HDCVI 4K Box Camera User's Manual

Version 1.0.1

Table of Contents

Welcome

Thank you for purchasing our HDCVI camera!

This user's manual is designed to be a reference tool for your system.

Please read the following safeguard and warnings carefully before you use this series product!

Please keep this user's manual well for future reference!

Important Safeguards and Warnings

Electrical safety

- All installation and operation here should conform to your local electrical safety codes.
- The power shall conform to the requirement in the SELV (Safety Extra Low Voltage) and the Limited power source is rated DC 12V or AC24V in the IEC60950-1. (Power supply requirement is subject to the device label).
- Please install easy-to-use device for power off before installing wiring, which is for emergent power off when necessary.
- Please check if the power supply meets the requirements of working voltage of the camera before operating the device (The material and length of the power supply cable will influence terminal voltage value).
- Please prevent the line cord from being trampled or pressed, especially the plug, power socket and the junction from the device.

Environment

- Please don't aim the device at strong light (such as lighting, sunlight and so on) to focus.
- Please transport, use and store the device within the range of allowed humidity and temperature.
- Please do not allow water and other liquid falling into the camera in case that the internal components are damaged.
- Please keep the sound ventilation in case of heat accumulation.
- Heavy stress, violent vibration or water splash are not allowed during transportation, storage and installation.
- Please pack the device with standard factory packaging or material with same quality when transporting the device.
- It is recommended to use the device together with lightning protection device to enhance lightning protection effect.
- It is recommended to GND the device to enhance device reliability.
- It is advised to use qualified video transmission cable to improve video quality. It is recommended to use RG59 coaxial cable or higher standard.

Warning

- Please use the standard accessories provided by manufacturer and make sure the device is installed and fixed by professional engineers.
- Please prevent the device surface from the radiation of laser beam when using laser beam device.
- Please do not provide two or more power supply modes for the device, otherwise it may cause damage to the device.

Statement

- Please refer to the actual product for more details; the manual is just for reference.
- The manual will be regularly upgraded according to the product update; the upgraded content will be added in the manual without prior announcement.
- Please contact the customer service for the latest procedure and supplementary documentation.
- The company is not liable for any loss caused by the operation which is not followed by the manual.
- Please refer to the company's final explanation if there is any doubt or dispute.

1 Packing List

Please check if there is any obvious damage to the device appearance when opening the packing box, and confirm if the accessories are in accordance with those in the list, please refer to Table 1-1 for more details about the accessories.

Accessory Name	Quantity
Camera	1
User Manual	1

Table 1-1

2 General Introduction

2.1 Overview

This series HDCVI camera conforms to the HDCVI standard. It supports video signal high-speed long distance transmission without any delay. It can be controlled by the HCVR conforming to the HDCVI.

2.2 Features

- Adopts high-performance CMOS image sensor, megapixel definition.
- Supports HD video, control signal coaxial transmission.
- Supports M43 protocol fixed-focal and vari-focal lens, supports auto focus function.
- 4M and 4K output supports RG59 coaxial cable transmission without any loss. The distance is over 500m.
- High speed, long distance and real-time transmission.
- Supports HD and SD switch output.
- Supports HDMI 4K realtime output, it can output with coaxial video signal at the same time, users can select video source freely.
- Supports OSD menu adjustment parameters.
- Supports 3D NR, excellent low illuminance performance.
- Supports audio input and output function, audio and video synchronous transmission.
- Supports alarm input and output function, simple networking and low cost.
- Supports DC 12V$\pm$25% or AC 24$\pm$25% wide voltage power supply.
- It can be applied to scenarios with complex light condition which requires UHD image quality, such as banking, telecom, supermarket, hotel, government, school, airport, factory, public safety, forensic and safe city etc.

3 Device Structure

3.1 Dimension

Please refer to Figure 3-1 for the dimension. The unit is mm (inch).
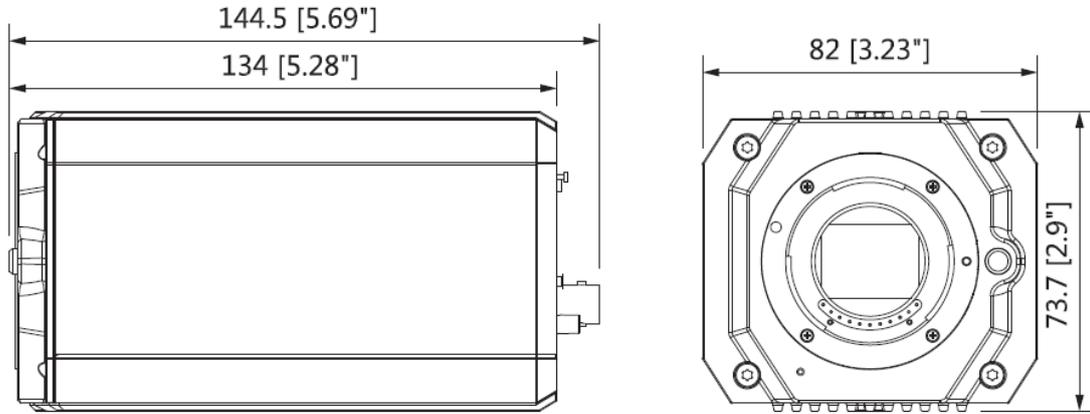

