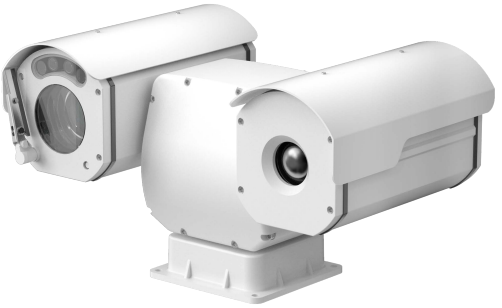
Bi-spectrum Mini PTZ Network Camera

User Manual



Issue	**V1.0**
Date	**2026-02-10**

Precautions

Precautions

Fully understand this document before using this device, and strictly observe the rules in this document when using this device. If you install this device in public places, provide the tip "You have entered the area of electronic surveillance" in an eye-catching place. Failure to correctly use electrical products may cause fire and severe injuries. To prevent accidents, carefully read the following context:

Symbols

This document may contain the following symbols whose meanings are described accordingly.

Symbol	Description
DANGER	It alerts you to fatal dangers which, if not avoided, may cause deaths or severe injuries.
WARNING	It alerts you to moderate dangers which, if not avoided, may cause minor or moderate injuries.
CAUTION	It alerts you to risks. Neglect of these risks may cause device damage, data loss, device performance deterioration, or unpredictable results.
TIP	It provides a tip that may help you resolve problems or save time.
NOTE	It provides additional information.

DANGER

To prevent electric shocks or other dangers, keep power plugs dry and clean.

WARNING

Strictly observe installation requirements when installing the device. The manufacturer shall not be held responsible for device damage caused by users' non-conformance to these requirements.

Strictly conform to local electrical safety standards and use power adapters that are marked with the LPS standard when installing and using this device. Otherwise, this device may be damaged.

Use accessories delivered with this device. The voltage must meet the input voltage requirements for this device.

If this device is installed in places with unsteady voltage, ground this device to discharge high energy, such as electrical surges, to prevent the power supply from burning out.

When this device is in use, ensure that no water or any liquid flows into the device. If water or liquid unexpectedly flows into the device, immediately power off the device and disconnect all cables (such as power cables and network cables) from this device.

Do not expose the thermal imaging camera or unpacked product to extremely strong radiation sources, such as the sun, laser, or arc welding machine, regardless of whether the device is being electrified or not; do not put the camera close to high thermal objects such as the sunlight; otherwise, the precision of the camera may be affected and even the detector inside the camera may suffer permanent damage.

If this device is installed in places where thunder and lightning frequently occur, ground the device nearby to discharge high energy, such as thunder strikes to prevent device damage.

CAUTION

Unless otherwise specified, do not use the camera in a temperature lower than -20 °C (-4 °F) or higher than +60 °C (+140 °F). Too-high or too-low temperature may cause image display anomaly of the camera, and the camera will be damaged if it is working under such conditions for a long time.

If the camera is installed outdoors, avoid direct sunlight at dawn and dusk on the camera lens and install a sunshield with frontal and rear positions adjusted according to the sunlight angle.

Avoid heavy loads, intensive shakes, and soaking to prevent damage during transportation and storage. The warranty does not cover any damage that is caused during secondary packaging and transportation after the original packaging is taken apart.

Protect this device from falls and intense strikes, keep the device away from magnetic field interference, and do not install the device in places with shaking surfaces or under shocks.

Clean the device with a soft dry cloth. For stubborn dirt, dip the cloth into a slightly neutral cleanser, gently wipe the dirt with the cloth, and then dry the device.

Since the camera lens is painted with a durable coating material, it adapts to the outdoor environment. The lens must be cleaned regularly. If the image quality is reduced or excessive dirt is deposited on the lens, clean the lens on time. In sandy (in desert) or corrosive (on sea) environments, use the camera with caution; improper use may cause the coating to peel off.

Do not jam the ventilation opening. Follow the installation instructions provided in this document when installing the device.

Keep the device away from heat sources such as radiators, electric heaters, or other heat equipment.

Keep the device away from moist, dusty, extremely hot, or cold places, or places with strong electric radiation.

If the device is installed outdoors, take insect- and moisture-proof measures to avoid circuit board corrosion that can affect monitoring.

Remove the power plug if the device is idle for a long time.

Before unpacking, check whether the fragile sticker is damaged. If the fragile sticker is damaged, contact customer services or sales personnel. The manufacturer shall not be held responsible for any artificial damage to the fragile sticker.

Special Announcement

All complete products sold by the manufacturer are delivered along with nameplates, operation instructions, and accessories after strict inspection. The manufacturer shall not be held responsible for counterfeit products.

This manual may contain misprints, technology information that is not accurate enough, or product function and operation descriptions that are slightly inconsistent with the actual product. The manufacturer will update this manual according to product function enhancement or changes, and regularly update the software and hardware described in this manual. Updated information will be added to new versions of this manual without prior notice.

This manual is only for reference and does not ensure that the information is consistent with the actual product. For consistency, see the actual product.

Contents

1 Overview

1.1 Principle of Thermal Imaging and Advantages

Any object with a temperature higher than absolute zero (-273.15° F) will emit infrared (IR) rays, even though it does not emit light. The IR ray is also called thermal radiation. IR rays emitted by objects with different temperatures can be absorbed by the detector to reflect temperature change and thus generate an electric effect. The electric signal is amplified and processed to produce a thermal image that corresponds to the thermal distribution of the object's surface. This is the process of thermal imaging.

Adapt to any environment.

Traditional cameras rely on natural or environmental light to shoot images, but this IR thermal imaging camera relies on the IR energy radiated by an object itself to form an image, not requiring any light. The IR thermal imaging camera applies to any environment and is not affected by light strength. It can detect and identify any camouflage and concealed objects both in daytime and nighttime, implementing round-the-clock monitoring.

Monitor the temperature field with object energy distributed.

The IR thermal imaging camera can show the temperature field of an object, converting the invisible surface temperature distribution situation to a visible thermal image that reflects the surface temperature distribution situation of the object. By this monitoring, users can discover temperature anomalies in time and take precautionary measures to avoid any risk that may be caused by the anomaly, for example, a fire.

Boast cloud penetration capability

Visible light and near IR rays will be absorbed by the air, cloud, and smoke, but they are transparent to IR rays of the 3~5 μm Medium Wavelength Infrared (MWIR) region and 8~14 μm Long Wavelength Infrared (LWIR) region.

Traditional cameras cannot shoot clear images in cloudy environments, but the IR thermal imaging camera can penetrate the cloud and smoke to shoot clear images.

1.2 Product Introduction

Bi-spectral Mini PTZ Network Camera, the whole machine shell and the base are all made of high-strength aluminum alloy material with comprehensive functions and high stability. Can adapt to a variety of bad environments, a heavy load can reach more than 50 kg, and run smoothly. This series has 360° continuous rotation, automatic scanning, automatic cruise, and other functions, suitable for large areas of monitoring, can be widely used in airports, stations, urban roads, traffic survey and monitoring, forest fire prevention, the high and heavy equipment rotary control, and other important areas.

1.2.1 Function

To support a variety of scanning methods, such as cruise scan, pattern scanning, etc.

It supports the function of power-off memory and automatically returns to the monitoring scene before powering off.

Support network signal and analog signal double output, cloud platform control classification operation.

The double helix structure of the worm gear and worm drive, the electronic image stabilization, the mechanical locking design, and the power self-locking function.

Horizontal continuous rotation 360°, vertically +90° ~- 90° rotating, horizontal velocity is 0.01°~30 °/S, vertical speed of 0.01° ~ 10°/S.

Support proportion variable times function, rotation speed adjusted automatically according to the lens change multiple times.

Support watch features preset point/figure/cruise can stay idle scan specified Automatic call after time (including the idle state entered after power).

1.3 Product Features

Outdoor intelligent variable speed PTZ, the fuselage selection of high-strength aluminum alloy material, and exterior design can resist strong winds, ensure smooth operation, and high precision.

Products using a high-precision stepper motor and precision worm gear drive combination, the power can be self-locking.

Support a variety of lens preset functions, and zoom adaptive functions, the rotation speed can be automatically adjusted according to the lens zoom factor.

Powerful, with preset, cruise, line sweep, keep watch, and other functions.

Visual pitch angle range, monitoring a wide range of horizontal speeds up to 10°/ s.

The equipment has an automatic heating system, which automatically starts the heating function, to ensure that products can be applied to cold areas.

The network transmission signal can reach 100 Mbps.

The device supports the RS485 / RS422 communication interface, you can remotely upgrade the device program, easy to maintain.

Power failure memory function, accidental power after re-power, the memory of the last running state, can be restored to the power before the running state.

1.4 Description of PTZ cable

The cables are shown in Figure 1-1, and the description is shown in Table 1-1.

Figure 1-1 Aviation power supply and network cable of twenty-six cores

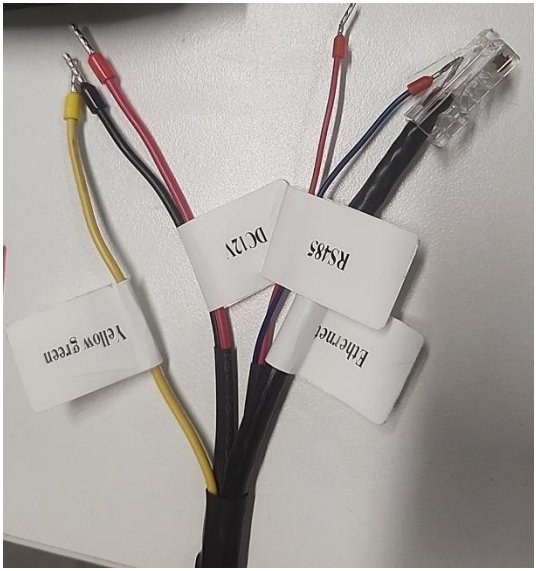


Table 1-1 Description of twenty-six cores

SN	Name	Core	Function	Description
1	Power supply	Red	DC12V +	-
		black	DC12V -	-
2	The network interface	-	Interwork interface	Connect to a standard Ethernet cable.
3	SGND	Yellow & green	Signal Ground	-
4	RS485 port	Transparent	RS485A	-
		Grey	RS485B	-

NOTE

To prevent lightning strikes, the grounding wire (yellow-green wire) in the cable outlet base must be grounded reliably, and the grounding resistance should be <4Ω.

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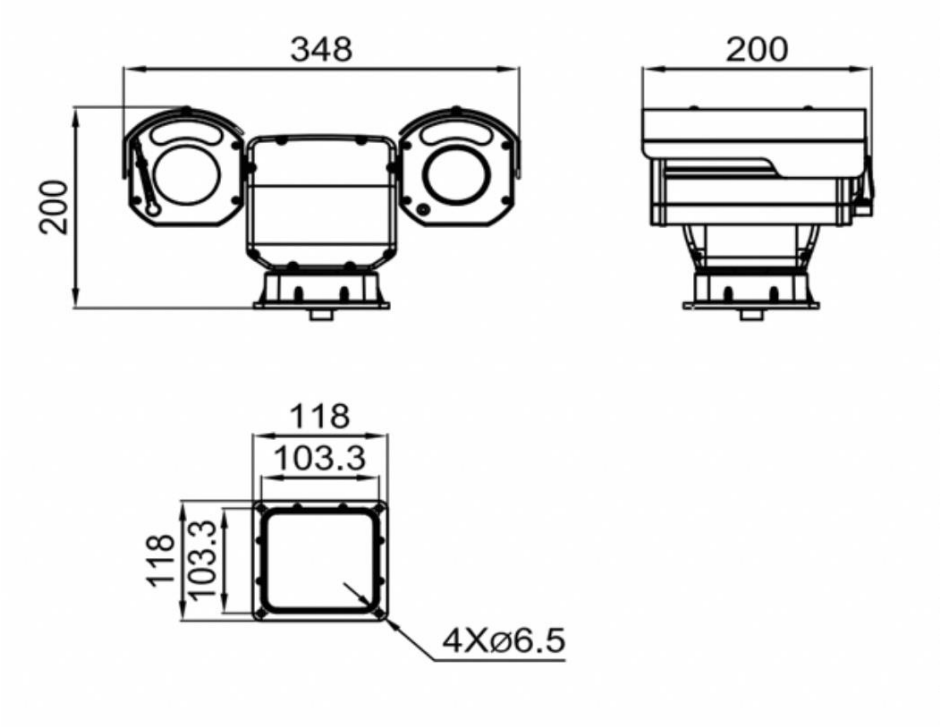
1.5 Device Dimensions

Figure 1-2 shows the dimensions of the Bi-spectral Mini PTZ Network Camera.

Figure 1-2 Dimensions (unit: mm)

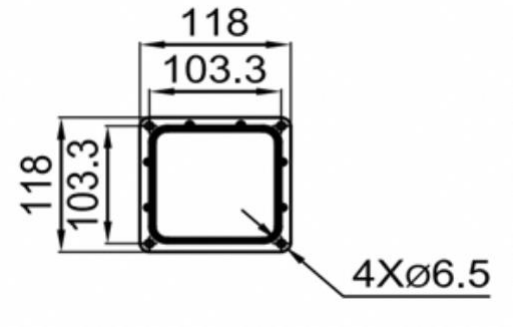


1.6 Device Installation

1.6.1 Installation Method

A Bi-spectral Mini PTZ Network Camera can be installed on the camera base. Figure 1-3 shows the base dimensions of the PTZ camera.

Figure 1-3 Base dimensions of PTZ camera (unit: mm)



1.6.2 Installation of Basic Requirements

At the installation site and environment to meet the technical parameters mentioned in the requirements, the installation staff should have fully read and understood the contents of this manual, with the appropriate system installation qualification and maintenance work qualification certificate.

1.6.3 Basic Installation Tool

Commonly used engineering wiring and equipment installation tools. Please install the equipment before the preparation is complete.

Table 1-1 shows the installation tools list.

Table 1-1 Installation tools

Name	Quantity	Remarks
13mm wrench	1	For mounting fixtures and mounting brackets
14mm sleeve	1	
Cross screwdriver(big)	1	For common construction
Cross screwdriver(small)	1	Used to disassemble the DIP cover to adjust the device communication parameters

Name	Quantity	Remarks
Inside the hex wrench	1 set	Used for the disassembly of the pan/tilt pallet and shield connection
Word screwdriver (small)	1	to secure the wiring harness connection terminals
Wire strippers	1	Stripping

1.6.4 Installation Space and Installation Strength

Under normal circumstances, this device needs to be equipped with a protective cover or other overhead items. Please confirm that the installation location can accommodate this product and the equipment and installation of the structure of the space. To confirm the installation of the wall, the carrying capacity of the bracket can reach 4 times the safety of the entire equipment weight.

----End

2 Device Login

When users access the Camera web UI for the first time, they must set a new password for the default admin account. If necessary, they can also adjust the password policy for all users of the Camera web UI at this point.

2.1 Login and Logout

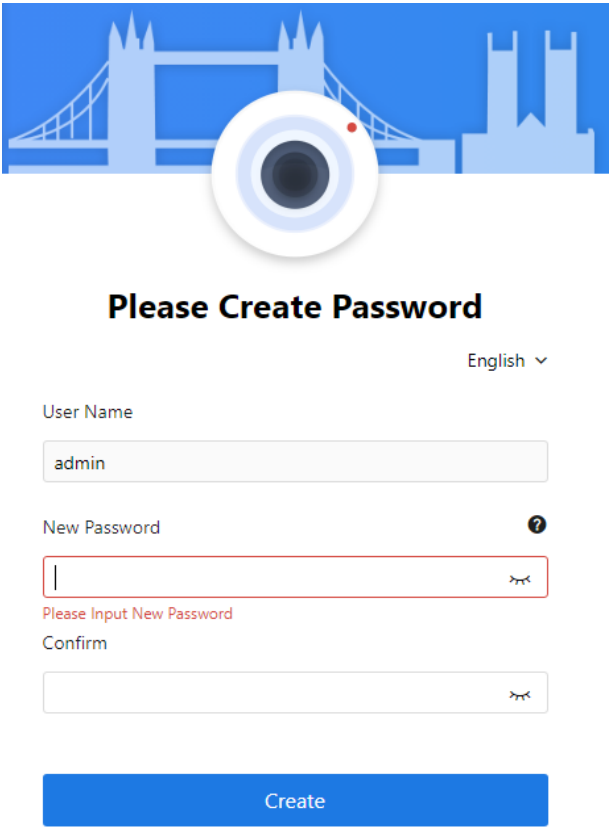
CAUTION

To access the web interface through Microsoft Edge, Chrome, or Firefox browser; Otherwise, some functions may be unavailable.

