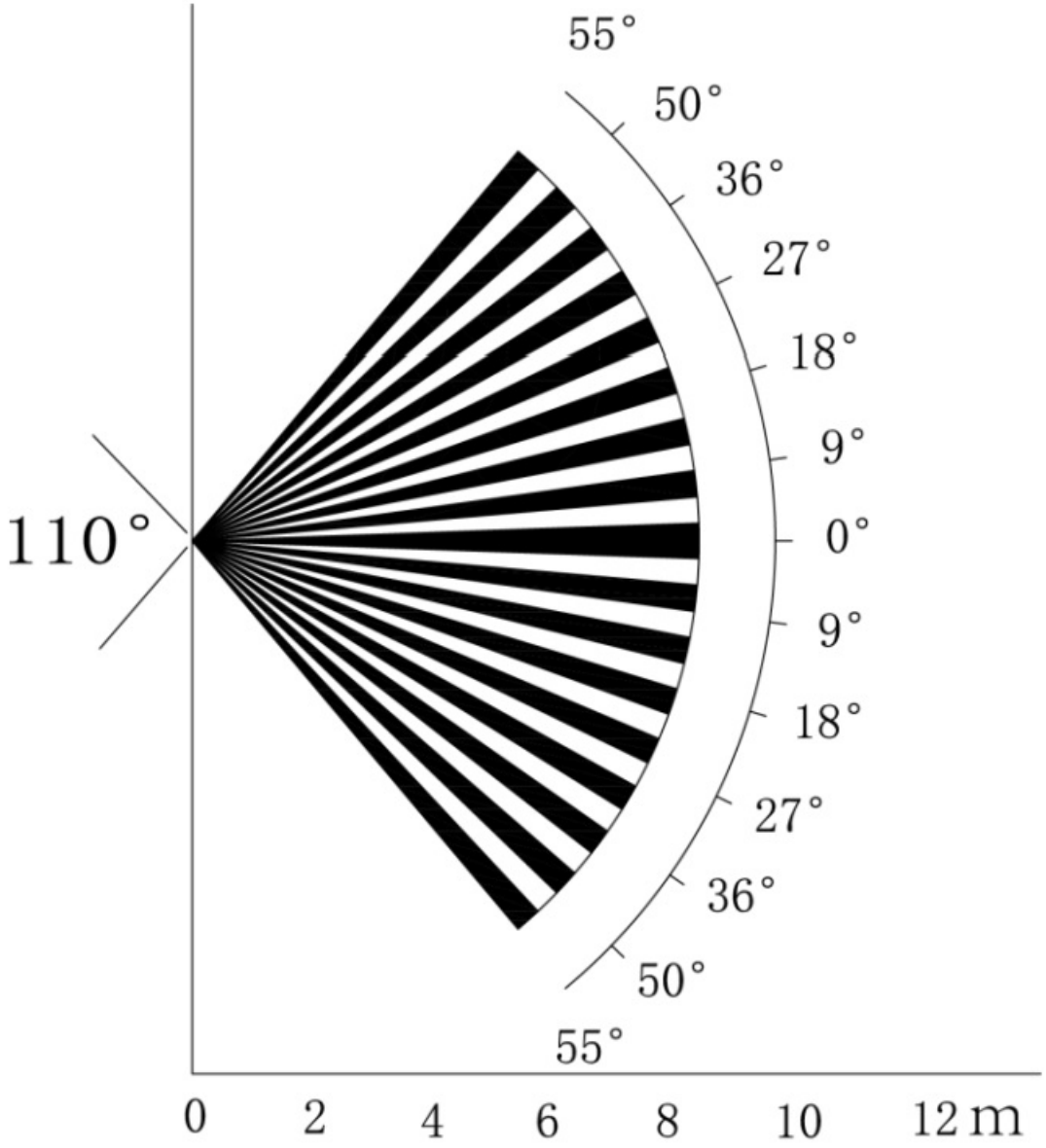
Active Deterrence Camera Configuration

Active deterrence cameras can warn off intruders actively with LED even before users are aware of the incident. Once an intrusion is detected, the LED will be turned on to alert the intruder.

Detection Range of PIR Detector

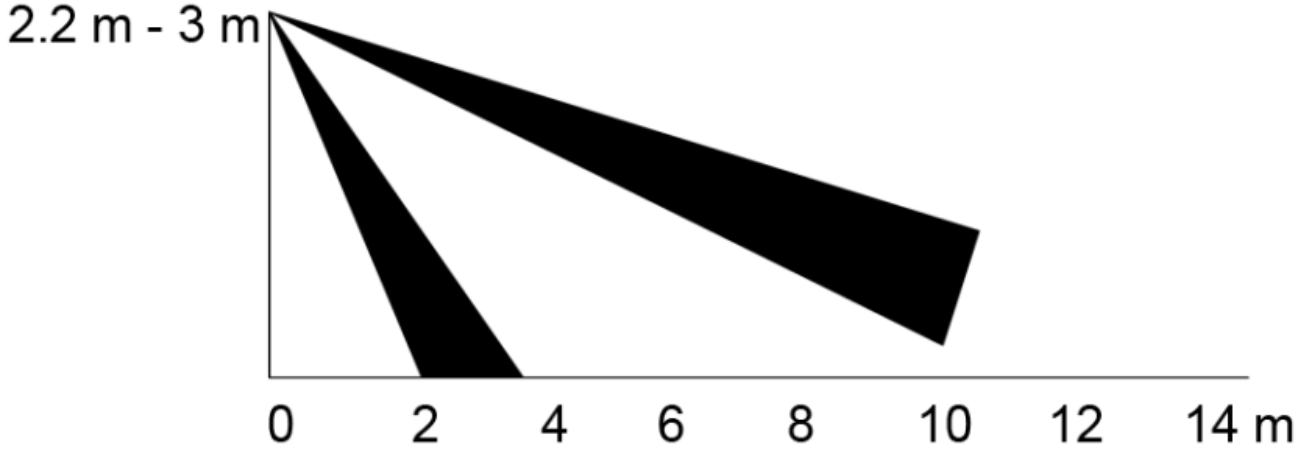
The horizontal detection range of the sensor is 100° or 110°.

Figure 6-1 Horizontal detection range



The vertical detection distance of the sensor is 2 m–10 m, 1 m–14 m or 1 m–12 m.

Figure 6-2 Vertical detection distance



Configuring Trigger Mode

On the OSD menu (Figure 3-7), select Alert > Trigger Mode.
If you select Camera Set, the sound and light alarm will be triggered in the device.
If you select XVR Set, the sound and light alarm will be triggered in the XVR.

For more information about XVR Set, see the user's manual XVR.

Configuring Light Warning and Audio Alarm

This function is available only when the trigger mode is set to Camera Set.
On the OSD menu (Figure 3-7), select Alert. Set Light Warning to ON, and then enter the item

- For Mode, You can select from Lighting to Flash.