Figure 3-1

Please refer to Figure 3-2 for the dimension of side panel.
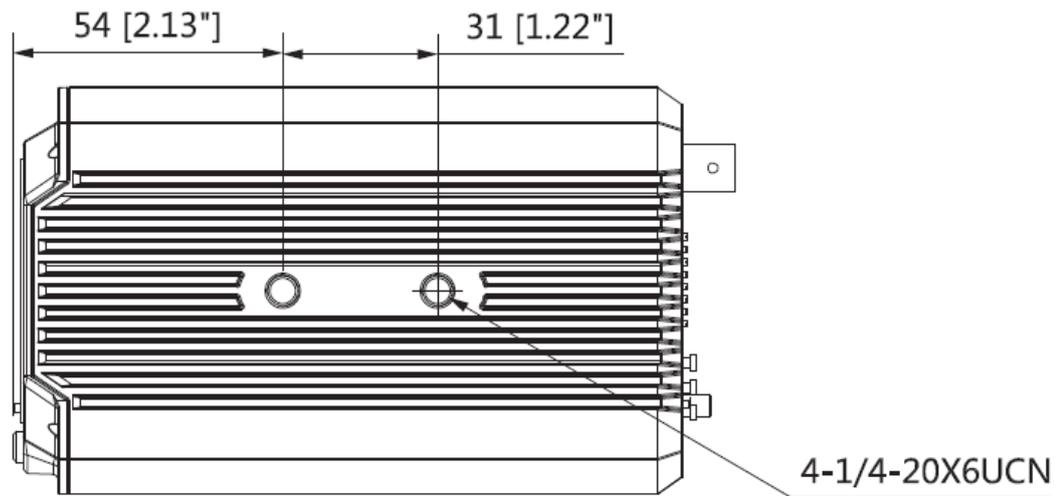
Figure 3-2

3.2 Components

Please refer to Figure 3-3 and Figure 3-4 for the device back and front panel respectively.
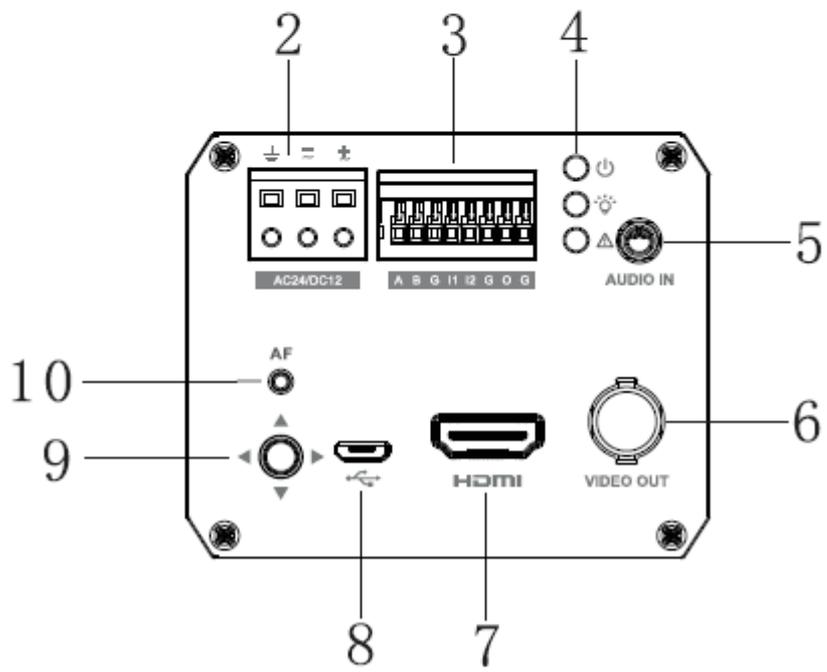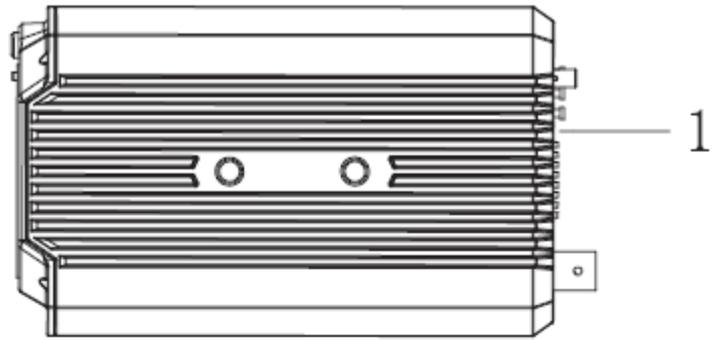
Figure 3-3
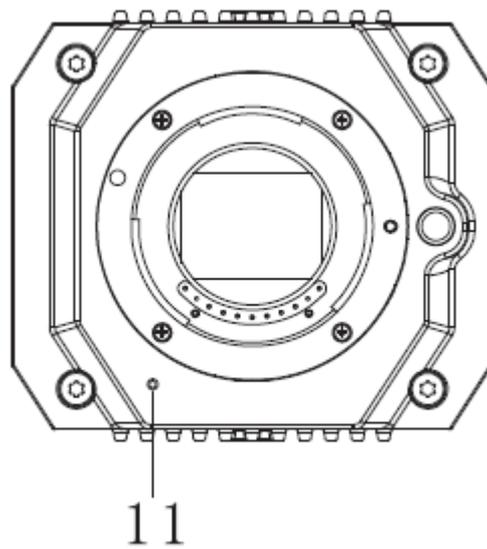
Figure 3-4