Login

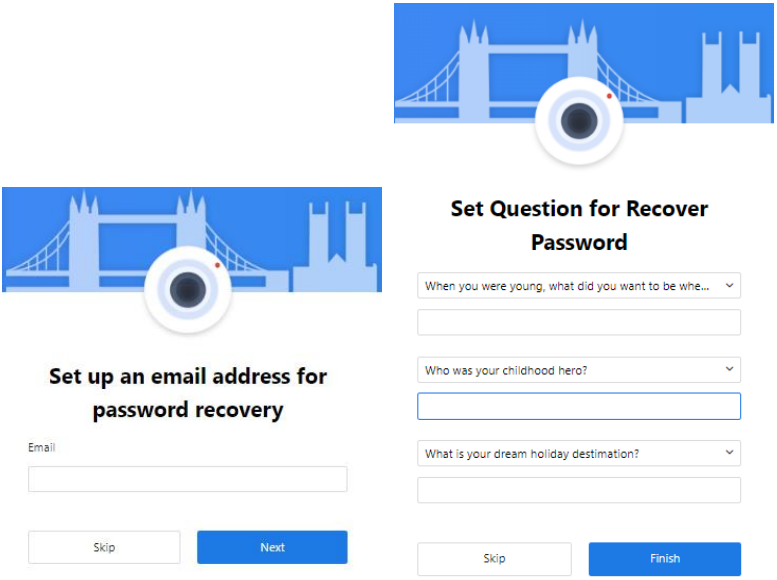
1. **Open a web browser** (Chrome recommended) and enter the camera's IP address in the address bar.
    - **Default IP address**: The default value of the thermal channel is `192.168.0.121`, and for the optical channel is `192.168.0.120`.
2. **First-time users**: Create a password when prompted, then proceed to the login page.

Figure 2-1 Create password



3. **Enter your username and password** to log in.
    - **Default username**: admin
    - You must set a password during the first login.
4. Set an **email address** for password recovery, and set the questions for recovery. If you don't want to set these, you can skip them.

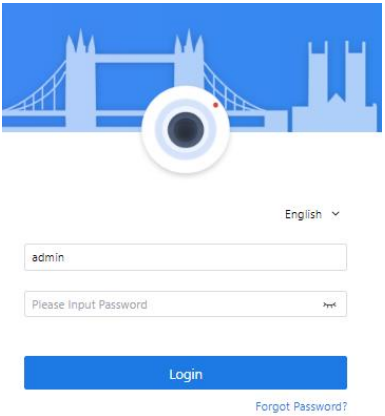
Figure 2-2 password recover



2.1.2 Forget Password

Input the **super administrator** user name to show the **"Forget password"**. If you forget the password, click this button to jump to the "Forget password" page.

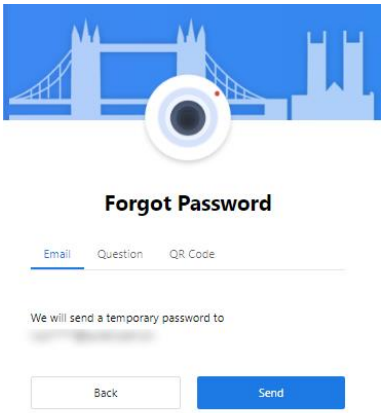
Figure 2-3 Login page



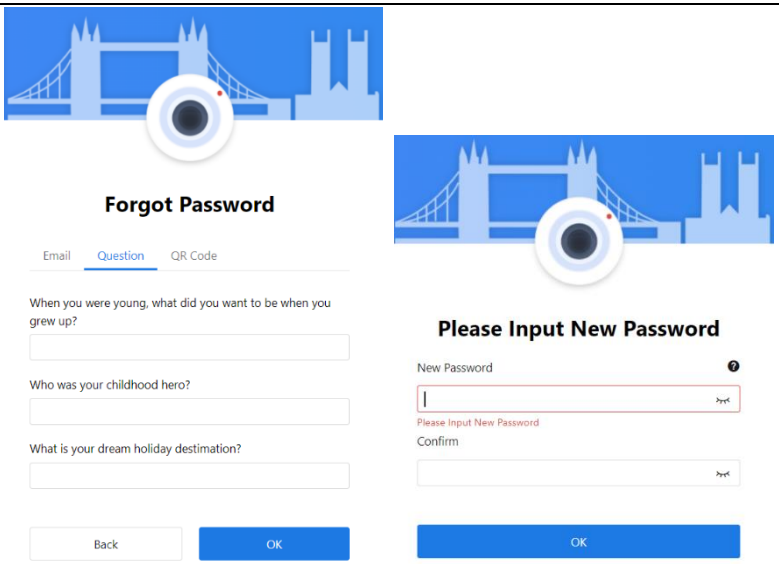
There are three methods available for recovering the password. For Email and Question, the user should set them first during the activation of the camera.

Method 1: **Email.** The camera should be connected to the network so that it can send the temporary password to the email address. The temporary password is **valid for five minutes**; create a new password immediately.

Figure 2-4 Forget password

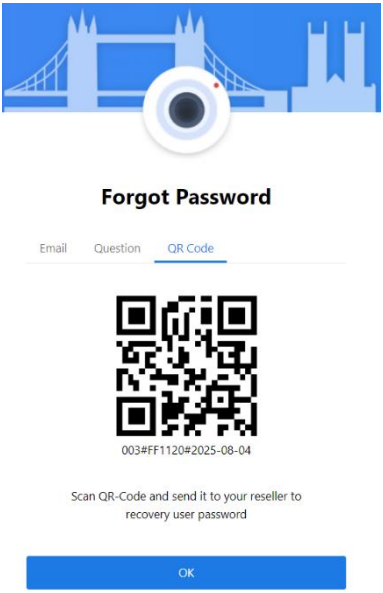


Method 2: **Question** Answer the security questions correctly to enter the "New Password" page.



Method 3: **QR Code.** If the user did not set the recovery email and question, the user can scan the QR Code on the login page and send it to the reseller. We will provide a temporary password that will be valid until 11:59:59PM. Use the temporary or new password to log in and then create a new one.

Figure 2-5 QR Code



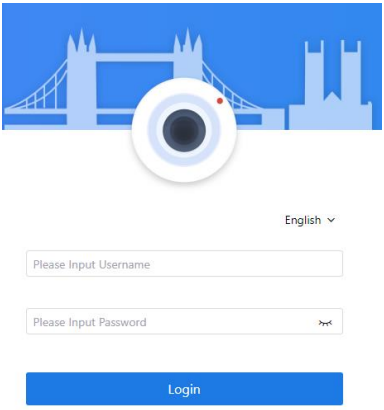
Note: DHCP is enabled by default. Use the provided tool to search for the camera IP. Default IP: `192.168.0.121 or 192.168.1.120`.

Important: After updating the password, wait at least 3 minutes before powering off the device to ensure the changes are saved. Alternatively, log in with the new password to verify.

You can change the system language on the login page.

Click **Login** to access the homepage.

Figure 2-6 Login page



NOTE

The default username is admin. Users should create a password for the first time to log in.

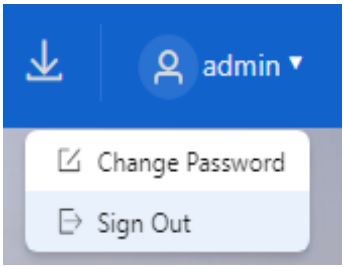
DHCP is enabled by default, meaning the IP address may change if your network assigns a new one. You can use the provided tool to search for the current IP address.

Changing the password requires a reboot: After modifying the password, wait **at least three minutes** before powering off the device. Alternatively, log in again to confirm the new password.

For security, regularly update your password.

You can change the system language from the login page.

Logout



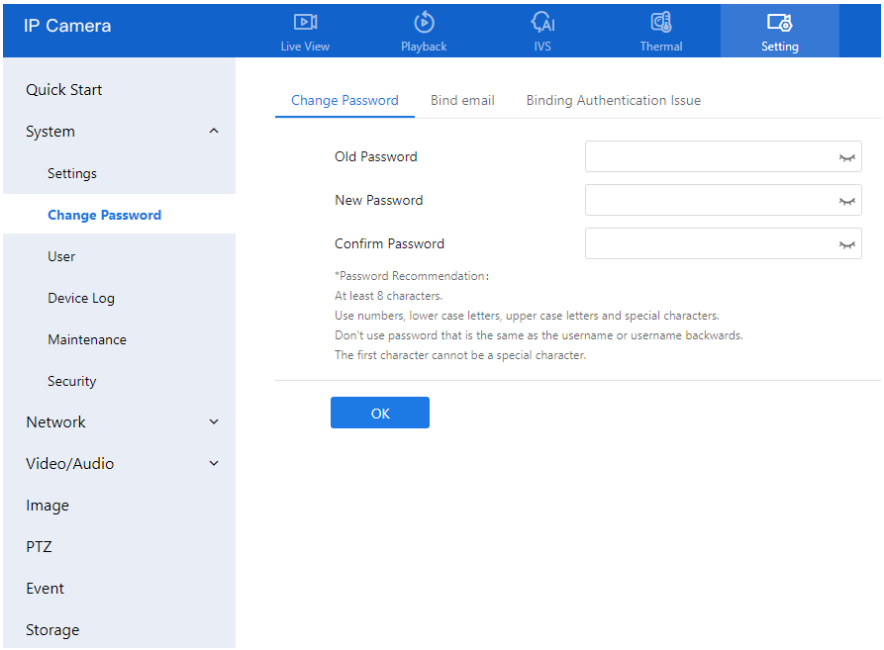
Click "**Sign Out"** in the upper right corner to return to the login page.

2.2 Change Password

Description

1. Click the username on the upper right, choose **Change Password** to enter the change password as shown in Figure 2-7. Or navigate to **Setting > System > Change Password**.

Figure 2-7 Change the default password page



2. Input the old password, new password, and confirm password.

3. Click **OK**.

If the message " Change password success!" pops up, the password is successfully changed. If the password fails to be changed, there will be some tips for changing the password. (For example, the new password length couldn't be less than eight.)

It is advised to restart the device three minutes after modifying the password.

4. The password is successfully changed, and then the login page is displayed.

The "admin" user can set the bind email and binding authentication issue, so that when the "admin" user forgets the password via email and authentication issue, to recovery the password.

Figure 2-8 Bind email

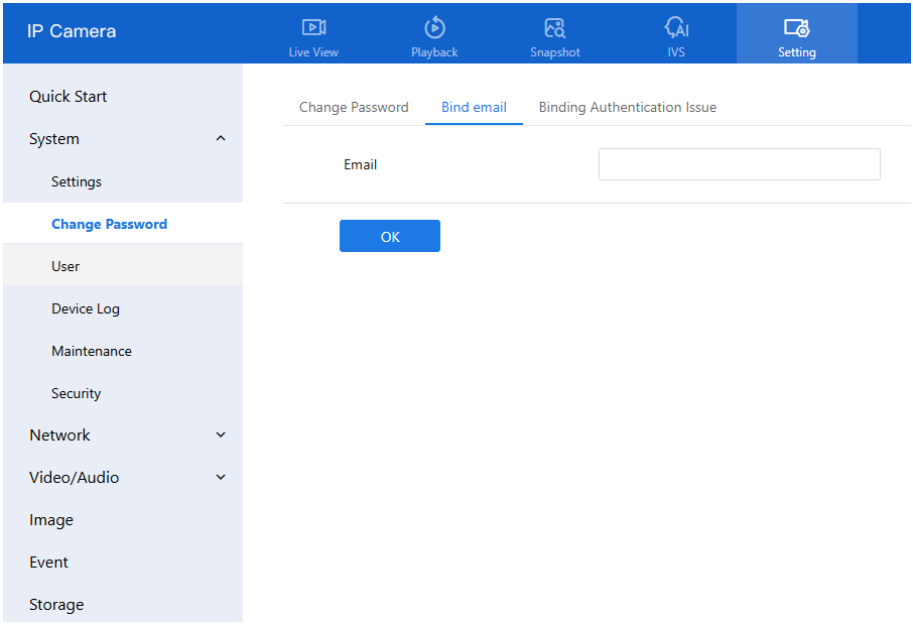
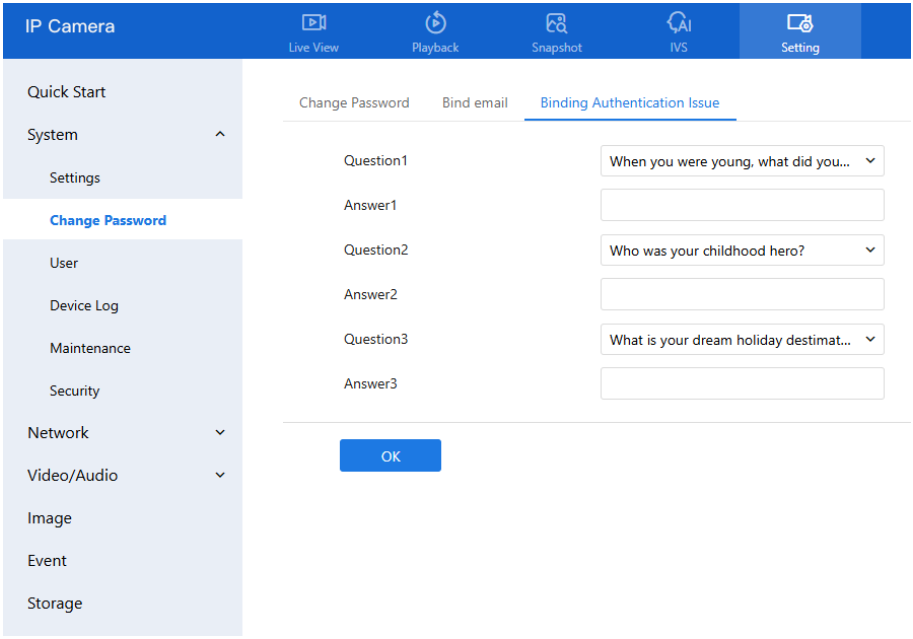


Figure 2-9 Binding authentication issue



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2.3 Homepage Layout

On the homepage, you can view real-time videos, receive alarm and fault notifications, set parameters, change the password, and log out of the system. The figure shows the homepage layout. Table 2-1 describes the elements on the homepage.

Figure 2-10 Homepage layout of the thermal channel

Figure 2-11 Homepage layout of the optical channel

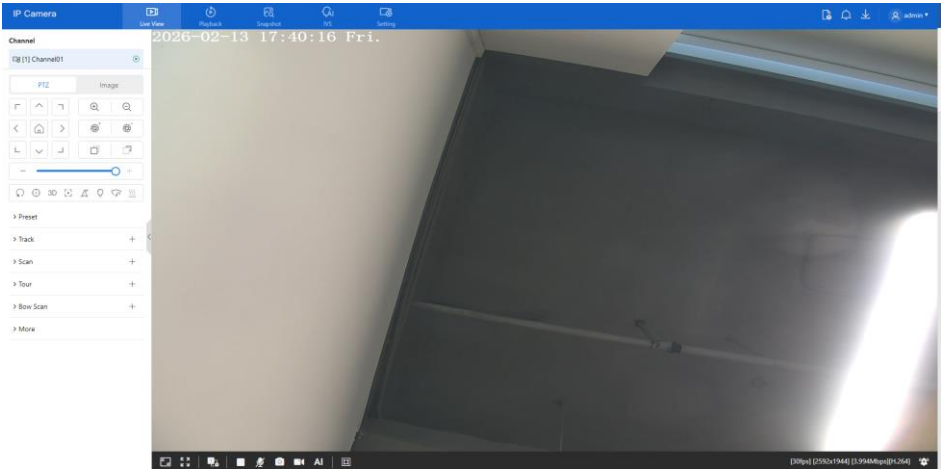
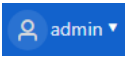


Table 2-1 Elements on the homepage

No.	Element	Description
1	Live View	Real-time videos are played on this page.
2	Playback	You can query the playback videos in this area. NOTE Only when the SD card or NAS has videos can you query the playback videos.

