

HDCVI Speed Dome & PTZ Camera

User's Manual



V1.0.0






Foreword

General

This manual introduces the functions and operations of the HDCVI speed domes and PTZ cameras (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 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, 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.	June 2020

About the Manual

- The manual is for reference only. If there is 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 inconsistency between 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 the customer service for the latest program and supplementary documentation.
- There still might be deviation in technical data, functions and operations description, or errors in print. 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 the company names in the manual are the properties of their respective owners.
- Please visit our website, 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 of final explanation.

Important Safeguards and Warnings

The manual will help you to use the Device properly. Read the manual carefully before using the Device, and keep it well for future reference.

Operating Requirements

- Avoid heavy stress, violent vibration, and water splash during transportation, storage, and installation. Complete package is necessary during the transportation. We assume no responsibility for any damage or problem caused by the incomplete package during the transportation.
- To avoid damage, protect the Device from falling down and heavy vibration. Arrange more than one person to move the Device when necessary.
- Buckle the safety hook before installing the Device if it is included.
- Keep the Device away from devices that generate electromagnetic field like televisions, radio transmitters, electromagnetic devices, electric machine, transformers, and speakers; otherwise image quality will be influenced.
- Keep the Device away from smoke, vapor, heat, and dust.
- Do not install the Device near heating furnace, spotlight, and other heat sources. If it is installed on ceiling, in kitchen or near boiler room, the Device temperature might rise.
- Do not disassemble the Device; otherwise it might cause dangers or device damage. Contact your local retailer or customer service center for internal setup or maintenance requirement.
- Make sure that there is no metal, or inflammable, explosive substance in the Device; otherwise it might cause fire, short-circuit, or other damage. Power off the Device and disconnect the power cord immediately if there is water or liquid falling into the Device. And contact your local retailer or customer service center. Avoid sea water or rain eroding the Device.
- Avoid aiming the lens at intense light source, including sunlight, and incandescent light; otherwise the lens might be damaged.
- Clean the enclosure with soft cloth. To remove the dirt, you can dip the soft cloth in proper detergent, wring the soft cloth out, and then dry the enclosure with soft cloth. Do not use gasoline, paint thinner, or other chemicals to clean the enclosure; otherwise it might result in enclosure transfiguration or paint flake. Read all the manuals included before using chemical cloth. Avoid long time touch between the plastic or rubber material and the enclosure; otherwise it might result in device damage and paint flake.
- It is recommended to use the Device with a lightning-proof device for better lightning-proof effect.

Requirements for Installation and Maintenance Personnel

- Have certificates or experiences related to installation and maintenance of the closed-circuit television (CCTV), and have certificates related to working at height.
- Have basic knowledge and installation skills of CCTV system.
- Have basic knowledge and operation technique for low-voltage wiring and low-voltage electronic circuit connection.
- Have the ability to read and understand the manual.

Requirements for Lifting the Device

- Use secure lifting appliances suitable for the installation place and the product installation mode.
- Make sure that the selected tools reach the installation height and have high safety performance.

Safety Requirements

- All installation and operations shall conform to local electrical safety regulations.
- The power source shall conform to the requirements of the Safety Extra Low Voltage (SELV) standard, and supply power with rated voltage which conforms to Limited Power Source requirement according to IEC60950-1. Note that the power supply requirement is subject to the device label.
- Use the power adapter recommended by the manufacturer.
- For the Device that supports laser, do not aim the laser directly at eyes. And keep a proper distance from the flammable to avoid fire.
- Do not connect several devices to one power adapter; otherwise it might result in overheat or fire if it exceeds the rated load.
- Make sure that the power is off when you connect the cables, install or uninstall the Device.
- Power off the Device and disconnect the power cord immediately if there is any smoke, disgusting smell, or noise from the Device. And contact your local retailer or customer service center.
- Contact your local retailer or customer service center if the Device is abnormal. Do not disassemble or repair the Device by yourself. We assume no responsibility for any problems caused by unauthorized modifications, disassembly or repair, incorrect installation or use, and overuse of certain components.

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1 Overview

1.1 Introduction

The Device is integrated with clear image, digitization, and intelligence. It adopts new design, and is easy to install. After installing the Device, the overall aesthetics of the monitoring site is not affected.

1.2 Features

HD Video

The image resolution is in megapixels.

Transmission without Any Loss

The data can be transmitted for up to 500 meters through 75-3 coaxial cable without any loss.



The function is available on select models.

Coaxial Control

The Device can be controlled through coaxial signal.

OSD Menu

With the OSD menu, you can see the device information, and set the functions and parameters of the Device.

Zoom and Speed Limit

The focal length and rotation speed can be matched automatically. The pan and tilt speed of the Device is changed with that of the zoom rate, which means the camera moves slower when the zoom rate increases, and it moves faster when the zoom rate decreases.

Overlay

The preset No., channel title, temperature, and coordinates of the Device can be overlaid on the image.

Preset

With the PTZ function, the pan, tilt, focal length, and other parameters of the Device in the current status can be saved in the memory. You can quickly call these parameters to adjust the PTZ and camera to the location as needed. Saving and calling presets can be performed by using control keyboard and other devices.

Scan

After left and right limit and scan speed are set, the Device can horizontally move back and

forth to display image at a certain speed in a certain range.

Tour

You can add several presets to a tour in the order you need, and then the Device can move back and forth at the defined interval in the order you need.

Pattern

Pattern means a record of a set of operations that users make to the Device. The operations include horizontal and vertical movements, zoom and preset calling. Record and save the operations, and then you can call the pattern path directly.

Privacy Masking

You can set a masked region in the monitoring screen to protect privacy. The masked area moves as the Device rotates horizontally and vertically, and it changes with the image size.

Alarm Linkage

The Device supports up to 7 NO or NC digital input ports and 2 NO alarm output ports. When alarms are triggered, the defined linked operations can be performed.

Auto Flip

You can track objects manually. When the object passes below the camera, you can operate the joystick on the keyboard to make the Device auto flip 180° horizontally to ensure tracking continuity.

Power-on Self-Test

The Device can perform self-test when it is powered on, which mainly includes self-test of the motor in the horizontal and vertical directions, self-test of camera zooming, and displaying system information.

Day/Night Switch

You can set the day/night switch mode to auto, manual, timing, and so on.



The function depends on the device module.

Auto Focus

The Device can adjust focus automatically.

Backlight Compensation (BLC)

Backlight compensation corrects regions with extremely high or low levels of light to maintain a normal and usable level of light for the object in focus.

Concurrent Operation of Pan/Tilt and Zoom

Pan/tilt and zoom can be performed at the same time. And the auto focus and auto iris can ensure stable and clear image.

3D Positioning

The Device can track the selected area automatically.

Idle Motion

The Device performs a defined action when it does not receive any valid command within a certain period.

Power Up

The Device performs power-up actions automatically after restarting and self-test, which includes auto, preset, scan, tour, pattern and none.

Image Stabilization and Flip

You can enable the image stabilization and image flip through the OSD menu. With the image stabilization function, the image is more stable when the Device is in an environment with vibration. With the image flip function, viewing image is more convenient.



The function depends on the device module.

2 Preparation

The Device is intended to use with matched back-end devices such as HCVR, DVR, and XVR. The manual takes using with XVR as an example.

Before controlling the Device, you need to set the control mode and protocol on the back-end device.

Step 1 Connect the Device to the XVR, and then connect the XVR to a display.

Step 2 Connect all devices to the power supply.

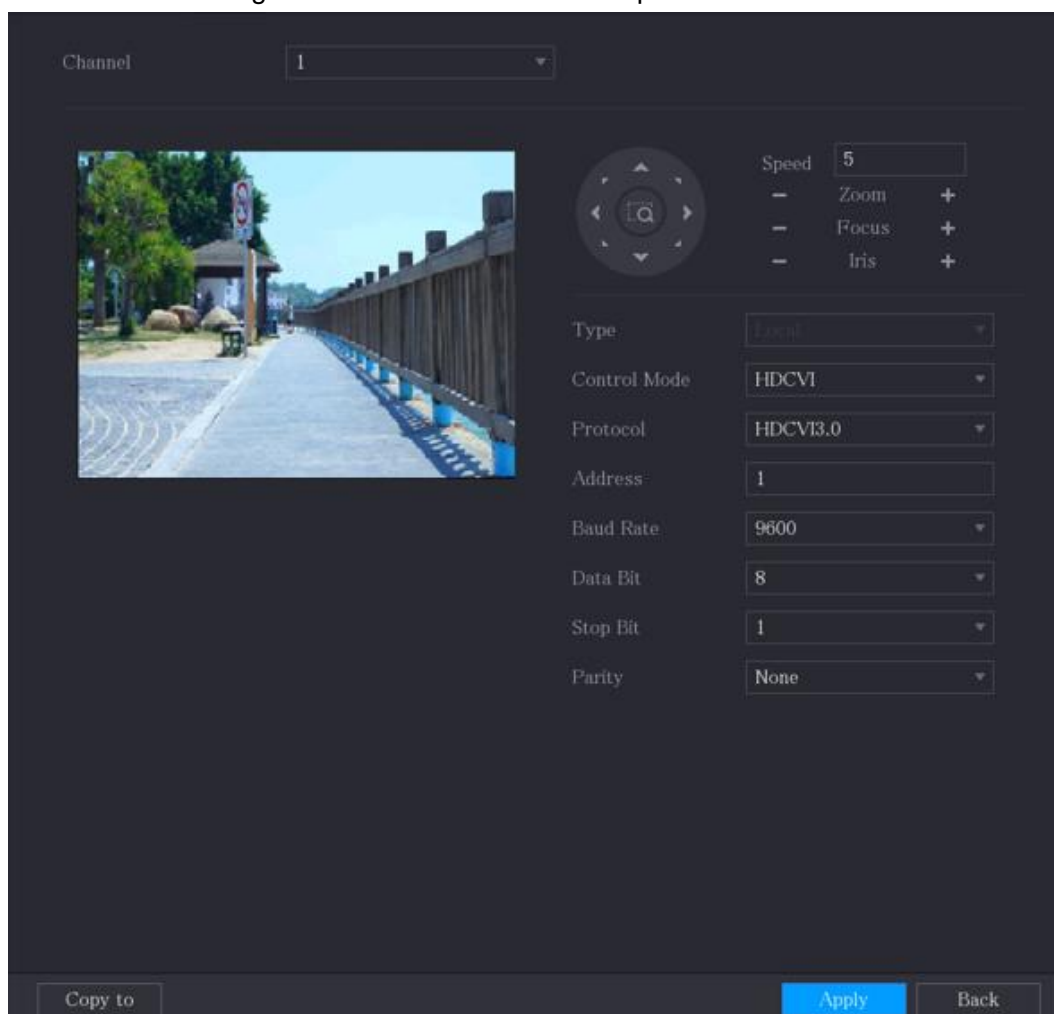
The Device is powered on, and the live interface is displayed.

Step 3 Right-click on the interface, select **Main Menu > Camera > PTZ**, and then select control mode and protocol as needed.



- If you select **HDCVI** for **Control Mode**, **HDCVI3.0** and **HDCCTV2.0** can be selected for **Protocol**. But before using HDCCTV2.0, you need to connect the Device to the XVR with ab cable. You can keep the default values for other parameters.
- If you select **Serial Port** for **Control Mode**, **PELCOD** and **PELCOP** can be selected for **Protocol**. Before using these two protocols, you need to connect the Device to the XVR with ab cable.
 - ◇ If selecting **PELCOD**, you need to enter the **Address** = device address-1. For example, if the device address is 1, enter 0 for the address. The device address can be found in **System Setting > Addr Information**.
 - ◇ If selecting **PELCOP**, you need to enter the device address.

Figure 2-1 Set control mode and protocol



You can set the video output mode (CVI, TVI, AHD or SD) through DIP switch or OSD menu. For details, see the corresponding installation guide.

3 OSD Menu

3.1 Self-test

After you install and power on the Device, it will perform self-test. If the self-test is normal, device information such as address, baud rate, parity, PTZ version, and module version is displayed. The information will disappear after the Device receives the first valid control command or the display time is over 20 s.

Figure 3-1 Information displaying after powering-on

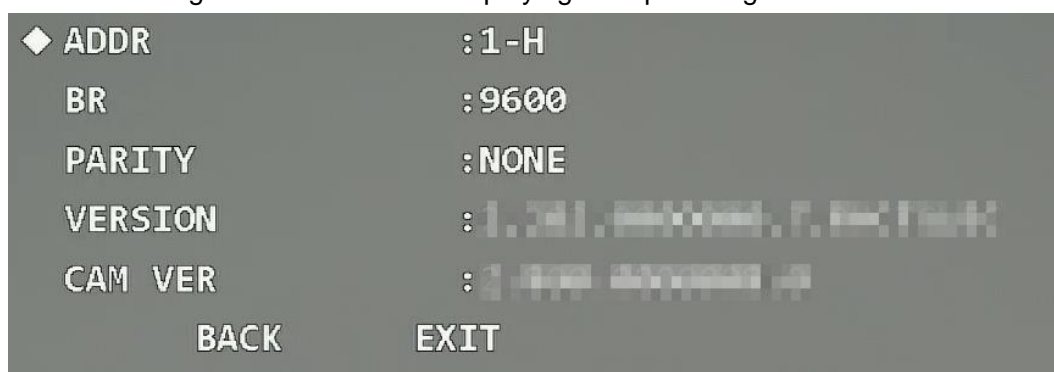


Table 3-1 Parameter description

Parameter	Description
ADDR	Address info of the Device. 1 represents address No.; -H represents hardware address mode.
BR	Baud rate. It is the communication baud rate currently used by Device.
PARITY	Communication parity bit format currently used by the Device.
VERSION	PTZ version number of the Device.
CAM VER	Module version number of the Device.



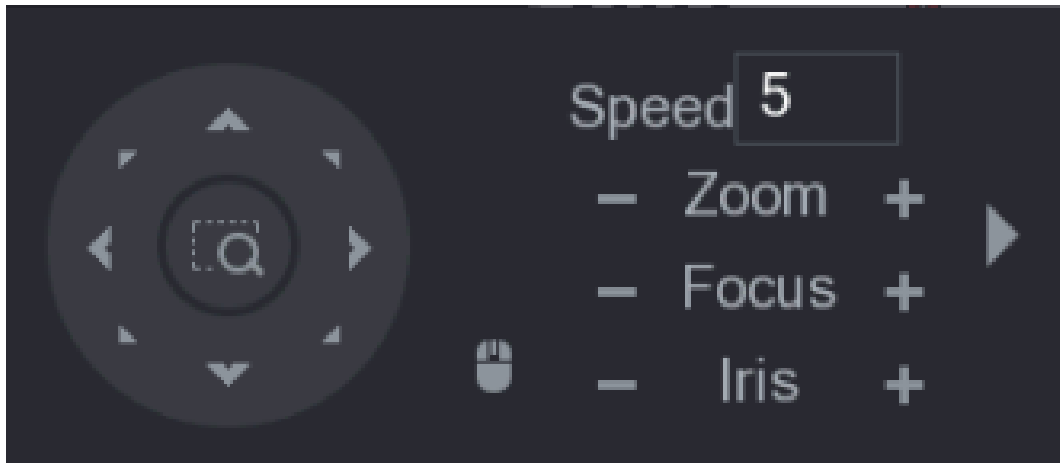
If you use control keyboard or matrix host to control the Device, set the control information the same as that of the Device (include address, baud rate, and parity), and make sure that the devices are correctly connected.

3.2 Opening the OSD Menu

With the OSD menu, you can configure the functions of the Device, and complete settings.

Step 1 Right-click on the live interface, and then select **PTZ Control**.

Figure 3-2 PTZ control





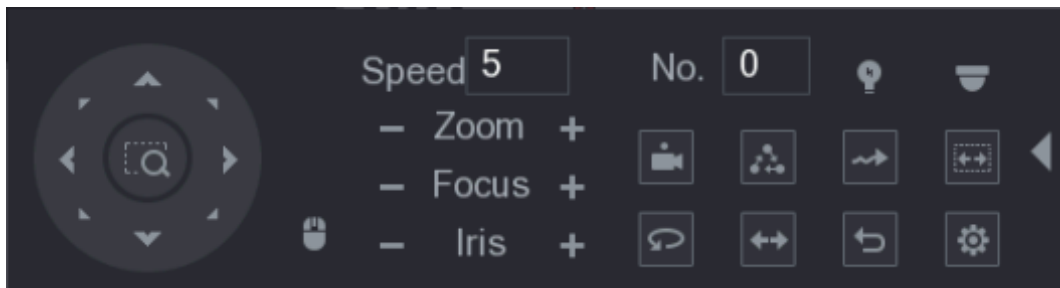
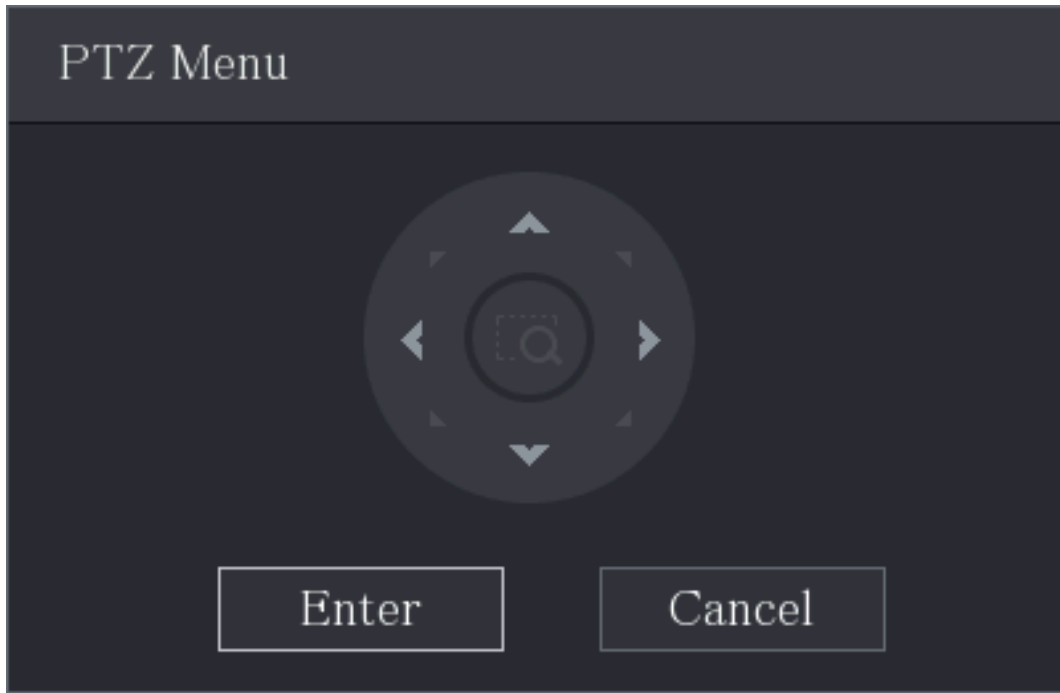
Step 2 Click  to unfold the PTZ control panel, and then click  to open the OSD menu.

Figure 3-3 Opening the menu



Step 3 Click up and down buttons to select menu item, click left and right buttons to select parameter value, and then click **Enter** to confirm it.

Figure 3-4 PTZ menu



3.3 Menu Index



- ERR on the menu means that there is an error about the parameter. In this case, you can restore the Device to factory default settings.
- The parameters vary with different models, and the actual product shall prevail. The menu items listed below are for reference.

Table 3-2 Menu index

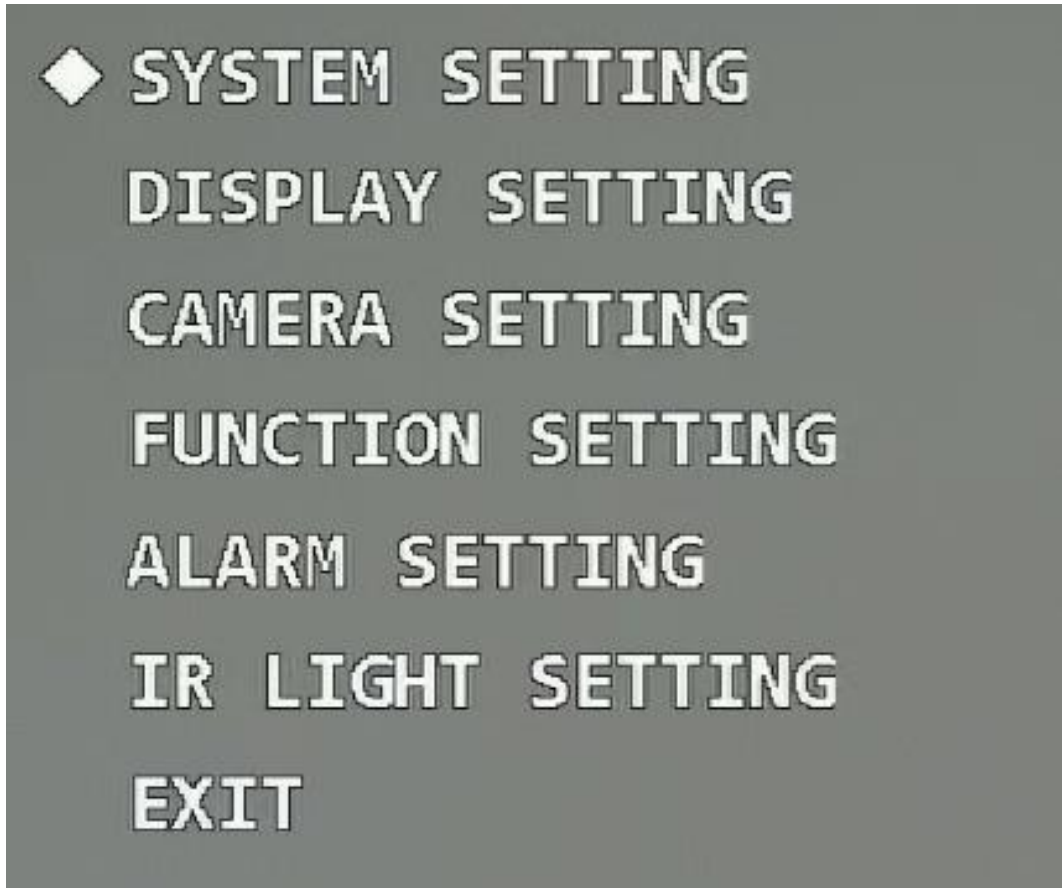
Menu	Items
System Setting	System Information; Addr Information; Count Information; System Time Setting; Set North; Language; Switch Type; Video Output; Audio Mode; Factory Default; Restart
Display Setting	Preset Title; Azimuth Disp; Time Disp; Position; Zoom Disp; Inside Temp; Title Disp; Alarm Disp; Pattern Disp
Camera Setting	WB Setting; Exposure Setting; Day/Night Setting; Focus Setting; Image Adjust; Defog Setting; Zoom Speed; Sharpness; Sharpness Restrain; Digital Zoom; Picture Flip; Lens Init; Picture Mode; Camera Maintain; Camera Factory Default; Camera Restart
Function Setting	Preset; Auto Pan; Auto Scan; Tour; Pattern; Idle Motion; Auto Run; Privacy Masking; PTZ Speed; Set Zero; Power Up; Menu Password; Menu Idle; Channel Title; PTZ Auto Stop; Warm Machine; PTZ Correction
Alarm Setting	Alarm No; Action; Parameter; Contact; Relay Out; Reset Delay
IR Light Setting	IR Sensitivity; IR Light Ctrl; Near Light; Far Light; IR Light Comp

3.4 Menu Functions and Operations

3.4.1 System Settings

Open the OSD menu, move the cursor to **System Setting**, and then click **Enter** to enter the second-level menu.

Figure 3-5 System settings



3.4.1.1 Checking System Information

Move the cursor to **System Information**, click **Enter** to enter the third-level menu, and then you can see the address, baud rate, parity, PTZ version, and module version of the Device.