  If you select Flash, you can set the Flash Frequency to Low, Medium, or High.
- For Alert Duration, you can adjust from 5 seconds to 60 seconds.

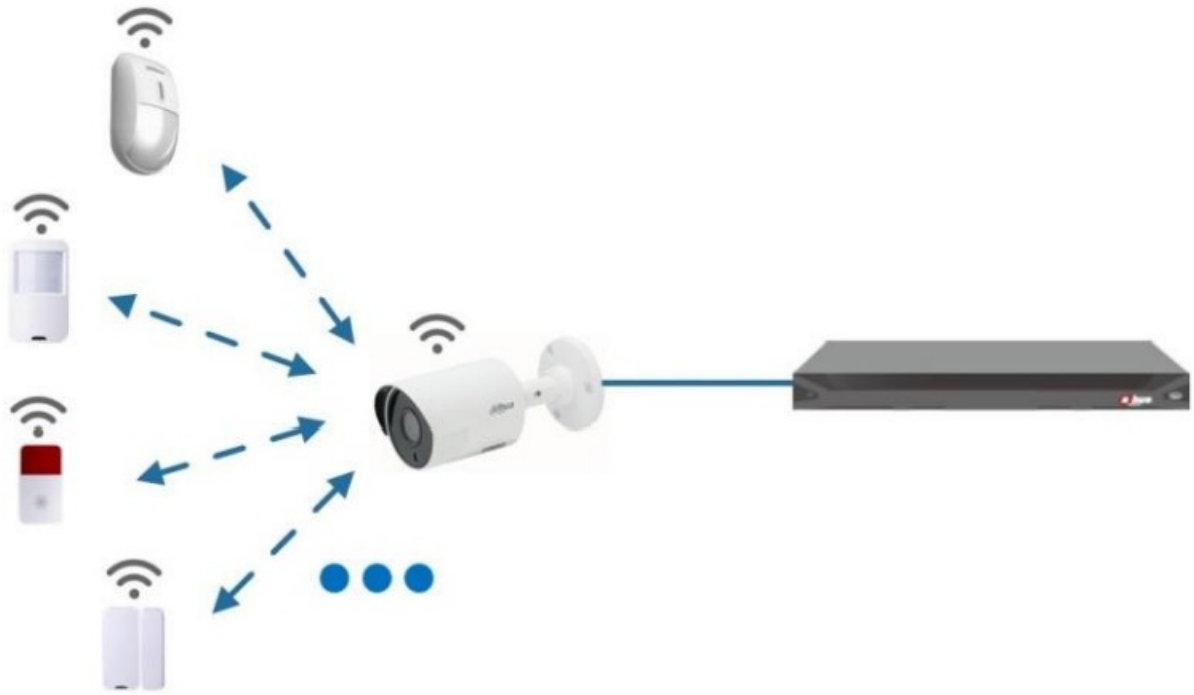
  On the Audio Alert item, set it to ON, and then enter the item.
- In the Audio item, you can select from three audios.

  You can contact after-sales support to customize alarm audio.
- In the Volume item, you can select from Low, Medium, and High.
- In the Alert Duration, you can adjust from 5 seconds to 60 seconds.

Gateway Camera Configuration

This function is available on select models.
This series of devices can serve as a gateway to connect compatible wireless node devices, including door/window contact, siren, and PIR detector to XVR to form a local alarm network. Once any alarm from devices within the network is triggered, the device transmits the alarm signal as configured.

Figure 7-1 Network diagram



Connect the wireless node devices to XVR with a gateway camera and then configure parameters.

For more detailed configuration, see the user's manual of XVR or node device.

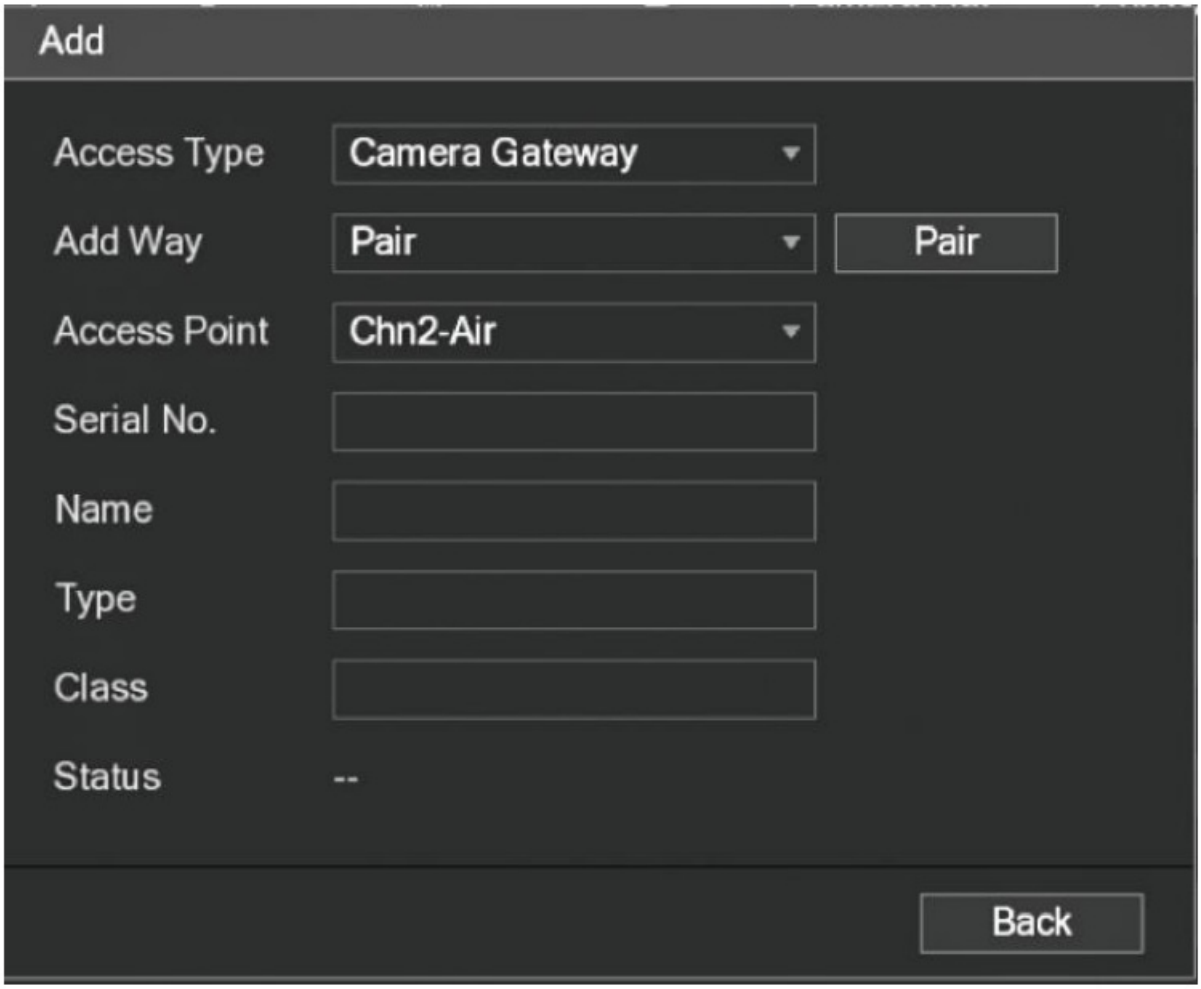
Connecting Node Devices on OSD menu

Step1 On the OSD menu (Figure 3-7), select Advanced.
step2 Set Enroll to ON, and the device enters pairing mode.
Operate the node device and enter pairing mode according to the corresponding manual.
step3After pairing is completed, you can check the information of the connected device on the Sensor Pairing interface.