Please refer to

SN	Port	Port Name	Function
1	Back panel	Back panel	-
2	⏚	GND port	Before you use this series product, please make sure it has been soundly grounded in case there is a risk of thunder strike.
	AC24V/DC12V	Power port	Input DC 12V or AC 24V, please make sure to conform to the device label instruction when powering the device. **Note** It may cause device operation abnormity or even damage if it fails to power the device according to the device label instruction.
3	A/B	RS485 port	Support RS 485 communication protocol
	I1	Alarm input port 1	It is to receive the signal of external alarm source.
	I2	Alarm input port 2	It is to receive the signal of external alarm source.
	G	GND	Alarm ground terminal.
	O	Alarm output port	Output the signal of internal alarm source.
4	Indicator light	Red light ⏻	Power light, it will be normally on after the system boots up
		Green light ☼	Hardware indicator light, it will be normally on after hardware is successfully loaded.
		Yellow light ⚠	HD and SD indicator light, HD output normally dark, SD output normally on.
5	AUDIO IN	Audio input port	Input audio signal, receive analog audio signal from sound pick-up and other devices.
6	VIDEO OUT	Video output port	Supports HDCVI HD/CVBS SD video switch output.
7	HDMI	HDMI port	Supports HDMI output.
8	Micro USB	Micro USB 2.0 interface	It is used to upgrade program
9	5-direction button	OSD button	Press the button to enter OSD menu, press button to confirm after entering the menu, up and down buttons are used to select menu items, left and right buttons are used to adjust parameter value.
10	AF	Auto focus	Auto focus function.
11	-	Built-in audio port	It is to collect the on-site sound

Table 3-1 for more details about device components.

SN	Port	Port Name	Function
1	Back panel	Back panel	-
2	⏚	GND port	Before you use this series product, please make sure it has been soundly grounded in case there is a risk of thunder strike.
	AC24V/DC12V	Power port	Input DC 12V or AC 24V, please make sure to conform to the device label instruction when powering the device. **Note** It may cause device operation abnormity or even damage if it fails to power the device according to the device label instruction.
3	A/B	RS485 port	Support RS 485 communication protocol
	I1	Alarm input port 1	It is to receive the signal of external alarm source.

SN	Port	Port Name	Function
	I2	Alarm input port 2	It is to receive the signal of external alarm source.
	G	GND	Alarm ground terminal.
	O	Alarm output port	Output the signal of internal alarm source.
4	Indicator light	Red light ⏻	Power light, it will be normally on after the system boots up
		Green light ᨑ	Hardware indicator light, it will be normally on after hardware is successfully loaded.
		Yellow light ⚠	HD and SD indicator light, HD output normally dark, SD output normally on.
5	AUDIO IN	Audio input port	Input audio signal, receive analog audio signal from sound pick-up and other devices.
6	VIDEO OUT	Video output port	Supports HDCVI HD/CVBS SD video switch output.
7	HDMI	HDMI port	Supports HDMI output.
8	Micro USB	Micro USB 2.0 interface	It is used to upgrade program
9	5-direction button	OSD button	Press the button to enter OSD menu, press button to confirm after entering the menu, up and down buttons are used to select menu items, left and right buttons are used to adjust parameter value.
10	AF	Auto focus	Auto focus function.
11	-	Built-in audio port	It is to collect the on-site sound

Table 3-1

4 Installation

Caution

- Please install the device in time after it is taken apart, which is to avoid the camera module being exposed in humid environment for a long time.
- The installation ceiling or wall shall be thick enough to sustain at least 3X weight of the camera.
- Please do not remove the electrostatic adsorption film on the surface of transparent cover before installation and debugging are completed, which is to avoid damage during installation;
- The following installation figure is for reference only.

4.1 Lens Installation

Note

The device is not equipped with lens when it is delivered out of factory, it needs to operate with M43 mount lens.
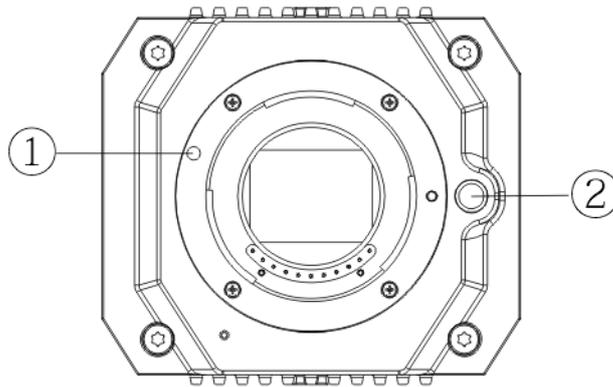

Figure 4-1

SN	Name
1	Align the lens mounting bayonet with the sign.
2	Lens-dismounting button

