HDAVS Multi-lens Panoramic Bullet Camera

User’s Manual

Version 1.0.0

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Welcome

Thank you for purchasing our HDAVS 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.

Regulatory Information

The regulatory information herein might vary according to the model you purchased. Some information is only applicable for the country or region where product is sold.

FCC Information

CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC conditions:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

FCC compliance:

This equipment has been tested and found to comply with the limits for a digital device, pursuant to part 15 of the FCC Rules. This equipment generate, uses and can radiate radio frequency energy and, if not installed and used in accordance with the guide, may cause harmful interference to radio communication.

- For class A device, these limits are designed to provide reasonable protection against harmful interference in a commercial environment. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
- For class B device, these limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.

1 General Introduction

1.1 Overview

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

1.2 Features

- Supports 3D noise reduction, excellent low illuminance performance.
- Supports WDR
- Supports ultra-wide field angle 180°.
- Supports auto tour function.
- Adopts high-performance CMOS image sensor, megapixel definition.
- Supports HD video and control signal coaxial transmission.
- For 1080P, 4M and 4K series, support 75-3 coaxial cable transmission without any loss. The distance is over 300m.
- Supports HDAVS HD video output.
- Supports ICR switch to realize monitoring both in daytime and at night.
- Supports OSD menu to adjust parameters.
- Supports smart IR function.
- Supports DC 12V ±25% or AC 24±25% wide voltage power supply.
- Supports IP67 compliance.
- Supports IK10 compliance.
- It can be applied to scenes with wide field vision such as airport waiting hall, railway station waiting hall, parking lot, shopping mall, school and large-scale conference hall etc.

2 Device Structure

2.1 Dimension

Please refer to Figure 2-1 for the dimension. The unit is mm.

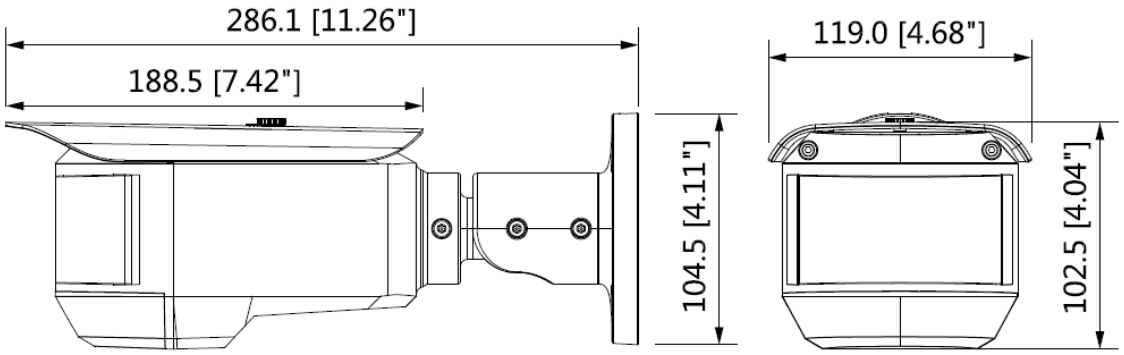

Figure 2-1

Please refer to Figure 2-2 for the size of pedestal.