Figure 3-6 System information (1)

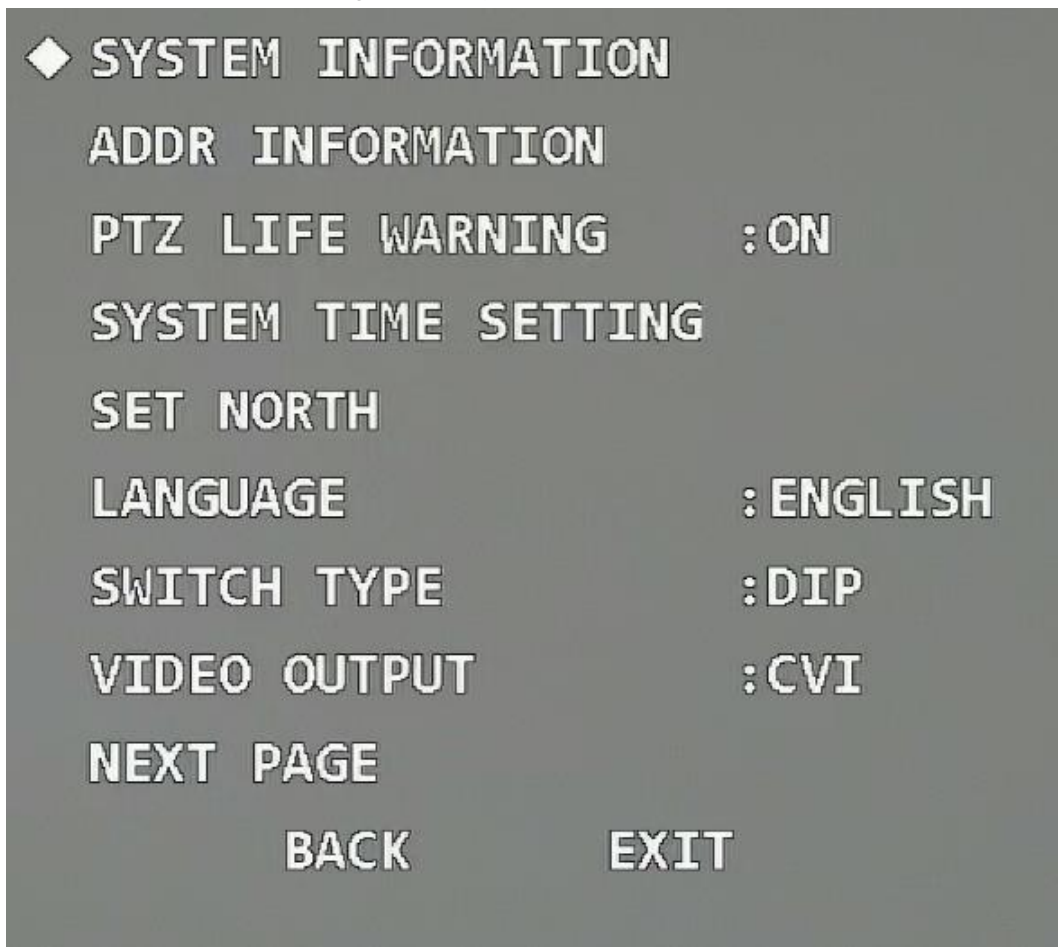
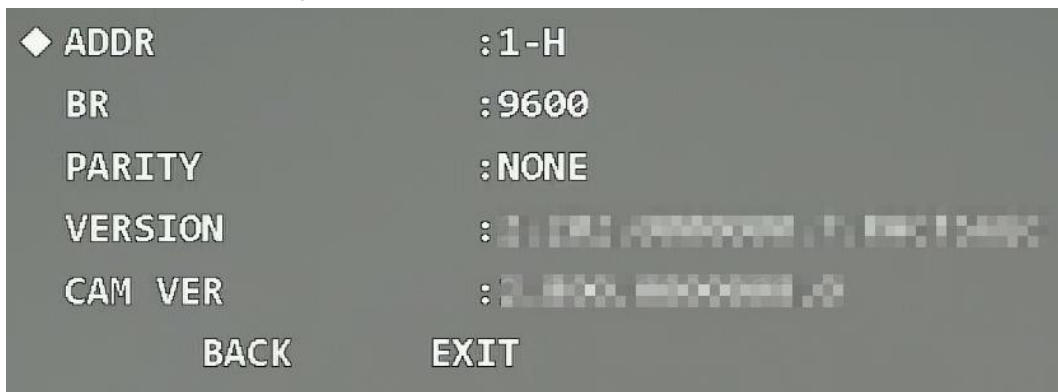


Figure 3-7 System information (2)



3.4.1.2 Setting Address Information

- Step 1 Move the cursor to **Addr Information**, and then click **Enter** to enter the third-level menu.

Figure 3-8 Address information (1)

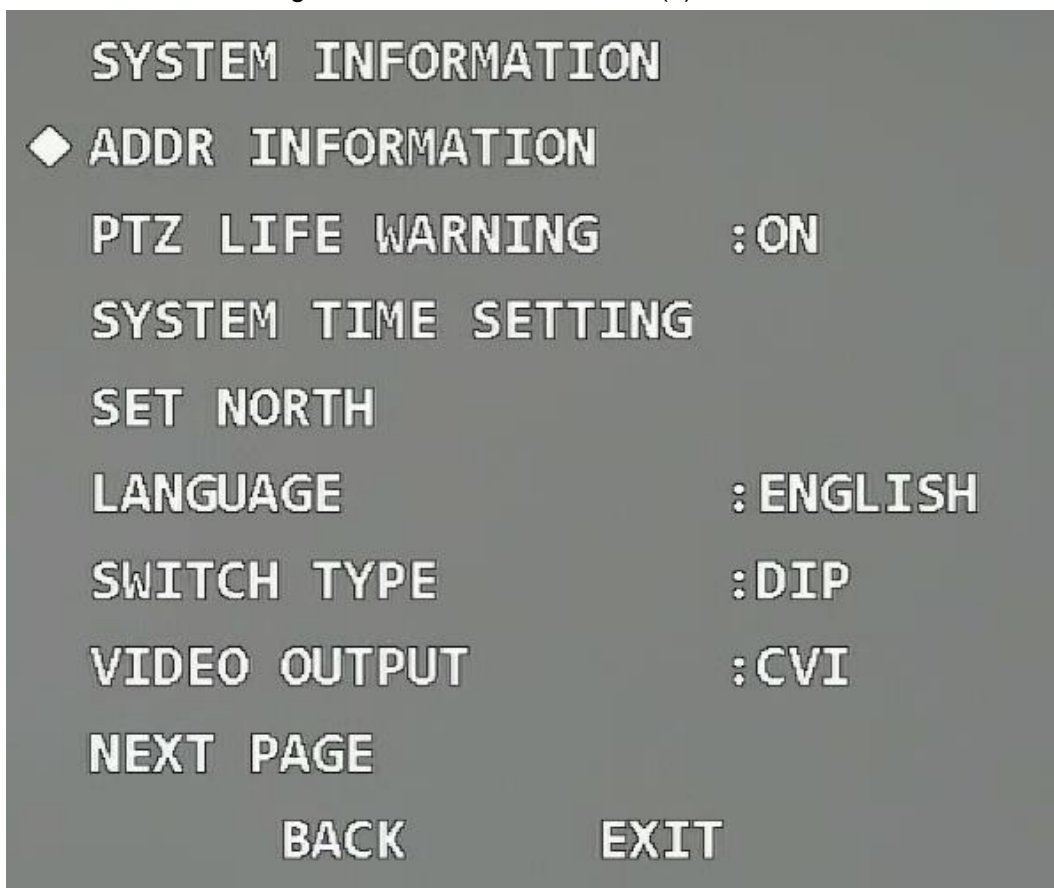


Figure 3-9 Address information (2)



Step 2 Click the direction buttons to set the address information of the Device.



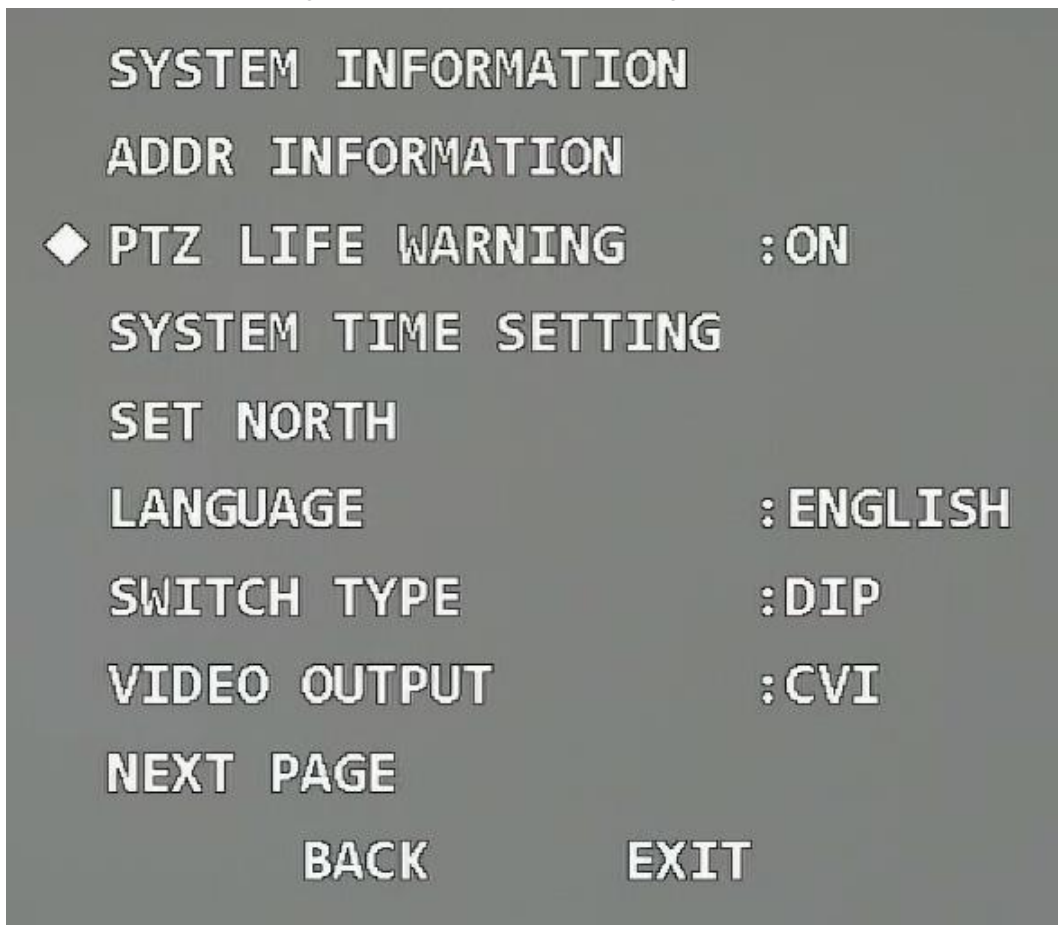
Select address type according to the application scene. You can select **Hard** if you can use DIP switch conveniently; otherwise select **Soft**.

- If you select **Hard**, the hardware address that you set through DIP switch is used, and the address cannot be modified.
- If you select **Soft**, the software address can be modified directly on the OSD menu; the address range is from 0 to 255.

3.4.1.3 Setting PTZ Life Warning

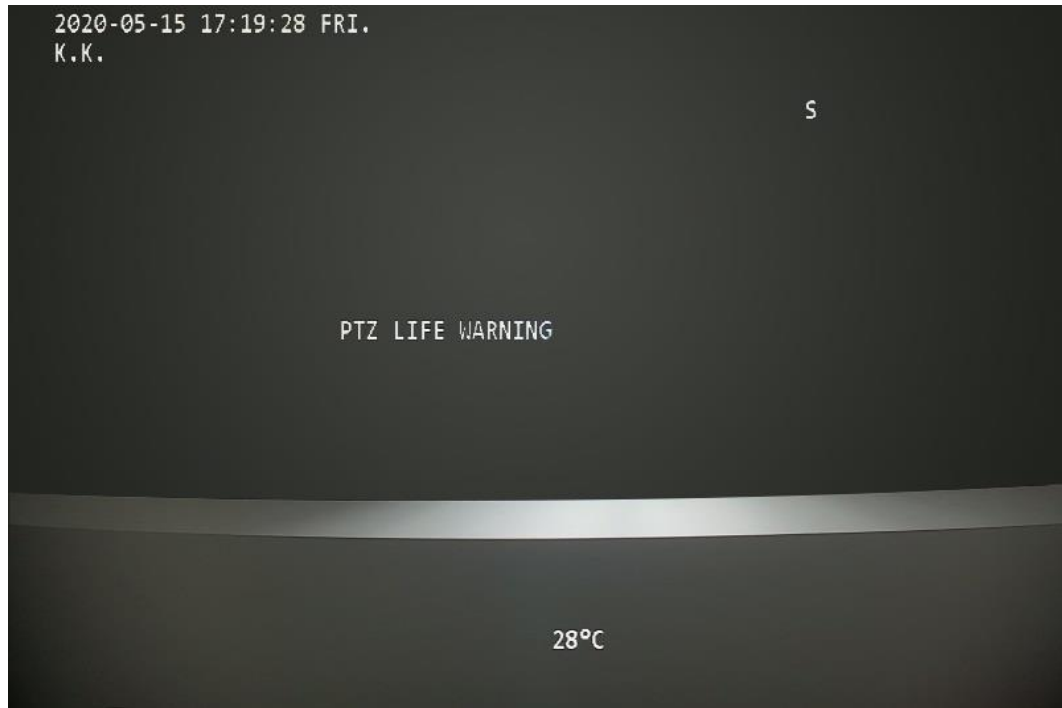
Move the cursor to **PTZ Life Warning**, and then click left and right buttons to select **On** or **Off**. The function is enabled by default.

Figure 3-10 Set PTZ life warning



After the function is enabled, when the horizontal or vertical rotation times of the PTZ reaches 80% of the service life, PTZ life warning will be displayed on the monitoring image.

Figure 3-11 PTZ life warning



3.4.1.4 Setting System Time

- Step 1 Move the cursor to **System Time Setting**, and then click **Enter** to enter the third-level menu.

Figure 3-12 Set system time (1)

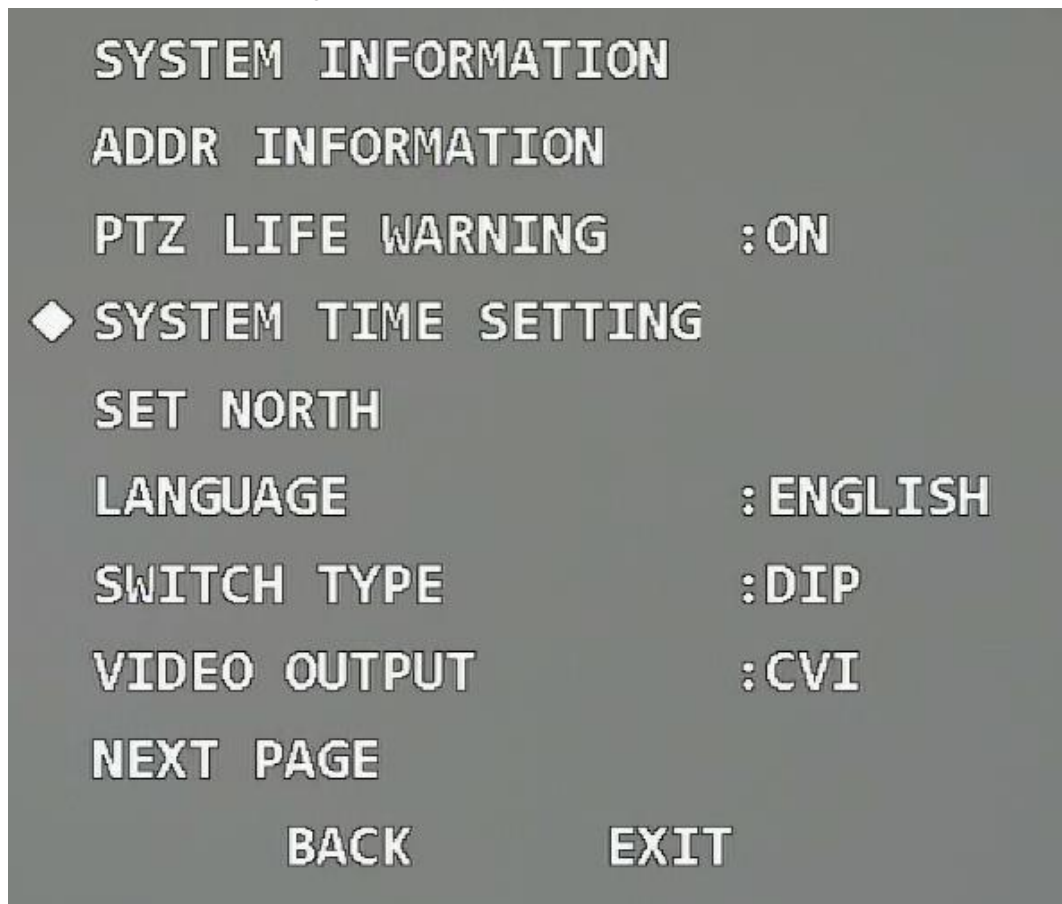
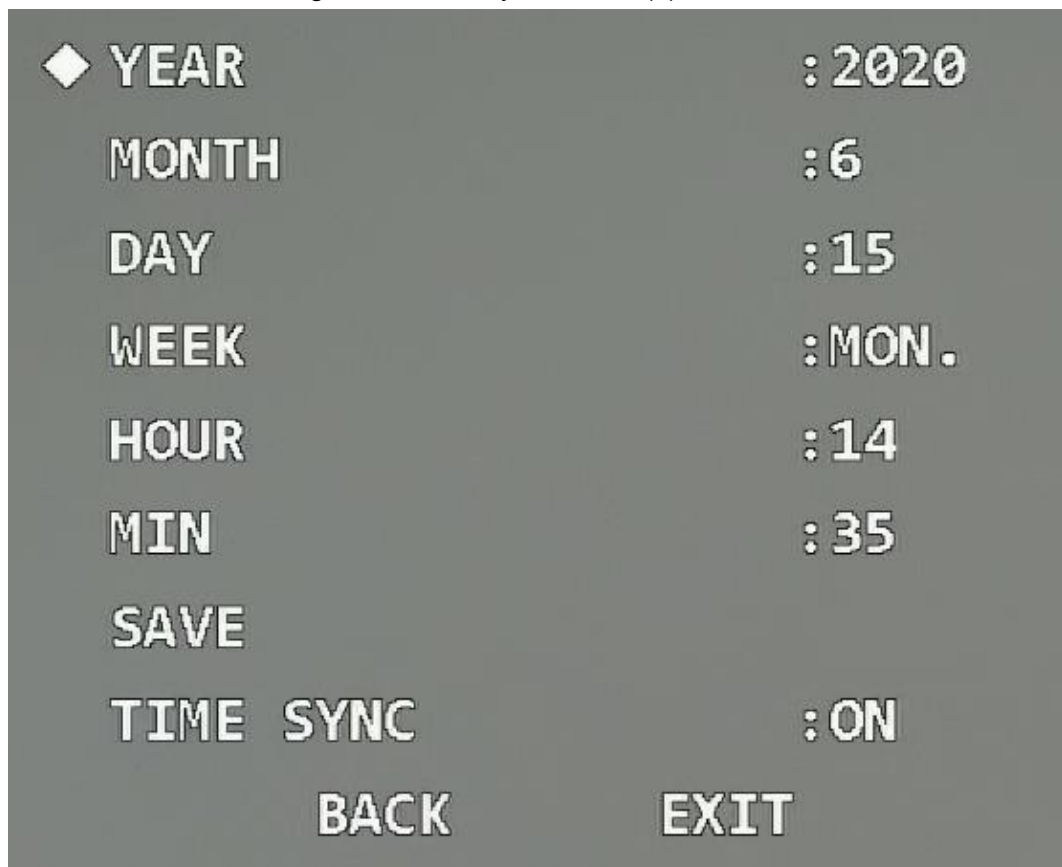


Figure 3-13 Set system time (2)



Step 2 Click the direction buttons on the control panel to set the time information of the

Device.

- Step 3 (Optional) Enable **Time Sync** to synchronize the time of the Device with that of the XVR if the XVR supports time sync.



The time will be restored to default value after restarting the Device if time sync is not enabled.

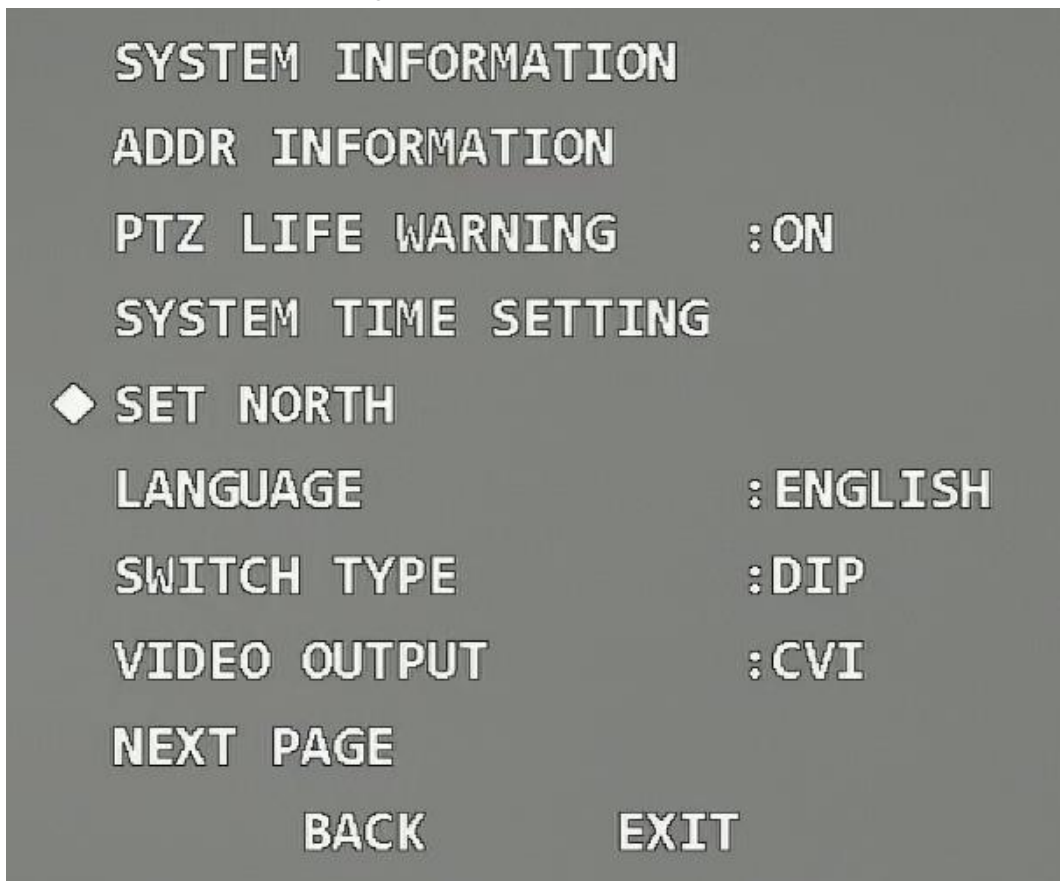
- Step 4 Move the cursor to **Save**, and then click **Enter**.

3.4.1.5 Setting North Direction

- Step 1 Adjust the monitoring direction of the Device to the north through PTZ direction buttons.

- Step 2 Move the cursor to **Set North**, and then click **Enter**. **OK** is displayed if the setting takes effect.

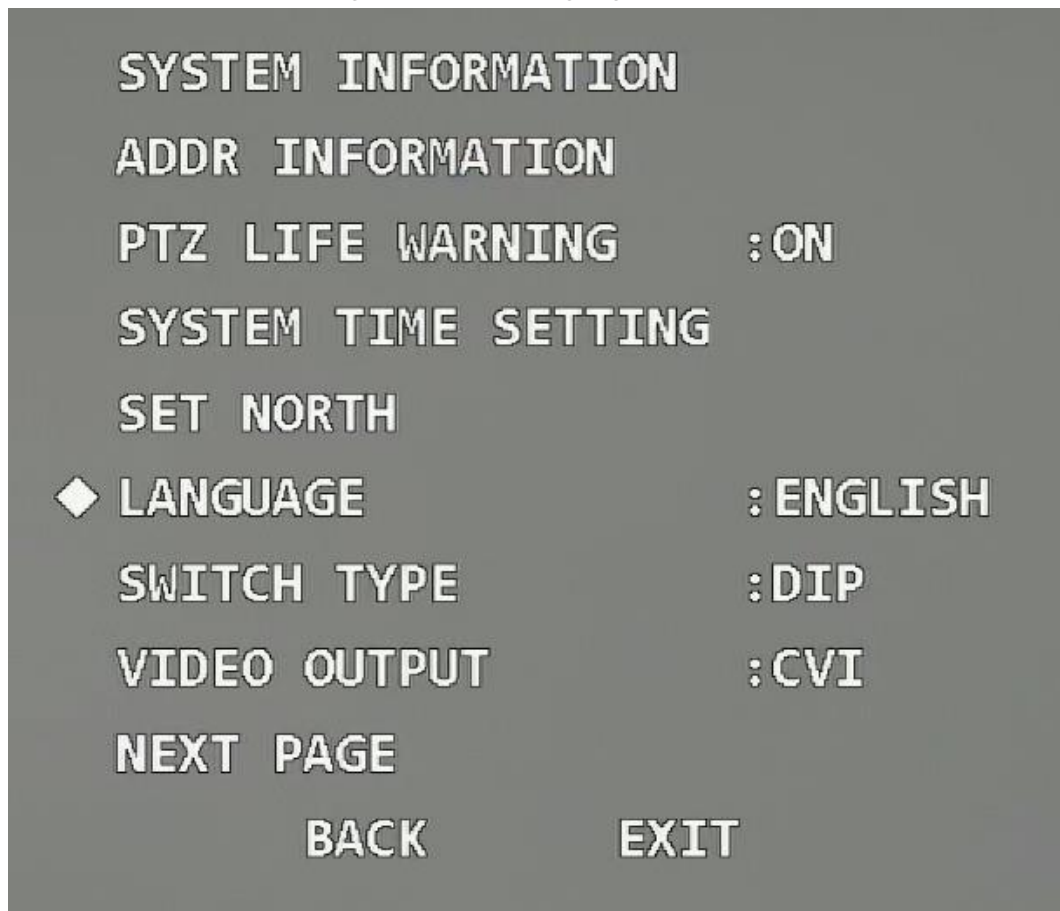
Figure 3-14 Set north



3.4.1.6 Setting Language

Move the cursor to **Language**, click left and right buttons to select the language, and then click **Enter**.