Table 4-1

Step 1

Dismantle the protection cover on the device lens, align the red sign of the lens with the red sign ① on the camera, rotate the bayonet clockwise, the metal button ② bounces upward, and then the lens is well installed.
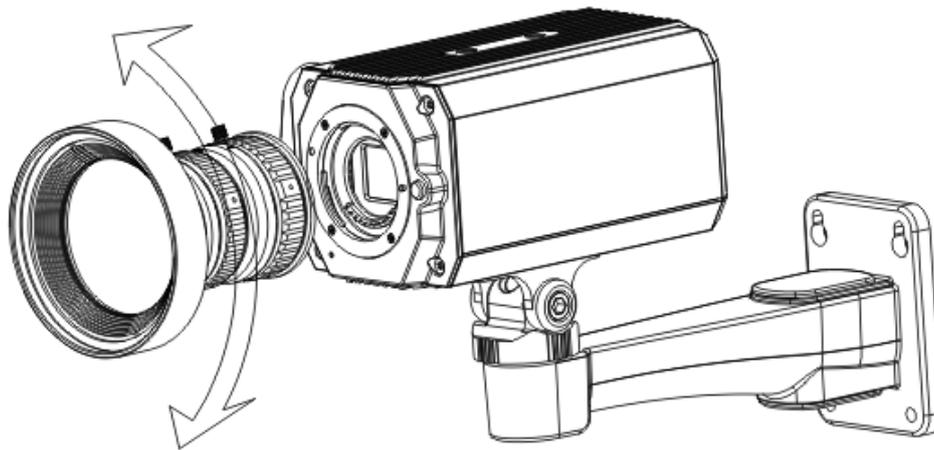
Figure 4-2

Step 2

Loosen the screw on the focusing ring, rotate the focusing ring outward for several millimeters and then make manual focusing, meanwhile you need to check the image definition till the image is clear enough (the step can be skipped for the lens which supports auto focusing).

Step 3

After focusing adjustment is completed, tighten the screw on the focusing ring and fix the focusing ring, then installation is done.

Step 4 (Optional)

Please press metal button ② if it needs to dismount the lens, rotate the lens anticlockwise, release the bayonet and take down the lens.

4.2 I/O Port Connection
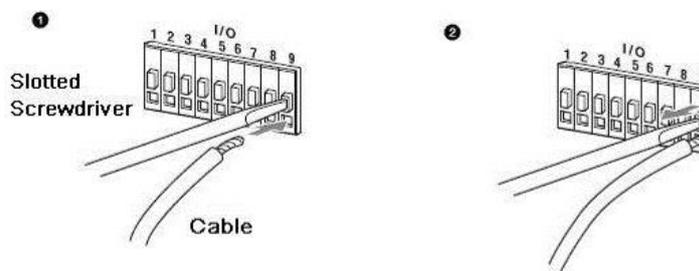
Figure 4-3

Steps of installing cable are shown as follows:

Step 1

Use the small slotted screwdriver to press the button on the hole groove which is corresponding to the cable which needs to be connected.

Step 2

Insert the cable into the hole groove.

Step 3

Release the screwdriver which is pressing the button, and then cable installation is completed.

Steps of demounting cable are shown as follows:

Step 1

Use the small slotted screwdriver to press the button on the hole groove which is corresponding to the cable which needs to be pulled out.

Step 2

Pull out the cable from the hole groove.

Step 3

Release the screwdriver which is pressing the button, and then cable demounting is completed.

4.3 Device Installation

Note

Mounting bracket and screw are not included when the device is delivered out of factory, it needs to purchase separately.
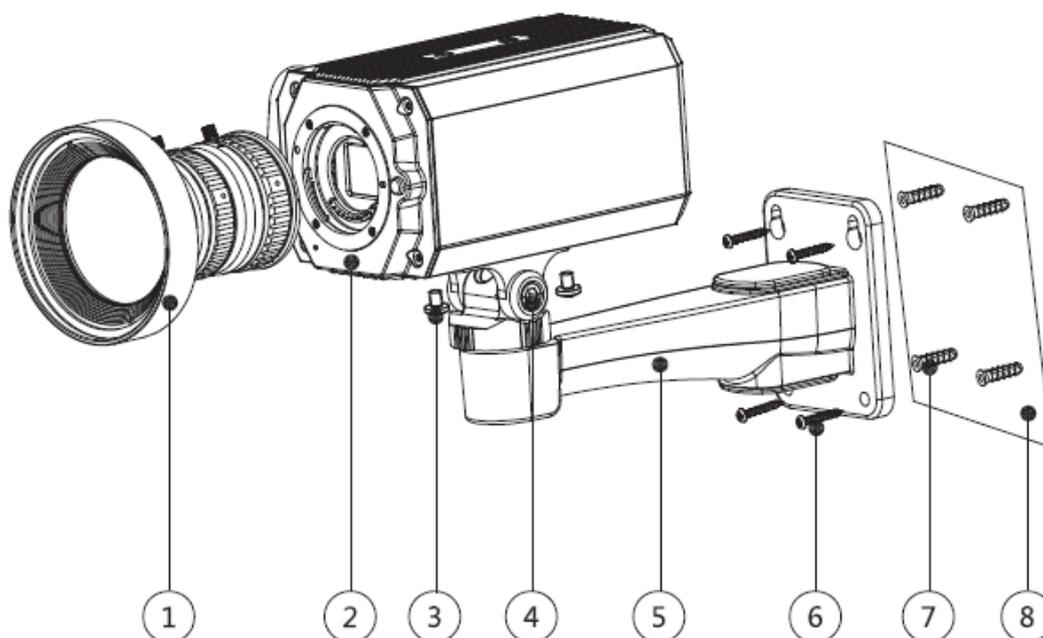

Figure 4-4

SN	Name
1	Lens
2	Front panel
3	Fixing screw
4	Bracket adjusting screw
5	Bracket
6	Self-tapping screw
7	Expansion bolt
8	Mounting surface

Table 4-2

Step 1

Fix the mounting bracket ⑤ on the mounting surface ⑧.