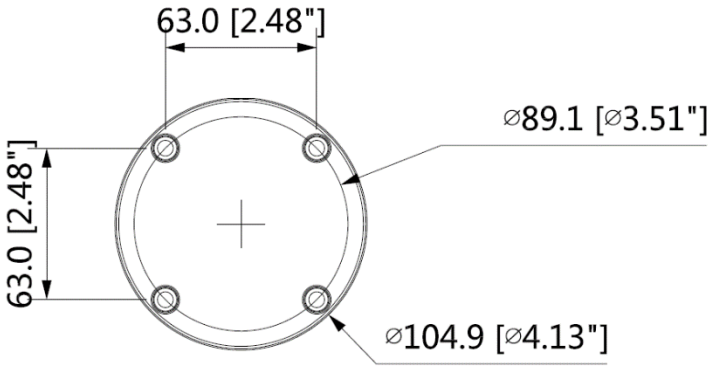

Figure 2-2

2.2 Cable Port

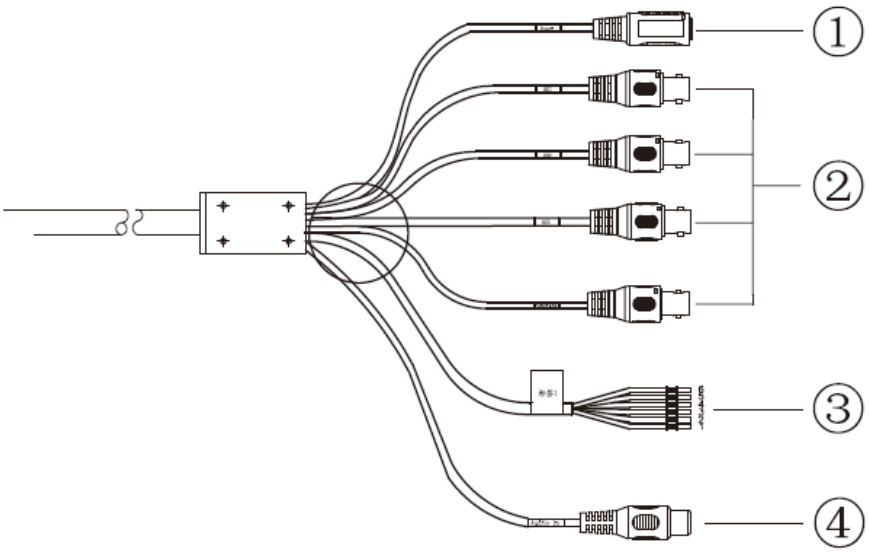

Figure 2-3

Please refer to Table 2-1 for more details about external cable functions.

SN	Port	Port name	Connector	Function description
1	POWER	Power input port	-	Input DC 12V or AC 24V, please be sure to conform to device label instruction when providing power for the device. **Note** It can use round port to 2PIN terminal cable when providing AC 24V power supply. **Attention** It may cause device abnormity or even damage if it fails to provide power to the device according to the device label instruction.
2	VIDEO OUT	Video output port	BNC	● Red Panorama is the output of panoramic image. ● Black (HD1, HD2 and HD3) is single channel image output.
3	I/O	Alarm port	-	Alarm signal input/output. ● Blue: Alarm output port (1 port) ● Black: Alarm GND terminal (3 ports) ● Orange: Alarm input port, receive the signal of external alarm (1 port) ● Yellow: Alarm input port, receive the signal of external alarm (1 port)

SN	Port	Port name	Connector	Function description
4	AUDIO IN	Audio input port	JACK	It inputs audio signal, receive analog audio signal from pickup and other devices.

Table 2-1

3 Installation

Attention

- 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.
- As for the installation mode of side cable outlet, it has to make sure the direction of side cable outlet is in accordance with the direction of installation position map when pasting the installation position map, and it has to pull the cable through pedestal outlet slot and then lock the screws firmly.
- The following installation figure is for reference only.

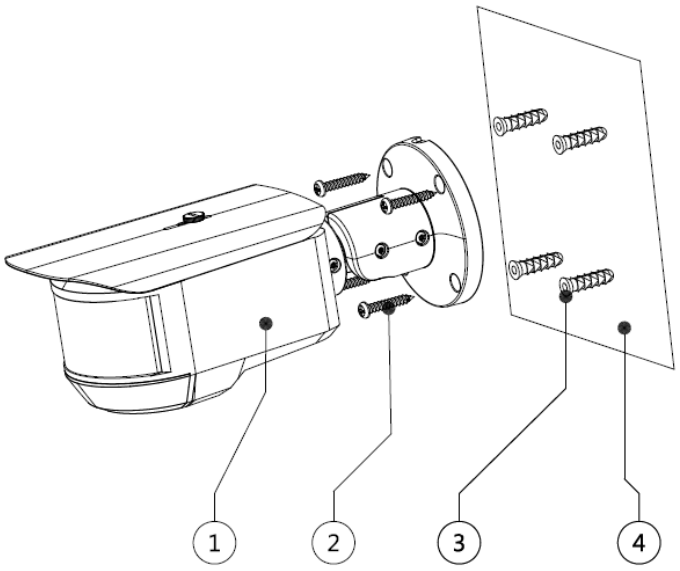

Figure 3-1

Step 1

Take out the installation position map from the accessories bag, stick it on the ceiling or wall ④ according to the cable exit, dig holes on the installation surface according to the installation position map,