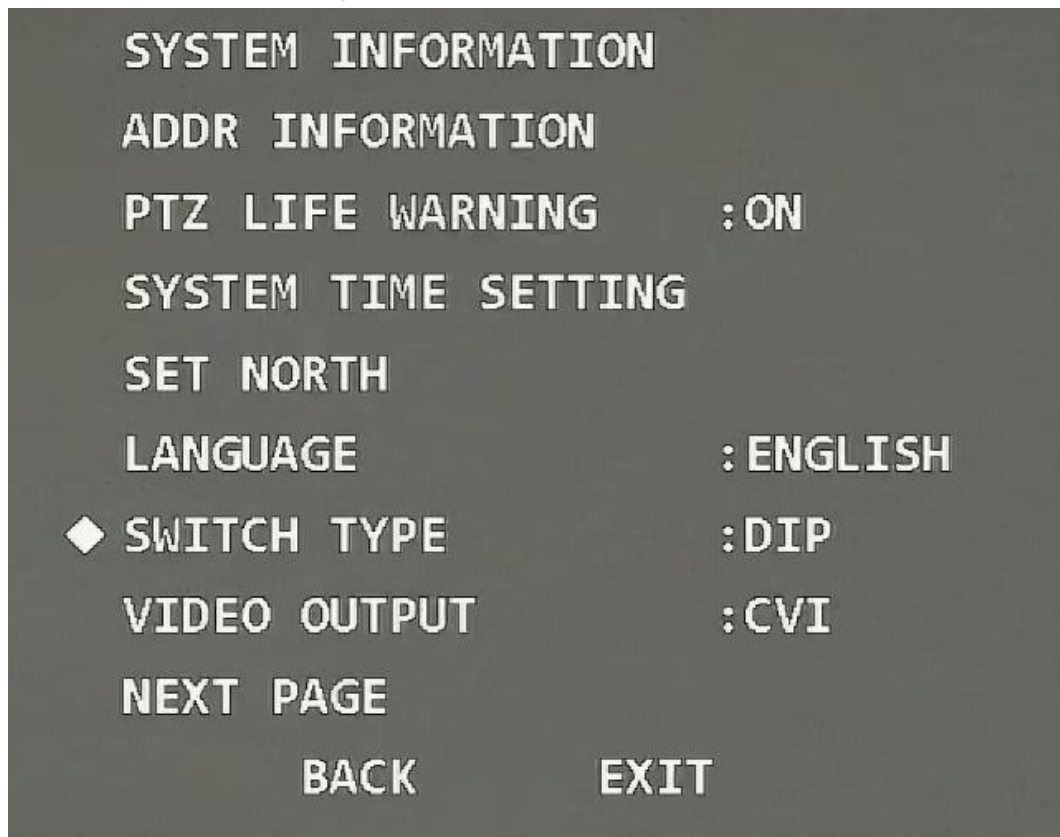
Figure 3-15 Set language



3.4.1.7 Setting Switch Type

Move the cursor to **Switch Type**, click left and right buttons to select **OSD** or **DIP**, and then click **Enter**.

Figure 3-16 Set switch type



- If selecting **OSD**, you can change the video output mode through OSD menu.
- If selecting **DIP**, you can only change the video output mode through DIP switch on the Device.

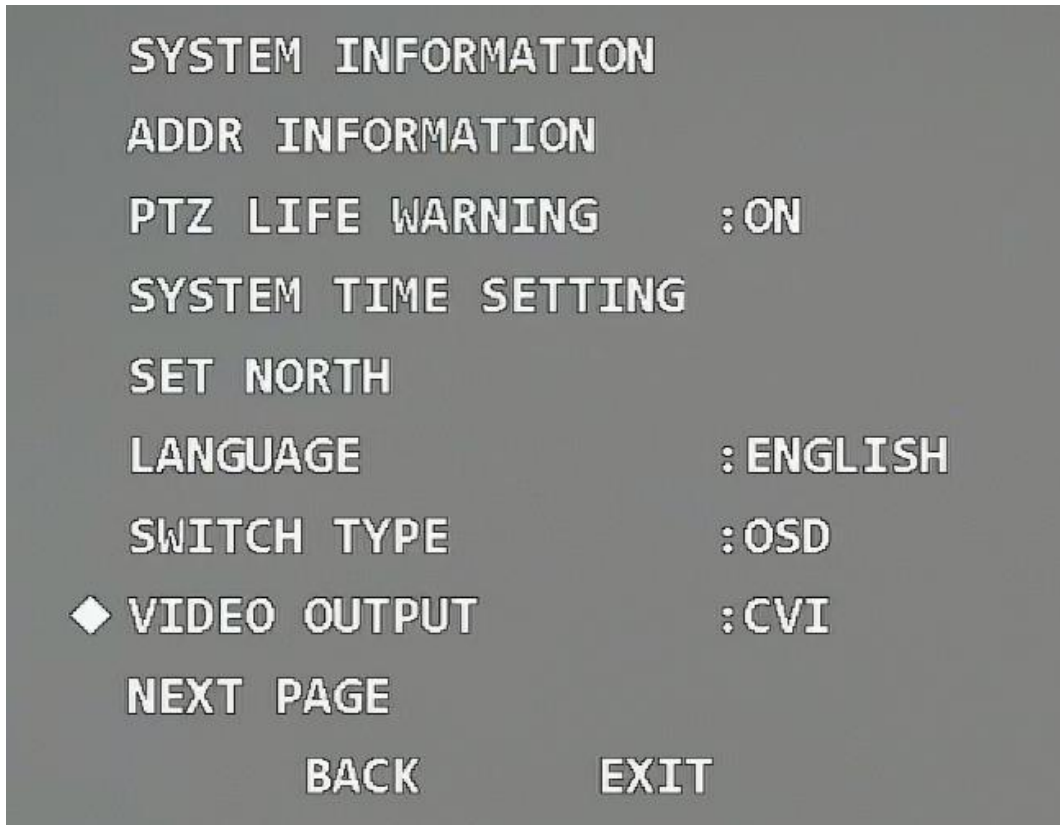
3.4.1.8 Setting Video Output Mode



- Before switching the mode, confirm whether the XVR supports the corresponding video output mode; otherwise image and coaxial control abnormality might occur.
- Only after you select **OSD** as **Switch Type**, can you set the video output mode through OSD menu.

Move the cursor to **Video Output**, click left and right buttons to select the video output mode from **CVI**, **TVI**, **AHD** and **SD**, and then click **Enter**.

Figure 3-17 Set video output mode

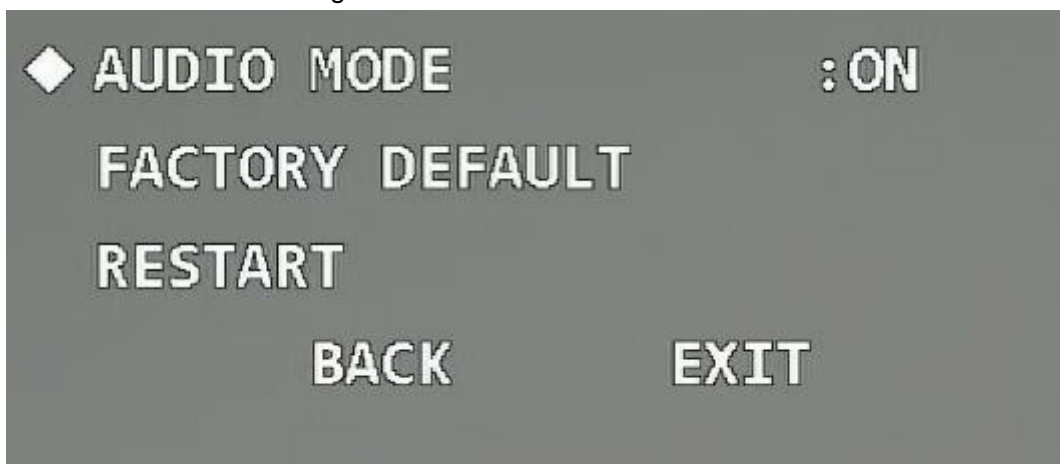


- CVI: High definition video.
- SD: Standard definition video.
- TVI and AHD: Apply to the third-party back-end devices. Select them as needed.

3.4.1.9 Setting Audio Mode

Move the cursor to **Audio Mode**, click left and right buttons to select **On** or **Off**, and then click **Enter**.

Figure 3-18 Set audio mode



- On: Enable the audio of the live video.

To make the audio take effect, in addition to enable audio here, you still need to do the following operations.

1. Connect an external sound pickup device to the Device.
 2. Go to the main menu of the XVR, select **Camera > Encode > Audio/Video**, click **More** in the **Main Stream** section, select the **Audio** check box, and then set **HDCVI** as **Audio Source**.
 3. Go to the **Live** interface of the XVR, and then click the **Sound** button in the corresponding channel.
- Off: Disable the audio of the live video.

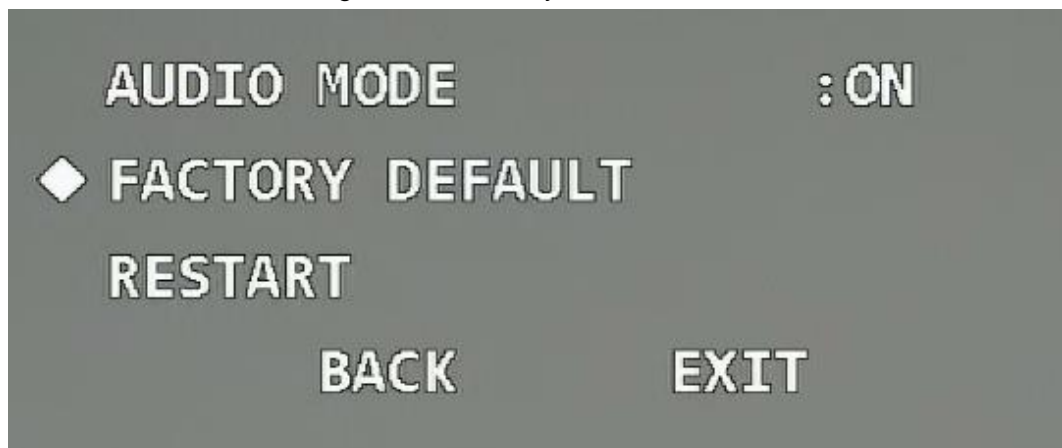
3.4.1.10 Restoring the Device to Factory Default Settings

Move the cursor to the **Factory Default**, and then click **Enter** to restore the Device to factory default settings.



All configurations will be restored to factory default settings if you perform this operation. Be cautious.

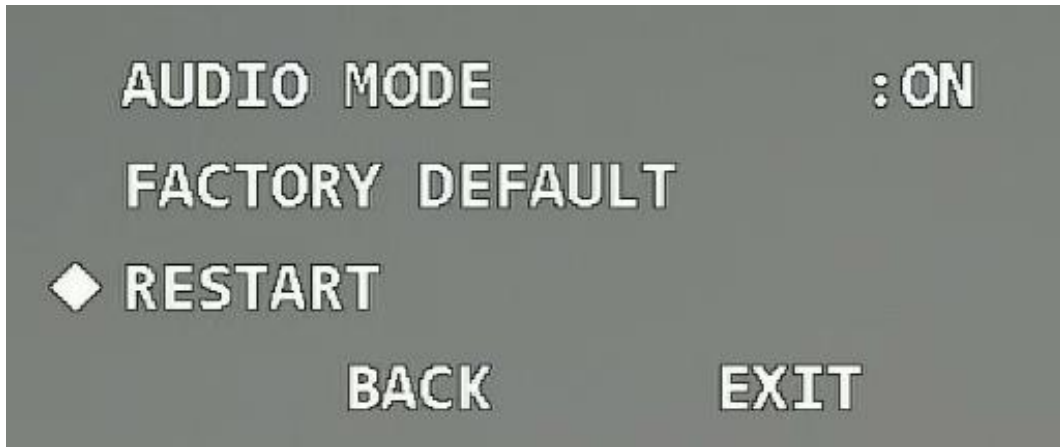
Figure 3-19 Factory default



3.4.1.11 Restarting the Device

Move the cursor to **Restart**, and then click **Enter** to restart the Device.

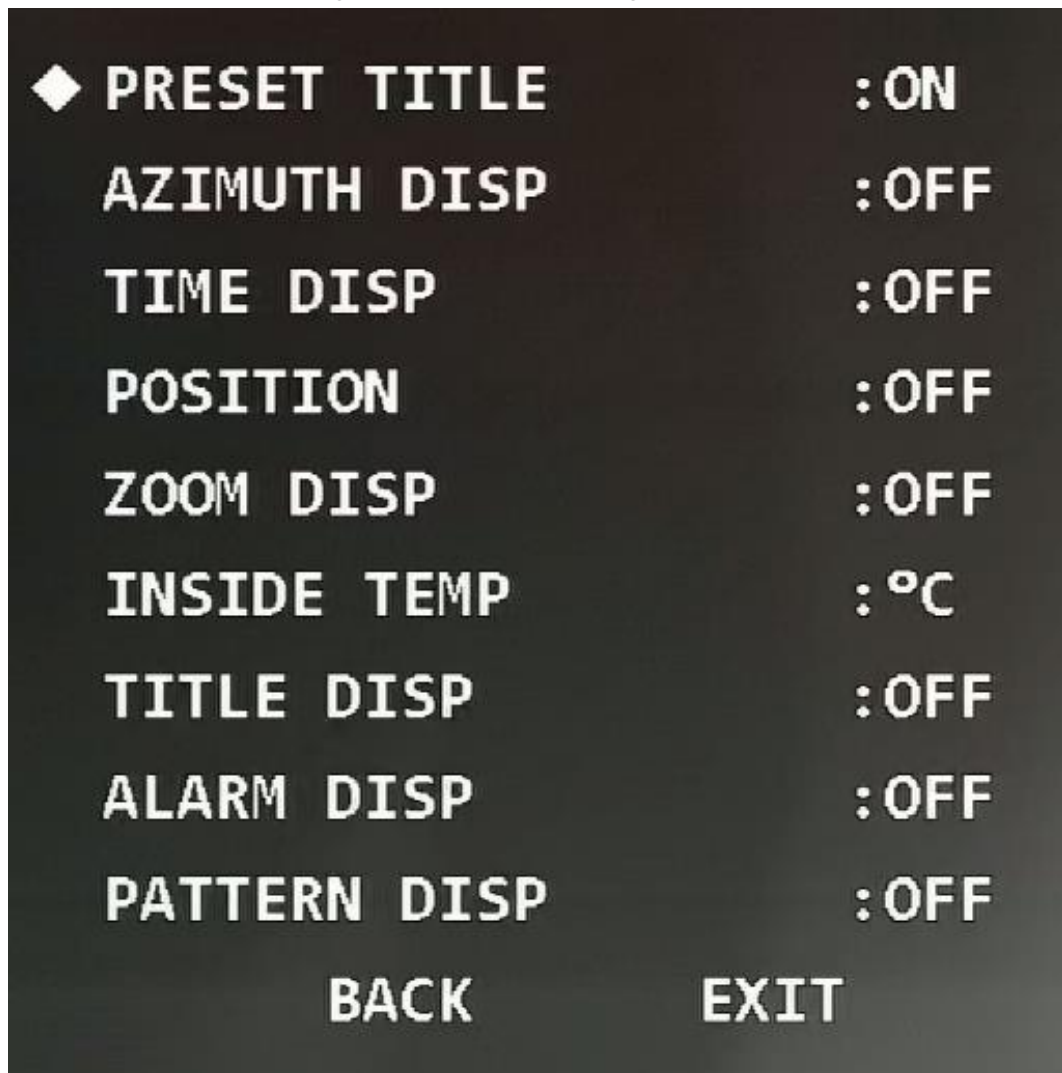
Figure 3-20 Restart



3.4.2 Display Settings

Open the OSD menu, move the cursor to **Display Setting**, and then click **Enter** to enter the second-level menu.

Figure 3-21 Display settings



3.4.2.1 Setting Preset Title Display

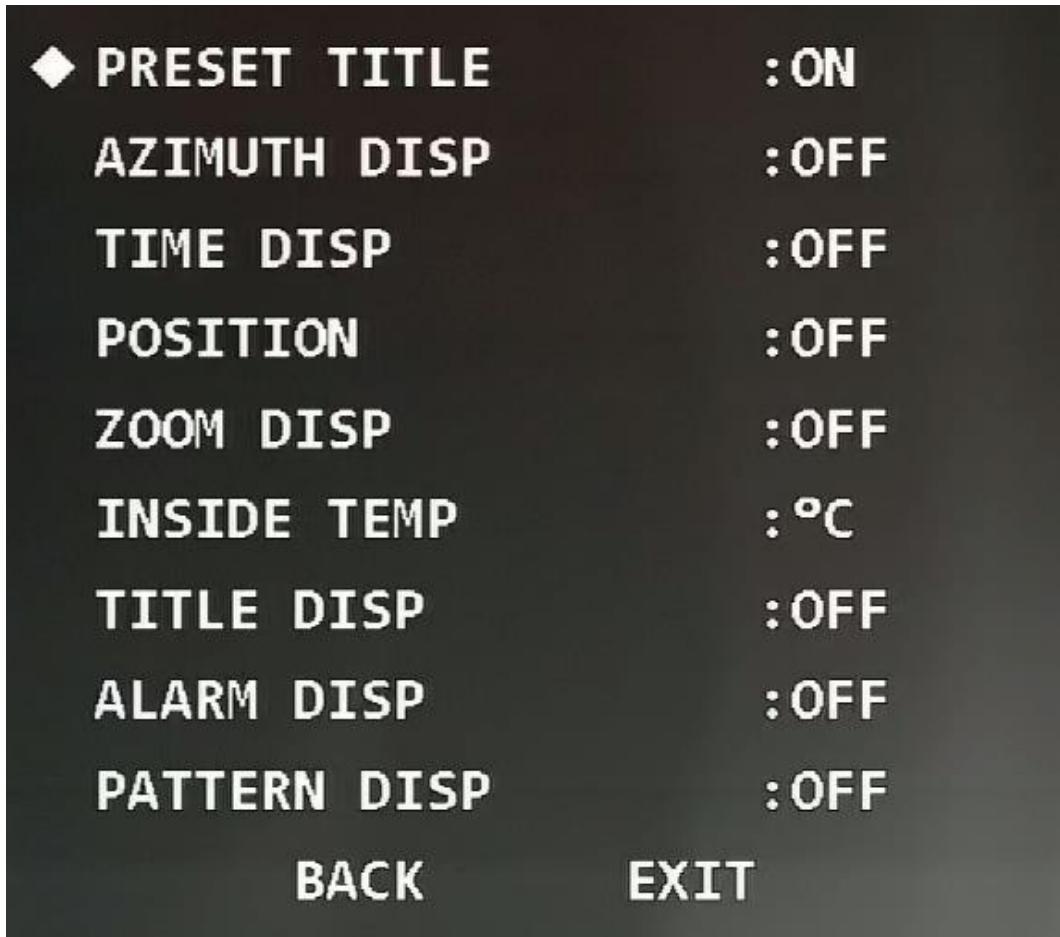
You can select whether to display the preset title on the monitoring screen.



Select **Function Setting** > **Preset** to set preset No. and title first.

Move the cursor to **Preset Title**, and then click left and right buttons to select **On** or **Off**.

Figure 3-22 Preset title



3.4.2.2 Setting Azimuth Display

You can select whether to display the current PTZ coordinate of the Device on the monitoring screen.

Move the cursor to **Azimuth Disp**, and then click left and right buttons to select **On** or **Off**.

Figure 3-23 Azimuth display

PRESET TITLE	: ON
◆ AZIMUTH DISP	: OFF
TIME DISP	: OFF
POSITION	: OFF
ZOOM DISP	: OFF
INSIDE TEMP	: °C
TITLE DISP	: OFF
ALARM DISP	: OFF
PATTERN DISP	: OFF
BACK	EXIT

3.4.2.3 Setting Time Display

You can select whether to display the current time of the Device on the monitoring screen. Move the cursor to **Time Disp**, and then click left and right buttons to select **On** or **Off**.

Figure 3-24 Time display

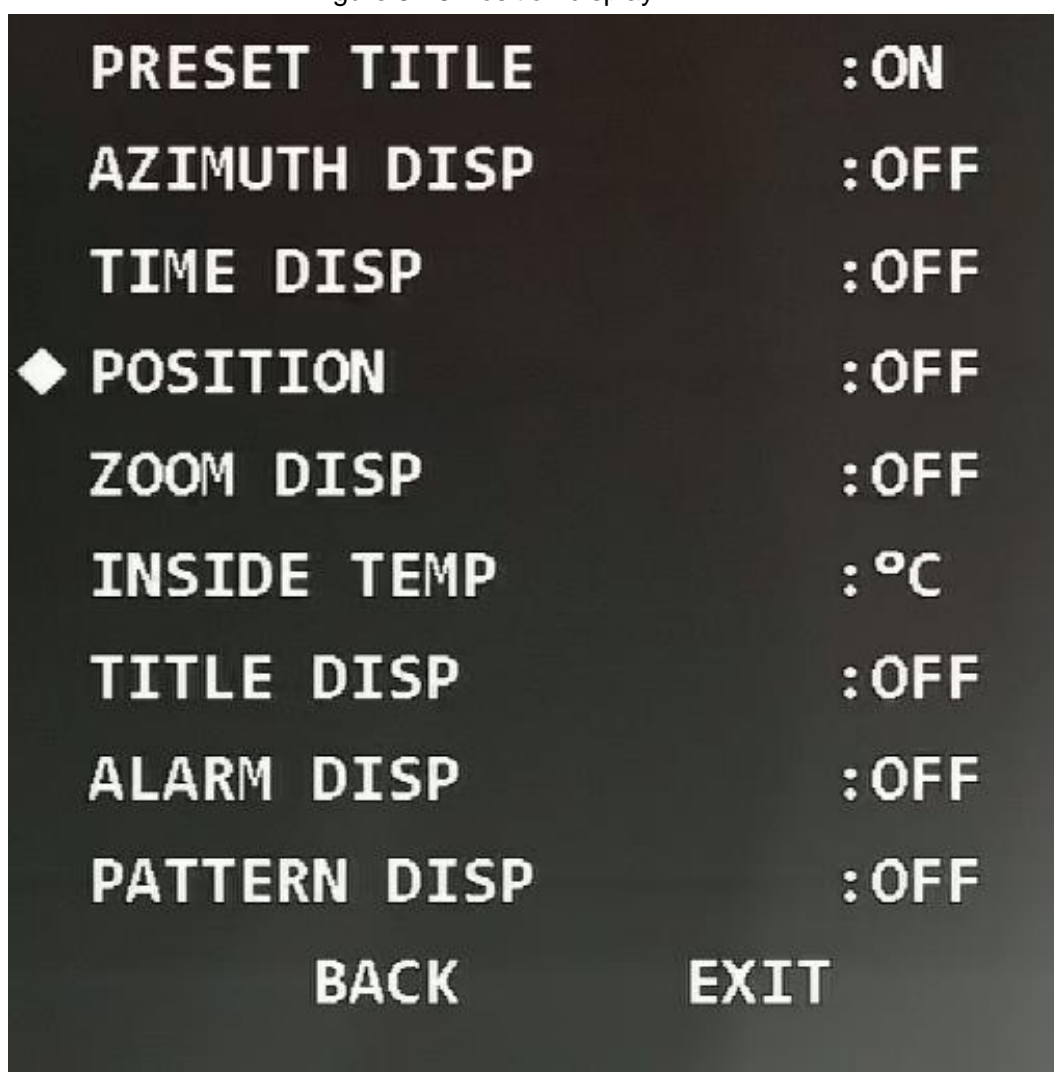
PRESET TITLE	:ON
AZIMUTH DISP	:OFF
◆ TIME DISP	:OFF
POSITION	:OFF
ZOOM DISP	:OFF
INSIDE TEMP	:°C
TITLE DISP	:OFF
ALARM DISP	:OFF
PATTERN DISP	:OFF
BACK	EXIT

3.4.2.4 Setting Position Display

You can select whether to display the deviation angle compared with the reference position of the current lens on the monitoring screen.

Move the cursor to **Position**, and then click left and right buttons to select **On** or **Off**.