Connecting Node Devices on XVR

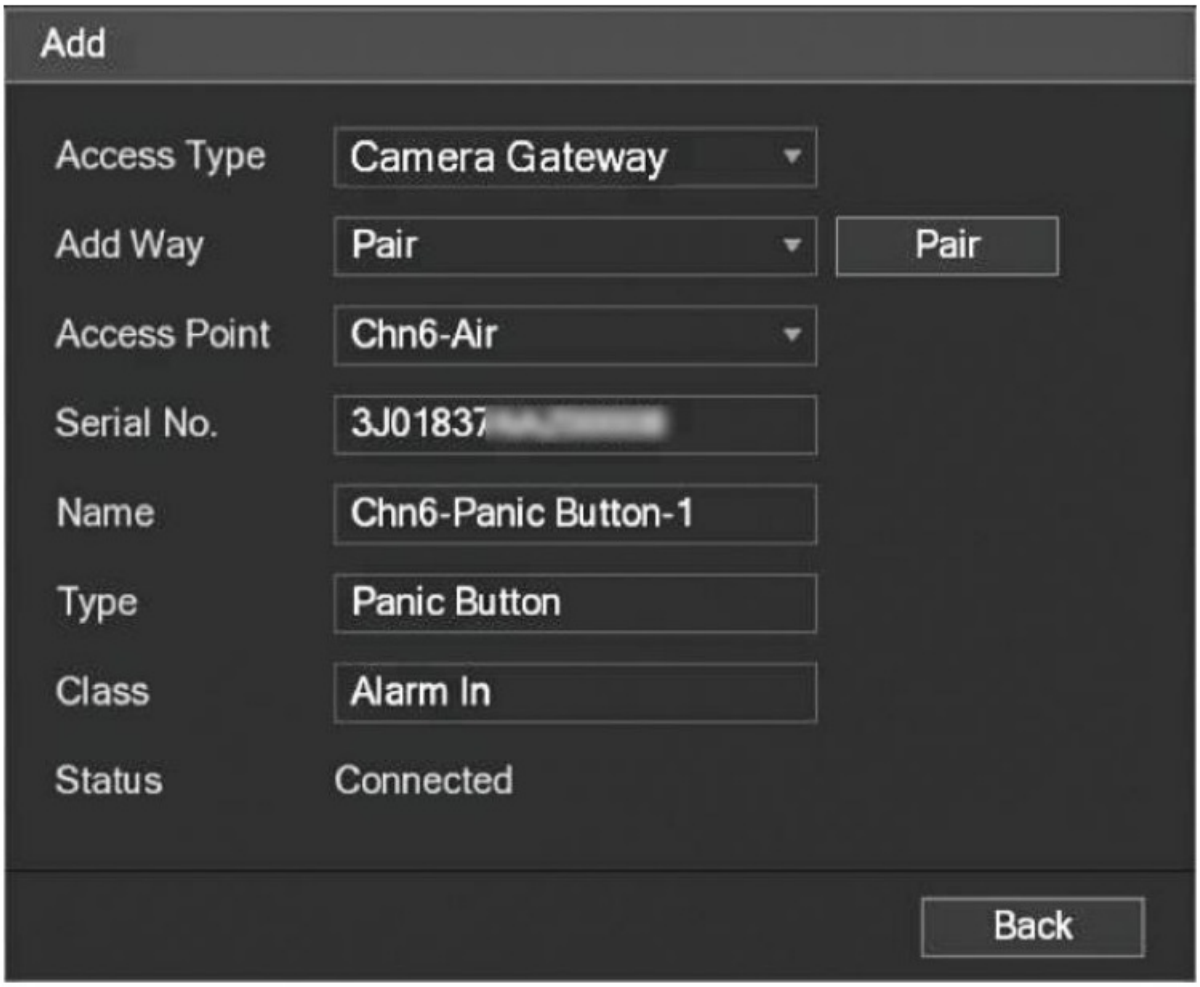
Step1 On the XVR Main Menu (Figure 3-1), select IoT > MANAGER > Sensor Pairing.
step2 Click Add.

Figure 7-2 Add sensor pairing (1)



step3 In the Access Type list, select Camera Gateway.
step4 Click Pair, and the device enters pairing mode.
Operate the node device and enter pairing mode.

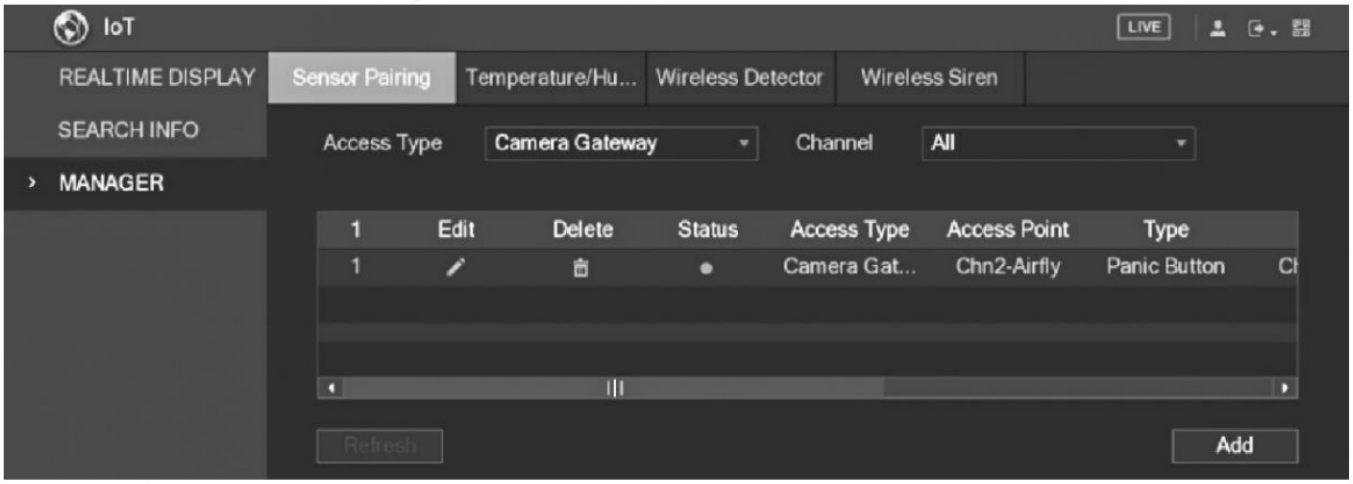
Figure 7-3 Add sensor pairing (2)



Step5 Click Back.