No.	Element	Description
3	IVS setting	Intelligent Video System, set the AI multi-target, intelligent analysis (intrusion, smart motion, single line crossing, double line crossing, multi-loitering, wrong-way, general parameters), environmental safety analysis (Thermal channel: smoking detection, and fire spot detection; Optical channel: smoke and flame detection), people counting, and so on.
4	Thermal	Set the parameters of thermal, such as temperature parameter, temperature alarm, schedule linkage, and so on. This function is only applicable to thermal channels.
5	Snapshot	For the optical channel The user installed an SD card in advance, enable snapshot feature. Set the conditions, click **Search** to search for the snapshot of the event.
6	Setting	You can choose a menu to set device parameters, quick start, system, network, audio /video, image, event, and storage.
7		About the intercom function.
8		When the device accepts an alarm signal, the alarm icon will display  . You can click  to view the alarm information.
9		SD card video backup and download status.
10		Current user, sign out or change password.
11		Set brightness, saturation, contrast, and sharpness. For motorized lenses, users can control the lens here.
12	The PTZ menu	Zoom +/ zoom - Iris +/ iris - Near focus /far focus Set the PTZ and image parameters.

No.	Element	Description
13		Window scale, switch the scale of playing live video.
14		Full screen, click the icon to play live video at full screen.
15		Stream, click the icon to switch streams. There are two streams of the thermal channel; There are three streams of the optical channel. Stream 1 is higher resolution, has a clearer image, and needs more bandwidth. Modify the video parameters based on different situational needs; it will affect the live video and recording. The video parameters are modified at “Setting > Quick Start > Video”, and the detailed information can be found in chapter *Figure 3-3Mode* page.
16		Pause/Start. Close live video or play live video.
17		Audio. Open or close audio.
18		Two-way audio. Open or close the intercom, and the computer should be plugged into the microphone in advance.
19		Click the icon to snapshot the video and save the images to the specified location.
20		Record the video and save the file to the specified location.
21		For the optical channel, the AI snapshot, click the icon to enter the real-time snapshot of the multi-target.
22		 Target frame: when detecting the target, it will show the frame on the target. Intelligent marking: the detection area frame of the intelligent analysis in IVS will be displayed in the live video interface.

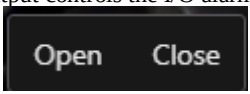
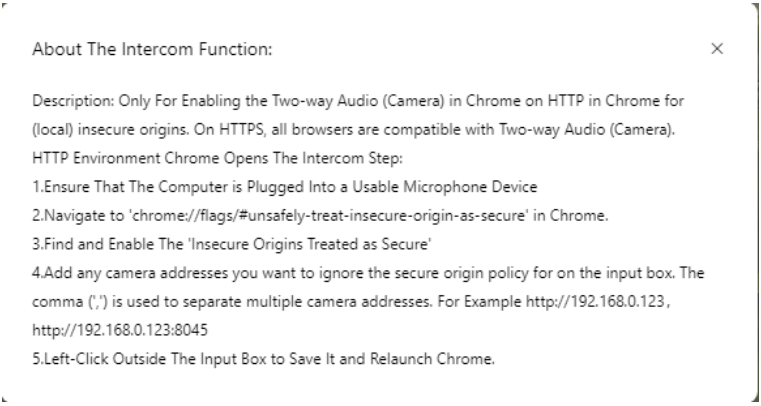
No.	Element	Description
23	[60fps] [2592x1944] [3.333Mbps][H.264]	Frame rate / resolution / bit rate / video encode type.
24		I/O output controls the I/O alarm output manually. Click  to open the alarm or close the alarm.

Figure 2-12 About the intercom function



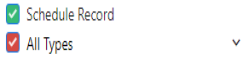
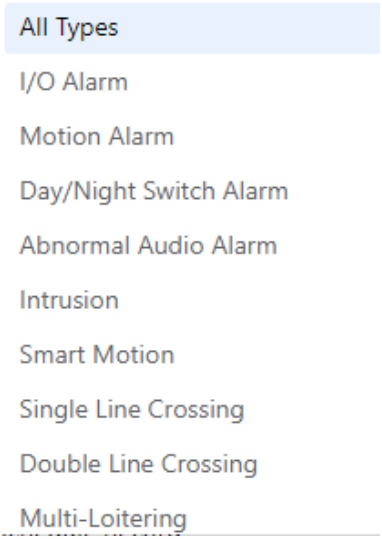
2.4 Playback

Click “Playback” on the web interface. If users install a micro SD card, and there are videos on the SD card. Click “Playback” and the playback video will show as in Figure 2-13.

Figure 2-13 Playback page

Table 2-2 Playback function

No.	Element	Description
1	Channel	The channel list of cameras.
2	Calendar	 The green point means it has a recording video. Set the time to play the recording.

3		 The green timeline represents scheduled recording, and the red timeline is alarm recording. The types of alarm recordings vary according to model performance.
4		One screen plays a recording. Choose one day that has recordings, and click  to play.
5		Two screens play the recording. Choose the screen, choose the channel, select one day that has a recording(the date shows a green point), and click  to play.
6		Four screens play recordings. Choose the screen, choose the channel, select one day that has a recording(the date shows a green point), and click  to play.
7		Window scale: switch the scale of the play recording video.
8		Full screen, click the icon to play the recordings in full screen.
9		Pause/Start. Close the live video or play the recording video.

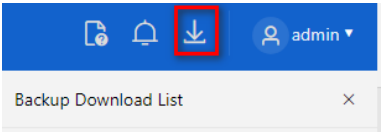
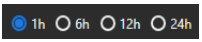
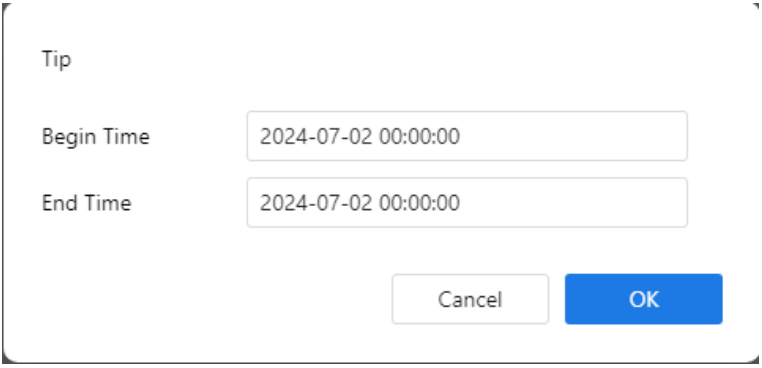
10		Audio. Open or close audio.
11		Click the icon to snapshot the video and save the images to the specified location.
12		Fast Forward, 1/16X, 1/8 X, 1/4 X, 1/2 X, 1 X, 2 X, 4 X, 8 X
13		Click the icon to start back up, drag the bar to download the recording quickly, and click the icon again to end up. In the pop-up window of the tip, as shown in Figure 2-14, click the save to save the video. Click **Cancel** to abandon.  the backup list to show the detailed information.
14		Time axis, users can choose 1h, 6h,12h, or 24h.

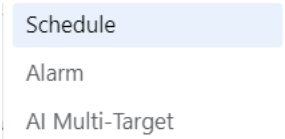
Figure 2-14 Record backup tip



2.5 Snapshot

For the optical channel camera, install an SD card (the camera will deploy 1/5 sizes of SD card to store snapshot images) to save and activate the snapshot feature (schedule, alarm, AI multi-target). The results can be retrieved and previewed in this interface.

To review snapshot footage:

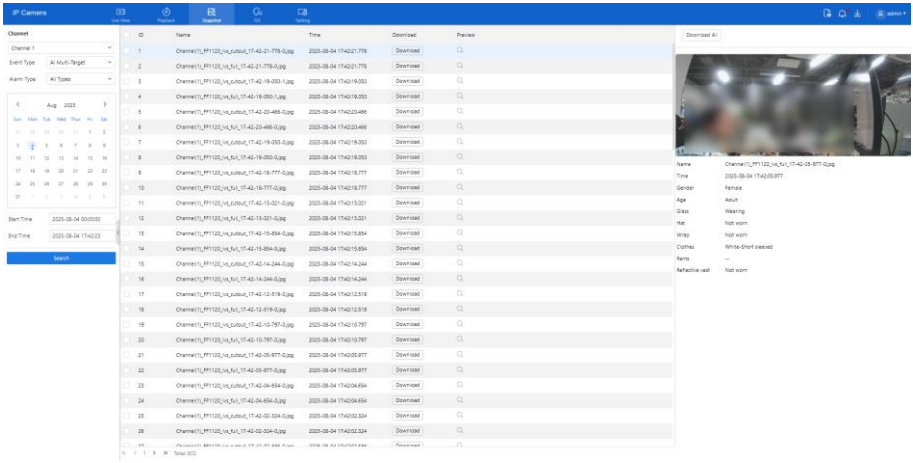
1. Click **Snapshot** on the web interface.
2. If an SD card is installed and enabled, the **Snapshot Policy** is enabled. Or the IVS alarm linkage **Snapshot Event Action** is enabled.
3. Choose the channel; the normal is channel 1. For the multi-channels, you should choose the corresponding channel.
4. Select the **Event Type** 

.
5. Choose the date. The date with a green dot 

means it has a snapshot record.
6. Set the detailed **start time** and **end time**.
7. Click **Search** to search the snapshot. The content will show on the page.

Refer to **Figure 2-15** for layout and controls.

Figure 2-15 Snapshot page



Click **Download** to download the picture.

Tick the ID and click **Download All** to download the selected pictures.

Click  to view the detailed information about the snapshot.

Figure 2-16 Schedule snapshot

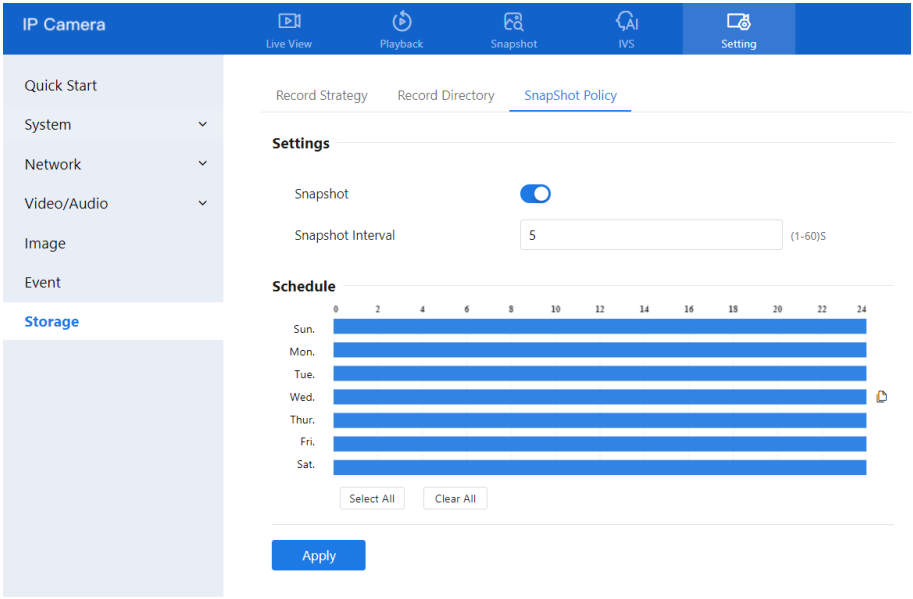


Figure 2-17 AI multi-target snapshot

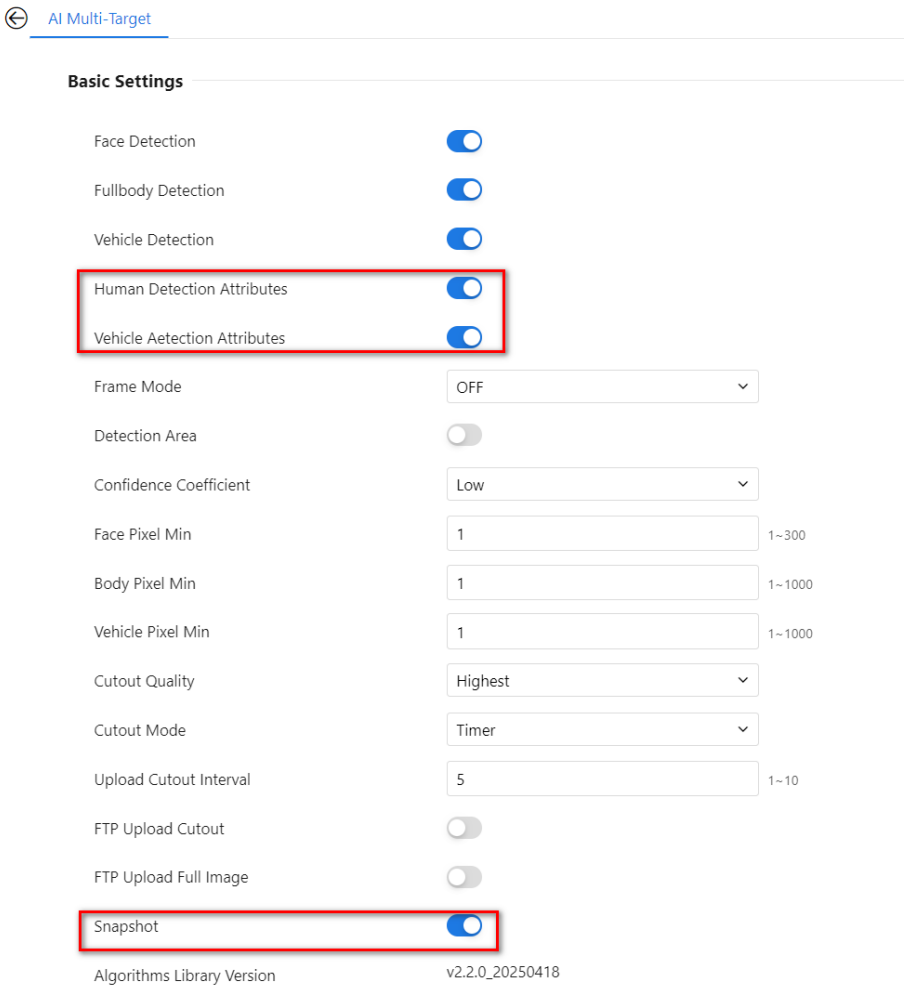
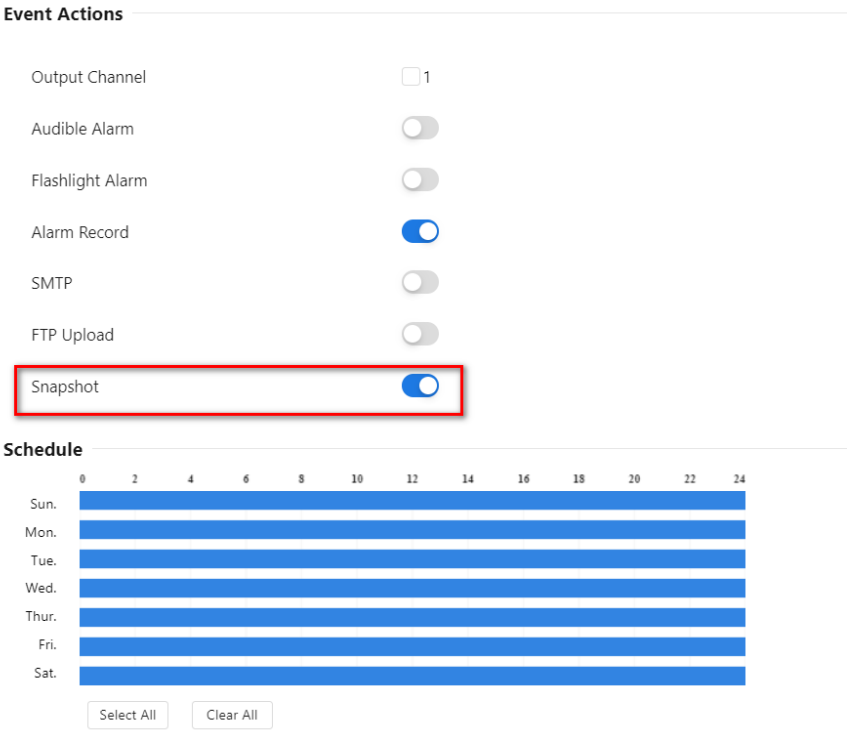


Figure 2-18 Alarm snapshot



2.6 IVS Setting

The IVS setting section leverages AI-powered algorithms to provide comprehensive monitoring capabilities, including intelligent analysis features like intrusion, smart motion, single line crossing, double line crossing, multi-loitering wrong-way, entering the area, and leaving the area. Deep learning (AI multi-target). Environmental safety analysis includes smoking detection and fire spot detection for the thermal channel, and smoke and flame detection is for the optical channel. The behavior analysis, such as people counting. Users can configure detection areas, sensitivity, and linkage actions.