Figure 3-25 Position display

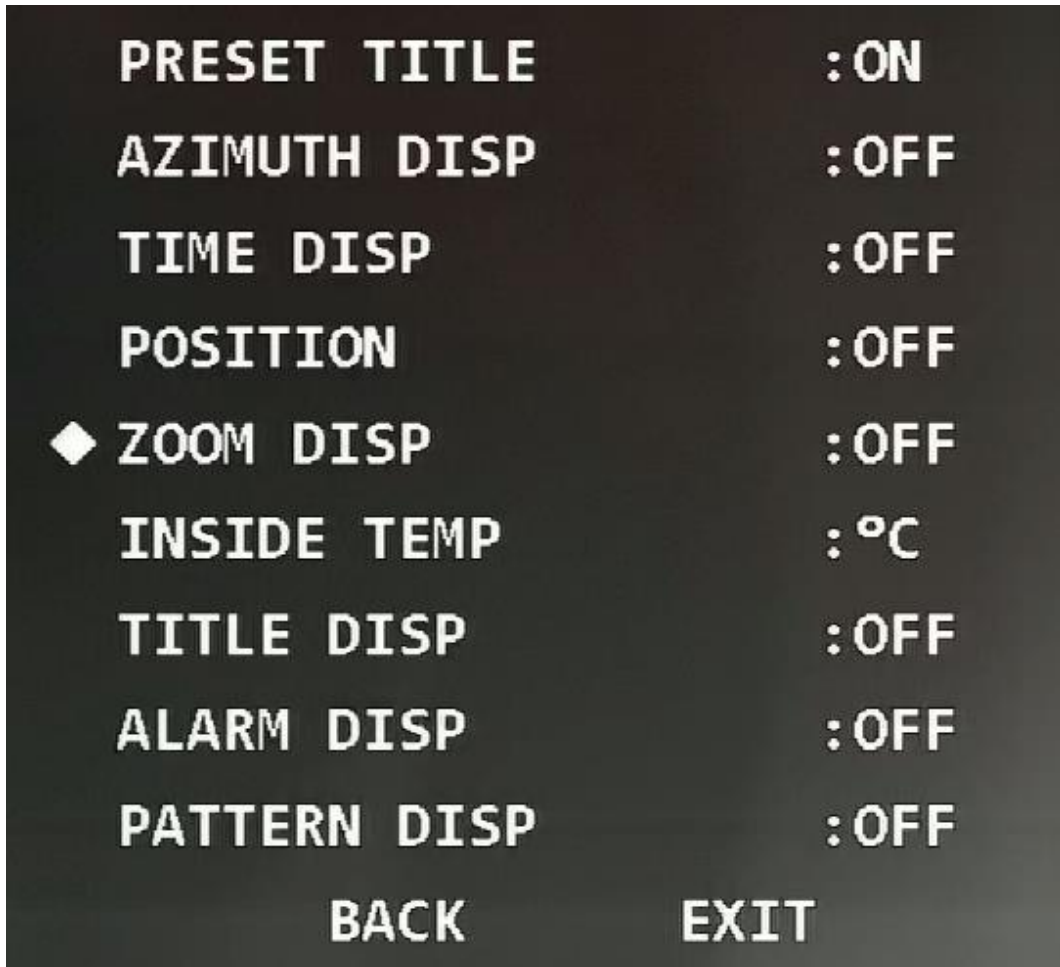


3.4.2.5 Setting Zoom Display

You can select whether to display the current zoom rate of the Device on the monitoring screen.

Move the cursor to **Zoom Disp**, and then click left and right buttons to select **On** or **Off**.

Figure 3-26 Zoom display

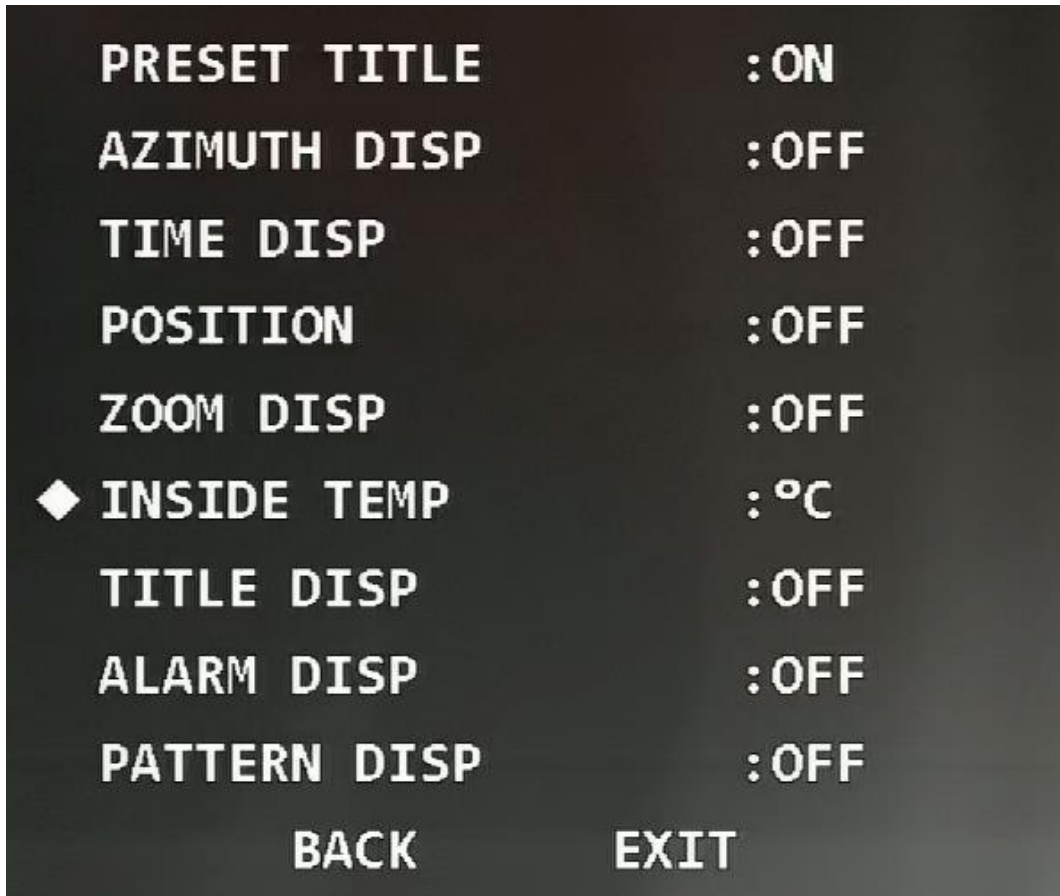


3.4.2.6 Setting Internal Temperature Display

You can select whether to display the internal temperature of the Device on the monitoring screen.

Move the cursor to **Inside Temp**, and then click left and right buttons to select **On** or **Off**.

Figure 3-27 Inside temperature



The image shows a terminal window with a dark background and white text. The menu items are listed vertically, with the 'INSIDE TEMP' option highlighted by a diamond symbol. At the bottom, there are two options: 'BACK' and 'EXIT'.

PRESET TITLE	: ON
AZIMUTH DISP	: OFF
TIME DISP	: OFF
POSITION	: OFF
ZOOM DISP	: OFF
◆ INSIDE TEMP	: °C
TITLE DISP	: OFF
ALARM DISP	: OFF
PATTERN DISP	: OFF
BACK	EXIT

3.4.2.7 Setting Title Display

You can select whether to display information such as location of the Device on the monitoring screen. The title description can be set through the control terminal or in the **Channel Title** section of **Function Settings**.

Move the cursor to **Title Disp**, and then click left and right buttons to select **On** or **Off**.

Figure 3-28 Title display

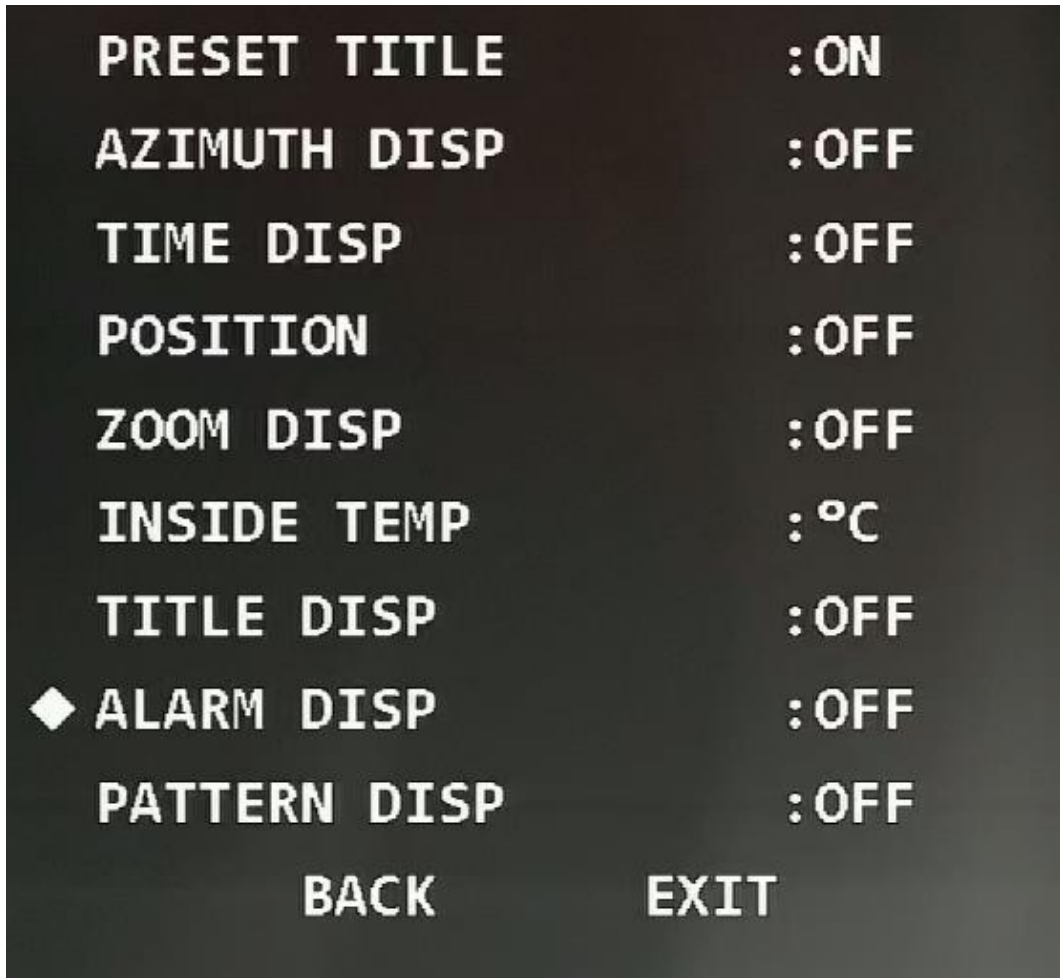
PRESET TITLE	: ON
AZIMUTH DISP	: OFF
TIME DISP	: OFF
POSITION	: OFF
ZOOM DISP	: OFF
INSIDE TEMP	: °C
◆ TITLE DISP	: OFF
ALARM DISP	: OFF
PATTERN DISP	: OFF
BACK	EXIT

3.4.2.8 Setting Alarm Display

You can select whether to display the alarms of the Device on the monitoring screen. After alarm display is enabled, the channel in which alarms are triggered is displayed. For example, if alarm input port 1 generates an alarm, **Alarm: 1** is displayed.

Move the cursor to **Alarm Disp**, and then click the left and right buttons to select **On** or **Off**.

Figure 3-29 Alarm display



3.4.2.9 Setting Pattern Display

You can select whether to display the percentage of the current location out of the total pattern path on the monitoring screen.

Move the cursor to **Pattern Disp**, and then click left and right buttons to select **On** or **Off**.

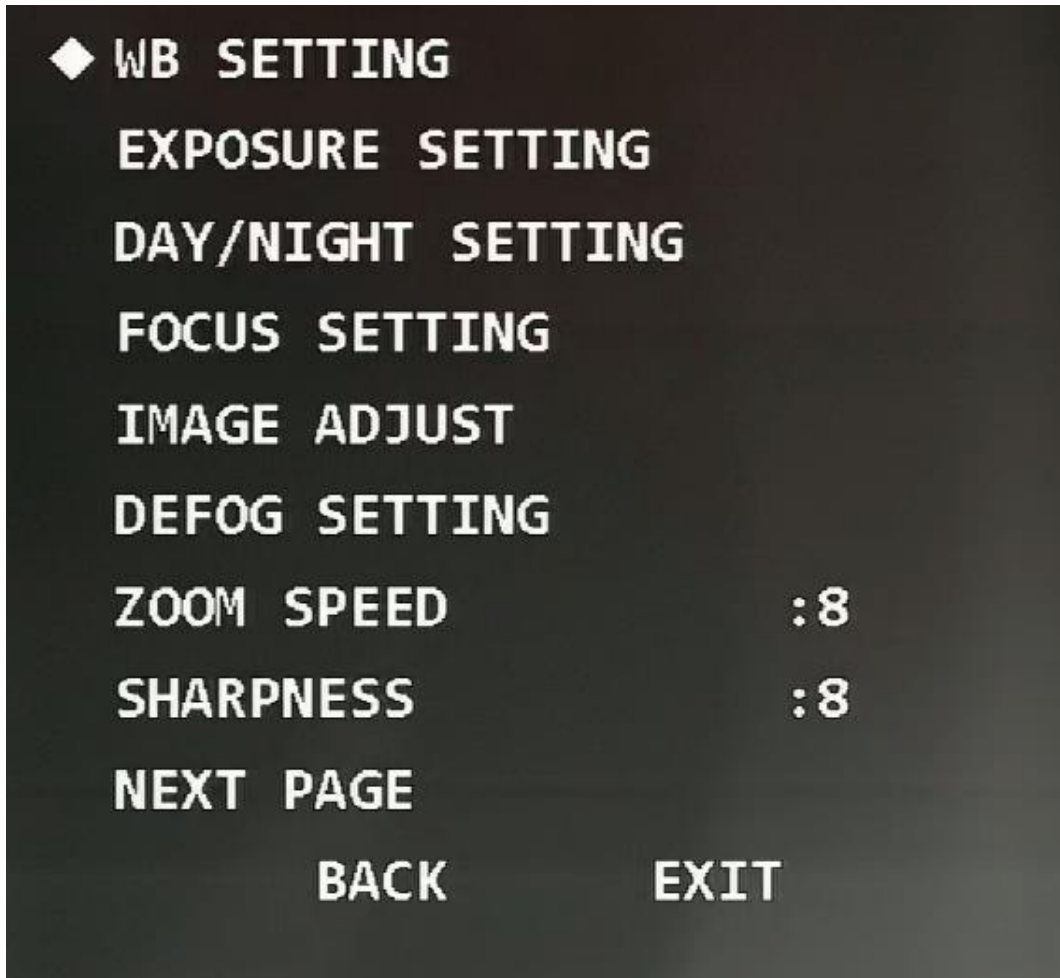
Figure 3-30 Pattern display

PRESET TITLE	: ON
AZIMUTH DISP	: OFF
TIME DISP	: OFF
POSITION	: OFF
ZOOM DISP	: OFF
INSIDE TEMP	: °C
TITLE DISP	: OFF
ALARM DISP	: OFF
◆ PATTERN DISP	: OFF
BACK	EXIT

3.4.3 Camera Settings

Open the OSD menu, move the cursor to **Camera Setting**, and then click **Enter** to enter the second-level menu.

Figure 3-31 Camera settings

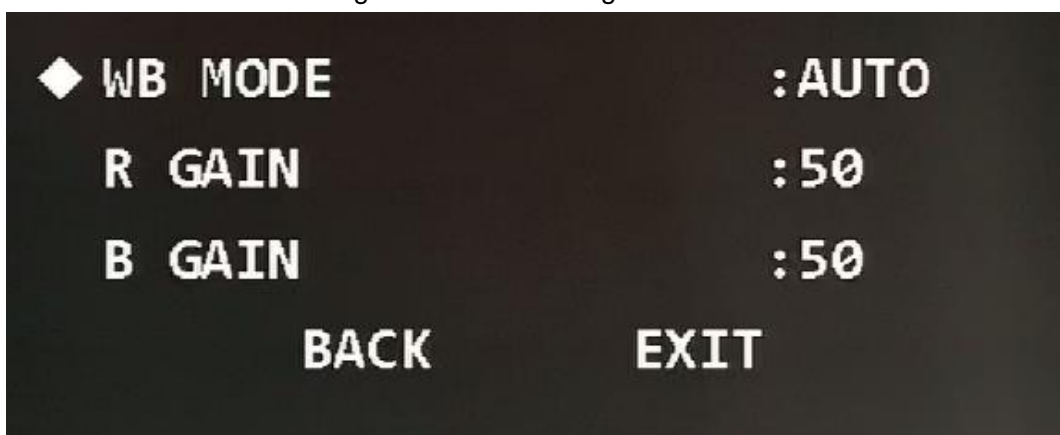


3.4.3.1 Setting White Balance

White balance means the restoration of white object, which can calibrate the color temperature in both indoor and outdoor environment.

Step 1 Move the cursor to **WB Setting**, and then click **Enter** to enter the third-level menu.

Figure 3-32 WB settings



Step 2 Select the WB mode.

- Select manual mode
 1. Click left and right buttons to select **Manual**.
 2. Move the cursor to **R Gain**, and then click left and right buttons to set R gain value.

3. Move the cursor to **B Gain**, and then click left and right buttons to set B gain value.
- Select other modes
Click left and right buttons to select others WB modes as needed. You can select **Auto**, **ATW**, **Outdoor**, **Indoor**, **Street Lamp**, **NA Lamp**, or **Natural**.

Table 3-3 WB mode description

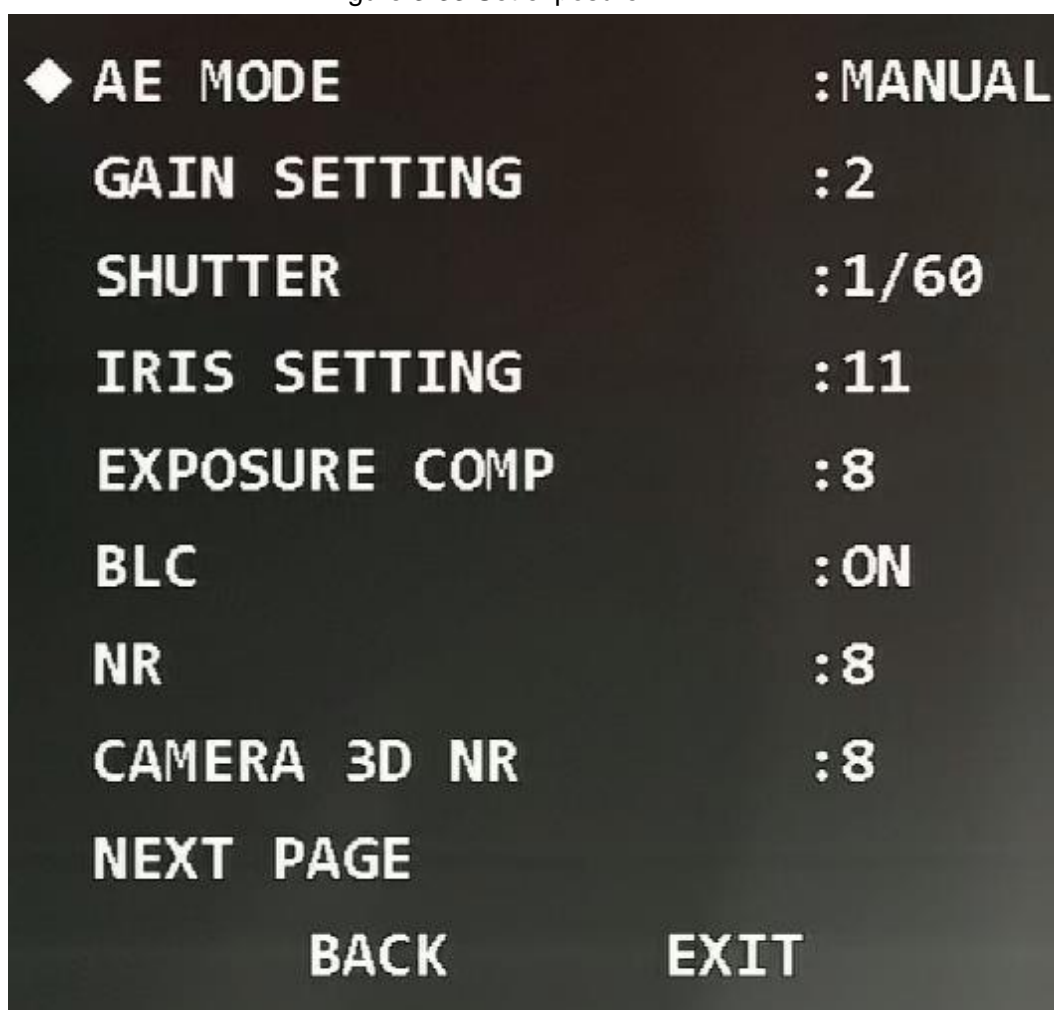
Mode	Description
Manual	Configure red and blue gain manually; the system auto compensates WB according to color temperature.
Auto	The system compensates WB according to color temperature to ensure color precision. The mode is selected by default.
ATW	The system compensates WB automatically. Compared with Auto mode, the color temperature range is wider, but the precision and recovery capability are weaker.
Outdoor	The system auto compensates WB to most outdoor environments with natural or artificial light to ensure color precision.
Indoor	Used for indoor environments.
Street Lamp	The system compensates WB to outdoor night scenes to ensure color precision.
NA Lamp	Used for scenes with sodium lamps.
Natural	The system auto compensates WB to environments without artificial light to ensure color precision.

3.4.3.2 Setting Exposure

You can set exposure to control the amount of light per unit area reaching the electronic image sensor by adjusting parameters.

Step 1 Move the cursor to **Exposure Setting**, and then click **Enter** to enter the third-level menu.

Figure 3-33 Set exposure



Step 2 Click the left and right buttons to select exposure mode.
 You can select **Auto**, **Manual**, **Iris Prio**, or **Shut Prio**.

Table 3-4 Exposure mode description

Mode	Description
Auto	Exposure is automatically adjusted according to scene brightness if the overall brightness of images is in the normal exposure range.
Manual	You can adjust the gain, shutter and iris value manually.
Iris Prio	You can set the iris to a fixed value, and the Device adjusts shutter value then. If the image brightness is not enough and the shutter value has reached upper or lower limit, the system adjusts gain value automatically to ensure the image is at ideal brightness.
Shut Prio	You can customize the shutter range. The Device automatically adjusts the iris and gain according to the scene brightness.

Step 3 Set the following three parameters according to the exposure mode selected in Step 2.

- Gain
 Move the cursor to **Gain Setting**, and then click left and right buttons to adjust gain value. The bigger the value is, the brighter the image becomes.
- Shutter
 Move the cursor to **Shutter**, and then click left and right buttons to adjust shutter

value. The bigger the value is, the darker the image becomes.

- Iris

Move the cursor to **Iris Setting**, and then click left and right buttons to adjust iris value. The bigger the value is, the brighter the image becomes.

Step 4 Set the following parameters as needed.

Table 3-5 Exposure parameter description

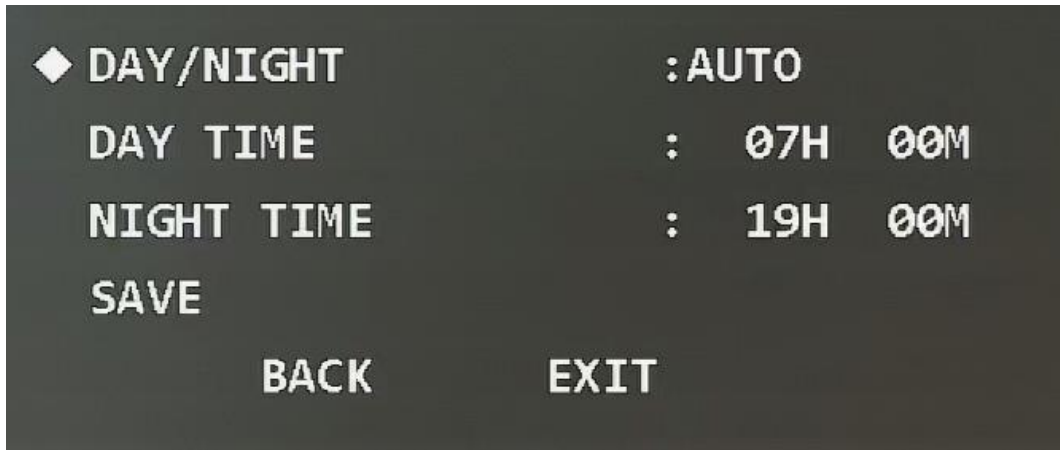
Parameter	Description
Exposure Comp	Set the exposure compensation value of the Device. The bigger the value is, the brighter the image becomes.
BLC	The Device corrects regions with extremely high or low levels of light to maintain a normal and usable level of light for the object in focus.
NR	Image noise might occur in the low light environment. In this case, digital filtering can be used to reduce the noise, and make the image clear.
Camera 3D NR	Noise reduction is performed between frames according to the images of the previous several frames and the current frame. The noise reduction effect is better without affecting image resolution, but it may generate smear.
High Light Reduce	Suppresses the image brightness.
AE Recovery	Automatic exposure is an automated digital camera system that adjusts the iris and shutter speed based on the external lighting conditions for images and videos. If you have selected an AE Recovery time, the exposure mode will be restored to the previous mode after you adjusted the iris value.
WDR Setting	After WDR is enabled, the Device can automatically adjust the image brightness when the comparison of brightness and darkness is very strong.

3.4.3.3 Setting Day/Night

This function allows you to switch between the color mode and the black & white mode, to ensure clear monitoring screen in a dim environment.

Step 1 Move the cursor to the **Day/Night Setting**, and then click **Enter** to enter the third menu.