Click to modify the device name; click to delete the node device.

Figure 7-4 Connected device



Box Camera Installation

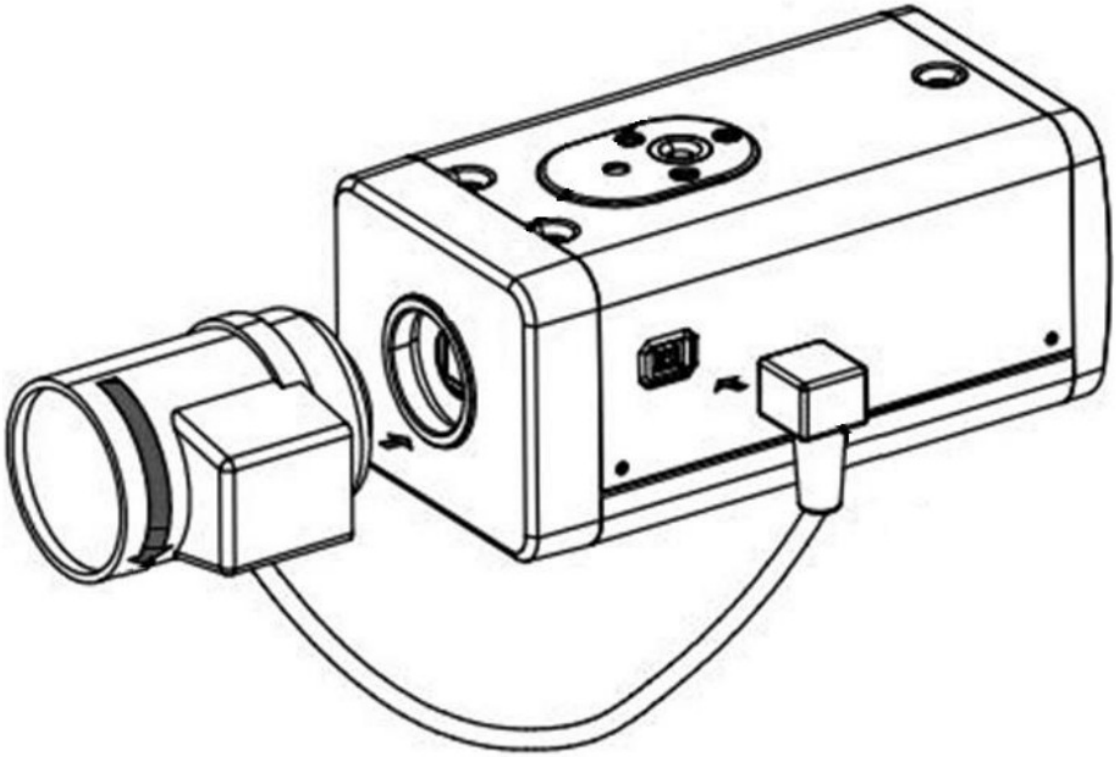
- The device is not equipped with the lens when it is delivered out of the factory and you need to install the lens.
- Do not remove the electrostatic adsorption film on the surface of the transparent cover before installation and debugging are completed, which is to avoid damage during installation.
- Install the lens onto the device in time after unpacking, which is to avoid the device module being exposed to a humid environment for a long time.
- The mounting surface shall be thick enough to sustain at least 3 times the device's weight.
- Install the C/CS adapter ring to the camera if you are using a C-mount lens.
- The following installation figure is for reference only.

Lens Installation

8.1.1 Installing Lens Type 1

Step1 Remove the protection cap from the device. Align the lens to the lens position of the device (Install the C/CS adapter ring to the device if you are using a C mount lens). Turn clockwise to secure the lens firmly.
Step2 Insert the socket of the lens cable into the auto iris lens connector on the side panel of the device. Skip this step if you are using an auto iris lens.
step3 Fasten the screw near the focusing ring, and then turn anti-clockwise to move the focusing ring out to focus manually until you get a clear video.
step4 After you completed focusing, fix the screw near the focusing ring firmly.
step Fasten the focusing ring.

Figure 8-1 Lens installation (1)



8.1.2 Installing Lens Type 2

Figure 8-2 Front panel

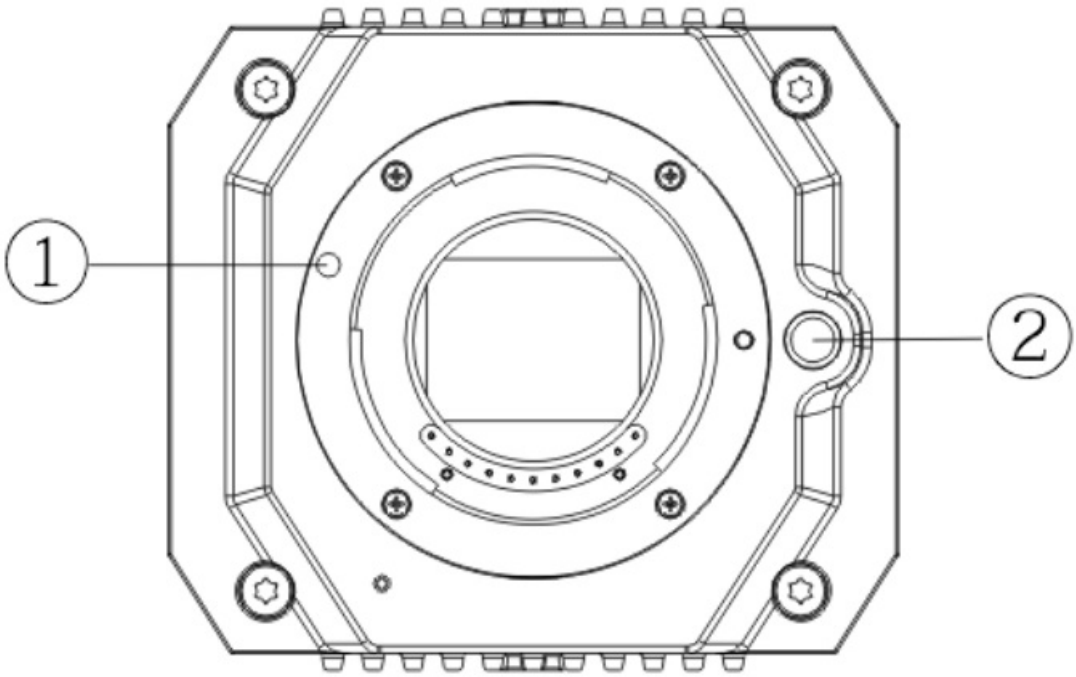


Table 8-1 Front panel components

No.	Name
1	Red sign
2	Lens-dismounting button

Step1 Remove the protection cover on the device lens, align the red sign of the lens with the red sign ① on the device, rotate the buckle clockwise until the lens-dismounting button ② bounces upward, and then the lens is installed.
Step2 Loosen the screw on the focusing ring and rotate the focusing ring outward to focus manually until you get a clear video. Skip this step if you are using a lens that supports autofocus.