Click IVS to enter the IVS setting page, users can set the deep learning, intelligent analysis, and behavior analysis as shown in Figure 2-19. The detailed settings will be introduced in the following chapters.

Figure 2-19 IVS setting page (optical channel)

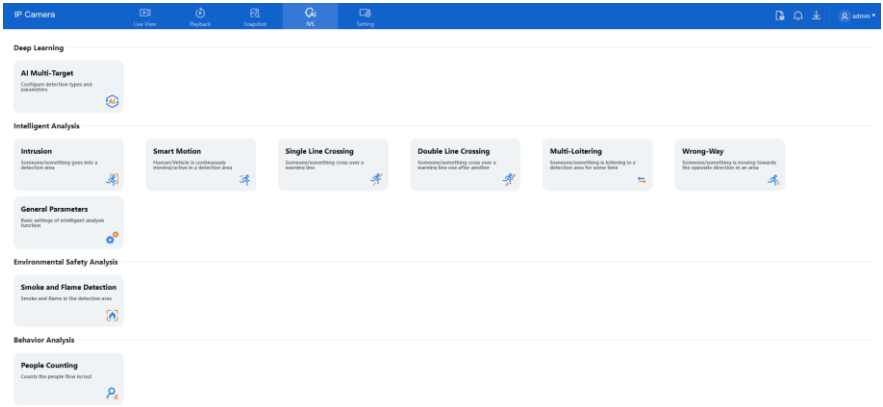
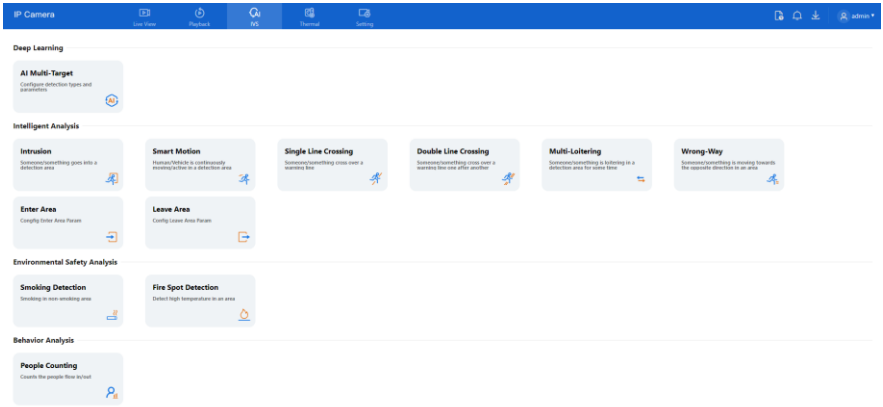


Figure 2-20 IVS setting page (thermal channel)



NOTE

The different models have different IVS functions. Please refer to the actual product.

----End

3 Quick Start Settings

To use the camera quickly, users need to set the Local Network, Video, Display, OSD, Date, and Time at the Quick Start interface.

3.1 Local Network

Description

Local network parameters include:

IP protocol

IP address

Subnet mask

Default gateway

Dynamic Host Configuration Protocol (DHCP)

Preferred Domain Name System (DNS) server

Alternate DNS server

MTU

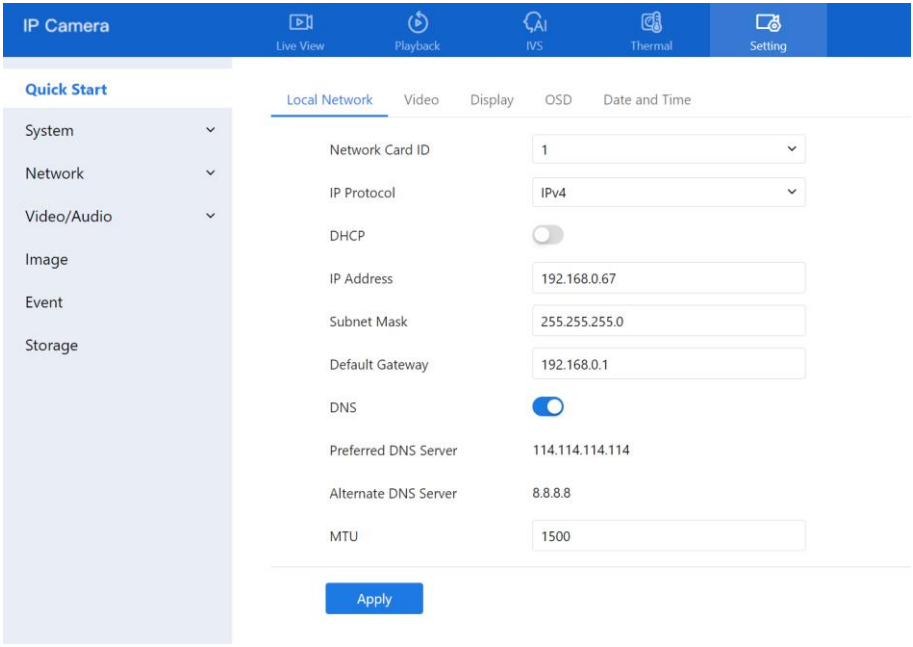
The device has DHCP enabled by default. When the device is connected to a network router with DHCP functionality, it will be automatically assigned an IP address. Otherwise, it will use the default address 192.168.0.120 for the optical channel and 192.168.0.121 for the thermal channel. If multiple devices are connected to the same network, users need to manually modify the management IP addresses.

Procedure

Step 1 Choose **Setting > Quick Start > Local Network**.

The **Local Network** page is displayed, as shown in Figure 3-1.

Figure 3-1 Local network page



Step 2 Set the parameters according to Table 3-1.

Table 3-1 Local network parameters

Parameter	Description	Setting
Network Card ID	--	[Default value] **1**
IP Protocol	IPv4 is the IP protocol that uses an address length of 32 bits. IPv6 is the IP protocol that uses an address length of 64 bits.	[Setting method] Select a value from the drop-down list box. [Default value] **IPv4**
DHCP	Enable DHCP, and the device will automatically obtain the IP address from the DHCP server.	[Setting method] Click the button to enable **DHCP**. NOTE To query the current IP address of the device, you must query it on the platform based on the device name.

Parameter	Description	Setting
IP Address	Device IP address that can be set as required.	[Setting method] Enter a value manually. [Default value] **192.168.0.121**
Subnet Mask	DHCP is off. The subnet mask of the network adapter.	[Setting method] Enter a value manually. [Default value] **255.255.255.0**
Default Gateway	DHCP is off. This parameter must be set if the client accesses the device through a gateway.	[Setting method] Enter a value manually. [Default value] **192.168.0.1**
Preferred DNS Server	DNS is on. The IP address of a DNS server.	[Setting method] Enter a value manually. [Default value] **192.168.0.1**
Alternate DNS Server	DNS is on. The IP address of a domain server. If the preferred DNS server is faulty, the device uses the alternate DNS server to resolve domain names.	[Setting method] Enter a value manually. [Default value] **192.168.0.2**
MTU	Set the maximum value of network transmission data packets.	[Setting method] Enter a value manually. NOTE The MTU value ranges from 1280 to 1500; the default value is 1500. Please do not change it arbitrarily.

Step 3 Click **Apply**.

If the message "Apply success!" is displayed, the system will save the settings. The message "Set network parameter success, please log in to the system again" is displayed. Use the new IP address to log in to the web management system.

If the message "Parameter is Invalid " is displayed, please set the parameters correctly.

----End

3.2 Video

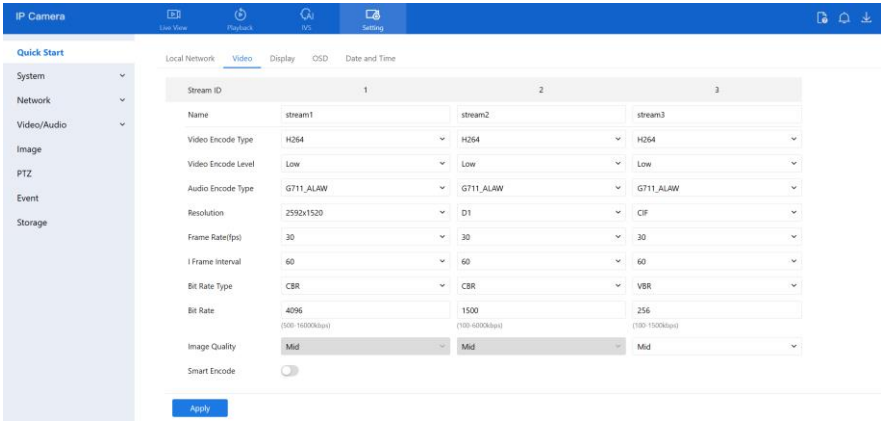
Modifying video parameters can affect the quality of the real-time video, as well as the file size of playback and stored recordings. If network bandwidth or storage space changes, users can adjust the video parameters accordingly.

Procedure

Step 1 Choose **Setting > Quick Start > Video**.

The **Video** page is displayed, as shown in Figure 3-2.

Figure 3-2 Video setting page



Step 2 Set the parameters according to Table 3-2.

Table 3-2 Parameters of stream configuration

Parameter	Description	Setting
Stream ID	The device supports at most three streams. Streams 1 and 2 adopt the H.264 code. Stream 1 stands for the best stream performance that the device supports. Stream 2 usually offers comparatively low-resolution options. Stream 3 is the lowest resolution for the optical channel.	[Setting method] Select a value from the drop-down list box.
Name	Stream name. NOTE The stream name consists of characters, numbers, and	[Setting method] Enter a value manually. The value

Parameter	Description	Setting
	underscores.	cannot exceed 32 bytes. [Default value] Stream 1
Video Encode Type	The video encoding determines the image quality and network bandwidth required by a video. Currently, the following encoding standards are supported: MJPEG MJPEG is a standard intra-frame compression encoding. The compressed image quality is good. No mosaic is displayed on motion images. MJPEG does not support proportional compression and requires a large storage space. Recording and network transmission occupy large hard disk space and bandwidth. MJPEG does not apply to continuous recording for a long period or network transmission of videos. It can be used to send alarm images. Only the low video encode level can be chosen. H.264 H.264 consists of H.264 low Profile, H.264 Main Profile, and H.264 High Profile. The performance of H.264 High Profile is higher than that of H.264 Main Profile, and the performance of H.264 Main Profile is higher than that of H.264 Base Profile. If a hardware decoding device is used, select the appropriate encoding based on the decoding performance of the device. H.264 High Profile has the highest requirements for hardware performance, and H.264 Base Profile has the lowest requirements for hardware performance. Three levels can be chosen H.265 H.265 is the advanced video encoding standard. It's the improvement standard from H.264. H.265 improves the streams, encoding quality, and algorithm complexity for configuration optimization. Only the Mid-video encode level can be chosen.	[Setting method] Select a value from the drop-down list box. [Default value] H.264 High Profile NOTE The H.264 High Profile encode means high requirements on the hardware. If the hard-decoding capability is low, use H.264 Main Profile or H.264 Base Profile. When users choose the MJPEG for Stream 1, some functions will be an error, such as the videos of FTP upload may not be played correctly.
Audio Encode Level	The following audio encoding standards are supported:	[Setting method] Select a value from the drop-down list

Parameter	Description	Setting
	G. 711_ULAW: mainly used in North America and Japan. G. 711_ALAW: mainly used in Europe and other areas. RAW_PCM: encode of the original audio data. This encoding is often used for platform data.	box.
Resolution	A higher resolution means better image quality. NOTE IP cameras support different resolutions based on the model.	[Setting method] Select a value from the drop-down list box.
Frame Rate(fps)	Frame rate is the number of images, snapshots, or frames that a camera can take per second. The frames per second determine the smoothness of a video. A video whose frame rate is higher than 22.5 f/s is considered smooth by human eyes. Frame rates for different frequencies are as follows: 50 Hz: 1–25 f/s 60 Hz: 1–30 f/s NOTE The frequency is set on the **Device Configuration** > **Camera** page. The biggest MJPEG coding format frame rate is 12 frames per second.	[Setting method] Select a value from the drop-down list
I Frame Interval(f)	The I frame does not require other frames to decode. A smaller I-frame interval means better video quality but higher bandwidth.	[Setting method] Select a value from the drop-down list
Bit Rate Type	The bit rate is the number of bits transmitted per unit of time. The following bit rate types are supported: Constant bit rate (CBR) The compression speed is fast; however, improper bit rates may cause vague motion images. Variable bit rate (VBR) The bit rate changes according to the image complexity. The encoding efficiency is high, and the definition of motion images can be ensured.	[Setting method] Select a value from the drop-down list box.
Bit Rate Range	Indicates the maximal value of the bit rate. The different models may have different ranges. Please refer to the actual product.	[Setting method] Enter a value manually.
Image	The video quality of the camera output.	[Setting method]

Parameter	Description	Setting
Quality		Select a value from the drop-down list box.
Smart Encode	Smart Encode. Smart encode includes H.264 & H.265. The storage space will be reduced by fifty percent when smart encoding is enabled. Only mainstream supports smart encoding.	[Setting method] Click the button to enable **Smart Encode**.

Step 3 Click **Apply**.

If the message "Apply success!" is displayed, the system will save the settings.

If a message is “please enter the appropriate range”, enter a new bit rate value.

The effect of modifying will be shown on live video or the saved recording.

----End

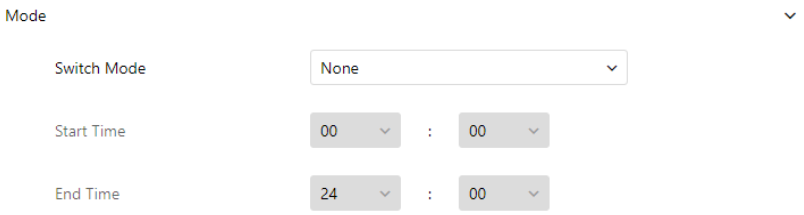
3.3 Image Display of Thermal Channel

There are two settings: current settings and edit settings. Modify the parameters in the edit setting. Four profiles can be set.

3.3.1 Mode

1. Go to **Setting > Quick Start > Display**, and choose **Edit Settings.** Click the **Mode** tag on the Display Settings interface, and the Mode page is displayed, as shown in Figure 3-3.

Figure 3-3 Mode page



2. Set the Mode parameters.

• **None**: Uses the current active profile with no switching.

• **Time Mode**: Automatically switches profiles at specific times. Set all four profiles in advance.

• **Day/Night (D/N) Linkage Mode**: Automatically switches between day and night profiles based on lighting. When the Day/Night is set to Auto, it is Day mode, which executes Profile 1; When it is Night mode, it executes Profile 2. The specific switching conditions usually depend on the strength of the ambient light, and the camera automatically judges and switches modes through its built-in light sensor.

3. Click **Apply** to save the setting.

----End

3.3.2 Image

Click **Setting > Quick Start > Display, and** choose the **Image** item. The figure shows the image interface.

Figure 3-4 Image interface

The table describes the image setting parameters.

Table 3-3 Image setting parameter description

Parameter	Description	Setting
Brightness	It indicates the total brightness of an image. As the value increases, the image becomes brighter.	[Setting method] Drag the slider. [Default value] **50**
Saturation	It indicates the color saturation of an image. As the value increases, the image becomes more colorful.	[Setting method] Drag the slider. [Default value] **50**
Sharpness	It indicates the clarity of an image. As the value increases, the image becomes clearer.	[Setting method] Drag the slider. [Default value] **50**
Contrast	It indicates the contrast between the bright part and the dark part of an image. As the	[Setting method] Drag the slider.