Figure 3-34 Set day/night



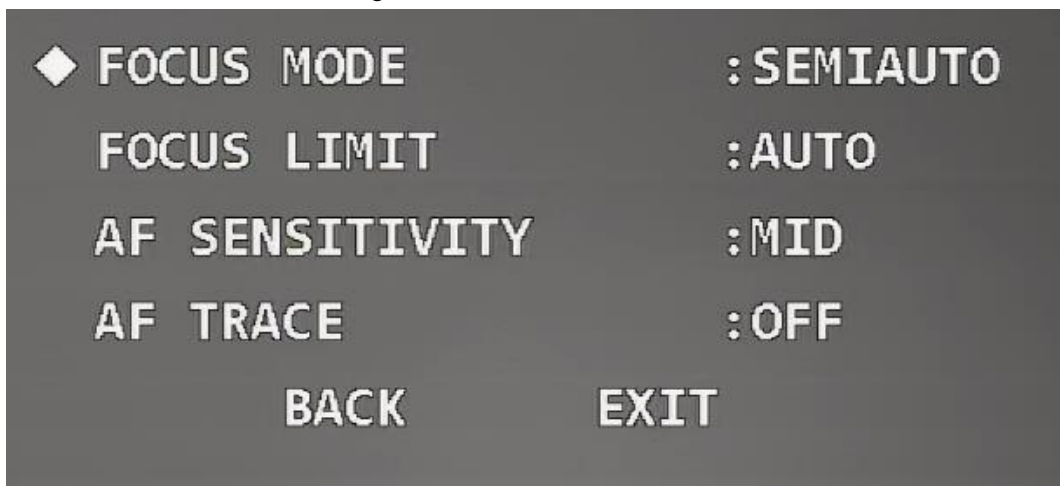
Step 2 Select day/night mode.

- Select auto, night, or day mode.
 - ◇ **Auto**: Day and night modes are switched automatically according to the environment.
 - ◇ **Day**: Color image.
 - ◇ **Night**: Black-and-white image.
- Select time mode.
 1. Click left and right buttons to select **Time**.
 2. Move the cursor to the **Day Time**, and then click **Enter** to set the duration of day mode. Click up and down buttons to set the value, and click left and right buttons to select hour or minute.
 3. Click **Enter** to exit the setting of day mode duration.
 4. Move the cursor to the **Night Time**, and then click **Enter** to set the duration night mode. Click up and down buttons to set the value, and click left and right buttons to select hour or minute.
 5. Click **Enter** to exit the setting of night mode duration.
 6. Click **Save**.

3.4.3.4 Setting Focus

Step 1 Move the cursor to **Focus Setting**, and then click **Enter** to enter the third-level menu.

Figure 3-35 Set focus



Step 2 Click left and right buttons to select the focus mode.

You can select **Semiauto**, **Auto** or **Manual**.

Table 3-6 Focus mode description

Mode	Description
Semiauto	Focus once for the same scene, which is suitable for the scenes in which the focused targets have little change.
Auto	Focus again if there is any change in the same scene, which can ensure the image definition, but it needs some time for each focus.
Manual	Focus manually.

Step 3 Move the cursor to the **Focus Limit**, and then click left and right buttons to set the focus limit value.



Focus limit means the closest distance that the speed dome can focus. The Device focuses with limit value by priority when the focus mode is auto or semi-auto.

Step 4 Move the cursor to the **AF Sensitivity**, and then click the left and right buttons to select the sensitivity from **Mid**, **High**, or **Low**.

Step 5 Move the cursor to **AF Trace**, and then click left and right buttons to select **On** or **Off**.



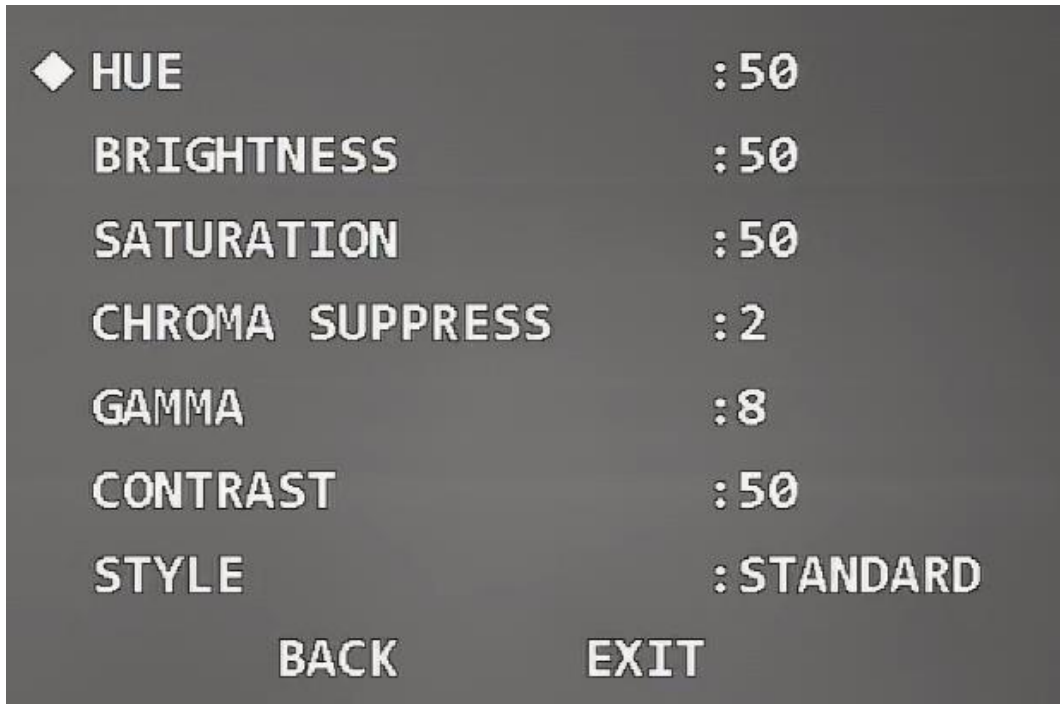
The Device can also focus to ensure the image definition when zooming after the function is enabled.

3.4.3.5 Setting Image Adjustment

With the function, you can adjust parameters such as brightness, contrast, hue, and saturation.

Step 1 Move the cursor to the **Image Adjust**, and then click **Enter** to enter the third-level menu.

Figure 3-36 Set image adjustment



Step 2 Click the direction buttons, and then click **Enter** to adjust each parameter.

Table 3-7 Image adjustment parameter description

Parameter	Description
Hue	Set the image hue. The value ranges from 0 to 100, and 50 is selected by default.
Brightness	Set the image brightness. The value ranges from 0 to 100, and 50 is selected by default.
Saturation	Set the image saturation. The value ranges from 0 to 100, and 50 is selected by default.
Chroma Suppress	Set the image chroma suppression. The value ranges from 1 to 16, and 2 is selected by default.
Gamma	Set the image gamma. The value ranges from 1 to 16, and 8 is selected by default.
Contrast	Set the image contrast. The value ranges from 0 to 100, and 50 is selected by default.
Style	Select the image style from Standard , Vivid and Soft . Standard is selected by default.

3.4.3.6 Setting Defog

Image quality drops if the Device is installed in foggy or hazy environment. You can enable defog to improve image quality.

Step 1 Move the cursor to the **Defog Setting**, and then click the **Enter** button to enter the third-level menu.

Figure 3-37 Set defog



Step 2 Select the defog mode.

- Click left and right buttons to select **Off**. The defog function is disabled.
- Click left and right buttons to select **Auto**. The system can automatically adjust the image according to the environment.
- Click left and right buttons to select **Manual**, move the cursor to the **Intensity**, and then click left and right buttons to select the defog intensity value.

3.4.3.7 Setting Zoom Speed

Step 1 Move the cursor to the **Zoom Speed**.

Figure 3-38 Set zoom speed



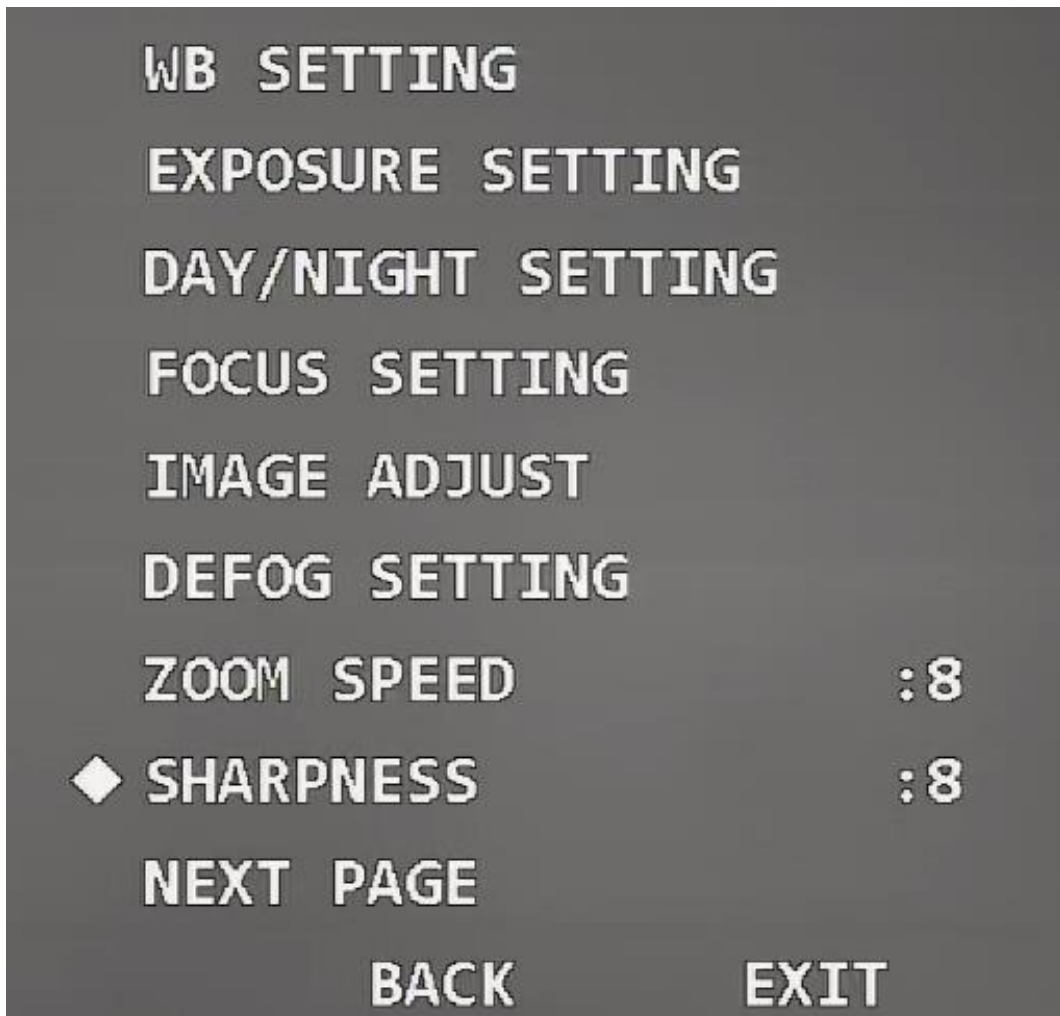
Step 2 Click left and right buttons to select zoom speed. The larger the value is, the faster the Device zooms.

3.4.3.8 Setting Sharpness

You can set the sharpness of the Device to adjust the lens resolution and image definition.

Step 1 Move the cursor to **Sharpness**.

Figure 3-39 Set sharpness



Step 2 Click left and right buttons to select sharpness value.

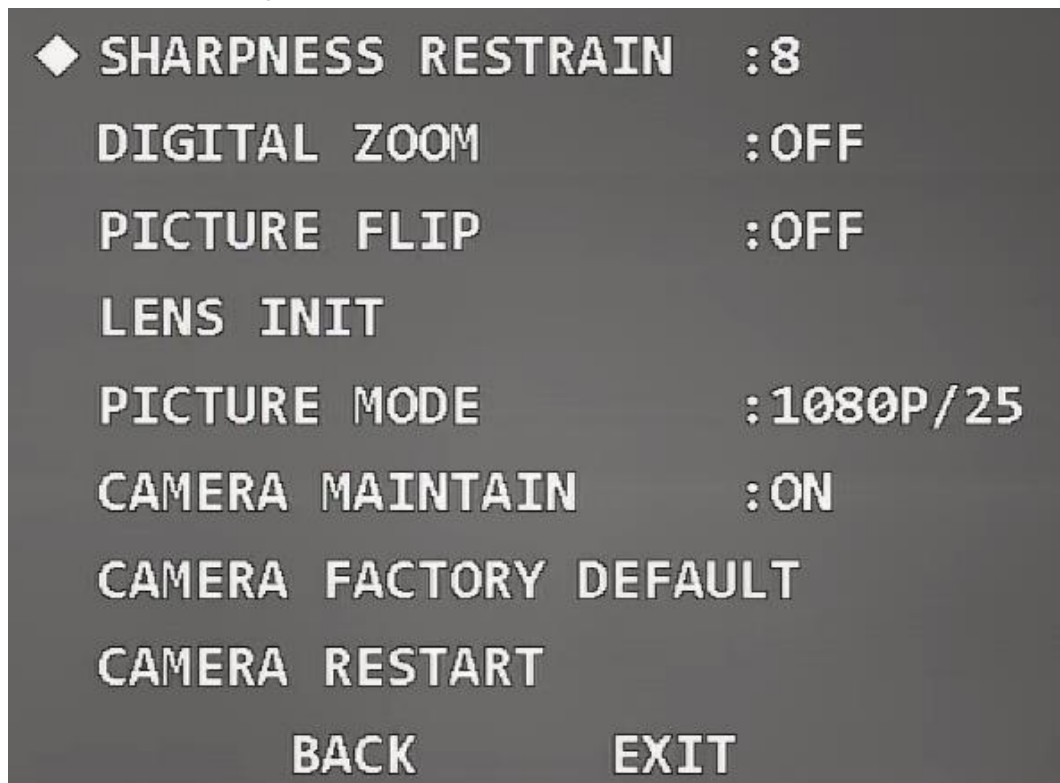


If the value is too large, there might be image noise. Set the value according to the actual condition.

3.4.3.9 Setting Sharpness Suppression

Step 1 Move the cursor to **Sharpness Restrain**.

Figure 3-40 Set sharpness suppression



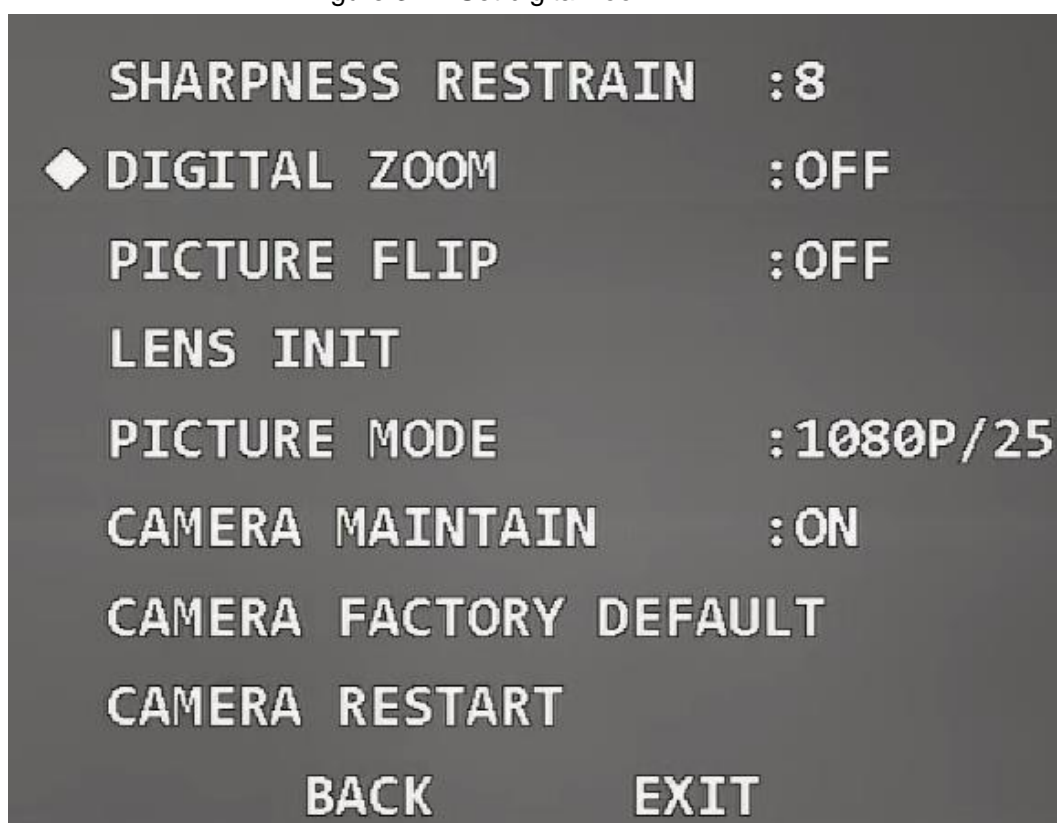
Step 2 Click left and right buttons to set the value of sharpness suppression.

3.4.3.10 Setting Digital Zoom

Digital zoom refers to capturing a part of the image to magnify it. The higher the magnification is, the blurrier the images will become.

Step 1 Move the cursor to **Digital Zoom**.

Figure 3-41 Set digital zoom



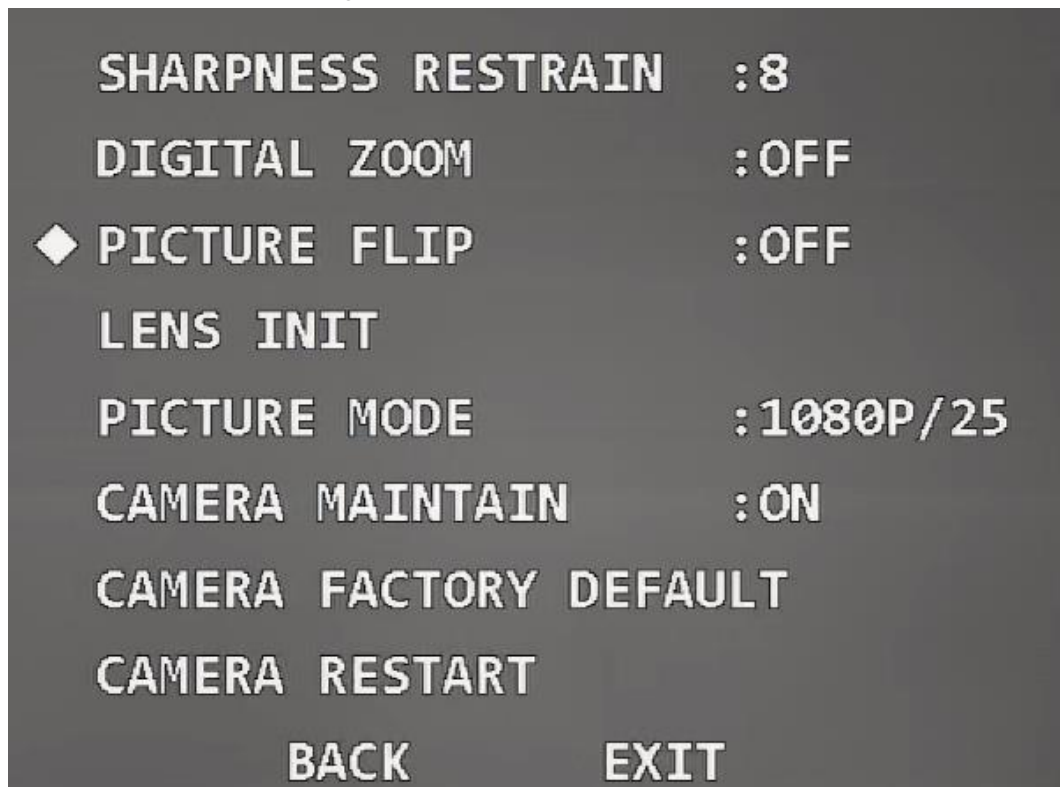
Step 2 Click left and right buttons select **On** or **Off**.

3.4.3.11 Setting Picture Flip

With the function, you can flip the monitoring image.

Step 1 Move the cursor to the **Picture Flip**.

Figure 3-42 Set picture flip



Step 2 Click left and right button to select **On** or **Off**.

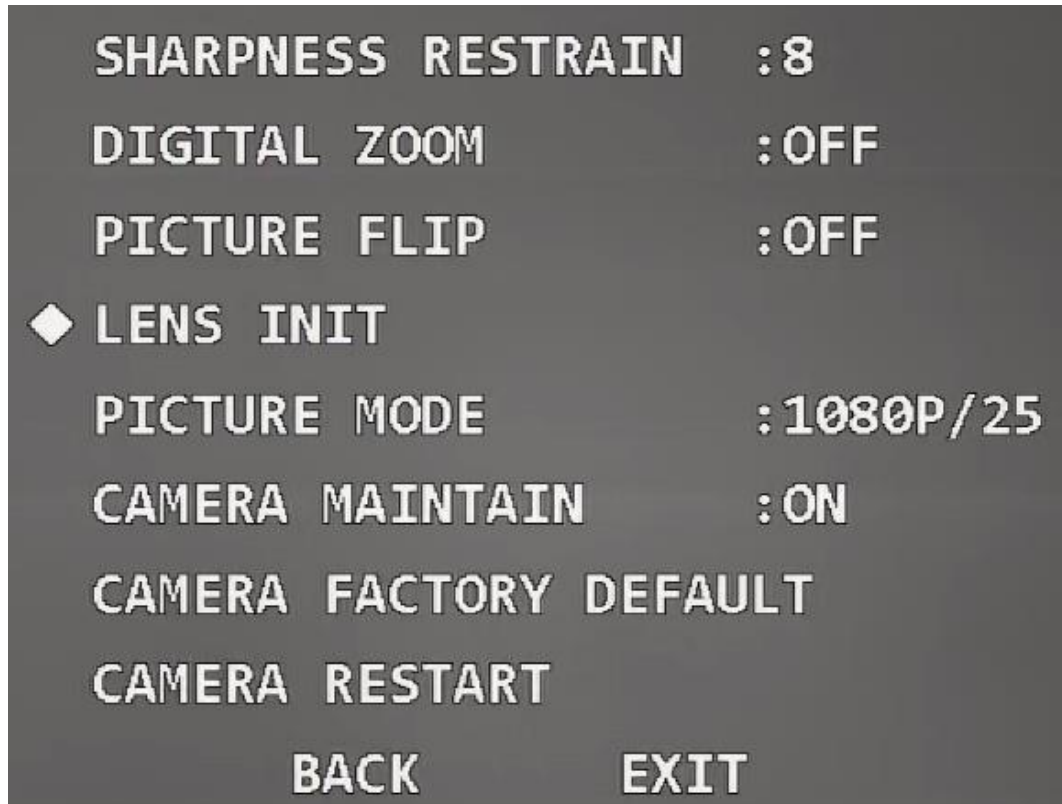
3.4.3.12 Lens Initialization

Move the cursor to **Lens Init**, and then click **Enter**. The lens will be initialized.



You can try the function when the focus is not accurate, or the image is blurry.

Figure 3-43 Lens initialization

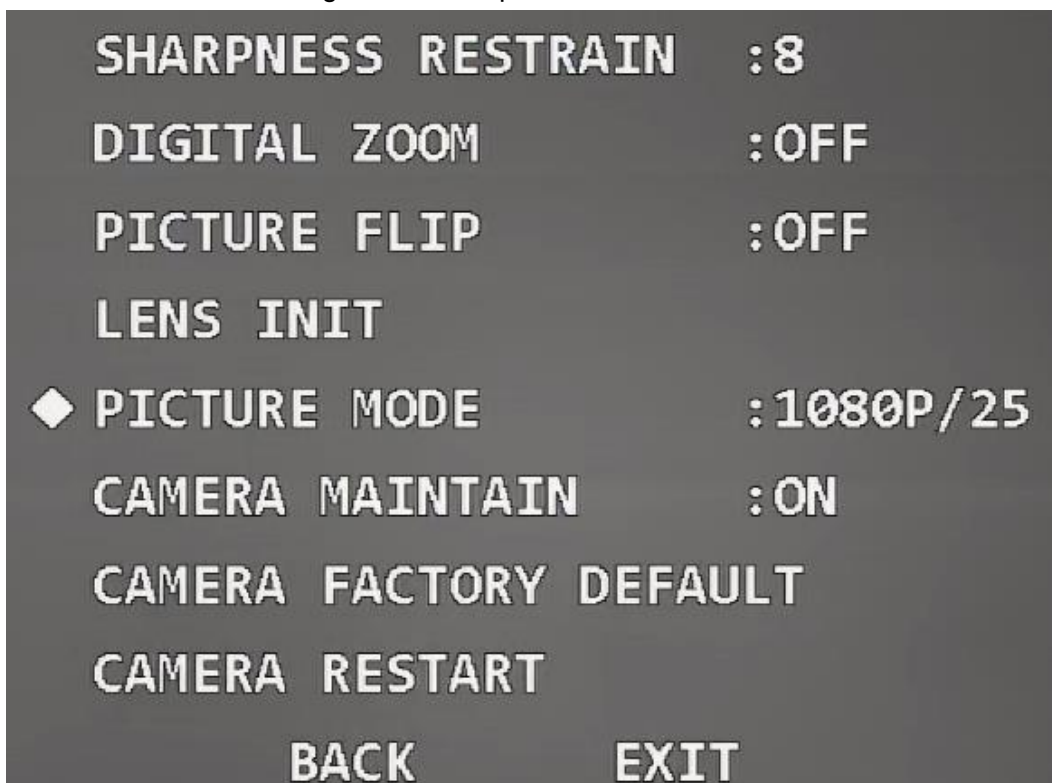


3.4.3.13 Setting Picture Mode

You can set the image output mode, which includes 1080P/30, 1080P/25, 720P/25, 720P/30, 720P/50, and 720P/60. The XVR needs to support corresponding image mode to collect images.