1. Mark the bracket mounting hole sites on the mounting surface ⑧ and dig four expansion bolt bottom holes on the mounting hole sites, then insert four expansion bolts ⑦ into the mounting holes and lock them firmly.
2. Align the four screw holes on the bottom of the mounting bracket ⑤ with the four mounting hole sites on the mounting surface, and then insert four self-tapping screws ⑥ into the four screw holes and lock them firmly.

Step 2

Fix the device on the mounting bracket ⑤.

Align the mounting hole sites on the bottom of device enclosure with the mounting holes sites on the mounting bracket ⑤, use fixing screw ③ to install the device on the bracket.

Step 3

Adjust camera monitoring direction

Use wrench to loosen the adjusting screw ④, adjust camera to the location which needs to be monitored, and then use wrench to tighten bracket adjusting screw ④ to fix the camera.

Step 4

Connect the cable to the back panel of the device.

So far, device installation and cable connection have been completed, you can check monitoring image via back-end coding device.

5 HCVR Settings

5.1 Control Coaxial Device

This HDCVI camera series can adjust OSD menu via coaxial control. After connecting the camera to HCVR, from Main Menu->Setting->System->PTZ, you need to select the channel number for access and set "control mode" as "HDCVI" and the "protocol" as "HD-CVI". Click "Save" button after setting is completed. See Figure 5-1.
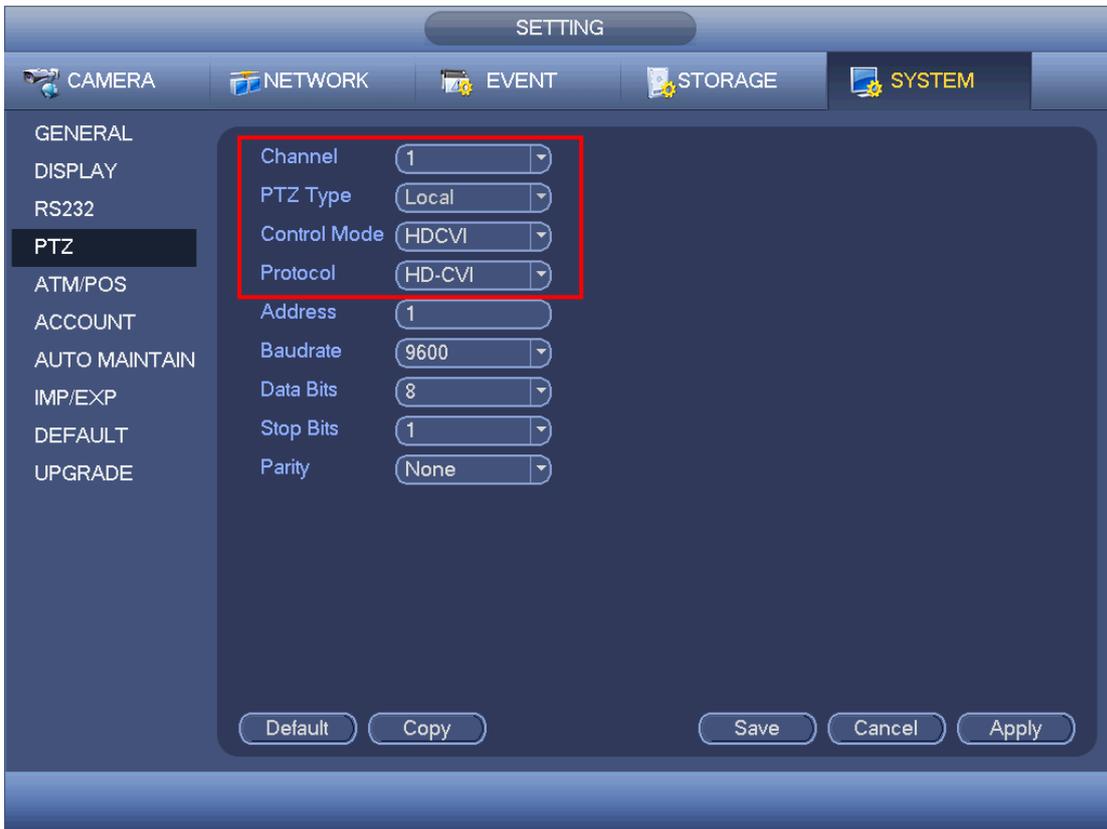
Figure 5-1