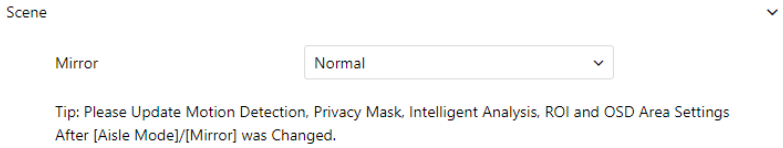
Parameter	Description	Setting
	value increases, the contrast increases.	[Default value] **50**

----End

3.3.3 Scene

Click **Setting > Quick Start > Display, and** choose the **Scene** item. Figure 3-5 shows the scene interface.

Figure 3-5 Scene interface



Provide the selection of image pixel locations.

Normal: the image is not flipped.

Horizontal: the image is flipped left and right.

Vertical: the image is flipped up and down.

Horizontal + Vertical: the image upside-down and reversed.

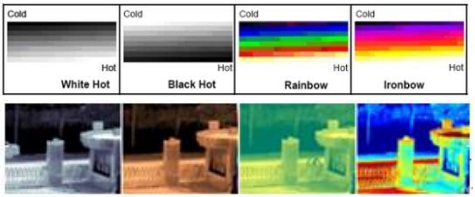
----End

3.3.4 Set Pseudocolor

Click **Setting > Quick Start > Display**, and choose the **Set Pseudocolor** item. Figure 3-6 shows the Set Pseudocolor interface.

Figure 3-6 Set Pseudocolor interface

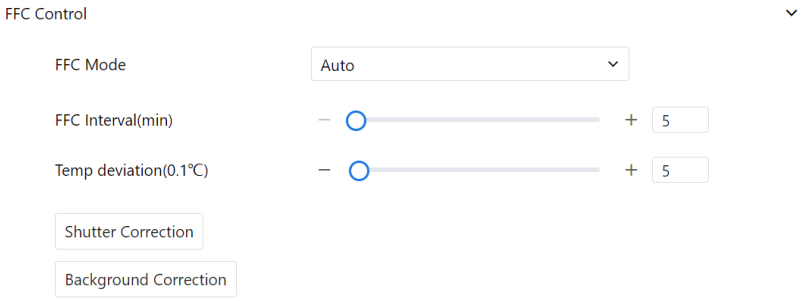
Table 3-4 Pseudocolor parameter

Parameter	Description	Setting
Pseudo-Colors	Polarity/LUT: the temperatures of the temperature fields detected by the thermal imaging camera are separately mapped to values ranging from 0 to 255 by the algorithm. In the black/white display mode, this range is converted to the grayscale tones. For example, 0 indicates completely black, and 255 indicates completely white. The temperature field of the scene is converted to images by using a grayscale ranging from 0 to 255. Different polarity modes can be converted to different display images. The most common setting is white hot (a hotter object is displayed brighter than a colder object) or black hot (a hotter object is displayed darker than a colder object). The difference between the two modes lies in the fact that the temperatures corresponding to the darker one and the lighter one are reversed. Other modes include rainbow, iron bow, HSV, autumn, bone, and so on. 	[How to set] Select from the drop-down list box. [Default value] **White Hot**
Legend of Temperature Value	Choose **On**, the legend will show on the real-time video.	[How to set] Select from the drop-down list box. [Default value] **Close**

3.3.5 FFC Control

Click **Setting > Quick Start > Display**, and choose the **FFC control** item. The figure shows the FFC control interface.

Figure 3-7 FFC control interface



The table describes the FFC mode parameters.

Table 3-5 FFC control parameter description

Parameter	Description	Setting
FFC Mode	The internal of the thermal imaging camera may comprise a mechanical action correction mechanism that can periodically improve the image quality. This component is called flat field correction (FFC). When controlling the FFC, the FFC shields the sensor array, so that each portion of the sensor can collect uniform temperature fields (flat field). Using FFC, the camera can update the correction coefficients to output more uniform images. Throughout the FFC process, the video image is frozen for two seconds, and a static-frame image is displayed. After the FFC is complete, the image is automatically recovered. Repeated FFC operations can prevent grainy and image degradation problems. The FFC is especially important when the temperature of the camera changes. For example, after the camera is powered on or the ambient temperature is changed, you should immediately perform the FFC. **Auto**: In the Automatic FFC mode, the camera performs FFC whenever its temperature changes by a specified amount or at the end of a specified period (whichever comes first). When this mode is selected, the FFC interval (minutes) ranges	[How to set] Select from the drop-down list box. [Default value] **Auto**

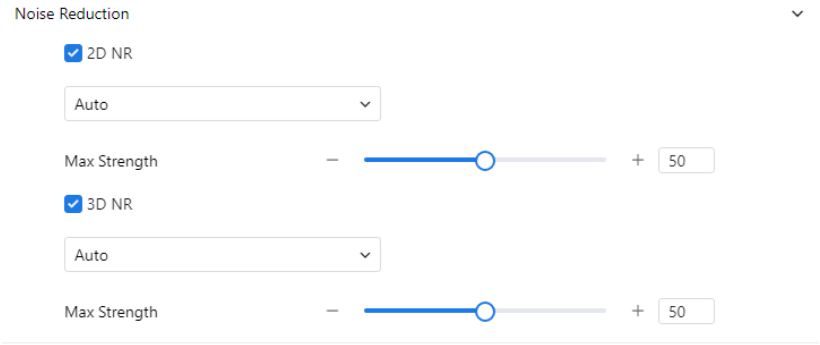
Parameter	Description	Setting
	from 5 to 30 minutes. The temperature change of the camera is based on the temperatures collected by the internal temperature probe. The temperature of the camera sharply changes when the camera is powered on. The FFC is relatively frequent, which is normal. **Manual**: In the manual FFC mode, the camera does not automatically perform the FFC based on the temperature change or the specified period. You can press the Do FFC button to select the manual FFC mode. When you feel that the image is degraded but the automatic FFC is not performed, you can use the manual FFC function to check whether the image quality can be improved.	
FFC Interval (min)	In the automatic FFC mode, the FFC interval ranges from 2 to 255 minutes.	[How to set] Drag the slider. [Default value] **5**
Temper deviation(0.1℃)	In the automatic FFC mode, the FFC interval ranges from 0.2 to 25.5 centigrade.	[How to set] Drag the slider. [Default value] **5**
Shutter Correction	Click the icon to adjust exposure immediately.	Click the button
Background Correction	Click the icon and cover the camera with something to adjust the image. Remove the thing to finish the adjustment.	Click the button

----End

3.3.6 Noise Reduction

Click **Setting > Quick Start > Display**, and choose the **Noise Reduction** item. The figure shows the Noise Reduction interface.

Figure 3-8 Noise reduction interface



The table describes noise reduction parameters.

Table 3-6 DNR parameter description

Parameter	Description	Setting
2 DNR	Decrease the image noise.	[How to set] Select from the drop-down list box. Drag the slider to adjust the maximum strength. [Default value] **Auto**
3 DNR	Decrease the image noise.	[How to set] Select from the drop-down list box. Drag the slider to adjust the maximum strength. [Default value] **Auto**

----End

3.3.7 Image Enhancement

1. Navigate to **Setting > Quick Start > Display > Image Enhancement** tag on the display interface. Figure 7-11 shows the image enhancement interface, and Table 7-7 shows the enhance image parameters.

Figure 3-9 Image Enhancement page

2. Defog: It provides a clearer view of an image in a fogged environment when DeFog is enabled. As the value increases, the image becomes clearer. Tick the Defog mode and drag the slider.
3. Click **Apply** to save the setting.

NOTE

All image settings can be modified at edit settings.

Factory Reset: All parameters will be restored to the factory settings.

Reset: the settings will be restored to the last settings.

----End

3.4 OSD

Description

The on-screen display (OSD) function allows you to display the device name, channel ID, and name, time, and other customized content on videos. You can drag the OSD frames anywhere you want to put them.

When the resolution is D1 and CIF, the OSD customized in the web interface can show at most 22 words normally.

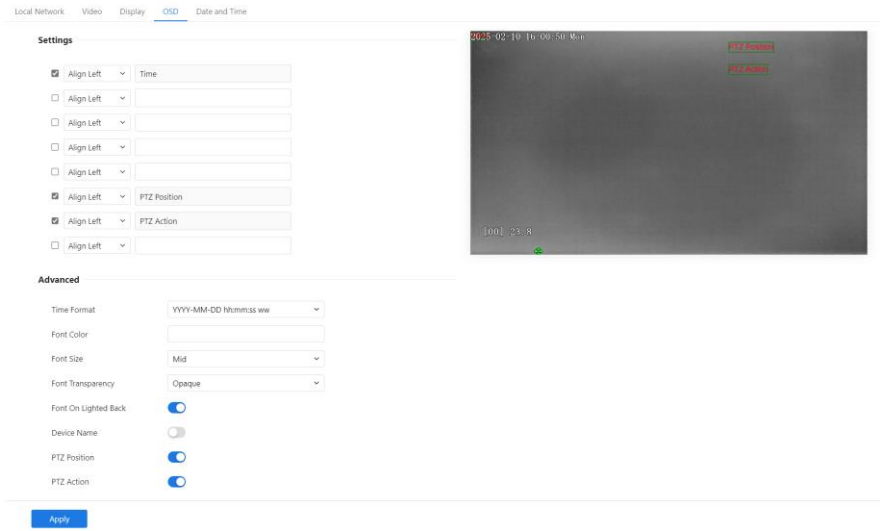
The OSD supports simplified Chinese, English, digital, and some special characters only.

Procedure

Step 1 Choose **Setting** > **Quick Start** > **OSD**.

The **OSD** page is displayed, as shown in 4.

Figure 3-10 OSD



Step 2 Set the parameters according to Table 3-7.

NOTE

There are no more than seven OSD display areas.

Table 3-7 Parameters of OSD

Parameter	Description	Setting
Time	Indicates whether to display the time.	[Setting method] Tick the time.
Settings	Custom OSD. Enables you to enter a line of characters.	[Setting method] Tick the custom OSD list. Set the position of the OSD showing. Or drag the frame of OSD to adjust the position on live video. Enter the characters. Click **Apply** to save the value.

Parameter	Description	Setting
Time Format	Format in which the time is displayed.	[Setting method] Select a value from the drop-down list box. [Default value] YYYY-MM-DD hh:mm: ss ww
Font Color	Set the font color.	[Setting method] Select a value from the drop-down list box. [Default value] Blank
Font Size	Set the font size.	[Setting method] Select a value from the drop-down list box. [Default value] Mid
Font Transparency	Set the font transparency.	[Setting method] Select a value from the drop-down list box. [Default value] Opaque
Font on Lighted Back	Enable the font on the lighted back.	[Setting method] Click the button to enable **the font on the lighted back**.
Device Name	Indicates whether to display the device name.	[Setting method] Click the button to enable the **Device Name**
PTZ Action	The action of PTZ will be shown on live video.	[Setting method] Click the button to enable
PTZ Position	The position of PTZ will be shown on live video.	[Setting method] Click the button to enable
Twelve-hour System	The time format shows a twelve-hour system.	[Setting method] Click the button to enable
Display Week	The week will show.	[Setting method] Click the button to enable

Step 3 Click **Advanced,** set the parameter of " Time Format", "Font Color", "Font Transparency", "Font on lighted back", and so on.

Step 4 Click **Apply**. The message "Apply success!" is displayed, and the system will save the settings.

----End

3.5 Date and Time

Description

On the **Date and Time** page, you can modify the date and time. Parameters that can be set include:

Time zone and daylight-saving time (DST)

Date and time

Network Time Protocol (NTP) server

Procedure

Step 1 Navigate to **Setting > Quick Start > Date and Time**.

The **Date and Time** page is displayed, as shown in Figure 3-11. Table 3-8 describes the parameters.

Figure 3-11 Date and time page

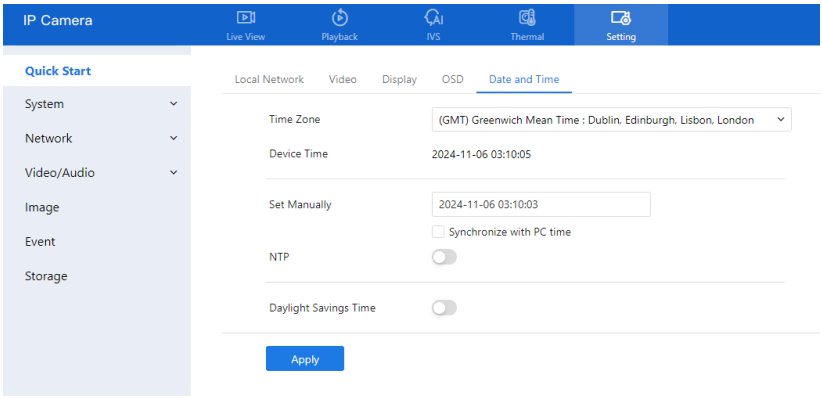


Table 3-8 Parameters of date and time

Parameter	Description	Setting
Time Zone	N/A	[Setting method] Select a value from the drop-down list box. [Default value] Greenwich Mean Time
Device Time	Device display time.	[Setting method] Synchronize the time from the PC.

Parameter	Description	Setting
		Enter a value manually.
Set Manually	You can set the device time manually or synchronize it with PC time.	[Setting method] Click **Set Manually** and set the date and time in the format *YYYY-MM-DD HH:MM: SS*.
NTP	IP address or domain name of the NTP server.	[Setting method] Click the button to enable **NTP** and enter a value manually.
Server Address	NTP is enabled. The NTP server IP.	[Setting method] Enter a value manually.
Port	NTP is enabled. Port number of the NTP server.	[Setting method] Enter a value manually. [Default value] **123**
Interval	NTP is enabled. Set time intervals to check if the device time has synchronized with the NTP server time.	[Setting method] Enter a value manually. [Default value] **60**
Daylight Saving Time	When the DST start time arrives, the device time will automatically be one hour earlier. When the DST end time arrives, the device time will automatically be one hour later.	[Setting method] Click the button to enable **Daylight Saving Time**.

Step 2 Click **Apply**. The message "Apply success!" is displayed, and the system will save the settings.

----End

4 Configuring Thermal

4.1 Settings

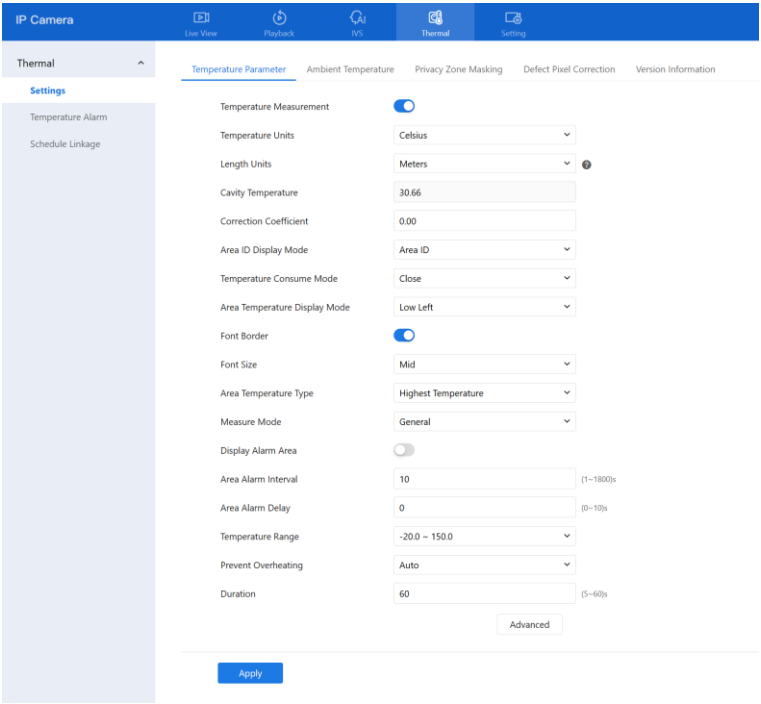
4.1.1 Temperature Parameters

Temperature parameters include temperature unit, ambient type, ambient temperature, cavity temperature, correctional coefficient, area temperature display mode, area temperature type, measure mode, area alarm interval, and so on.