Step 2

Install camera

- If it is cement wall, it needs to install expansion bolt ③ first (the mounting holes of expansion bolts need to be in accordance with bracket), then use self-tapping screws to install bracket.
- If it is wooden wall, you can just skip the first step, use self-tapping screws ② to install bracket directly.

Step 3

Adjust the camera to the location which needs to be monitored, tighten the screw on the bracket and fix the camera. Please refer to Figure 3-2 for more details.

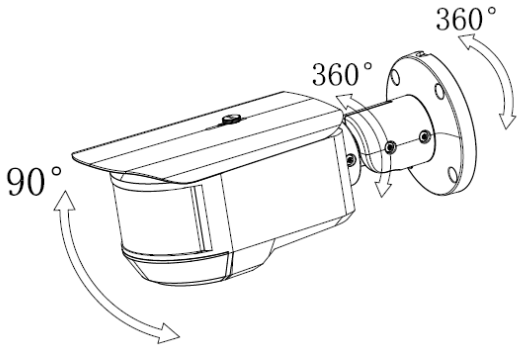

Figure 3-2

Step 4

Connect the video output port of device cable to the back-end HAVR device, and connect power port to power supply. So far, device installation and cable connection have been completed, you can check the monitoring image via back-end encoding device. Besides, you can control OSD menu via lower cover board, please refer to Figure 3-3 and Table 3-1 for more details.

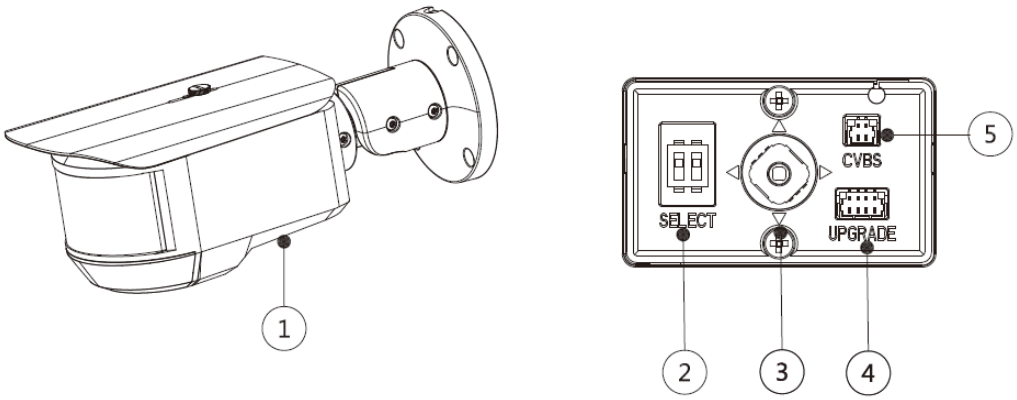

Figure 3-3

<table>
<tr><th>SN</th><th>Name</th><th colspan="4">Function</th></tr>
<tr><td>①</td><td>Lower cover</td><td colspan="4">-</td></tr>
<tr><td rowspan="3">②</td><td rowspan="3">DIP switch
(Select)</td><td colspan="4">It controls 5-direction button to operate OSD of some channel. The detail is shown as below.
Note
It is ON when the number key is moved upward, and it is OFF when the number key is moved downward.</td></tr>
<tr><td>Number key 1</td><td>Number key 2</td><td>BNC cable</td><td>Operation</td></tr>
<tr><td>OFF</td><td>OFF</td><td>Panorama</td><td>5-direction button calls panorama menu</td></tr>
</table>

		ON	OFF	HD1	5-direction button calls channel 1 menu
		OFF	ON	HD2	5-direction button calls channel 2 menu
		ON	ON	HD3	5-direction button calls channel 3 menu
③	5-direction button	It is used for OSD menu operation. ● Press the middle button for 2 seconds, and you can enter OSD menu after you release the button. Short press middle button to confirm after entering menu, up and down buttons are used to select menu items, left and right buttons are used to adjust parameter value. ● Select “Exit”, short press the middle button to exit OSD menu.			
④	UPGRADE	It is used for system upgrade. Connect to 4-core USB cable and realize software upgrade.			
⑤	CVBS	It is the second video port, which supports standard definition. Please refer to Figure 3-4 for video conversion cable.			