5.2 Set Audio Coax

From "Main Menu > Setting > Camera > Encode > Encode", you need to set "Audio Format" as "G711a" and the "Audio Source" as "HDCVI". Click "Save" after setting is completed. See Figure 5-2 for more details.
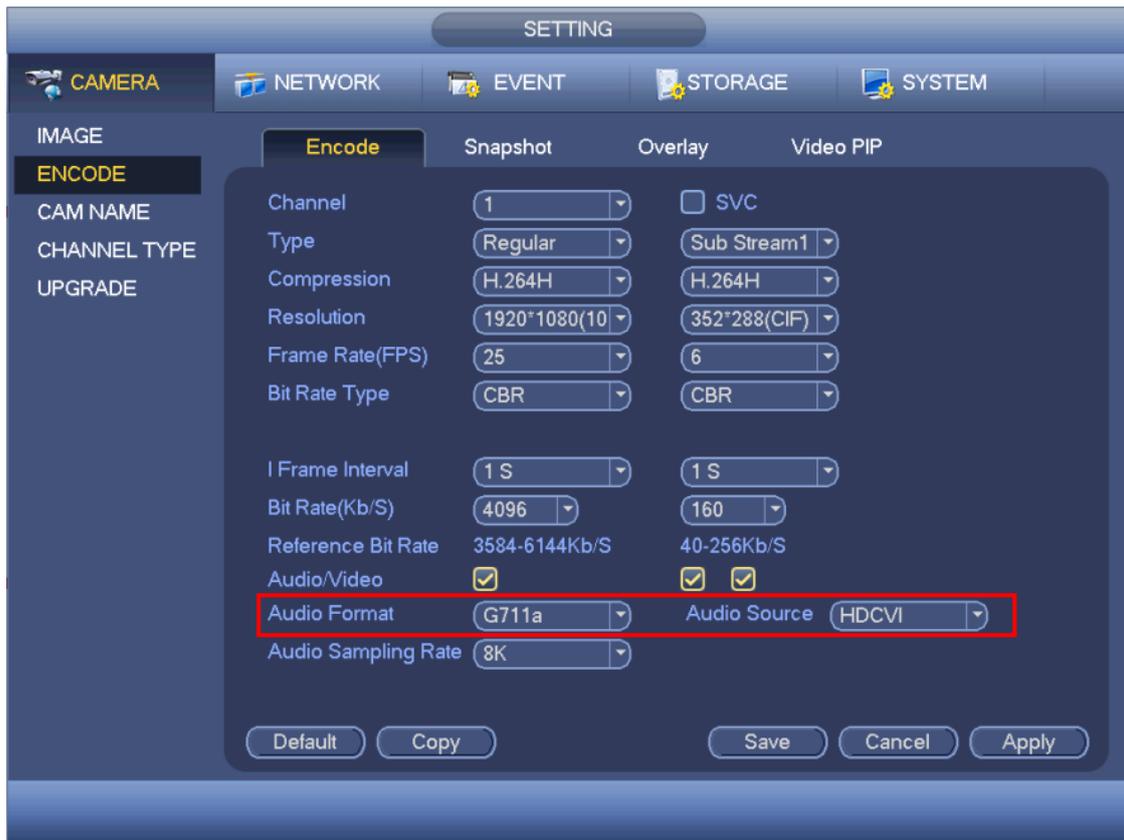
Figure 5-2

6 Menu Function

6.1 Menu Operation

Click the right mouse button and select "PTZ Control", then you will see the "PTZ Setup" menu, which is as shown in Figure 6-1 and Figure 6-2.

Figure 6-1

Figure 6-2

See Table 6-1 for the details of button functions.

Button	Function	
+ Enter	Open menu.	
▲、▼	Select menu item.	
◀、▶	Select menu value.	
− Focus +	Adjust the lens focus	**Note**
− Iris +	Focusing lens iris	Some buttons can be operated only for the device which supports auto focusing lens.

Table 6-1

Please refer to Figure 6-3 for more details about OSD menu.
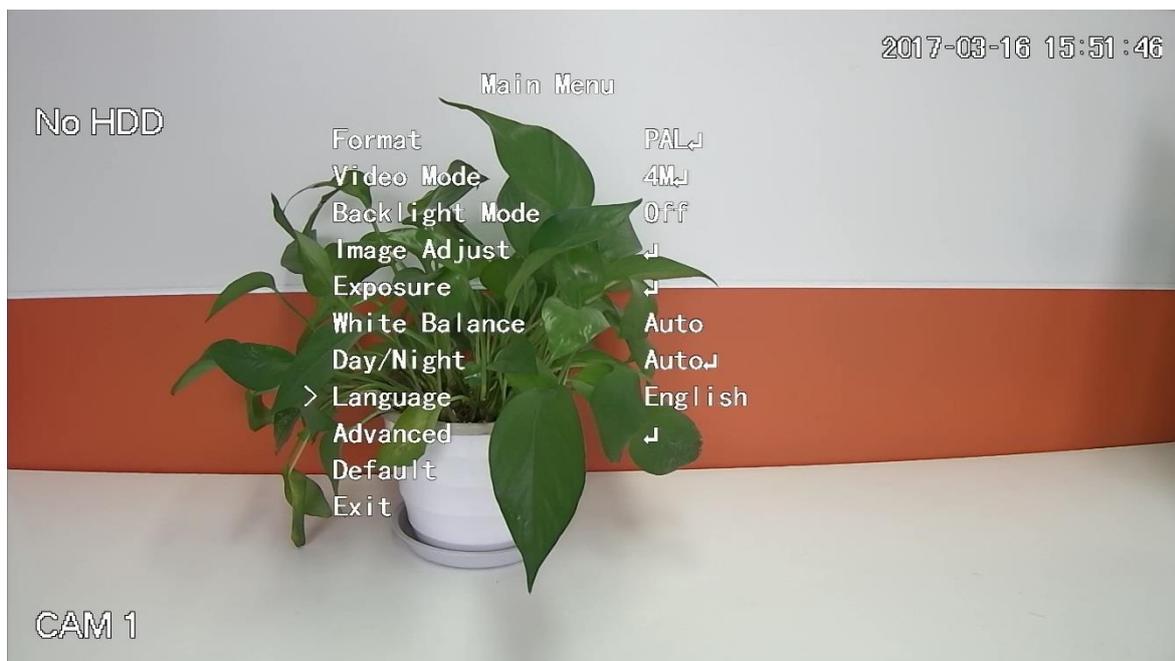
Figure 6-3