Operation Procedure

1. Navigate to **Thermal > Settings > Temperature Parameter**, as shown in Figure 4-1.

Figure 4-1 Temperature Parameters Interface



2. Set the parameters as per Table 4-1.

Table 4-1 Temperature Parameters

Parameter	Description	Setting
Temperature Measurement	It is default-enabled. If it is disabled, the thermal channel cannot work.	[Default value] **Enable**
Temperature Units	Celsius and Fahrenheit temperature units are available.	[Setting method] Select a value from the drop-down list box. [Default value] **Celsius**
Length Units	Meters and feet are available as length units.	[Setting method] Select a value from the drop-down list box. [Default value] Meters
Cavity Temperature	The cavity temperature of the camera.	N/A
Cavity Temperature Alarm	Enable, set the **Cavity Temperature Alarm threshold**. When the camera detects that the cavity temperature is over the setting value, it will trigger an alarm.	[Default value] **Disable**

Parameter	Description	Setting
Correction Coefficient	The correction coefficient refers to the deviation of the measured object temperature and the actual temperature, which is the offset value. For example: 1. The measured object temperature is 20, and the actual temperature is 20.5, so the correction coefficient should be **0.5.** 2. The measured object temperature is 20, and the actual temperature is 19.5, so the correction coefficient should be -0.5**.** NOTE The user should contact the technical support staff of our company under these conditions to ensure that the application is made	[Setting method] Enter a value manually. [Default value] **0.00**
Area ID display Mode	There are two modes to display: area ID and area name	[Setting method] Select a value from the drop-down list box. [Default value] **Area ID**
Temperature Consume Mode	Transfer temperature values or images to third-party platforms via SDK(Software development kit) protocol. You can get a custom SDK from the manufacturing company if needed.	[Setting method] Select a value from the drop-down list box. [Default value] **Close**
Transmissivity[0-100%]	The proportion of radiant energy that passes through an object without being absorbed or reflected. It is the transmissivity for the germanium window; users set this value only for the lens added germanium window.	[Setting method] Enter a value manually ranging from 0 to 100.

Parameter	Description	Setting
Area Temperature Display Mode	The display position of temperature information on the live-video image.	[Setting method] Select a value from the drop-down list box. [Default value] **Low left**
Font Border	Enable bold font	[Setting method] Enable or disable [Default value] **Disable**
Font size	Three font sizes can be chosen, small/mid/big	[Setting method] Enable or disable [Default value] **Mid**
Area Temperature Type	There are three types of area temperature.	[Setting method] Select a value from the drop-down list box. [Default value] **Highest Temperature**
Measure Mode	There are two types of measure modes. Preset or general.	[Setting method] Select a value from the drop-down list box. [Default value] **General**
Display Alarm Area	Tick, the setting alarm area will display on live video.	[Setting method] Enable or disable [Default value] **Disable**
Area Alarm Interval	During the interval, the same alarm will only be sent once.	[Setting method] Enter a value manually that ranges from 1 to 1800. [Default value] **10**

Parameter	Description	Setting
Area Alarm Delay	The area alarm information will be delayed for the setting time.	[Setting method] Enter a value manually that ranges from 1 to 10. [Default value] **10**
Temperature Range	It depends on the device. Different devices have different modes; there are two ranges, such as -20 ℃ - 150℃, -40 ℃-150℃. The thermal imaging box network camera is -40 ℃-150℃.	[Setting method] Select a value from the drop-down list box.
Prevent Overheating	Open, if the temperature of the testing area is too high, the camera will be automatic triggered prevent overheating. The shutter will be closed to keep the detector safe. The live video will show a tip: "The current temperature has exceeded the maximum temperature! Please wait…"	[Setting method] Enable
Anti Burn Protection Time (5-180 S)	When the prevention of overheating takes effect, the shutter will close for the setting time.	[Setting method] Enter a value manually ranging from 5 to 180.
Protection Frequency	When the overheating time is over, this setting value, the shutter will be locked for the setting lock time. The next trigger time is over 20s, the frequency will be cleared, and the recount will be performed.	[Setting method] Select a value from the drop-down list.
Lock Time	The shutter will be locked during the time, or users can click the button to unlock manually. The live video will show the tip "The shutter is closed. Please wait for the time or manual unlock."	[Setting method] Select a value from the drop-down list.
Manually Unlock	Click to unlock manually.	[Setting method] Click

Figure 4-2 Advanced Interface

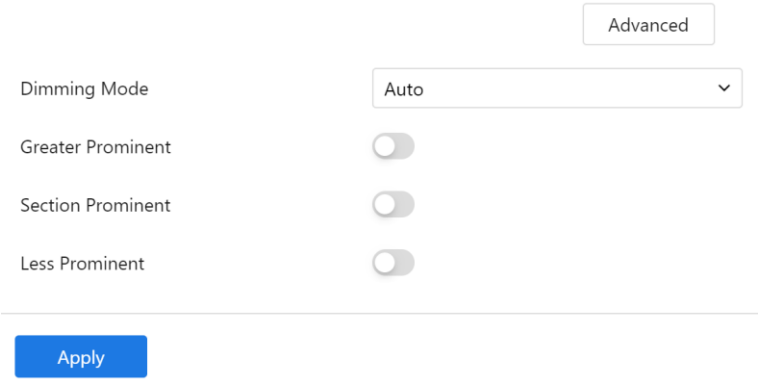


Table 4-2 Advance Parameters

Parameter	Description	Setting
Dimming Mode	There are auto and manual modes. Auto: It will show on the temperature item depending on the full-screen temperature. Manual: It will show the manual value.	[Setting method] Select a value from the drop-down list box. [Default value] **Auto**
Greater Prominent	Enable that, and the image will show the set color if the temperature is higher than the set value.	[Setting method] Enter a value manually. Choose one color to show.
Section Prominent	Enable that, the image will show the setting color if the temperature is between the minimum and maximum temperatures.	[Setting method] Enter a value manually. Choose one color to show.
Less Prominent	Enable that, and the image will show the set color if the temperature is lower than the set value.	[Setting method] Enter a value manually. Choose one color to show.
Raw Data Upload Interval(F/S)	Interval for uploading the raw data.	[Setting method] Select a value from the drop-down list box. [Default value] **1**

3. Click **Apply** to save.

----End

4.1.2 Ambient Temperature

Usually, no customer configuration is required. The current ambient temperature needs to be configured only when the device has just been powered on, but the user needs to measure the temperature immediately.

1. Navigate to **Thermal > Settings > Ambient Temperature**

Figure 4-3 Ambient Temperature

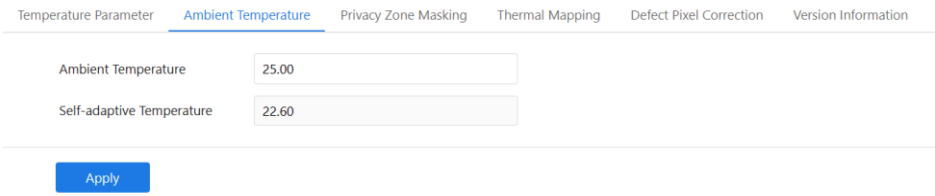


Table 4-3 Parameter of Ambient Temperature

Parameter	Description	Setting
Ambient Temperature	Environment temperature of the camera. When the camera is powered on for at least half an hour and the cavity temperature is stabilized, set the temperature. It is set as the environmental temperature of the camera.	[Setting method] Enter the temperature of the ambient environment. [Default value] **25**
Self-adaptive Temperature	Set the ambient temperature, click “Apply”, and the camera will get the value automatically.	---

2. Click **Apply** to save.

----End

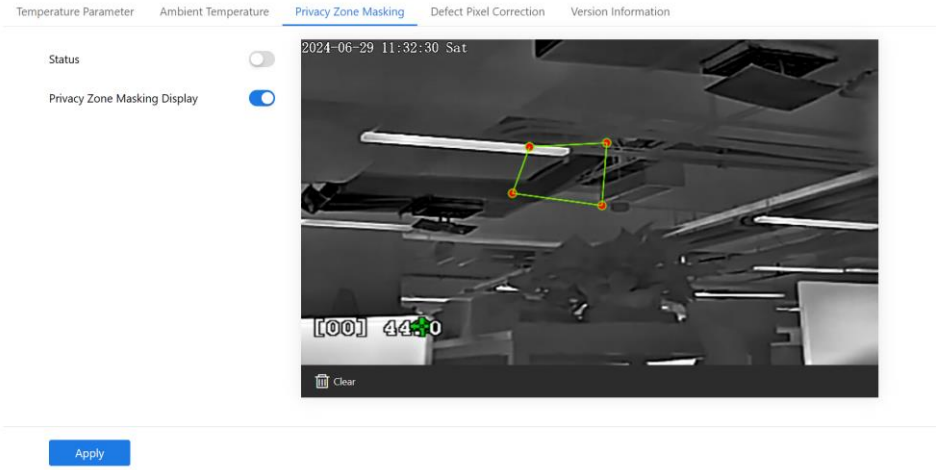
4.1.3 Privacy Zone Masking

Privacy zone masking means that the camera will not detect the temperature of that area. The shield areas can be set up to eight areas.

Operation Procedure

1. Navigate to **Thermal > Settings > Privacy Zone Masking**.

Figure 4-4 Privacy Zone Masking



2. Enable the privacy zone masking.
3. Enable Show Privacy Zone Masking Display, then the setting shield will show on live video.
4. Click the left mouse button to set the area; Click-right mouse button to end the setting.
5. Click **Clear** to clear the setting area.
6. Click **Apply** to save.

----End

4.1.4 Defect Pixel Correction

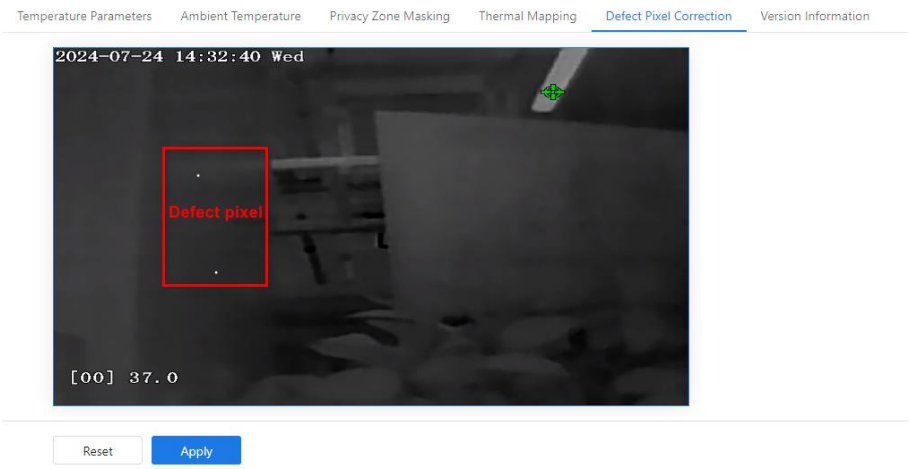
Operation Procedure

1. Navigate to **Thermal > Settings > Defect Pixel Correction**.

The **Defect Pixel Correction** page is displayed, as shown in the figure.

If the image has a white dot as shown in the figure, the user can test the function to recover the defect pixel. Users should connect with the technical support under these conditions to make sure to apply.

Figure 4-5 Defect pixel correction



2. Click the white point in the image, and click **Reset** to recover the defect pixel, as shown in Figure 4-6.

Figure 4-6 Recover Defect Pixel

3. Click **Apply**. The message "Apply success" is displayed, and the system will save the settings.

----End

4.1.5 Version Information

Check the MCU version and MCU sequence number for easy traceability

4.2 Temperature Alarm

Operation Procedure

1. Navigate to **Thermal > Temperature Alarm,** as shown in Figure 4-7.
2. Set the parameters as per Table 4-4.

Figure 4-7 Temperature Area and Alarm Configuration

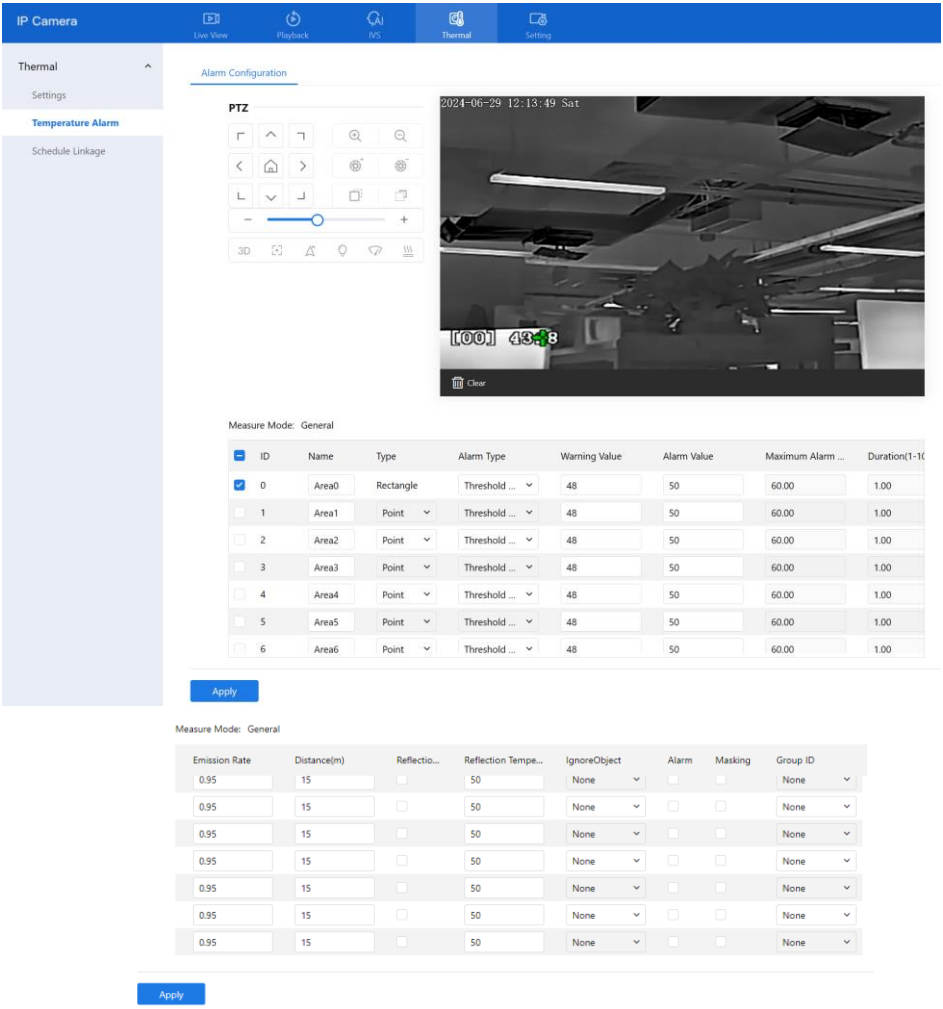


Table 4-4 Alarm configuration

Parameter	Description	Setting
Measure Mode	Set the temperature parameter interface.	N/A
Enable	Tick the ID to enable the area measuring.	[Setting method] Tick

Parameter	Description	Setting
Name	Area name of temperature area.	[Setting method] Enter a value manually.
Type	Type of temperature area. ID 0 is the default rectangle area, which is full screen. It cannot be modified. Other IDs can be set as point, line, or polygon.	[Setting method] Select a value from the drop-down list box. [Default value] **Rectangle/Point**
Alarm Type	**Temperature Difference Alarm**: Highest Temp minus Average Temp > Warning value, the 'Temperature Difference Warning' will be triggered; Highest Temp minus Average Temp > Alarm Value, the 'Temperature Difference Alarm' will be triggered. **Temperature Rise Alarm**: High Temp Increase Value > Warming Value, 'Temperature Rise Warning' will be triggered; Warning: High Temp Increase Value > Alarm Value, the 'Temperature Rise Alarm' will be triggered. **Temperature Threshold Alarm**: Highest Temp > Warning Value, the 'Temperature Threshold Warning will be triggered; Highest Temp > Alarm Value, the 'Temperature Threshold Alarm' will be triggered. **Section Alarm**: Alarm Value < Highest Temp < Maximum, 'Section Alarm' will be triggered.	[Setting method] Select a value from the drop-down list box. [Default value] **Threshold alarm**
Alarm	Enable or disable the alarm output and linkage of the area.	[Setting method] Tick to enable the alarm.
Warning Value	The camera will trigger a warning alarm when the object's temperature reaches the warning value.	[Setting method] Enter a value manually. [Default value] **48**