Step 1 Move the cursor to **Picture Mode**.

Figure 3-44 Set picture mode



Step 2 Click left and right buttons to select the picture mode which needs to be output.

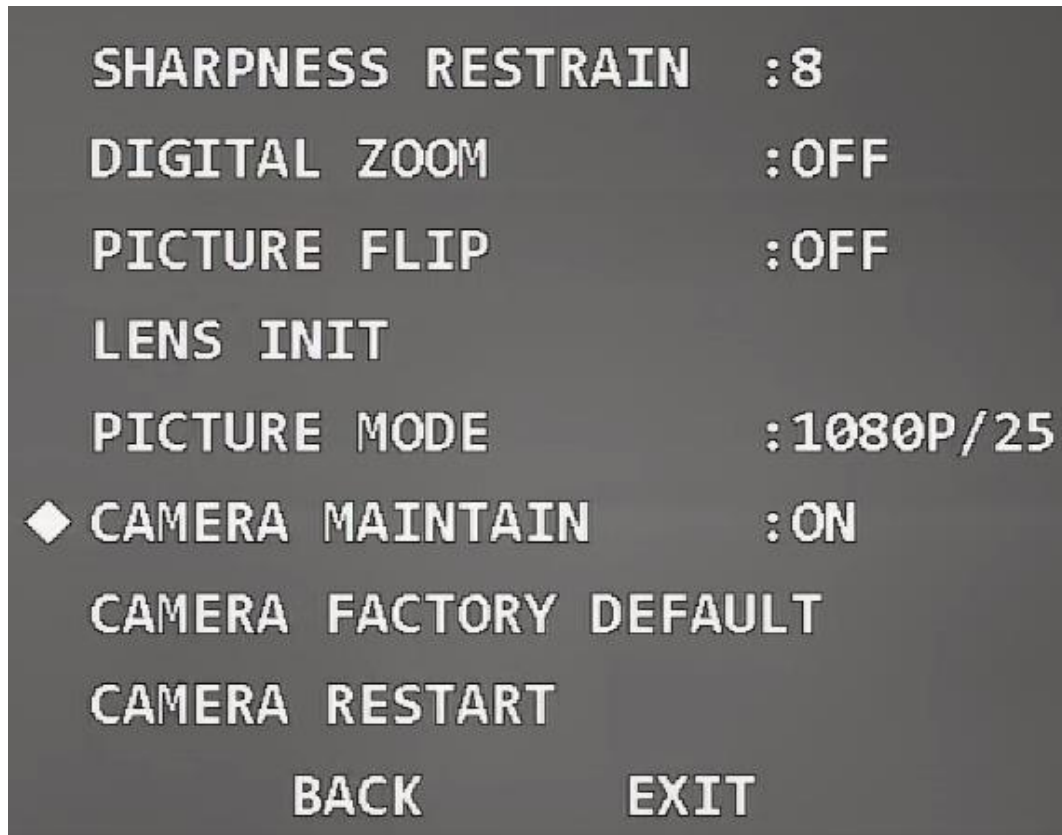
3.4.3.14 Setting Camera Maintenance

Move the cursor to **Camera Maintain**, and then click the left and right buttons to select **On** or **Off**.



If the function is enabled, the camera will restarts automatically after a period to perform maintenance.

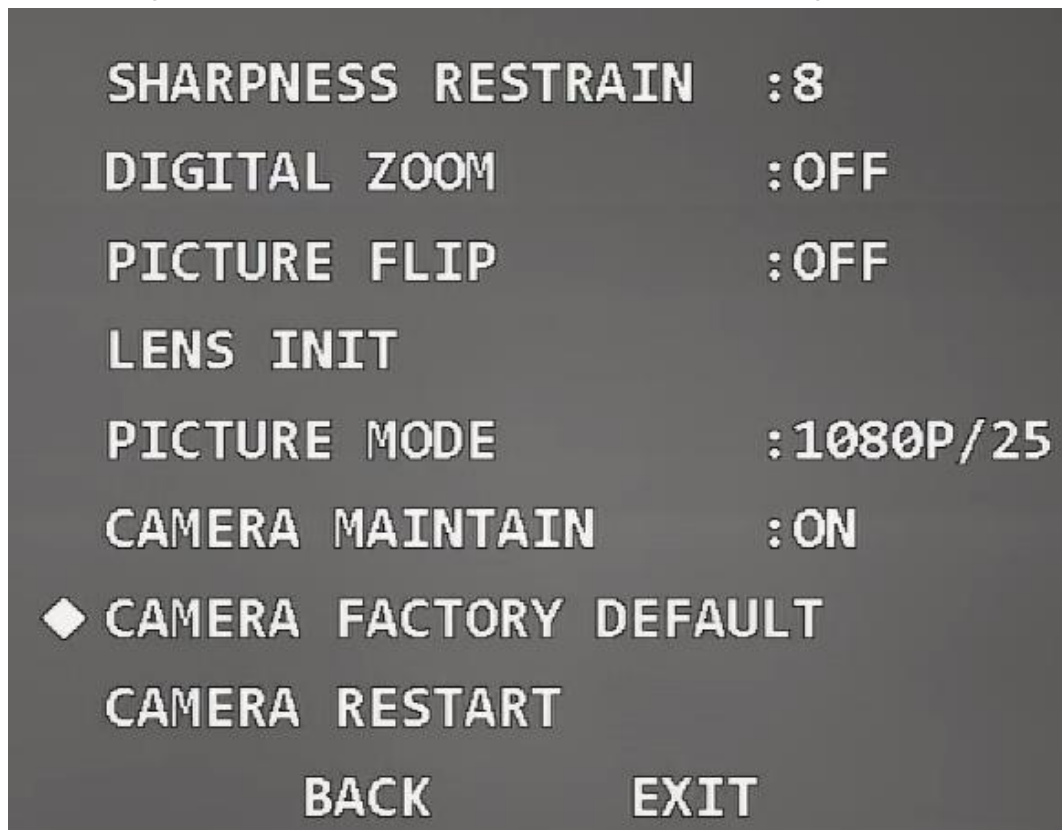
Figure 3-45 Set camera maintenance



3.4.3.15 Restoring the Camera to Factory Default Settings

If you perform the operation, all camera settings will be restored to factory default settings. Move the cursor to the **Camera Factory Default**, and then click **Enter**.

Figure 3-46 Restore the camera to factory default settings

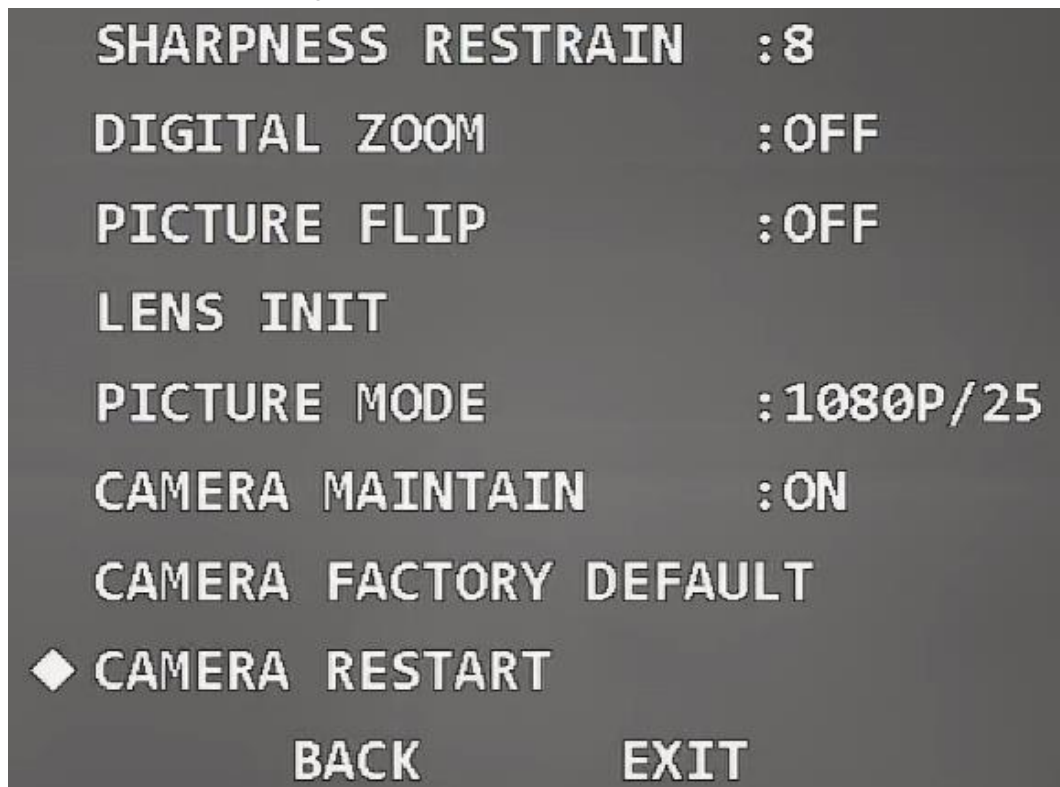


3.4.3.16 Restarting the Camera

With the function, you can restart the camera, and some functions come effect only after you restart the camera.

Move the cursor to the **Camera Restart**, and then click **Enter**.

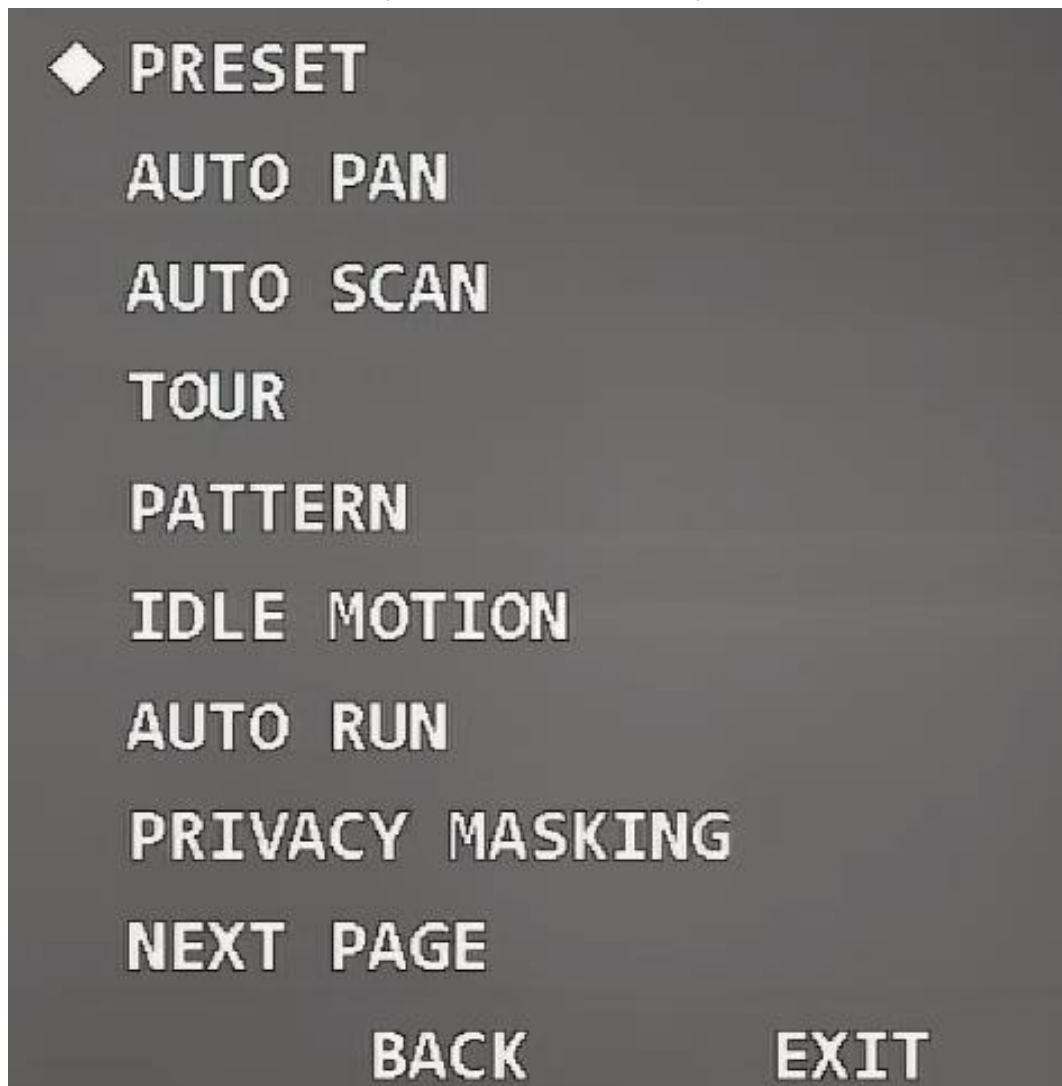
Figure 3-47 Restart the camera



3.4.4 Function Settings

Move the cursor to **Function Setting**, and then click **Enter** to enter the second-level menu.

Figure 3-48 Function settings

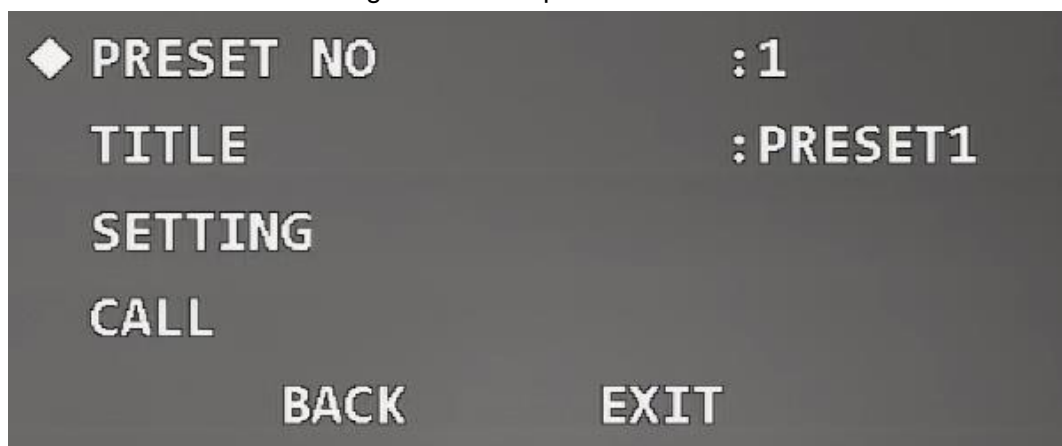


3.4.4.1 Setting Preset

Preset means a certain position that the Device can make quick orientation to. Users can adjust the camera to the position quickly through calling the preset.

Step 1 Move the cursor to **Presets**, and then click **Enter** to enter the third-level menu.

Figure 3-49 Set preset



Step 2 Click left and right buttons to set the preset No. and title.



The system automatically synchronizes the preset title according to the preset No. For example, if you set preset No. as 1, the title will be Preset1.

Step 3 Adjust the Device to the scene to be monitored.



You need to exit OSD menu, and then adjust the Device with PTZ control panel.

Step 4 Move the cursor to **Setting**, and then click **Enter**.

OK is displayed, and then disappears from the menu, which means the preset is set successfully.



- If you have set **Preset Title** as **On** in **Display Setting**, when you call the preset on the live interface, the preset title will be displayed on the image.
- If you need to modify the preset, you can simply modify the preset No, adjust the monitoring scene, and then click **Setting** to overwrite the original preset.

Step 5 Call the preset.

1. Move the cursor to **Preset No** to select the preset to be called.
2. Move the cursor to **Call**, and then click **Enter** to call the preset.



If using PELCO protocol, you can call specific presets for some functions.

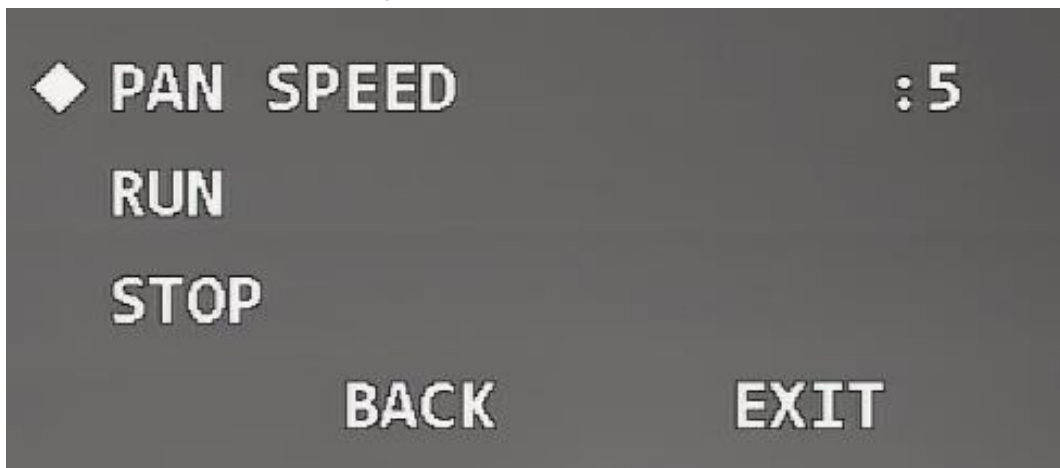
- **Call preset**
 - ◇ Call Preset 28 or Preset 95 to enter the OSD menu.
 - ◇ Call Preset 29 or Preset 99 to start scanning.
 - ◇ Call Preset 24 or Preset 81 to start patterning.
 - ◇ Call Preset 25 or Preset 82 to start tour.
 - ◇ Call Preset 30 or Preset 96 to stop scanning or tour.
 - ◇ Call Preset 31 or Preset 83 to start pan.
 - ◇ Call Preset 33 to enable 180° horizontal rotation.
 - ◇ Call Preset 34 to set device coordinate as 0.
- **Set preset**
 - ◇ Set Preset 26 or Preset 92 to set the left limit of scanning; set Preset 27 or Preset 93 to set the right limit of scanning.
 - ◇ Set Preset 22 or Preset 79 to start recording; set Preset 23 or Preset 80 to stop recording.

3.4.4.2 Setting Pan

Pan refers to continuous 360° horizontal rotation of the Device at a certain speed.

Step 1 Move the cursor to **Auto Pan**, and then click **Enter** to enter the third-level menu.

Figure 3-50 Set pan



Step 2 Click left and right buttons to set the pan speed.

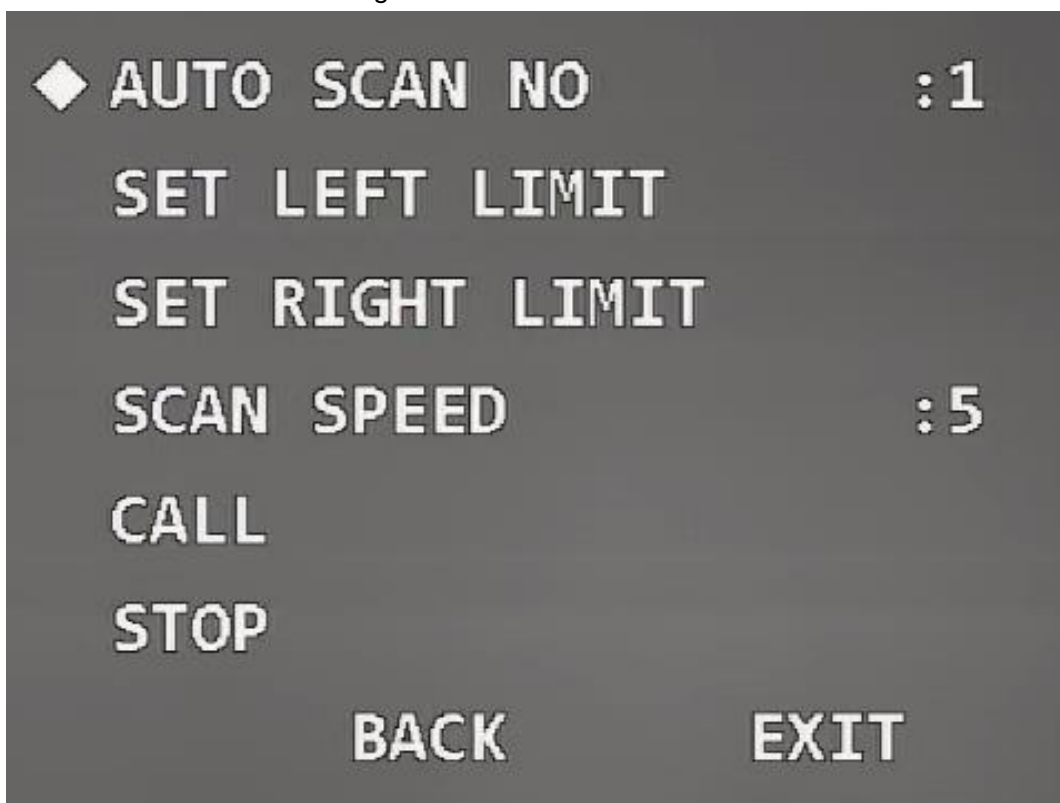
Step 3 Move the cursor to **Run**, and then click **Enter**. The Device starts pan. Move the cursor to **Stop**, and then click **Enter** to stop pan.

3.4.4.3 Setting Scan

Scan means the Device moves horizontally at a certain speed between the defined left and right limits.

Step 1 Move the cursor to **Auto Scan**, and then click **Enter** to enter the third-level menu.

Figure 3-51 Set scan



Step 2 Click left and right buttons to set the scan No.

Step 3 Go to the live interface, and then adjust the Device to the left limit of the required scan range.

Step 4 Move the cursor to **Set Left Limit**, and then click **Enter**. **OK** is displayed if the setting is successful.

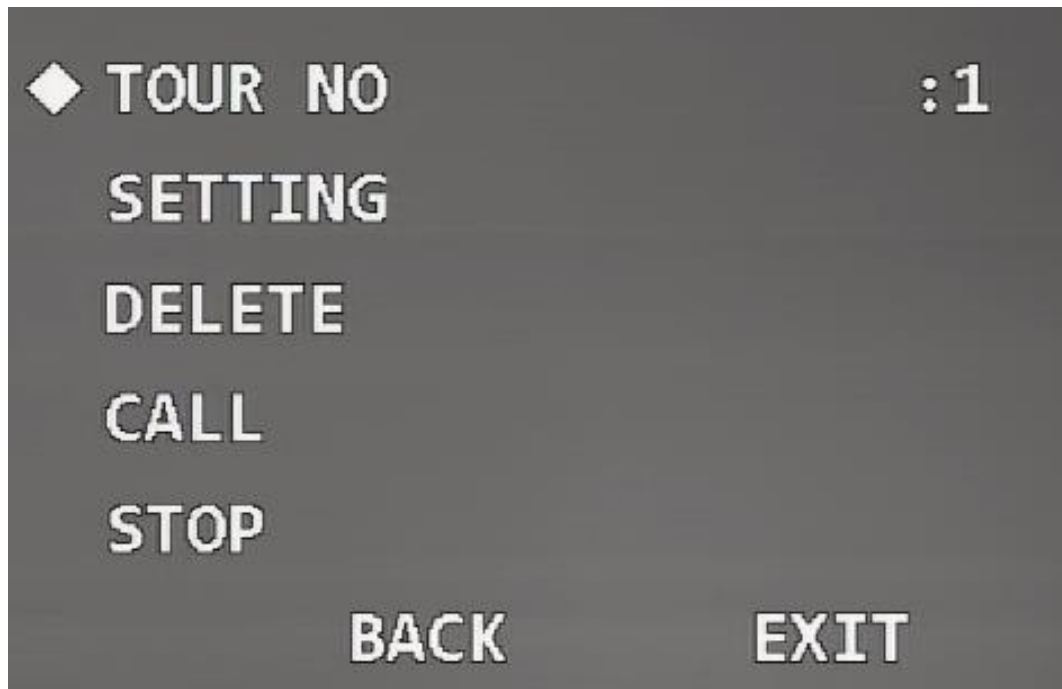
- Step 5 Go to the live interface, and then adjust the Device to the right limit of the required scan range.
- Step 6 Move the cursor to the **Set Right Limit**, and then click **Enter**. **OK** is displayed if the setting is successful.
- Step 7 Move the cursor to **Scan Speed**, and then click left and right buttons to select scan speed.
- Step 8 Call the scan.
 1. Move the cursor to **Auto Scan No**, and then select the scan number to be called.
 2. Move the cursor to **Call**, and then click **Enter**. The system calls the scan. Move the cursor to **Stop**, and then click **Enter**. The scan stops.

3.4.4.4 Setting Tour

You can add some presets to a tour in the required sequence, and then call the tour to make the Device automatically moves back and forth among these presets at specified time intervals in the defined sequence.

- Step 1 Move the cursor to **Tour**, and then click **Enter** to enter the third-level menu.