Figure 8-3 Lens installation (2)

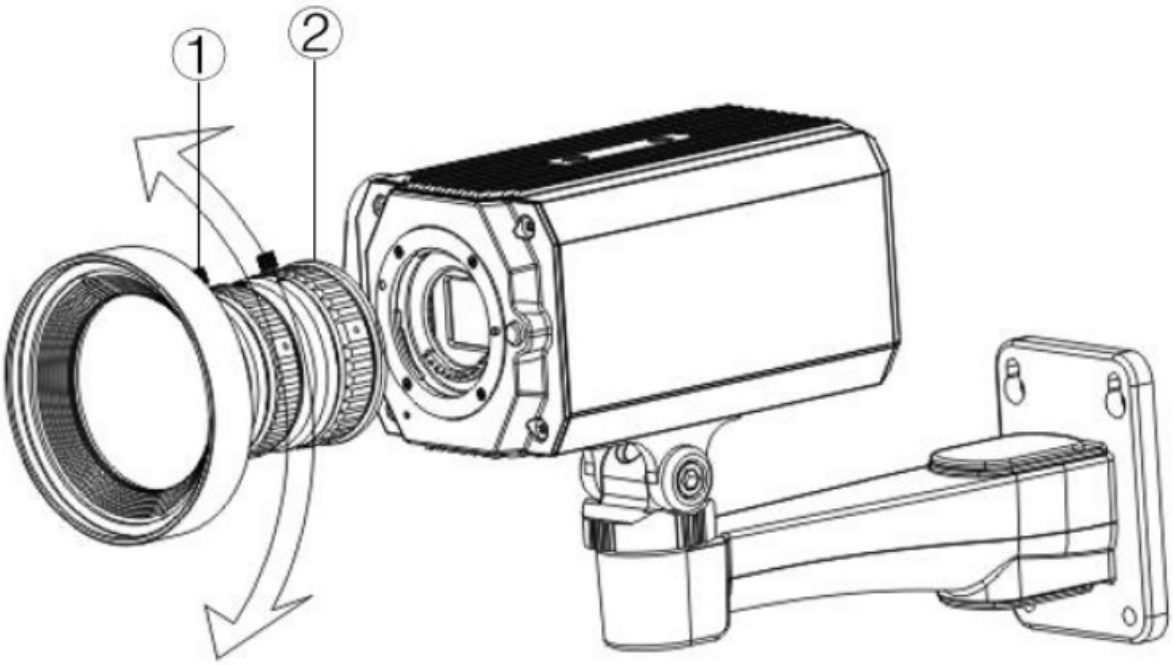


Table 8-2 Lens components

No.	Name
1	Screw
2	Focusing ring

Step3 After focusing, tighten the screw on the focusing ring and fix the focusing ring.

To dismount the lens, press the lens-dismounting button ②, rotate the lens anticlockwise, and release the bucket.

8.2 I/O Port Installation

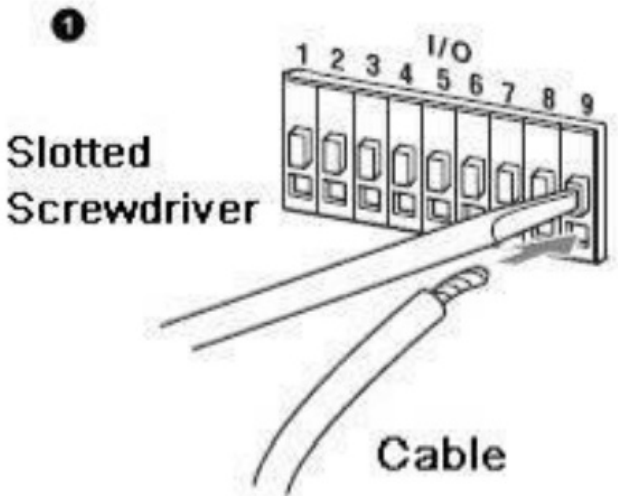
8.2.1 Connecting Cable

Step1 Press and hold the mini screwdriver to press the button on the hole groove of the cable to be connected.

Step2 Insert the cable into the hole groove.

Step3 Release the screwdriver.

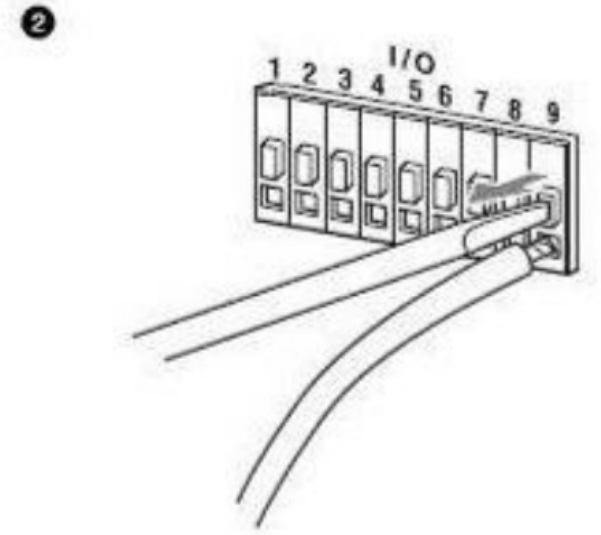
Figure 8-4 Install cable



8.2.2 Removing Cable

Step1 Use the mini screwdriver to press the button on the hole groove of the cable to be connected.
Step2 Pull out the cable from the hole groove.
Step3 Release the screwdriver.

Figure 8-5 Remove cable



8.3 Device Installation

The device is delivered without a mounting bracket and screw. You need to purchase them separately.