Table 3-1

Figure 3-4

Note

Left and right buttons fail to realize focus and zoom function when using 5-direction button to operate OSD menu, it needs to exit OSD menu and then operate.

4 HAVR Settings

4.1 Control Coaxial Device

This HDAVS camera series can adjust OSD menu via coaxial control. After connecting the camera to HAVR, from Main Menu->Setting->System->PTZ, you need to select the channel number for access and set “control mode” as “HDAVS” and the “protocol” as “HD-AVS”. Click “Save” button after setting is completed. See Figure 4-1.

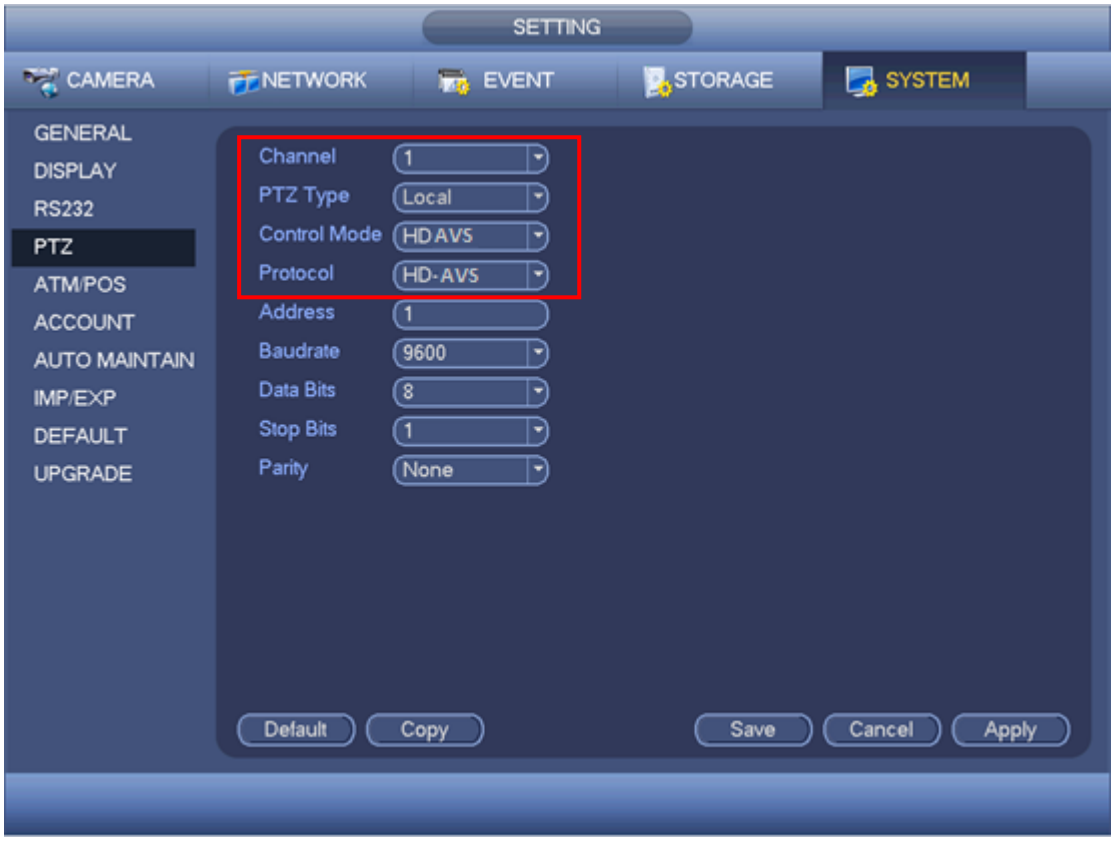

Figure 4-1

4.2 Set Audio Coax

From “Main Menu > Setting > Camera > Encode > Encode”, you need to set “Audio Format” as “G711a” and the “Audio Source” as “HDAVS”. Click “Save” after setting is completed. See Figure 4-2 for more details.