Figure 3-52 Set tour (1)



- Step 2 Click left and right buttons to set tour No.
- Step 3 Move the cursor to **Setting**, and then click **Enter** to enter the fourth-level menu.

Figure 3-53 Set tour (2)

NO	PRESET	DWELL	SPEED
◆ 01	000	015	012
02	000	015	012
03	000	015	012
04	000	015	012
05	000	015	012
06	000	015	012
07	000	015	012
08	000	015	012
	BACK	EXIT	

Step 4 Set the preset No, dwell time and speed, and then click **Enter** to exit the setting.

Step 5 Call the tour.

1. Move the cursor to **Tour No**, and then select the tour No to be called.
2. Move the cursor to **Call**, and then click **Enter**. The system calls the tour. Move the cursor to **Stop**, and then click **Enter**. The tour stops.



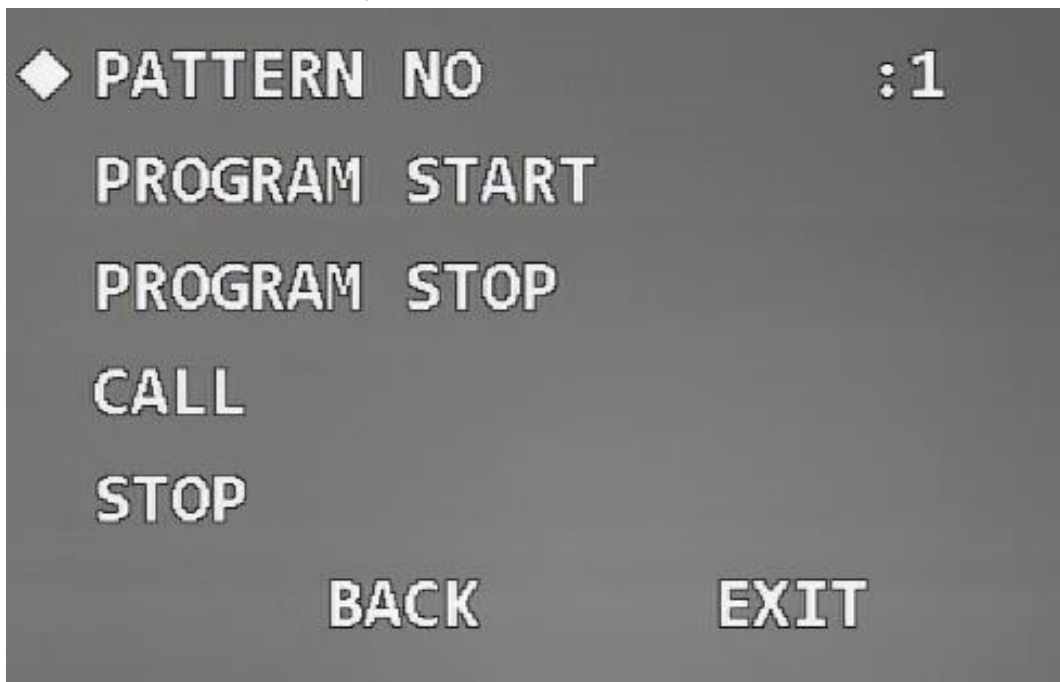
You can click **Delete** to delete the tour.

3.4.4.5 Setting Pattern

Pattern means a record of a set of operations that users make to the Device. The operations include horizontal and vertical movements, zoom and preset calling. Record and save the operations, and then you can call the pattern path directly.

Step 1 Move the cursor to **Pattern**, and then click **Enter** to enter the third-level menu.

Figure 3-54 Set pattern



Step 2 Click left and right buttons to set pattern No.

Step 3 Move the cursor to **Program Start**, and then click **Enter**. **OK** is displayed, and the system starts recording the pattern path.

Step 4 Operate the Device as needed, move the cursor to **Program Stop**, and then click **Enter**. **OK** is displayed if the setting is successful.



If the time interval between two operations is over 1 minute, the system takes it as 1 minute by default.

Step 5 Call the pattern.

1. Move the cursor to **Pattern No**, and then select the pattern No to be called.
2. Move the cursor to **Call**, and then click **Enter**. The system calls the pattern. Move the cursor to **Stop**, and then click **Enter**. The pattern stops.



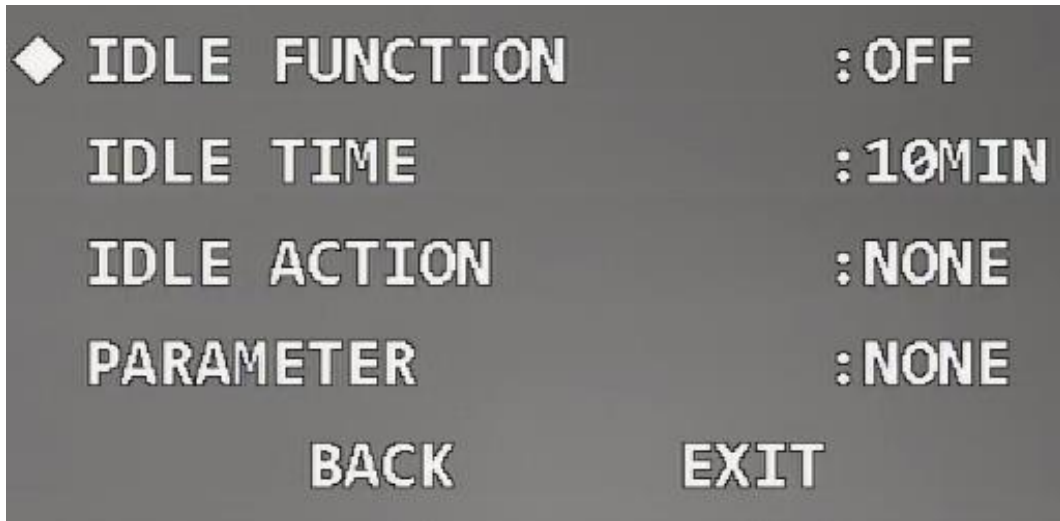
Any manual PTZ operations during the pattern will stop the pattern.

3.4.4.6 Setting Idle Motion

Idle motion refers to a defined operation when the Device does not receive any valid command within a certain period.

Step 1 Move the cursor to **Idle Motion**, and then click **Enter** to enter the third-level menu.

Figure 3-55 Set idle motion



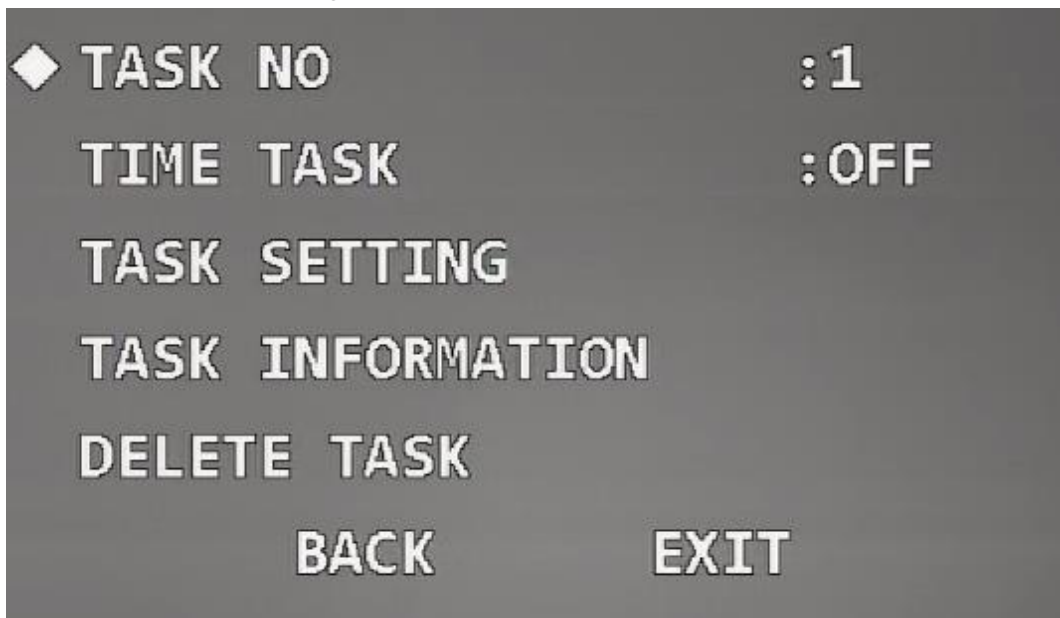
- Step 2 Move the cursor to **Idle Function**, and then click left and right buttons to set it as **On**.
- Step 3 Move the cursor to **Idle Time**, and then click left and right buttons to select the needed time.
- Step 4 Move the cursor to **Idle Action**, and click left and right buttons to select motion type from **None**, **Preset**, **Scan**, **Tour**, and **Pattern**.
- Step 5 Move the cursor to **Parameter**, and then click left and right buttons to select the number of the selected motion.

3.4.4.7 Setting Time Task

After setting time task, the Device performs the selected motions during the defined period.

- Step 1 Move the cursor to **Auto Run**, and then click **Enter** to enter the third-level menu.

Figure 3-56 Set time task (1)



- Step 2 Click left and right buttons to set task No.
- Step 3 Move the cursor to **Task Setting**, and then click **Enter** to enter the fourth-level menu.

Figure 3-57 Set time task (2)

```
◆ WEEK : ALLWEEK
START TIME : 00H 00M
END TIME : 00H 00M
RUN ACTION : SCAN
PARAMETER : 1
SAVE
BACK EXIT
```

Step 4 Click the direction buttons to set **Week**, **Start Time**, **End Time**, **Run Action**, and **Parameter**.

Step 5 Click **Save**.

After the setting is completed, **Time Task** status is changed to **On** automatically.



- Move the cursor to **Task Information**, and then click **Enter** to view the task that you have set.

Figure 3-58 Task information

NO	TIME	ACTION
1	ALL 03:00-00:00	SCA001

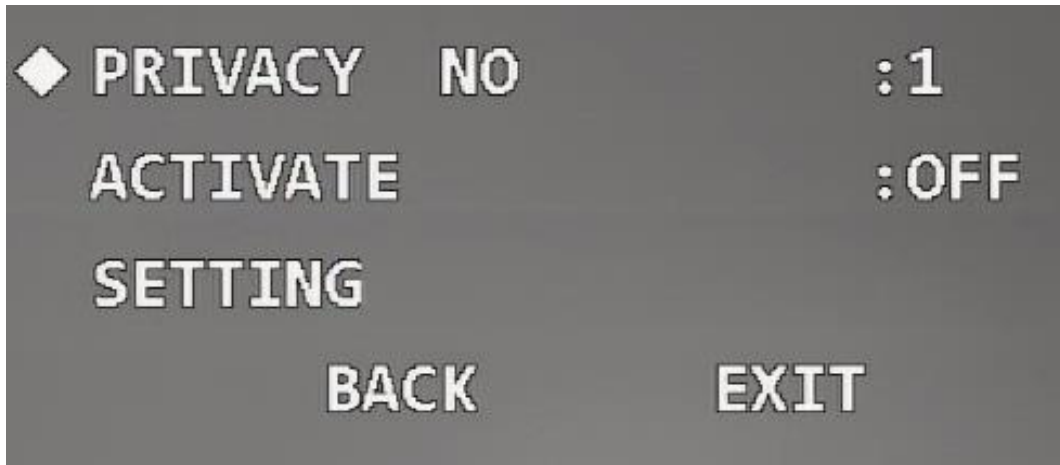
- Move the cursor to **Delete Task**, and then click **Enter** to delete the time task.

3.4.4.8 Setting Privacy Masking

With privacy masking function, you can set a certain masked area to protect the privacy in the monitoring area.

Step 1 Move the cursor to **Privacy Masking**, and then click **Enter** to enter the third-level menu.

Figure 3-59 Set privacy masking (1)



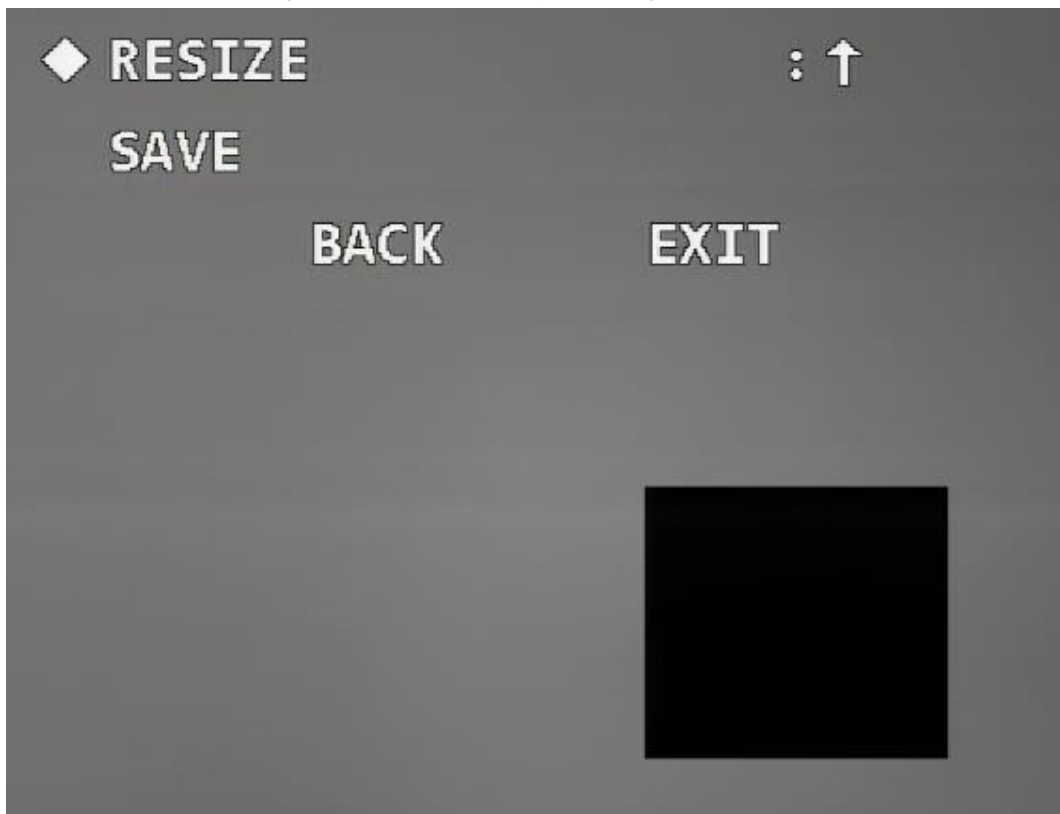
Step 2 Click left and right buttons to set the privacy No.



The number of privacy masks and setting requirements vary with the models, and the actual product shall prevail.

Step 3 Move the cursor to **Setting**, and then click **Enter** to enter the fourth-level menu. A privacy mask is displayed at the center of the screen.

Figure 3-60 Set privacy masking (2)



Step 4 Operate the PTZ control panel to move the monitoring screen until the center of the object to be masked match the center of the privacy mask.

Step 5 Set the size of the privacy mask.

1. Move the cursor to **Resize**, and then click left and right buttons to select the change mode of the privacy mask. ← means becoming narrower horizontally; → means becoming wider horizontally; ↑ means becoming higher vertically; ↓ means becoming shorter vertically.

2. Click **Enter** continuously to adjust the privacy mask to the needed size.



Make the privacy mask larger than the object to be masked; otherwise the object might be exposed during device movement.

Step 6 Click **Save** to exit the setting interface.

The status of **Activate** is changed to On automatically.



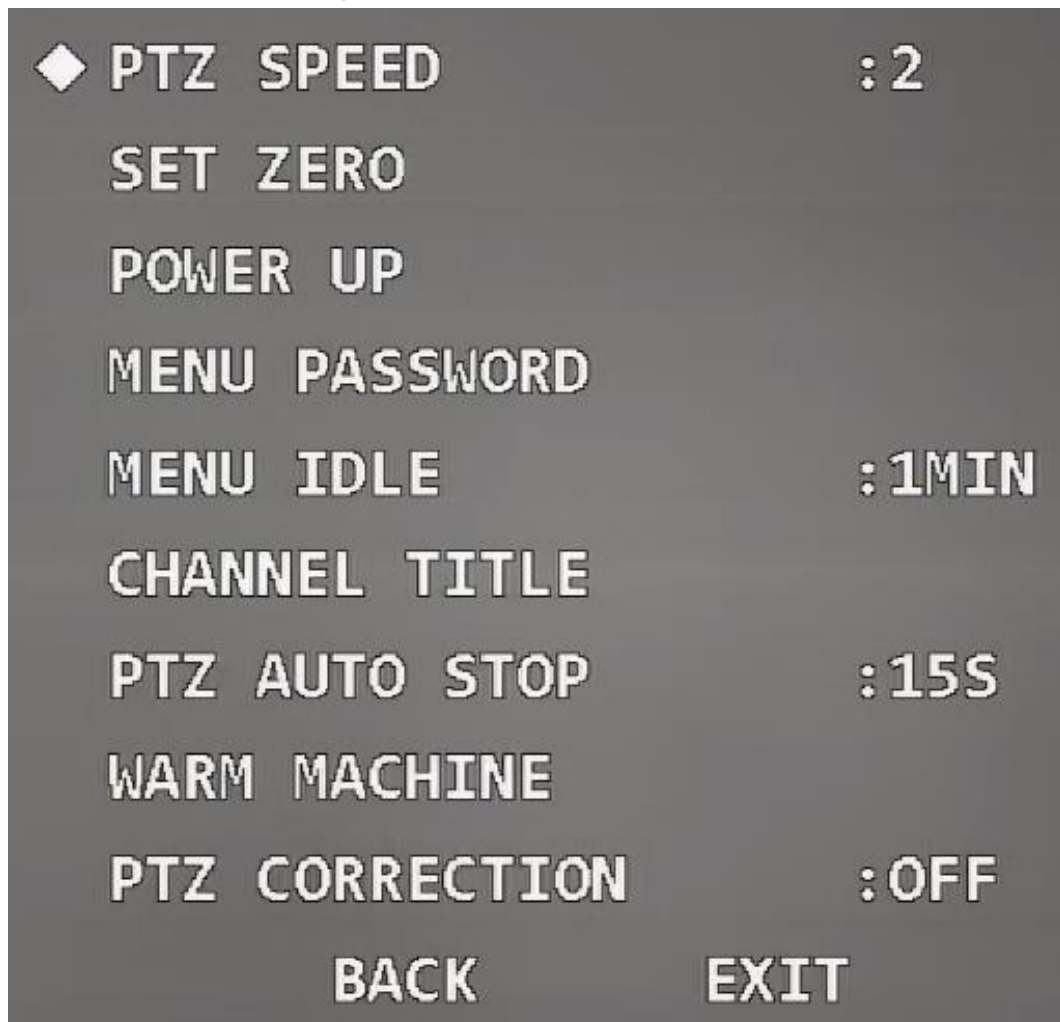
Move the cursor to **Privacy No**, click left and right buttons to select the privacy mask No, and then click **Enter**. The image will be switched to this masked area.

3.4.4.9 Setting PTZ Speed

You can adjust the manual control speed of the PTZ by setting PTZ speed.

Move the cursor to **PTZ Speed**, and then click left and right buttons to select PTZ speed from 1, 2, and 3.

Figure 3-61 Set PTZ speed



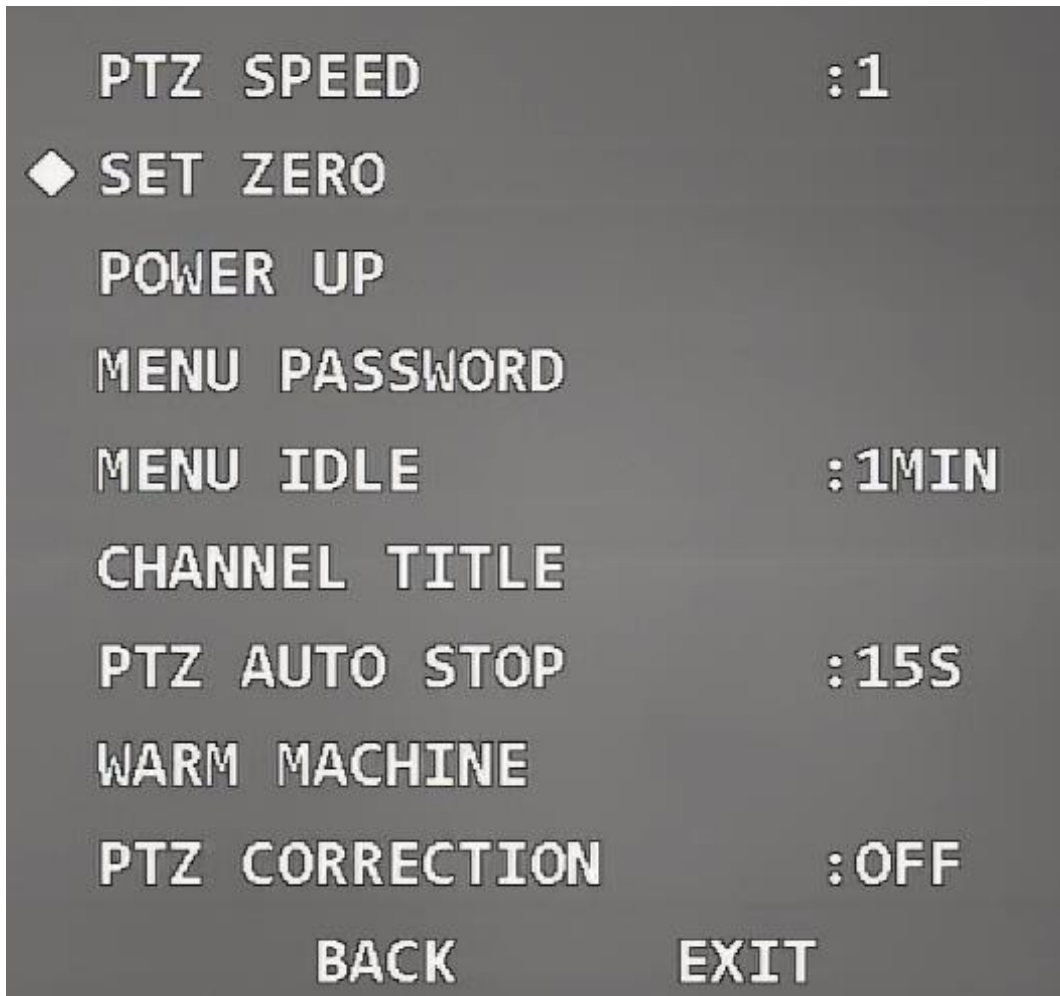
3.4.4.10 Setting Zero

Zero means the location where the Device stays after self-check. You can set the location as

needed.

Step 1 Move the cursor to **Set Zero**.

Figure 3-62 Set zero



Step 2 Adjust the Device to the location that you need to set as zero.

Step 3 Click **Enter**.

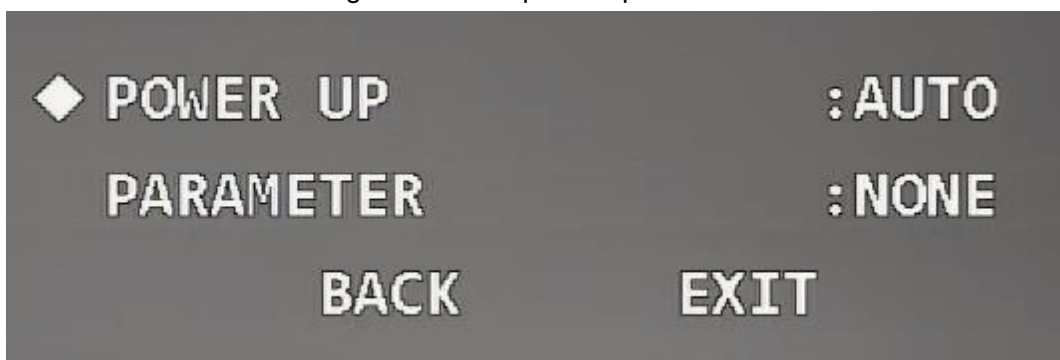
OK is displayed if the setting is successful.

3.4.4.11 Setting Power Up

Power up means the automatic operation of the Device after it is powered on.

Step 1 Move the cursor to **Power Up**, and then click **Enter** to enter the third-level menu.

Figure 3-63 Set power up



Step 2 Click left and right buttons to select the power up operation from **Auto**, **Preset**, **Scan**,

Tour, Pattern, and None.



If you select **Auto**, the last operation before you shut down the Device last time will be set as power up action.

Step 3 Move the cursor to **Parameter**, and then click left and right buttons to select the number of the corresponding operation.



To use the function, set preset, tour, scan or pattern in advance.