Figure 8-6 Device components

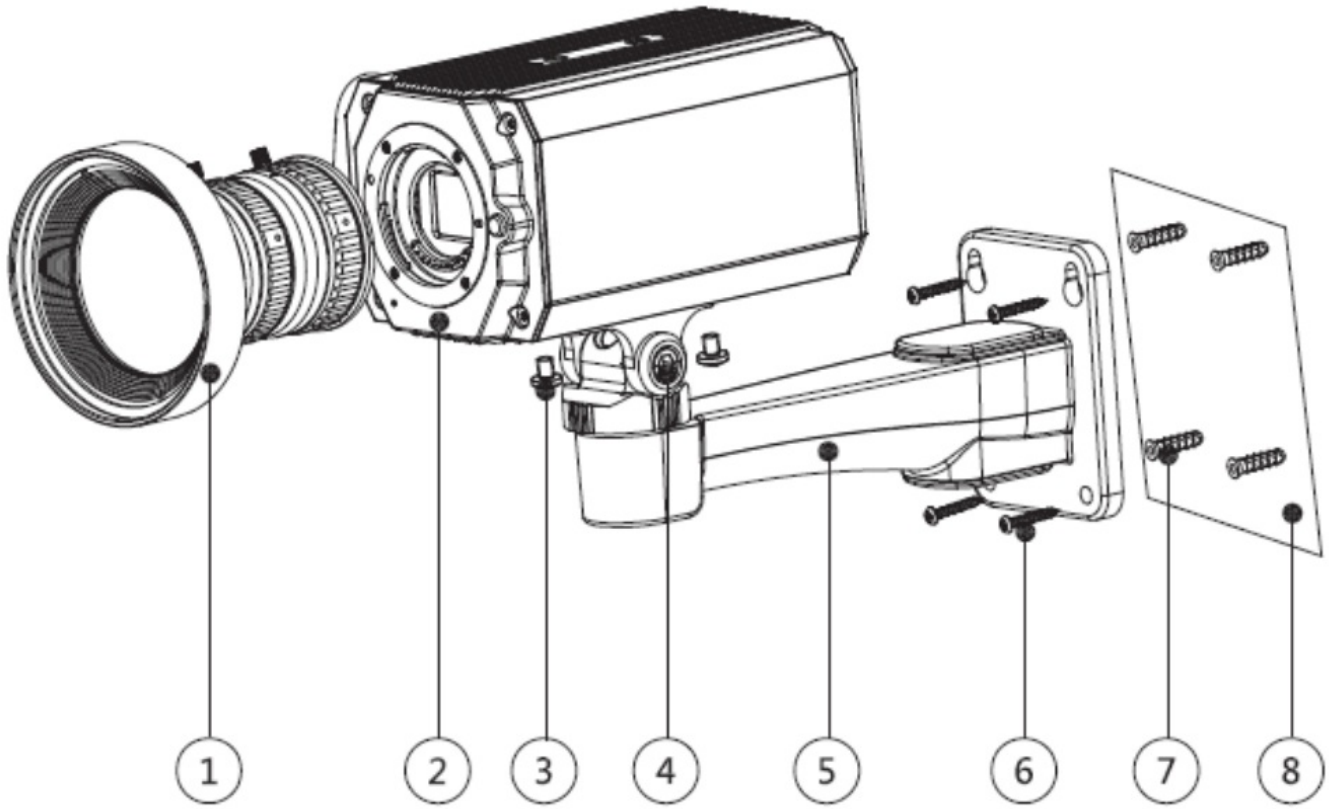


Table 8-3 Device components

No	Name
1	Lens
2	Front panel
3	Fixing screw
4	Bracket adjusting screw
5	Mounting bracket
6	Self-tapping screw
7	Expansion bolt
8	Mounting surface

Step1 Fix the mounting bracket ⑤ on the mounting surface ⑧.
1) Mark the bracket mounting hole positions on the mounting surface ⑧, drill four holes on the marked positions, insert four expansion bolts ⑦ into the mounting holes and then tighten.
2) Align the four screw holes on the bottom of the mounting bracket ⑤ with the expansion bolts, insert four self-tapping screws ⑥ and then tighten.
Step2 Fix the device on the mounting bracket ⑤.
Align the mounting hole positions on the bottom of the device casing with the positions of the mounting holes on the mounting bracket ⑤, and then install the device on the mounting bracket with a fixing screw ③.

Step3 Adjust the camera monitoring angle.
Use a wrench to loosen the adjusting screw ④, adjust the camera to the location which needs to be monitored, and then use a wrench to tighten the bracket adjusting screw ④ to fix the device.
Step4 Connect the cable to the back panel of the device.
After device installation and cable connection, you can view the monitoring images through a storage devices such as XVR.

Fisheye Camera Configuration

The fisheye camera (panoramic camera) has wide monitoring angle but its video is distorted.
The dewarp function can provide the proper and vivid video suitable for human eyes. The fisheye function should be configured at XVR.

9.1 Fisheye Dewarp on the Live Interface

Step1 On the XVR shortcut menu, select Fisheye.
Step2 Set fisheye Fit Mode and Show Mode.

Figure 9-1 Fisheye menu

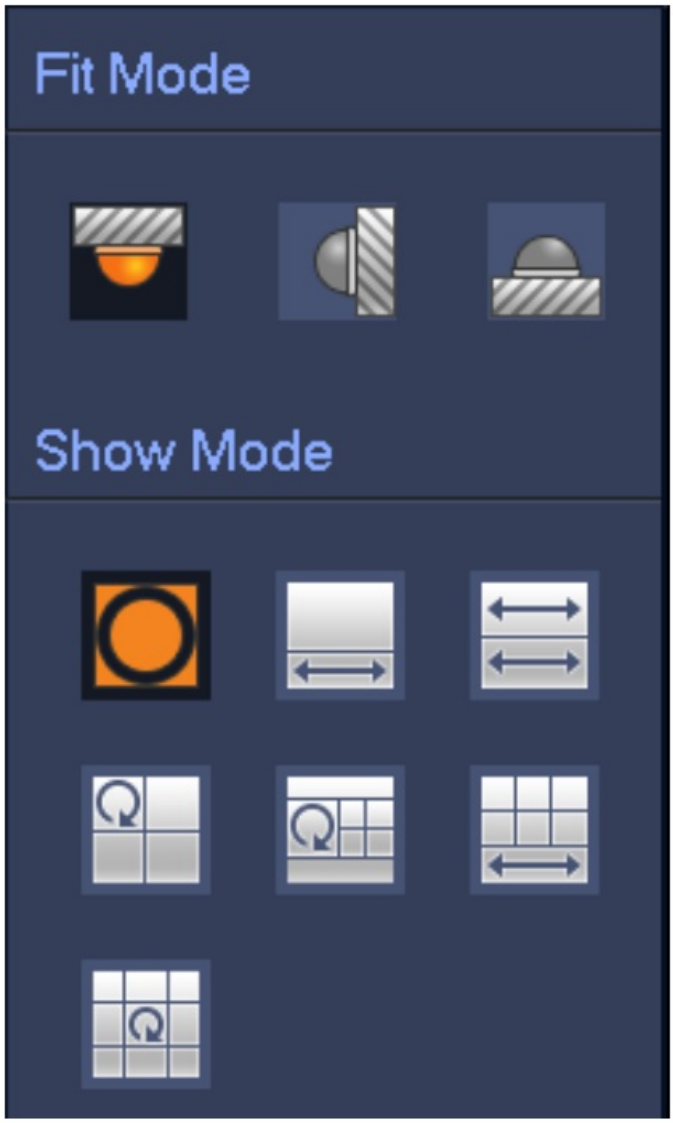


Table 9-1 Parameter of fisheye

Fit Mode	Icon	Description
Ceiling mount  Ground moun 		360° panorama original window
		1 dewarp window and 1 panorama expanded window
		2 panorama expanded window
		1 360° panorama window and 3 dewarp windows
		1 360° panorama window and 4 dewarp windows
		4 dewarp windows and 1 panorama expanded window
		1 360° panorama window and 8 dewarp windows
Wall mount 		360° panorama original window
		Panorama expanded window
		1 panorama unfolding window and 3 dewarp windows
		1 panorama unfolding window and 4 dewarp windows
		1 panorama unfolding window and 8 dewarp windows

- The dewarp modes might vary for different installation modes.
- For the non-fisheye channel, a prompt is displayed to remind you that dewarp function is not supported.
- Some series products support 180° dewarp which can only be wall mounted. The actual product shall prevail.