If there is " ↵ " in the parameter value, click the "Enter" button in "Menu Operation" interface to go to the 2nd menu. Click "Return" button to go back to the previous menu interface. Please refer to

1st Menu	2nd Menu	
Format	PAL	
	NTSC	
Video Mode	4K	
	4M	
Backlight Mode	BLC	1～5
	WDR	1～5
	HLC	1～5
	Off	
Image Adjust	Image Mode	Standard/Soft/Flamboyant
	Sharpness	0～15
	Brightness	0～15
	Contrast	0～15
	Saturation	0～15
	Sharp Suppress	0～15
	Chroma Suppress	0～15
	Gamma	0～15
	2DNR	0～15
	3DNR	0～15
	Return/Exit	
Exposure	Exposure Mode	Auto/Low noise/Anti-smear/Manual
	Exposure Level	0～15
	Anti-flicker	Outdoor/50Hz/60Hz
	Return/Exit	
White Balance	Auto	
	Auto Track	

1st Menu	2nd Menu	
	Area WB	
	Manual	Blue Gain (0～100) /Red gain (0～100)
	Sodium Lamp	
	Indoor	
	Outdoor	
Language	Chinese/English/Korean/Japanese/German/Russian/French/Portuguese/ Spanish/Polish/ Italian	
	Camera Name	
	Mirror	H-Mirror/ V-Mirror
	D-Zoom	1~8
	Lens	Auto Focus/Reset
	Audio Mode	External Audio/Off
	Alarm Setting	
	Defog	
Advanced	Motion Detect	
	Privacy Mask	
	Coaxial 485	
	System Info	
	Intelligent	Defocus Detection/Video Tampering/Motion Optical Zoom/Tripwire/People Counting
	LSC	On/Off
	Return/Exit	
Default		
Exit	Save	

Table 6-2 for more details about menu path.

1st Menu	2nd Menu	
Format	PAL	
	NTSC	
Video Mode	4K	
	4M	
Backlight Mode	BLC	1～5
	WDR	1～5
	HLC	1～5
	Off	
Image Adjust	Image Mode	Standard/Soft/Flamboyant
	Sharpness	0～15
	Brightness	0～15
	Contrast	0～15
	Saturation	0～15
	Sharp Suppress	0～15
	Chroma Suppress	0～15
	Gamma	0～15
	2DNR	0～15
	3DNR	0～15
	Return/Exit	
Exposure	Exposure Mode	Auto/Low noise/Anti-smear/Manual
	Exposure Level	0～15

1st Menu	2nd Menu	
	Anti-flicker	Outdoor/50Hz/60Hz
	Return/Exit	
White Balance	Auto	
	Auto Track	
	Area WB	
	Manual	Blue Gain (0～100) /Red gain (0～100)
	Sodium Lamp	
	Indoor	
	Outdoor	
Language	Chinese/English/Korean/Japanese/German/Russian/French/Portuguese/ Spanish/Polish/ Italian	
Advanced	Camera Name	
	Mirror	H-Mirror/ V-Mirror
	D-Zoom	1~8
	Lens	Auto Focus/Reset
	Audio Mode	External Audio/Off
	Alarm Setting	
	Defog	
	Motion Detect	
	Privacy Mask	
	Coaxial 485	
	System Info	
	Intelligent	Defocus Detection/Video Tampering/Motion Optical Zoom/Tripwire/People Counting
	LSC	On/Off
	Return/Exit	
Default		
Exit	Save	

Table 6-2

Note

- The operation interface above is an example of HCVR7116H-4M series, different back-end devices have different operation interface, please refer to corresponding HCVR manual for more details.
- Menus are different according to different products, please refer to actual device for exact menu.

6.2 Image Adjust

Select "Main Menu > Image Adjust" to set the image parameter of the camera, which it to increase the definition of monitoring scene.

6.2.1 Image Mode

The image display mode which is preset by the system.
- Standard: the standard mode of image display, each parameter is the system default.
- Soft: compared to standard mode, it mainly lowered saturation and sharpness.
- Flamboyant: compared to standard mode, it mainly enhanced saturation.