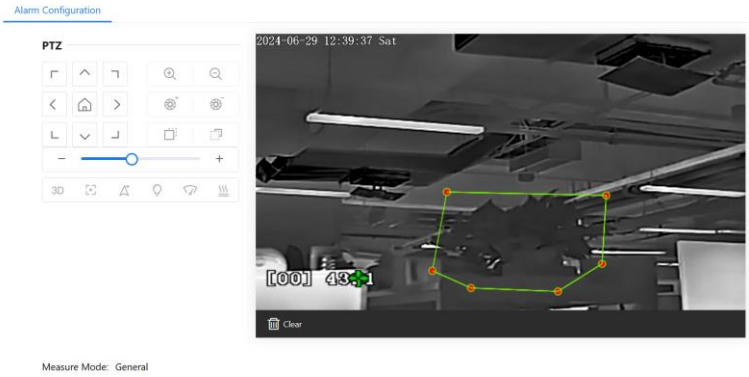
Parameter	Description	Setting
Alarm Value	The camera will alarm when the object temperature reaches the alarm value.	[Setting method] Enter a value manually. [Default value] **50**
Maximum Alarm Value	At section alarm type, the device would not alarm when the temperature is higher than the maximum alarm value.	[Setting method] Enter a value manually. [Default value] **60.00**
Duration (1-10S)	Choose the temperature rise alarm, and set the duration. If the temperature value rises within the duration setting, the alarm is triggered successfully.	[Setting method] Enter a value manually. [Default value] **1.00**
Emission Rate	The emission rate is the capability of an object to emit or absorb energy. The emission rate should be set only when the target is a special material.	[Setting method] Enter a value manually. [Default value] **0.95**
Distance(m)	The distance between the camera and the target.	[Setting method] Enter a value manually. [Default value] **15** **NOTE** Enter the actual distance when the distance between the camera and the target is less than 15m. Enter 15 when the distance between the camera and the target is greater than or equal t o 15m.
Reflection Temperature on	When there are some high-temperature objects on the scene, and the temperature reflects on the other object, you can enable this function to calibrate the temperature.	[Setting method] Tick to enable

Parameter	Description	Setting
Reflection Temperature	The temperature of high-temperature objects.	[Setting method] Enter a value manually. [Default value] **50.00**
Ignore Object	Enable, shield the temperature of this area’s capturing AI objects.	[Setting method] Select a value from the drop-down list box.
Masking	Enabling the device will shield this area’s temperature.	[Setting method] Tick to shield.
Group ID	Different areas can be divided into the same group. The same group’s areas will be merged calculated temperature difference alarm. The ID can be chosen from one of six groups or no group. The group will be alarmed following the next rules: A=The highest temperature of groups (the highest temperature of N regions is the largest) B=Average temperature of groups (average temperature of N regions) WA=Warning value AA=Alarm value a. If A-B >= WA, a temperature difference warning signal is generated ---> (The one with the largest difference between the N areas and the average temperature is the alarm area flashing.) b. If A-B >= AA, a temperature difference alarm signal is generated ---> (the one with the largest difference between the N areas and the average temperature is the alarm area flashing) c. If the warning and alarm conditions are met at the same time, the alarm signal will be generated first.	[Setting method] Select a value from the drop-down list box.

3. Set the temperature area.
   1. Tick an area ID. Set the name.
   2. Choose the type (point, line, polygon)

3. Press and hold the left mouse button, and drag in the video area to draw a temperature area, as shown in Figure 4-8. Right-click to finish the area selected.

Figure 4-8 Temperature Area Setting Interface



NOTE

ID 0 is the full screen; The area cannot be changed.

 : The lowest temperature of the full screen.

 : The highest temperature of the full screen.

 : The lowest temperature in the area.

 : The highest temperature in the area.

4. Delete a temperature area:
   1. Select an area ID.
   2. Click **Clear**.
   3. Remove the tick from the area ID.
   4. Click **Apply**, the message “Apply success” is displayed, and the temperature area is deleted successfully.
5. Click **Apply**. The message "Apply success" is displayed, and the system will save the settings.

----End

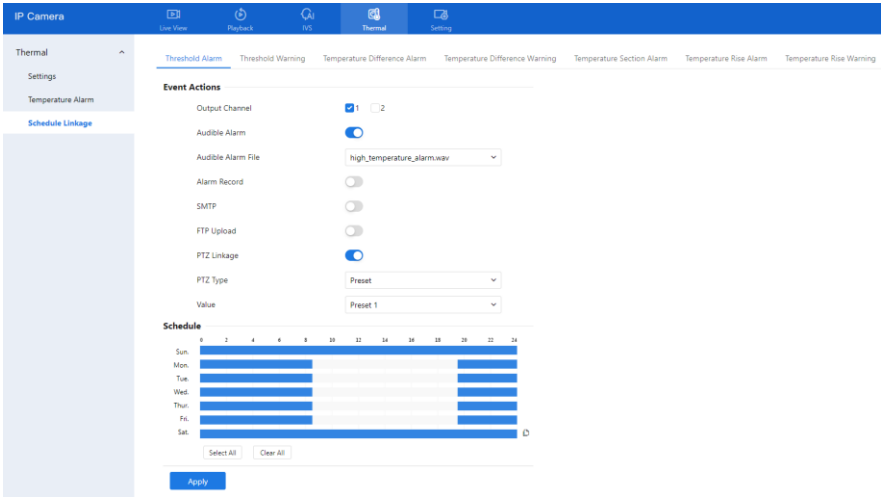
4.3 Schedule Linkage

Operation Procedure

1. Navigate to **Thermal > Schedule Linkage**, as shown in Figure 4-9.

There are eight types of alarm linkage: threshold alarm, threshold warning, temperature difference alarm, temperature difference warning, temperature section alarm, temperature rise alarm, temperature rise warning, and cavity temperature threshold alarm(Eable on **Thermal > Settings> temperature parameter** page).

Figure 4-9 Schedule Linkage



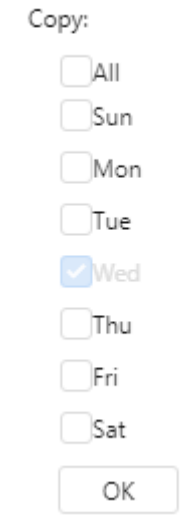
2. Tick the output channel.
3. Enable wanted linkage: “Output Channel”, “Audible alarm”, “Alarm Record”, “SMTP”, “ FTP Upload”, and “PTZ Linkage”.
4. Set schedule linkage.

Method 1： Hold down the left mouse button, drag, and release the mouse to select the deployment time between 0:00-24:00 from Monday to Sunday.

Method 2： Click **Select All** to deploy all the time.

Method 3: Set one day, click  to copy to other days.

Figure 4-10 Copy



Delete schedule time: click **Clear All** to delete all times.

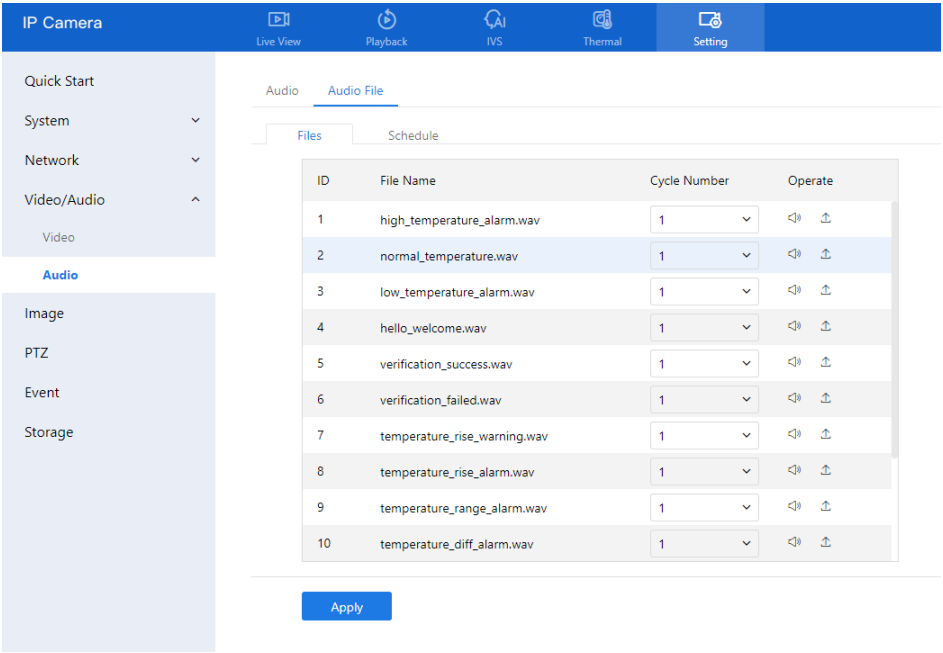
Click the set time, 

click **Delete** to delete this time.

5. Click **Apply**. The message "Apply success" is displayed, and the system will save the settings.

NOTE

Figure 4-11 Audio file



Users can set the audio file manually. Click  to upload the audio file(The type should be WAV, the size must be less than 250 KB, and the bit rate should be 128 kbps.), as shown in Figure 4-12.

Figure 4-12 Upload audio file

----End

5 IVS Settings

On the IVS (intelligent video system) page, users can set deep learning (**AI multi-target**), intelligent analysis (i**ntrusion, smart motion, single line crossing, double line crossing, multi-loitering, wrong-way, enter area, leave area**), environmental safety analysis (**smoking, fire spot detection**), and behavior analysis (**people counting**).

The purpose of the IVS setting is to enhance the automated monitoring capabilities of the camera, reduce manual intervention, and promptly notify relevant personnel in the event of anomalies, thereby improving security and efficiency. Users can enable and configure the corresponding detection options in the management interface based on specific needs.

AI Multi-Target

AI Multi-Target Detection in Smart IPC identifies and tracks faces, full-body, and vehicles within the camera's field of view.

This function enables the detection of different targets within the same scene, effectively categorizing them and improving alarm efficiency and target separation.

People Counting

People counting in Smart IPC is designed to identify areas where the number of people exceeds a predefined threshold. This feature ensures effective crowd control in public spaces by alerting users to potential overcrowding situations. By providing real-time monitoring, it enhances safety, helps manage crowd flow, and prevents dangerous conditions in sensitive or high-traffic areas, such as events, transportation hubs, or emergency evacuation zones.

Smart Motion

Intrusion

Intrusion Detection in Smart IPC is designed to monitor predefined zones and trigger alerts whenever an unauthorized person or object enters the area. This feature enhances security by proactively protecting restricted or high-security spaces, preventing unauthorized access, and ensuring that critical areas remain secure and free from potential threats.

Single Line Crossing

Single Line Crossing Detection in Smart IPC triggers an alert whenever an object or person crosses a user-defined virtual boundary. This feature is essential for monitoring boundaries and ensuring perimeter security, preventing unauthorized entry into restricted areas, and enhancing overall access control.

Double Line Crossing

Double Line Crossing Detection in Smart IPC triggers an alert whenever an object or person crosses a user-defined virtual double line. This feature is essential for monitoring boundaries and ensuring perimeter security, preventing unauthorized entry into restricted areas, and enhancing overall access control for double protection.

Multi-loitering

Multi-Loitering Detection in Smart IPC identifies individuals lingering in a specified area for an unusually long duration. This feature helps detect suspicious behavior early, enabling users to take preventative actions to mitigate potential security threats such as vandalism, theft, or unauthorized activities in sensitive areas.

Unattended Object Detection in Smart VCA identifies objects left behind in a specific area. This feature enhances safety by promptly detecting potential security risks, such as unattended baggage in public spaces, allowing for timely investigation and response.

Enter Area

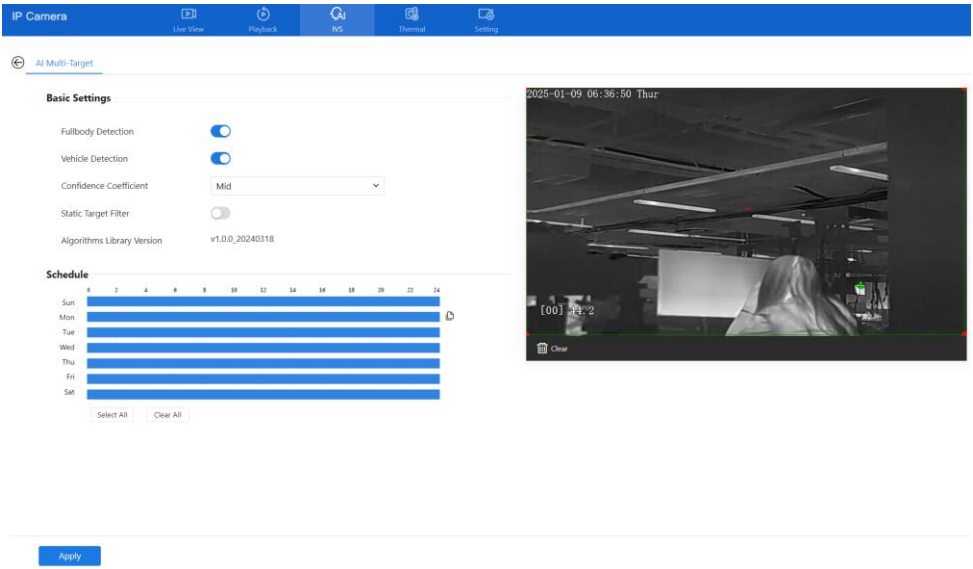
Face Detection in Smart VCA identifies and tracks faces within the camera's field of view.

Missing Object Detection in Smart IPC alerts users when an object is removed from a predefined area. This feature enhances security by helping to prevent theft or unauthorized removal of critical items, ensuring that valuable assets remain protected at all times.

5.1 AI Multi-Target

1. At **the IVS > AI Multi-Targe**t interface, the user can enable full-body detection and vehicle detection to detect the person and vehicle, as shown in Figure 5-1.

Figure 5-1 AI Multi-Target



2. Set the parameters of AI Multi-Target as per Table 5-1.

Table 5-1 AI Multi-Target parameters

Parameter	Description	Setting
Full body detection	The camera will snap the whole body when someone appears in the live video. The detection	Enable

	frame is blue.	
Vehicle detection	The camera will snap the license when the vehicle appears in live video. The detection frame is yellow.	Enable
Confidence Coefficient	In the range of snapshots, there are three types: high, mid, and low. The higher the confidence, the better the snap quality and the fewer snapshots.	Choose from the drop list.
Static Target Filter	If the target is static, the device will filter this target. For example, if a vehicle stops for a long time, the device will be filtered.	Enable

Step 1 Draw the detection area by using the mouse. The default area is full-screen. Move the cursor to the drawing interface and click to generate a point, move the cursor to draw a line, and then click to generate another point. This is how a line is generated. In this way, continue to draw lines to form any shape, and right-click to finish the drawing.

Step 2 To set the schedule, please refer to *Chapter 4*.

Step 3 Click **Apply** to save the settings.