Figure 9-2 Fisheye show mode

You can use the mouse to drag the color areas on the left original screen or the rectangular screens on the right to change the monitoring ranges. (Not supported for wall mount.)

9.2 Fisheye Dewarp During Playback

When playing back the fisheye recorded video, you can use the dewarp function to adjust the video.

Step 1 On the XVR main menu, click SEARCH.

Step 2 Select 1-window playback mode and corresponding fisheye channel, and then click  to play.

Step 3 Right-click  to go to the dewarp playback interface.

FAQ

10.1 PoC Power Supply

PoC XVR supports the PoC function.

PoC cameras can be divided into AT cameras and AF cameras. The power consumption of AT camera is less than 12W, and the power consumption of the AF camera is less than 6W.

You need to check the maximum power of PoC before use. Assuming that the maximum power of one XVR is 48W, the XVR can connect AT cameras up to 48/12=4 and AF cameras up to 48/6=8.

When the device is in the condition of PoC power supply, do not connect any other device between the device and PoC XVR or PoC transceiver such as UTC, Balun, optical transceiver, distributor and converter, and so on; otherwise, the device might get burned.

PoC power supply is with high voltage. Do not dismantle the device during normal operation; otherwise, it might cause danger to both device and users due to high voltage.

10.2 Long Distance Power Supply

In many scenarios, our clients adopt a long-distance power supply, transmitting 12V DC to cameras located over 100 m. Such long-distance power supply might cause problems.

Q1: Recurrent restart of devices or even ICR Failure.

Possible reasons: The long power supply cable leads to a large voltage drop on the equipment power supply cable, and turning on the IR light at night leads to a further increase of the voltage drop, resulting in the restart of the device. After the device is restarted, the ICR is switched to the Day mode by default. By judging the ambient light at night, the device will operate in Night mode, and then the infrared light is turned on, which causes the device to restart again because of Undervoltage. Thus, ICR is switched to every 2 seconds, impacting its switching lifespan.

Q2: Unable to restart devices at night, and black screen or restart occurs when switching ICR.

Possible reasons: The long power supply cable leads to a large voltage drop on the equipment power supply cable, and turning on the IR light at night leads to a further increase of the voltage drop, resulting in the restart of the device and a black screen.

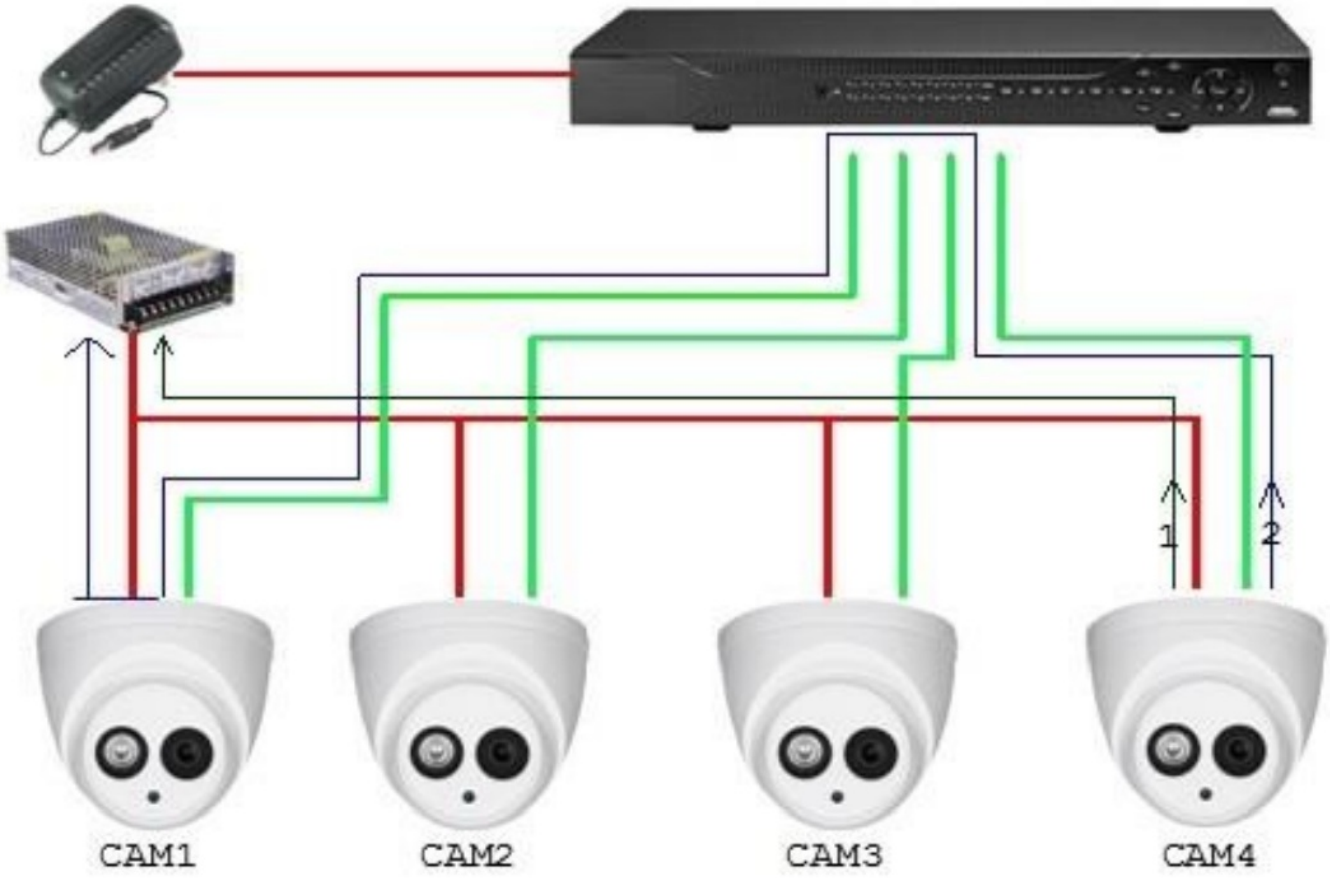
Solution: During construction, when the camera location is far from the power supply, you need to adopt a long-distance separate power supply or purchase –DP dual power supply to use 24V AC power supply.