6.2.2 Sharpness

It is used to adjust the image definition and image edge sharpness.
The bigger the value is, the higher the detail contrast of the image plane becomes, and the image becomes clearer. The image tends to generate noise when the value is set too high. The range is between 0 and 15.

6.2.3 Brightness

It is used to adjust the overall brightness of the image. Users can adjust the value when the image becomes too bright or too dark. Both the dark and bright area will be increased or lowered equally at the same time during adjustment.
The bigger the value is, the brighter the image becomes. The image tends to be foggy or overexposed if the value is set too high. The range is between 0 and 15.

6.2.4 Contrast

It is used to adjust the image contrast. Users can adjust the value when the overall image brightness is appropriate but the contrast is not enough.
The bigger the value is, the more obvious the contrast becomes. The dark area of the image becomes too dark and the bright area tends to be overexposed when the value is set too high; the image becomes foggy when the value is set too low. The range is between 0 and 15.

6.2.5 Saturation

It is used to adjust the color purity. The threshold won't cause any effect to the overall brightness of the image.
The bigger the value is, the higher the purity becomes and more flamboyant the color becomes. The image color becomes too strong when the value is set too big; the image color is not flamboyant enough when the value is set too small. The range is between 0 and 15.

6.2.6 Sharpness Suppression

It is used to suppress image sharpness during high gain, it will cause no influence to low gain effect when modifying the value.
The bigger the value is, the more obvious it becomes for high gain sharpness suppression, and it is blurrier for object edge. The range is between 0 and 15.

6.2.7 Chroma Suppression

It is used to suppress image saturation during high gain.
The bigger the value is, the more obvious it becomes for chroma suppression effect during high gain, and the image color is more likely to tend to be black and white. The range is between 0 and 15.

6.2.8 Gamma

It is used to optimize brightness and contrast and implement subtle adjustment of bright and dark layer.
The image becomes foggier and brighter when the value gets bigger; the image becomes sharper and darker when the value gets smaller. The range is between 0 and 15.

6.2.9 2DNR

It is used to reduce the image noise.
The bigger the value is, the smaller the noise becomes. The range is between 0 and 15.

6.2.10 3DNR

It is used to reduce image noise in low illuminance environment.
Compared to general 2DNR, 3DNR not only realizes noise reduction for brightness and saturation of the video separation signal but also for the original data generated by sensor, which can greatly improve noise reduction capability and make image clearer and brighter, but it is easy to generate smear.
The bigger the value is, the smaller the noise becomes; but it is easier to lose image details and generate smear. The range is between 0 and 15.

6.3 Advanced

Select "Main Menu > Advanced" to set the advanced functions of the camera.

6.3.1 Smart IR

Enable smart IR function, the IR light can be auto adjusted according to the brightness of current environment, which will effectively solve the problem of face overexposure and so on. The range is between 0 and 15.

6.3.2 Alarm Setting

It can activate motion detection to trigger alarm.
● Alarm type: It is divided into external alarm 1 and external alarm 2.
● Alarm enable: After the device is connected to other alarm devices, enable the function to realize alarm effect.
● Alarm mode: It is divided into NC and NO.

6.3.3 Motion Detection

It is used to detect if there is any moving object in the area which has been set. It will trigger alarm when there is moving object in the monitoring area. Users can select different areas and sensitivity levels according to the actual needs.
● Area selection (SN): It is to select the serial number of the motion detection box. It is between 0 and 3.
● Display: It is to set if it is to display the current motion detection box on the image.
● Alarm upload: It is to select if it is to upload the detected alarm.

- Sensitivity: It is to set the sensitivity. The range is between 0 and 10.
- Area setting: It is to set the location and size of the current motion detection box.

6.3.4 Privacy Mask

It is used to set the privacy mask area. It can mask some certain areas in the device monitoring range to protect privacy; for example, it needs to mask privacy in the ATM where the users need to enter password.
- Area selection (SN): select the area which is to be set. It is between 0 and 3.
- Display (on/off): select if the area is masked.
  - ✧ On: The area is enabled to mask.
  - ✧ Off: The area is disabled to mask.
- Area setting: it is to set the location and size of the masked area.

Appendix Maintenance

Attention

Please maintain the device according to the following instructions in order to ensure the image effect and long-term stable operation of the device.

Maintenance for lens and mirror surface

The lens and mirror surface are covered with antireflection coating, so it may produce hazardous substance and lead to performance reduction or scratch, dimness etc. Please don't touch sensor CCD (or CMOS) directly, you can use hair dryer to remove dust or dirt on the lens surface. Please use dry cloth slightly soaked with alcohol to get rid of dust and dirt gently if it is necessary to be cleaned.

Camera Body Maintenance

Use a soft dry cloth to clean the camera body when it is dirty, in case the dirt is hard to remove, use a clean dry cloth soaked with mild detergent and wipe gently, make it dry later. Don't use volatile solvent like alcohol, benzene, thinner and etc. or strong detergent with abrasiveness, otherwise it will damage the surface coating or reduce the working performance of the device.

Note

- **This manual is for reference only. Slight difference may be found in the user interface.**
- **All the designs and software here are subject to change without prior written notice.**
- **All trademarks and registered trademarks mentioned are the properties of their respective owners.**
- **If there is any uncertainty or controversy, please refer to the final explanation of us.**
- **Please visit our website or contact your local service engineer for more information.**