SETTING
CAMERA
NETWORK
EVENT
STORAGE
SYSTEM
IMAGE
ENCODE
CAM NAME
CHANNEL TYPE
UPGRADE
Encode
Snapshot
Overlay
Video PIP
Channel
1
SVC
Type
Regular
Sub Stream1
Compression
H.264H
H.264H
Resolution
1920*1080(10
352*288(CIF)
Frame Rate(FPS)
25
6
Bit Rate Type
CBR
CBR
I Frame Interval
1 S
1 S
Bit Rate(Kb/S)
4096
160
Reference Bit Rate
3584-6144Kb/S
40-256Kb/S
Audio/Video
Audio Format
G711a
Audio Source
HDAVS
Audio Sampling Rate
8K
Default
Copy
Save
Cancel
Apply

Figure 4-2

5 Menu Function

5.1 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 5-1 and Figure 5-2.

Figure 5-1

Figure 5-2

See Table 5-1 for the details of button functions.

Button	Function
+ Enter	Open menu.
、	Select menu item.
、	Select menu value.

Table 5-1

Please refer to Figure 5-3 for more details about OSD menu.

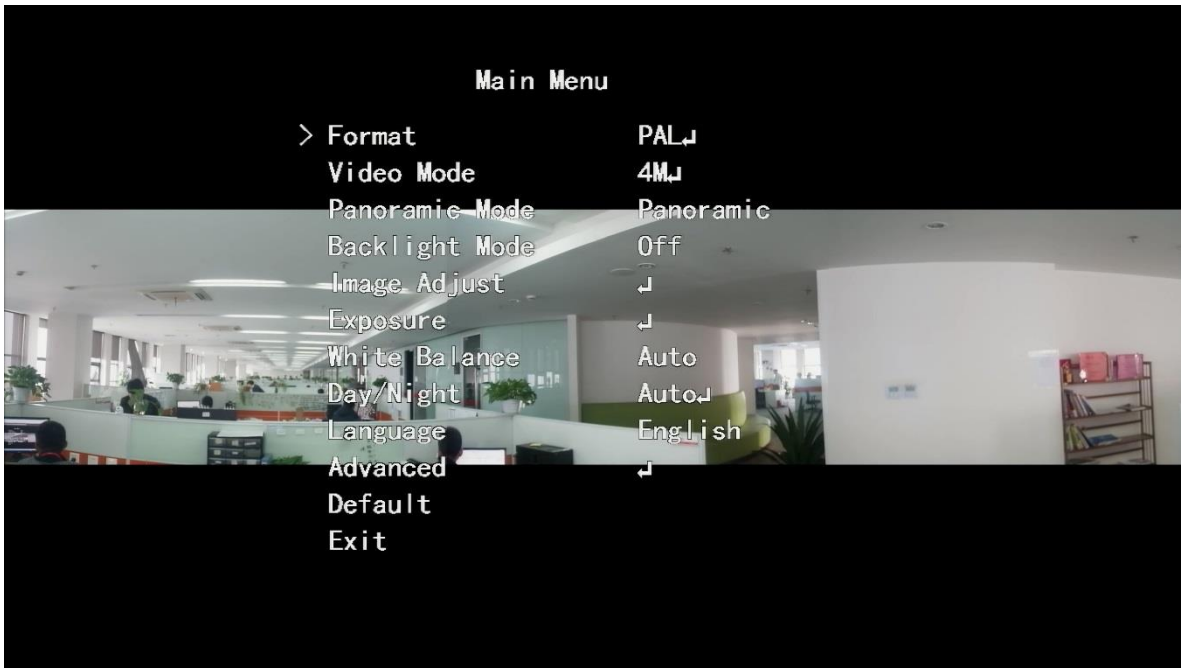

Figure 5-3

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 Table 5-2 for more details about menu path.