10.3 Centralized Power Supply

The typical problem of a centralized power supply is that there are obvious black stripes on the device screen, which interferes with the display.

The principle of centralized power supply is as follows:

Figure 10-1 Principle of centralized power supply



There are two paths for the power output of CAM4, return path 1 and return path 2. Reflow 2 first flows to CAM1 and then flows to the power supply from the power supply ground of CAM1. In this way, the reflow of power supply ground CAM4 affects the video ground of CAM1, resulting in interference stripes on the screen. And CAM4 also interferes with CAM2 and CAM3.

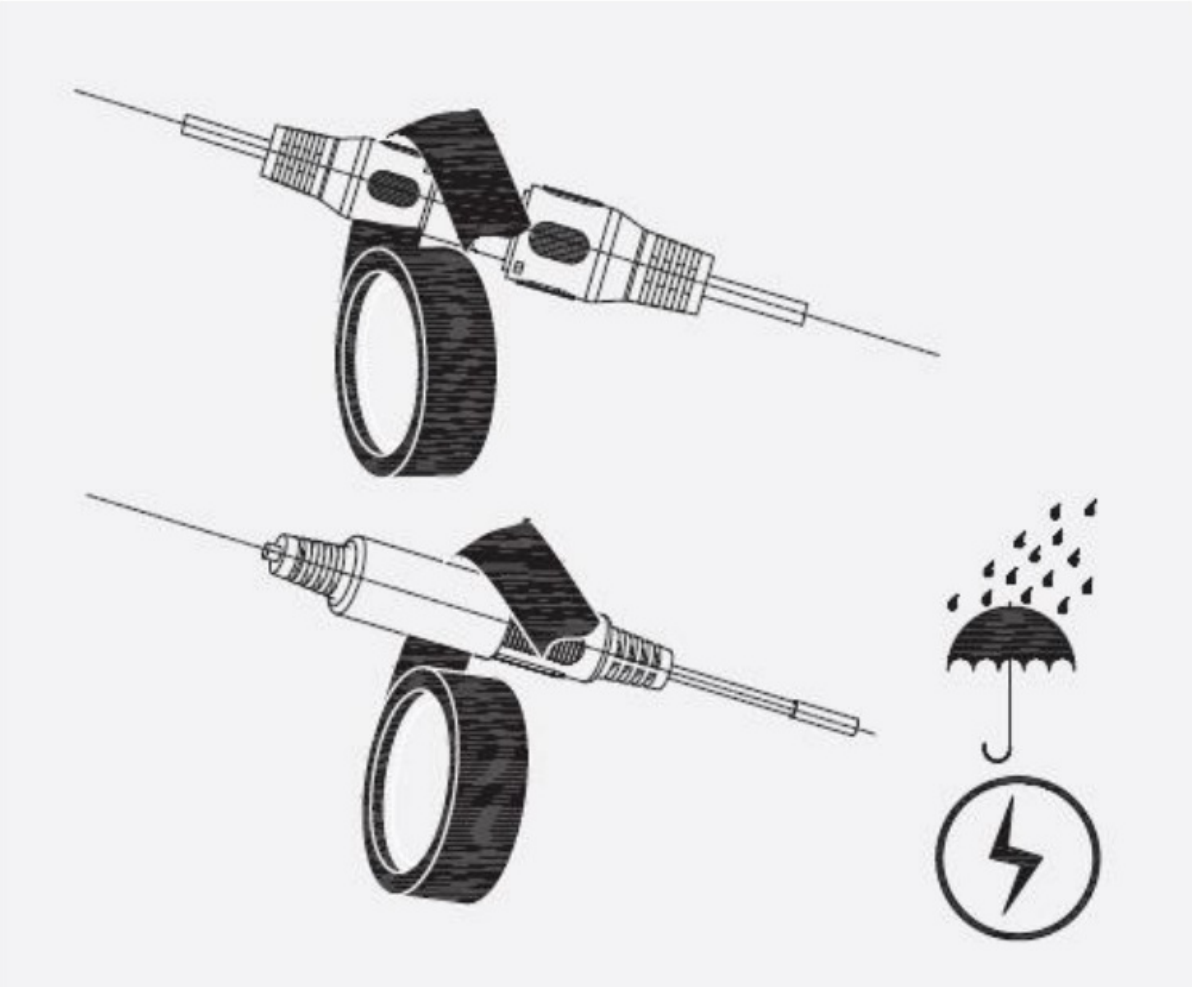
In the same way, CAM1, CAM2, or CAM3 affects other cameras besides itself.

The main reason for the interference of the centralized power supply is that the power supply ground of the camera is not isolated. To solve this problem: Use dual-power devices with isolation of power supply ground; equip low-power devices with power isolators to block the return path 2 low-power devices can also use power isolators to block the return path 2; use isolated power supplies for each channel, or power the device separately, which are the two recommended methods.

10.4 Connector Waterproof Protection

HDCVI cameras need to be well waterproofed and protected. After installation, wrap the BNC connector and power connector tightly with insulated or waterproofed tape to prevent water and external electromotive forces. When a metal casing device is installed on metal surfaces such as elevators and buses, the metal casing should not be in contact with the installation surface to prevent water and external electromotive forces.

Figure 10-2 Waterproof measures



Maintenance

In order to maintain the image quality and proper functioning of the device, please read the following maintenance instructions carefully and hold rigid adherence.

Disassembly and Desiccant Replacement

- Carefully follow the instructions in the manual when performing any disassembly operation on the device; otherwise, it might cause water leakage or poor image quality due to unprofessional disassembly.
- Please contact after-sale service for desiccant replacement if there is condensed fog found on the lens after unpacking or when the desiccant turns green. (Not all models are included with the desiccant).

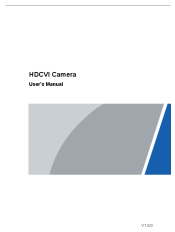
Maintaining Lens and Lens Protector

- The lens and lens protector is covered with the antireflection coating, which could be contaminated or damaged and result in lens scratches or haze images when being touched with dust, grease, fingerprints, and other similar substances.
- Do not touch the image sensor (CCD or CMOS) directly. Dust and dirt could be removed with air blower, or you can wipe the lens gently with a soft cloth that is moistened with alcohol.

Maintaining Device Body

- The device body can be cleaned with a soft dry cloth, which can also be used to remove stubborn stains when moistened with mild detergent.
- To avoid possible damage to the device body coating which could cause a performance decrease, do not use volatile solvents such as alcohol, benzene, diluent, and so on to clean the device body, nor can strong, abrasive detergent be used.

Documents / Resources

	dahua HDCVI Camera [pdf] User Manual HDCVI Camera, HDCVI, Camera