3.4.4.12 Setting Menu Password

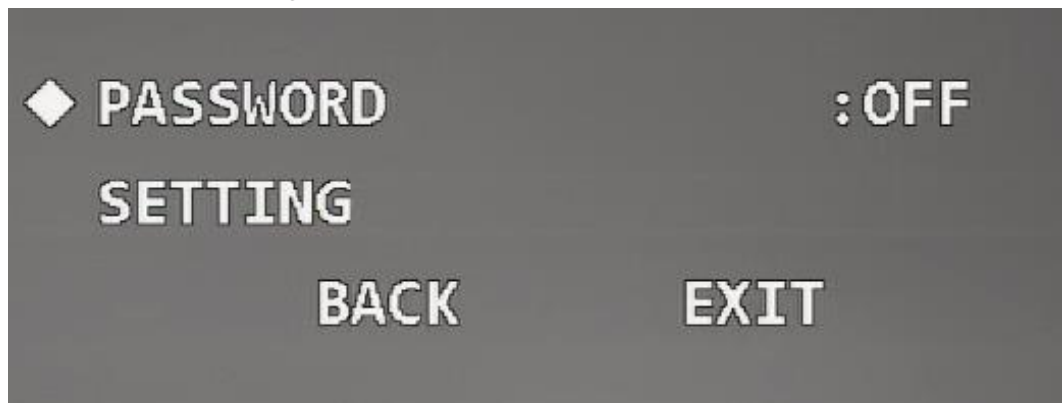
After setting the menu password, you need to enter the correct password to open the menu.



The menu will be locked after three wrong attempts. In this case, contact after-sales service.

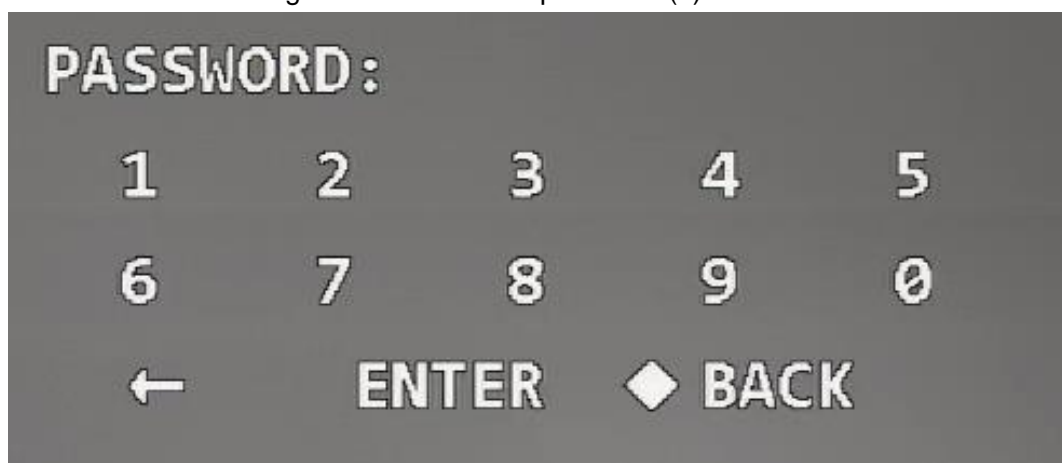
Step 1 Move the cursor to **Menu Password**, and click **Enter** to enter the third-level menu.

Figure 3-64 Set menu password (1)




Step 2 Move the cursor to **Setting**, and then click **Enter** to enter the fourth-level menu.

Figure 3-65 Set menu password (2)



Step 3 Move the cursor to a number, and then click **Enter** to set it as a password digit.



- Click  to delete the entered number.
- The password can be set as 8 digits at most.

Step 4 Click **Enter** to enter the password again.

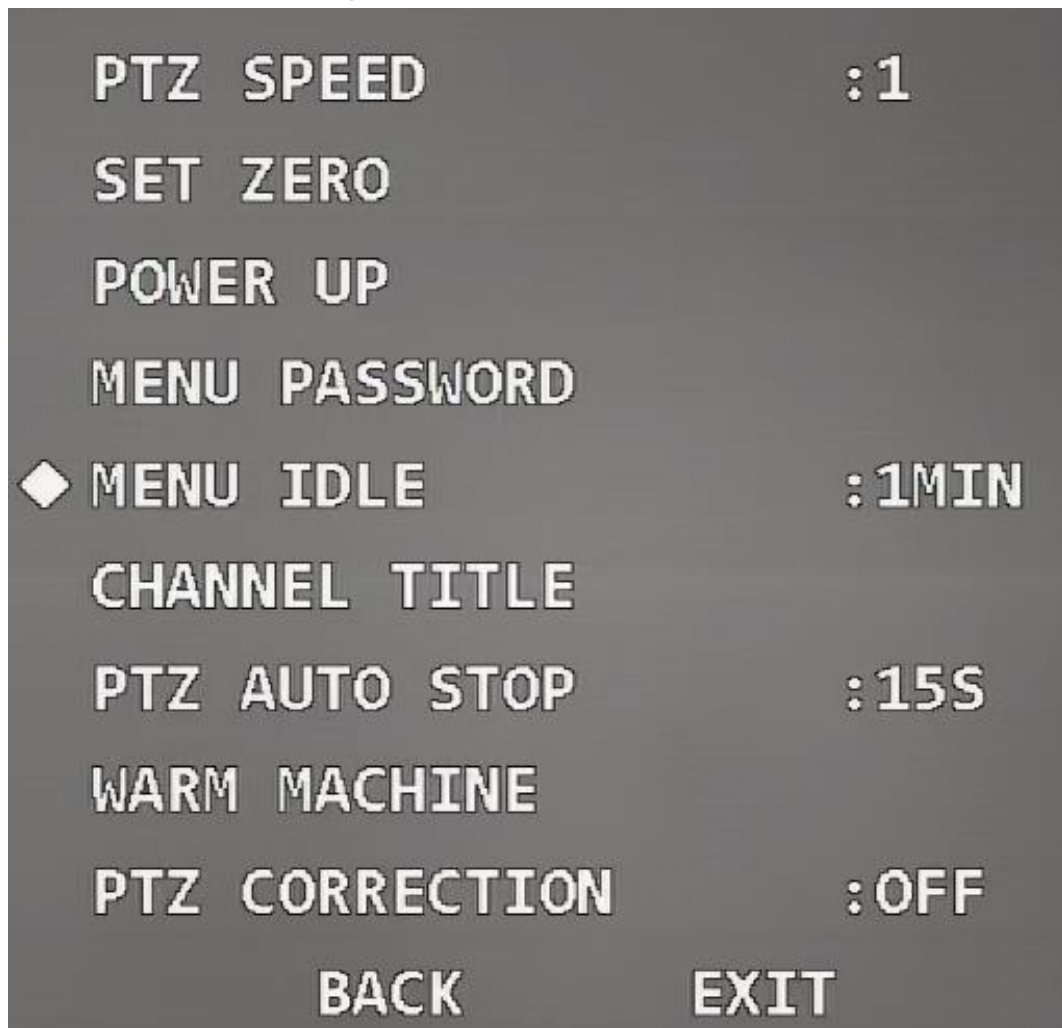
Step 5 Click **Enter** to exit the setting interface.
The password will be enabled automatically.

3.4.4.13 Setting Menu Idle

When the OSD menu is opened and the function is enabled, the menu disappears if there is no operation on the menu during the defined period.

Move the cursor to **Menu Idle**, and then click left and right buttons to select the idle time.

Figure 3-66 Set menu idle



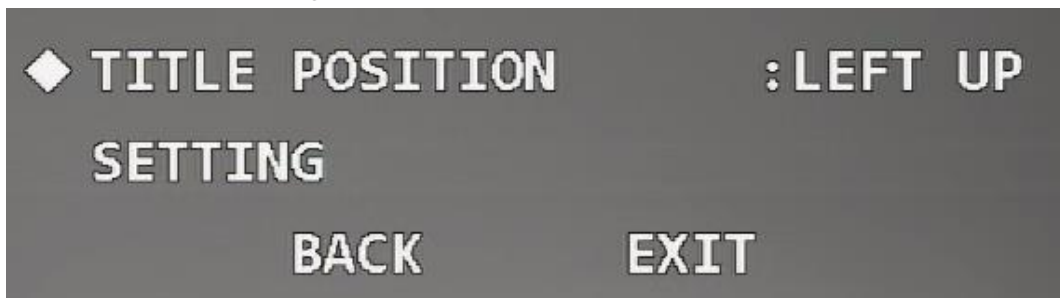
The menu idle time can be set as 5 minutes at most.

3.4.4.14 Setting Channel Title

You can set the channel title content and its location on the monitoring image.

Step 1 Move the cursor to **Channel Title**, and then click **Enter** to enter the third-level menu.

Figure 3-67 Set channel title (1)



Step 2 Click left and right buttons to set **Title Position** as **Right Up**, **Left Down**, **Right Down**, or **Left Up**.

Step 3 Move the cursor to **Setting**, and then click **Enter** to enter fourth-level menu.

Figure 3-68 Set channel title (2)



Step 4 Click up and down buttons to set channel title content, and then click **Enter** to move the cursor to the next digit.



The channel title consists of numbers (0–9), letters (A–Z), or their combination.

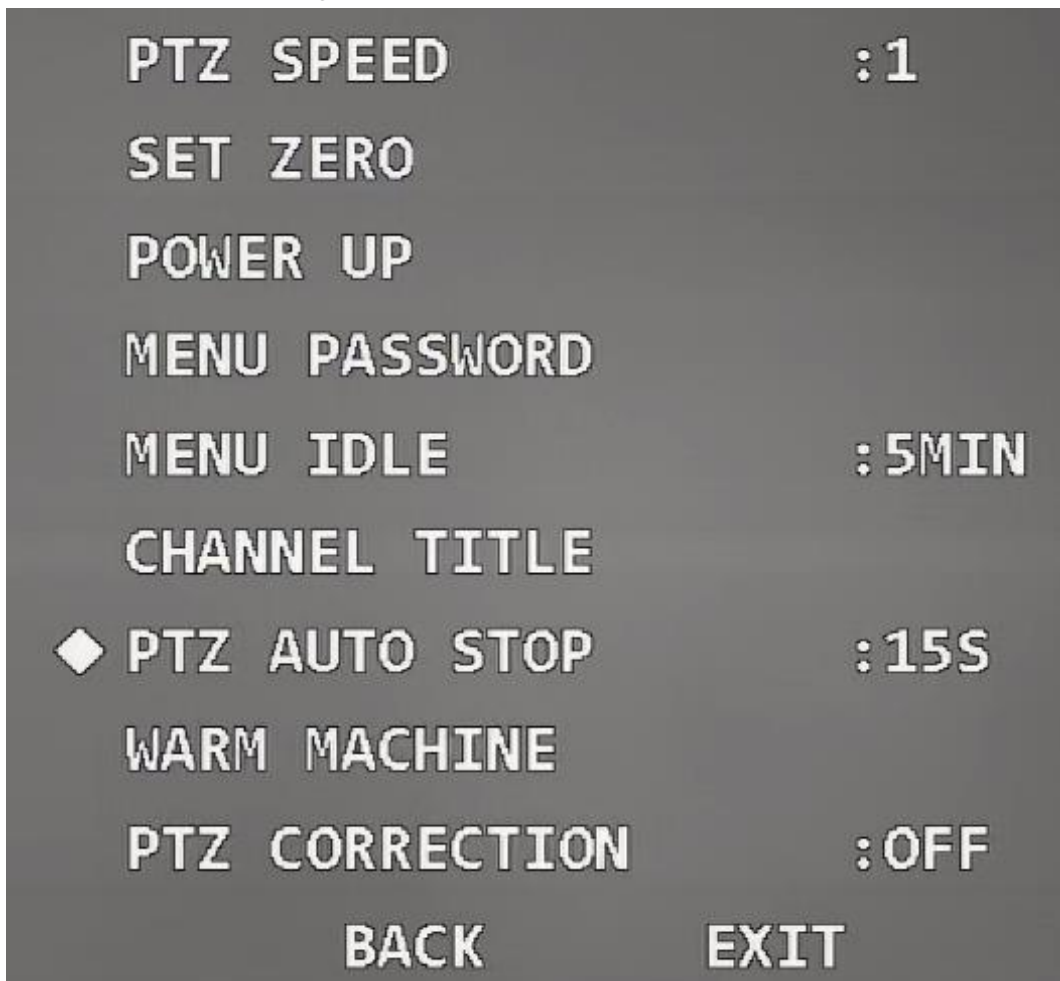
Step 5 Click **Enter**.

3.4.4.15 Setting PTZ Auto Stop

PTZ auto stop means that the Device will automatically stop PTZ operations if it does not receive any control commands within the define time period.

Step 1 Move the cursor to **PTZ Auto Stop**.

Figure 3-69 Set PTZ auto stop



Step 2 Click left and right buttons to select the time period. You can select **Off**, **5S**, **10S**, **15S**, **20S**, **25S**, or **30S**.

3.4.4.16 Setting Temperature Control

With the function, you can set the heater of Device.

Step 1 Move the cursor to **Warm Machine**, and then click **Enter** to enter the third-level menu.

Figure 3-70 Set temperature control



Step 2 Click left and right buttons to set **Warm Machine** as **Auto**, **On**, or **Off**.



Auto is selected by default.

Step 3 Move the cursor to **Open Temperature**, and then click left and right buttons to set the temperature value.

The heater is enabled automatically when the temperature is lower than the value.

Step 4 Move the cursor to **Close Temperature**, and then click left and right buttons to set the temperature value.

The heater is disabled automatically when the temperature is higher than the value.

3.4.4.17 Setting PTZ Correction

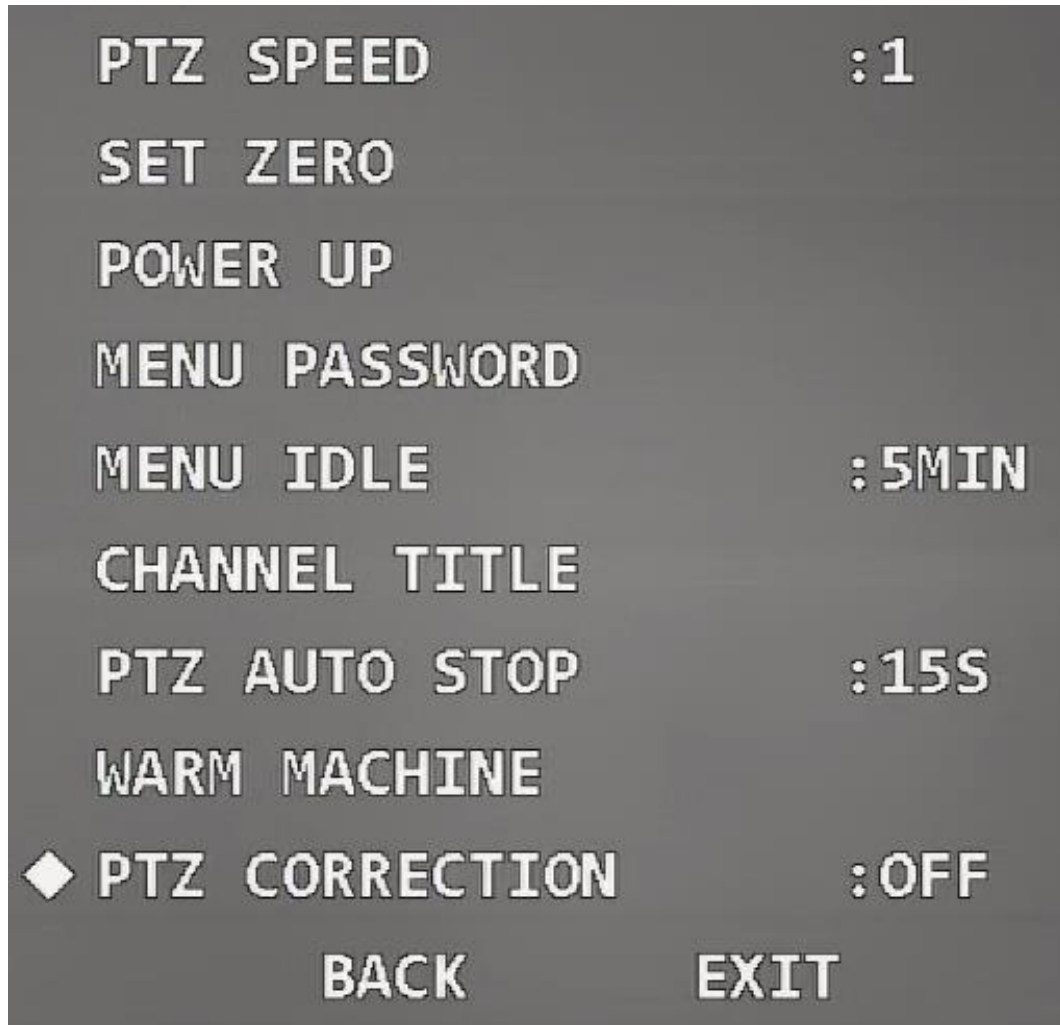
When the PTZ comes to its service life, or there is mechanical failure or artificial damage, the vertical optocoupler might be damaged. In this case, the vertical optocoupler location can be adjusted automatically with the function.

Move the cursor to **PTZ Correction**, and then click left and right buttons to select **On** or **Off**.



The function takes effect only after you restart the Device.

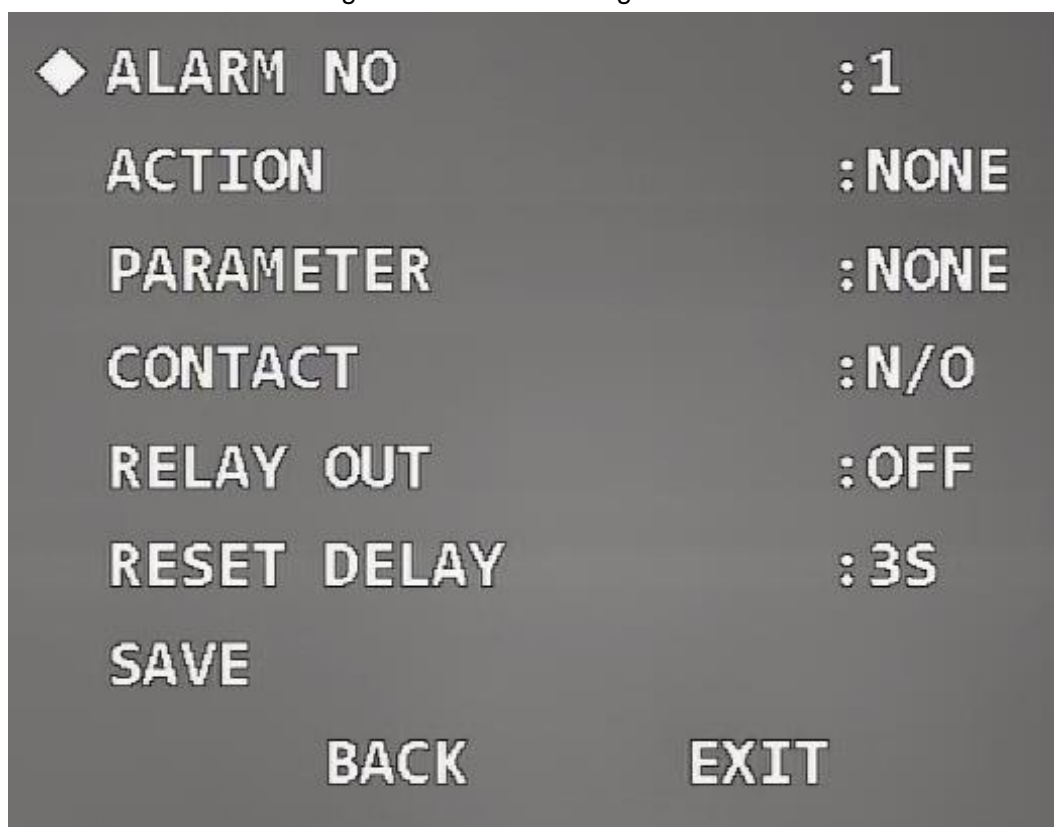
Figure 3-71 Set PTZ correction




3.4.5 Alarm Settings

Step 1 Move the cursor to **Alarm Setting**, and then click **Enter** to enter the second-level menu.

Figure 3-72 Alarm settings



- Step 2 Move the cursor to **Alarm No**, and then click left and right buttons to select the channel number of alarm input.
- Step 3 Move the cursor to **Action**, and then click left and right buttons to select linked actions from **Preset**, **Scan**, **Tour**, **Pattern**, and **None**.
- Step 4 Move the cursor to **Parameter**, and then click left and right buttons to select the number of the corresponding linked action.
- Step 5 Move the cursor to **Contact**, and then click left and right buttons to select the trigger mode of linked actions.
- **N/O**: Normally open. Alarms will not be triggered when the alarm input cable and grounding cable are disconnected, and alarms are triggered when the cables are connected.
 - **N/C**: Normally closed. Alarms will be triggered when the alarm input cable and grounding cable are disconnected. Alarms are not triggered when the cables are connected.
- Step 6 Move the cursor to **Relay Out**, and then click left and right buttons to select alarm output mode from **Off** and **1-5S**.
- 
- For **1-5S**, 1 means No. 1 alarm relay; 5S means that the relay automatically resets after the alarm signal disappears for 5 seconds.
- Step 7 Move the cursor to **Reset Delay**, and then click left and right buttons to select the time after which the PTZ returns to normal if alarm are triggered.
- Step 8 Move the cursor to **Save**, and then click **Enter**. **OK** is displayed if the setting is successful.

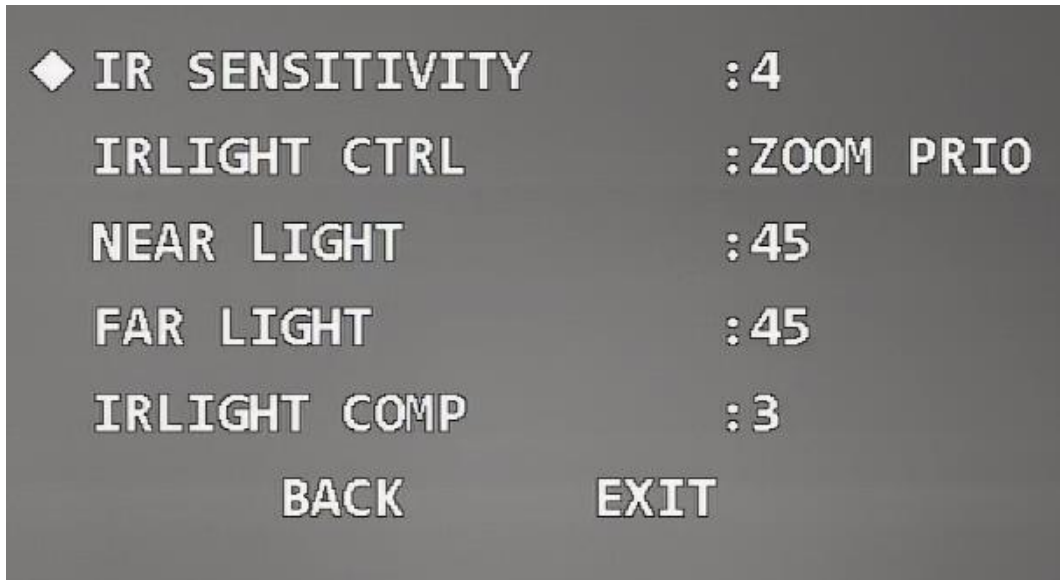
3.4.6 IR Light Settings



The function is available on select models, and the actual product shall prevail.

Step 1 Move the cursor to **IR Light Setting**, and then click **Enter** to enter the second-level menu.

Figure 3-73 IR light settings



Step 2 Move the cursor to **IR Sensitivity**, and then click left and right buttons to select IR light sensitivity.

Step 3 Move the cursor to **IR Light Ctrl** to select IR light control mode.

- Zoom priority mode
 1. Click left and right button to select **Zoom Prio**. The Device can automatically adjust IR light brightness according to the actual zoom rate.
 2. Move the cursor to **IR Light Comp**, and then click left and right buttons to set the IR light compensation value.
- Manual mode
 1. Click left and right buttons to select **Manual**.
 2. Move the cursor to **Near Light**, and then click left and right buttons to set the brightness value of near light.
 3. Move the cursor to **Far Light**, and then click left and right buttons to set the brightness value of far light.

4 Maintenance

4.1 Regular Cleaning

To ensure clear image, you need to clean the lens glass regularly.

- Handle the Device with care. Hold the dome with your hands, and avoid touching the glass surface with your fingers.
- Rinse the glass surface with clean water.
- Use mild detergent if there is too much dust.

4.2 Troubleshooting

Table 4-1 Troubleshooting

Issue	Possible Reason	Solution
No self-test and no image after the Device is powered on.	Red LED light on the power board is off. <ul style="list-style-type: none"> • The power supply is not connected to the power board or the connection is in bad contact. • Mains electricity failure or transformer problem. 	<ul style="list-style-type: none"> • Check whether the power supply is properly connected. • Check whether the mains electricity and transformer are working normally.
	Red LED light on the power board is on. <ul style="list-style-type: none"> • Output voltage of the transformer is too low. • Power board failure. 	<ul style="list-style-type: none"> • Use the multimeter to measure the load voltage of the Device. If the voltage is lower than the supply voltage, it is beyond the operating voltage range of the Device. • Contact the retailer to replace power board.
Self-test can not be performed, or there is noise.	Insufficient power.	Use the required power supply.
	Mechanical failure.	Contact the retailer for an overhaul.
Video signal loss occurs when the Device is in high-speed rotation.	Insufficient power	Use the required power supply.
Image is not stable.	Poor contact of circuit.	Connect the cable properly.
Blurry image.	Focus is in manual mode.	Operate the Device

Issue	Possible Reason	Solution
	Lens glass is dirty.	Clean the lens glass.