1st Menu	2nd Menu	
Format	PAL	
	NTSC	
Video Mode	4M	
	4K	
Panoramic Mode	Panorama (default)	
	Panoramic & local zoom	Tour speed/tour left limit/tour right limit/area setting
Backlight Mode	BLC	1～5
	WDR	1～5
	HLC	1～5
	Return/Exit	
Image Adjust	Image mode	Standard/Soft/Flamboyant
	Sharpness	0～15
	Brightness	0～15
	Contrast	0～15
	Saturation	0～15
	Sharpness suppress	0～15
	Chroma suppress	0～15
	Gamma	0～15
	2DNR	0～15
	3DNR	0～15
	Return/Exit	
Exposure	Exposure mode	Auto/Low noise/Low motion blur/Manual
	Exposure level	0～15
	Anti-flicker	Outdoor/50Hz/60Hz

1st Menu	2nd Menu	
	Return/Exit	
WB	Auto	
	Auto track	
	Manual	Blue gain (0～100) /Red gain (0～100)
	Sodium Lamp	
	Indoor	
	Outdoor	
Day/Night	Auto	
	Black & White	
	Color	
Language	Chinese/English/Korean/Japanese/German/Russian/French/Portuguese/ Spanish/Polish/ Italian	
Advanced	Camera name	
	Mirror (Off by default)	
	Audio mode	
	Smart IR (Auto by default)	
	Alarm setting (Off by default)	
	Electronic defog (Off by default)	
	Motion detection (Enable 3 areas by default)	
	Privacy mask (Off by default)	
	System info	
Default		
Exit	Save	

Table 5-2

Note

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

5.2 Panoramic Mode Setting

Enter OSD menu via PTZ, and then set panoramic mode, which includes panorama and panoramic & local zoom.

5.2.1 Panorama

Select “Main Menu > Panoramic Mode >Panoramic”, and the screen displays panoramic image.

Panorama is the image which is output by panoramic mode by default, which means it integrates 3-channel video as one and adopts seamless splicing technology to display image with 180° field angle.

5.2.2 Panoramic & Local Zoom

Select “Main Menu > Panoramic Mode > Panoramic & Local Zoom”, it can also display tour image when panoramic image is displayed on the screen. The main setup parameters are as follows.

- Tour speed
  It is to adjust tour speed via adjusting the parameter, it can properly increase tour speed for the monitoring scenario with quick change of object or human.
- Tour left limit
  The left limit of 180° field angle is considered as tour left limit by default, it will appear white rectangular box after setting menu. It can adjust via left and right buttons and confirm tour left limit according to the left location of rectangular box, click “Enter” to complete setting, and it will auto pop out tour left limit and set menu.
- Tour right limit
  The right limit of 180° field angle is considered as tour right limit by default, it will appear white rectangular box after setting menu. It can adjust via left and right buttons and confirm tour right limit according to the right location of rectangular box, click “Enter” to complete setting, and it will auto pop out tour right limit and set menu.
- Area Setting
  Area setting is mainly divided into size setting and location setting.
  Size: adjust the size of white rectangular box after entering size setting menu, and then it will generate the effect of local zoom in and zoom out.
  Location: Adjust the UDLR location of white rectangular box after entering location setting menu, and then it will set the exact tour area.

5.3 Image Adjust

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

5.3.1 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.

5.3.2 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.

5.3.3 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.

5.3.4 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.

5.3.5 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.

5.3.6 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.

5.3.7 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.

5.3.8 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.

5.3.9 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.

5.3.10 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.

5.4 Advanced

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

5.4.1 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.

5.4.2 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.

5.4.3 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.

5.4.4 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.

Maintenance for Dome Cover

Dome cover is an optical device, please don't touch or wipe cover surface directly during installation and use, please refer to the following methods to deal with once dirt is found:

Stained with dirt

Use oil-free soft brush or hair dries to remove it gently.

Stained with grease or fingerprint

Use soft cloth to wipe the water drop or oil gently to make it dry, then use oil-free cotton cloth or paper soaked with alcohol or detergent to wipe from the lens center to outward. It is ok to change the cloth and wipe several times if it is not clean enough.

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.**