---End

5.2 Intelligent Analysis

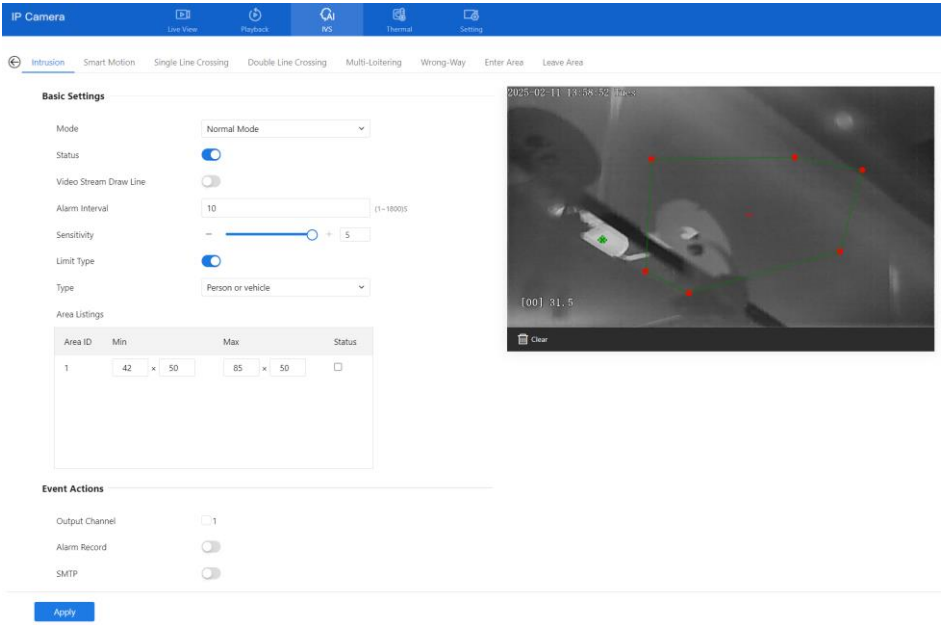
5.2.1 Intrusion

The Intrusion function refers to an alarm generated when target objects (such as person, vehicle, or both person and vehicle) enter the deployment area.

Procedure

1. Navigate to **IVS > Intelligent Analysis** > **Intrusion** to access the **Intrusion** interface, as shown in Figure 5-2.

Figure 5-2 Intrusion Setting Interface

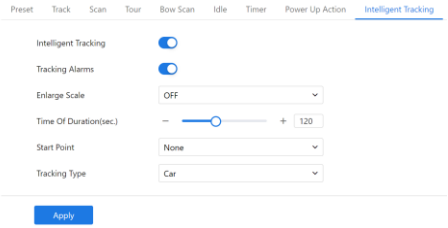


2. Set all parameters of Intrusion as per Table 5-2.

Table 5-2 Intrusion Parameter Description

Parameter	Description	Setting
Mode	Normal mode and preset mode. Preset mode: choose one preset to set parameters on it.	[How to set] Choose from the drop-down list [Default value] **Normal mode**
Preset point mode	You can choose between Normal Mode and Preset Mode. Preset Mode: Pre-set positions in advance, select the corresponding preset point for configuration, and choose post-alarm actions (continued tour or pause tour). Mode: Preset Point Mode Action After Alarm: Continued Tour Preset Point Mode: Preset 1 Tour refers to the camera itself performing a tour action. During the tour, if an alarm is triggered at a preset point, the camera will continue the tour after the alarm action concludes. If the camera is not performing a tour action, the post-alarm action settings are ineffective.	[How to set] Choose from the drop-down list [Default value] **Preset 1**

Parameter	Description	Setting
Status	Enable the button to enable the alarm.	[How to set] Click Enable to enable. [Default value] **OFF**
Alarm Interval	During the interval, the same alarm will only be sent once.	[How to set] Input a value [Default value] **10**
Sensitivity	The sensitivity of detecting smoking, when the value is high, the alarm can be triggered easily, but the accuracy will be lower.	[How to set] Choose from the drop-down list [Default value] **5**
Limit Type	Effective alarms are set based on target type, with options of Person or Vehicle, person, vehicle. When the device is used indoors, because of the small space and large targets, to avoid wrong alarms being triggered by the person, even if the vehicle is selected, it is recommended to set the target type to person for indoor use.	[How to set] Click to enable Limit Target Type. [Default value] **OFF**
Area Listing	When users set the areas, the area will show on the listing. If the area status is on, the min and max size will show on the area, drag the frame to move, and adjust the points of the frame to change size.	
Output Channel	If you check to set the Output Channel and the device is connected to an external alarm indicator, the alarm indicator signals when an alarm is triggered.	[How to set] Click to select an ID.
Audible alarm	After enabling Audible Warning and setting Audible Alarm Output, the built-in speaker of the device or the connected external speaker plays warning sounds when an alarm happens. (set at the "**Setting > Video / Audio > Audio File**")	[How to set] Click to enable the Audible alarm [Default value] **OFF**
SMTP	Enable the button to enable the SMTP server.	[How to set] Click to enable SMTP. [Default value] **OFF**

Parameter	Description	Setting
FTP Upload	Enable the button to enable File Transfer Protocol.	[How to set] Click to enable FTP Upload. [Default value] **OFF**
Linkage Tracking	Enable, when an alarm target is detected, the lens tracks the target's movement. The linked tracking action is executed via the "Setting > PTZ > Intelligent Tracking" parameters. During linkage tracking, the current alarm remains active continuously, preventing other alarms from triggering during this period. Whether Intelligent Tracking is enabled does not affect the linked tracking action. 	[How to set] Click to enable Linkage Tracking. [Default value] **OFF**
Snapshot	When the alarm is triggered, it will snapshot to save to the SD card. The result can be viewed on the Snapshot interface of the optical channel.	[How to set] Click to enable Snapshot. [Default value] **OFF**

3. Set a deployment area. Move the cursor to the drawing interface and click to generate a point, move the cursor to draw a line, and then click to generate another point. This is how a line is generated. In this way, continue to draw lines to form any shape, and right-click to finish the drawing.

NOTE

A drawn line cannot cross another one, or the line drawing fails.

Any shape with 32 sides at most can be drawn.

The quantity of deployment areas is up to 8.

4. Set deployment time, please refer to Chapter 4.3 Step 4.
5. Click **Apply** to save the settings.

----End

5.2.2 Smart Motion

Smart motion refers to the alert generated when a specified type of target (such as a person, vehicle, etc.) moves within the live video defense area.

Smart Motion Detection is designed to improve the efficiency and accuracy of motion detection in surveillance systems. Its primary purposes include:

Reducing False Alarms

Smart Motion Detection minimizes unnecessary alerts caused by irrelevant motions such as moving shadows, light changes, or environmental factors like wind-blown leaves.

Enhancing Security Monitoring

Focusing on specific areas and detecting meaningful activities (e.g., people or vehicles) allows security teams to respond more effectively to potential threats.

Improving Event Detection Accuracy

With intelligent filters like people and vehicle detection, it ensures that only relevant events are identified and recorded, reducing the effort required to review footage.

Optimizing Storage and Bandwidth

Recording only critical events, it reduces the amount of data stored and transmitted, leading to more efficient storage usage and lower bandwidth consumption.

Facilitating Real-Time Alerts

Smart Motion Detection enables instant notifications for events of interest, helping users take timely actions in critical situations.

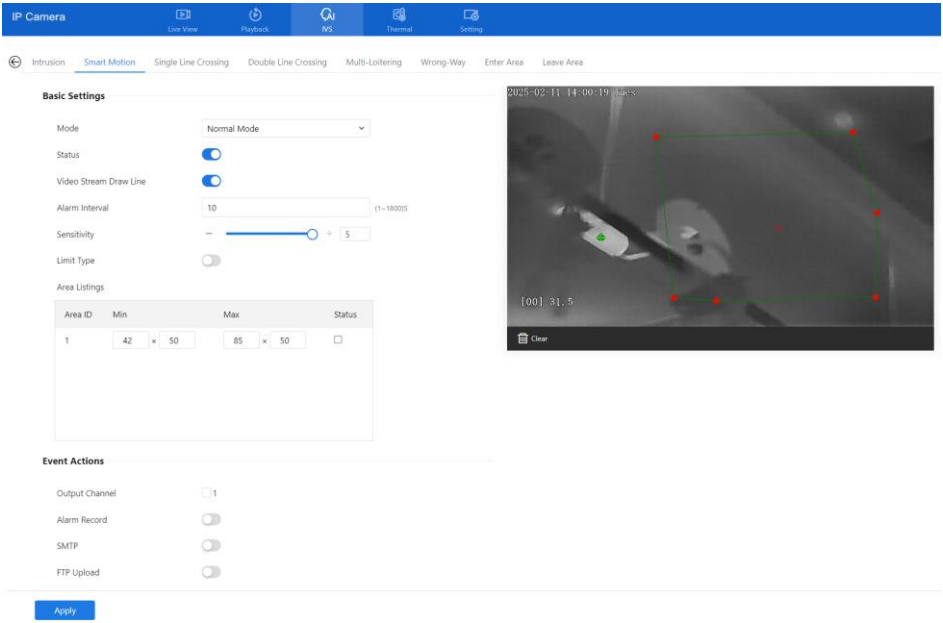
Simplifying Event Analysis

Focusing on high-priority events simplifies post-event investigations and improves the efficiency of video footage review.

Procedure

1. Navigate to **IVS > Intelligent Analysis** > **Smart Motion** to access the **Smart Motion** interface, as shown in Figure 5-3.

Figure 5-3 Smart Motion



2. Set all parameters of smart motion. Please refer to Chapter 5.2.1

5.2.3 Single Line Crossing

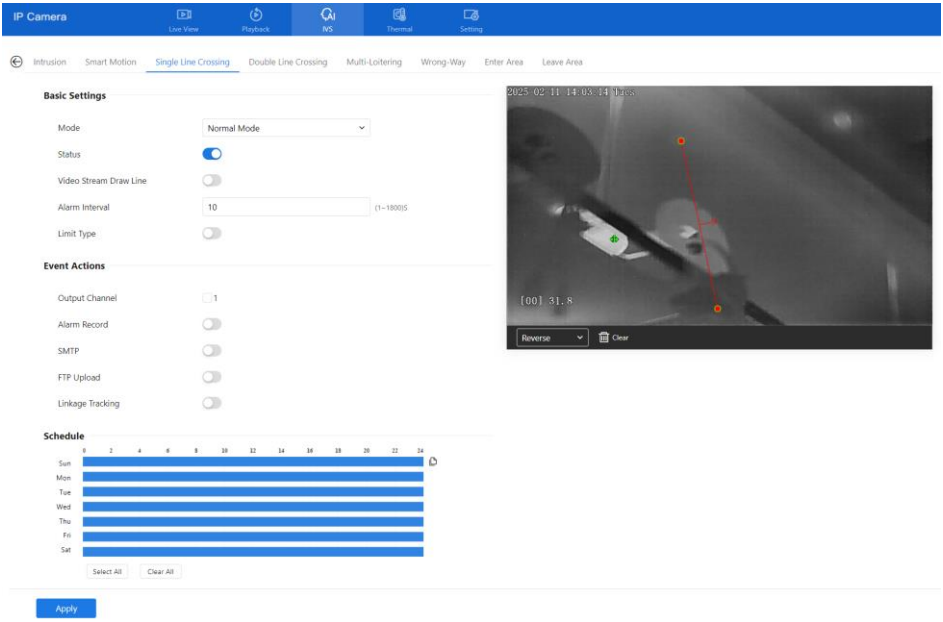
A single line crossing can set up a virtual boundary line. When a target crosses this line to enter or leave the area, the camera will record the event and trigger linkage actions.

A Single Line Crossing is a line that is set at a concerned position within the monitored field of view and specifies the forbidden travel direction; An alarm is generated when the targets of specified types (such as person or vehicle) cross this line.

Procedure

1. Navigate to **IVS > Intelligent Analysis** > **Single Line Crossing** to access the **Single Line Crossing** setting interface, as shown in Figure 5-4.

Figure 5-4 Single Line Crossing Setting Interface



2. Set all parameters of the Single Line Crossing, please refer to Table 5-2.
3. Set a deployment area.

Draw a line: Move the cursor to the drawing interface, hold down the left mouse button, and move the cursor to draw a line. When you release the left mouse button, a Single Line Crossing is generated.

Setting a Single Line Crossing: Click a line (and the trip line turns red) to select the Single Line Crossing and set its direction as Positive, Reverse, or Bidirectional, or delete the selected line. You can also press and hold the left mouse button at the endpoint of a Single Line Crossing and move the mouse to modify the position and length of this Single Line Crossing. You can right-click to delete the Single Line Crossing.

Figure 5-5 Set the Single Line Crossing line.

NOTE

Try to draw the Single Line Crossing in the middle, because the recognition of a target takes time after the target appears on the screen, and an alarm is generated only when the object is recognized to have crossed the Single Line Crossing.

The Single Line Crossing, which detects a person's foot as the recognition target, cannot be too short, because a short Single Line Crossing tends to miss targets.

4. Set deployment time, please refer to Chapter 4.
5. Click **Apply** to save the settings.

----End

5.2.4 Double Line Crossing

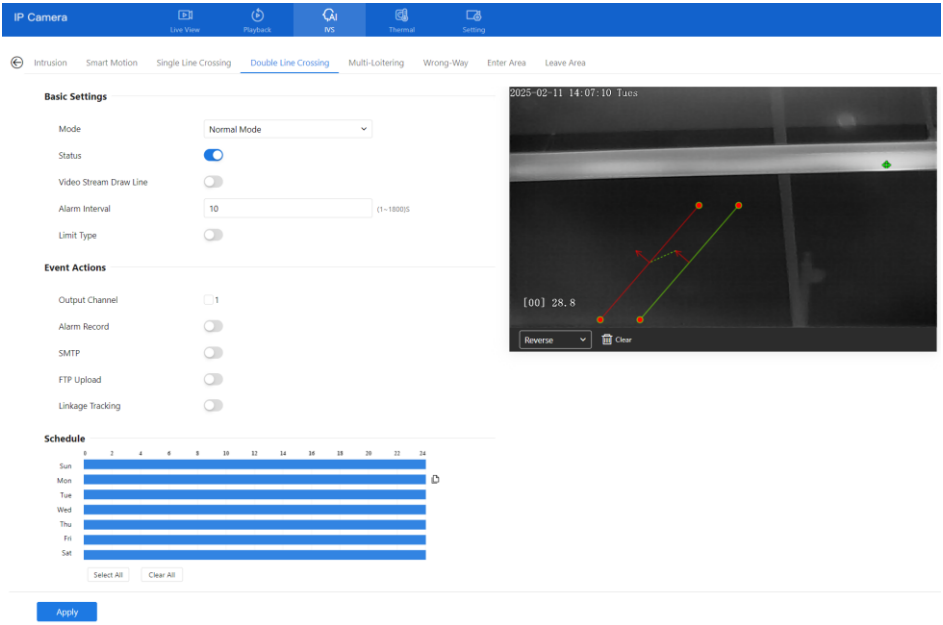
A double line crossing involves drawing two parallel virtual lines within the area. When a target crosses these two lines in sequence, the camera can determine the target's movement direction (whether entering or leaving) based on the order of crossing.

Double Line Crossing refers to two lines that are set at a concerned special position within the field of view and specify the forbidden travel direction. When the targets of specified types (such as person or vehicle) move along the set travel direction and cross these lines in a certain order (line 1 followed by line 2) in pass max time, an alarm is generated.

Procedure

1. Navigate to **IVS > Intelligent Analysis** > **Double Line Crossing** to access the **Double Line Crossing** setting interface, as shown in Figure 5-6.

Figure 5-6 Double Line Crossing Setting Interface



2. Set all parameters of the Double Line Crossing. Please refer to chapter 5.2.1
3. Set a deployment area.

Draw a line: Move the cursor to the drawing interface, hold down the left mouse button, and move the cursor to draw two lines. When you release the left mouse button, two numbered virtual fences are generated. Choose either of the Double Line Crossing to set the direction to Positive or Reverse.

Set Double Line Crossing: Click one of the Double Line Crossing (and the virtual fence turns red) to select this virtual fence and set the direction to **Positive** or **Reverse**, or delete the selected line. You can also press and hold the left mouse button at the endpoint of a virtual fence and move the mouse to modify the position and length of this virtual fence. You can right-click to delete the Double Line Crossing.

NOTE

The two lines are in sequential order. An alarm is generated only when a target crosses virtual fence 1 and then virtual fence 2 within the set maximum passing time.

Try to draw a Double Line Crossing in the middle, because the recognition of a target takes time after the target appears on the screen, and an alarm is generated only when the object is recognized to have crossed the Double Line Crossing.

The Double Line Crossing, which detects a person's foot as the recognition target, cannot be too short, because a short Double Line Crossing tends to miss targets.

4. Set deployment time, please refer to Chapter 4.
5. Click **Apply** to save the settings.

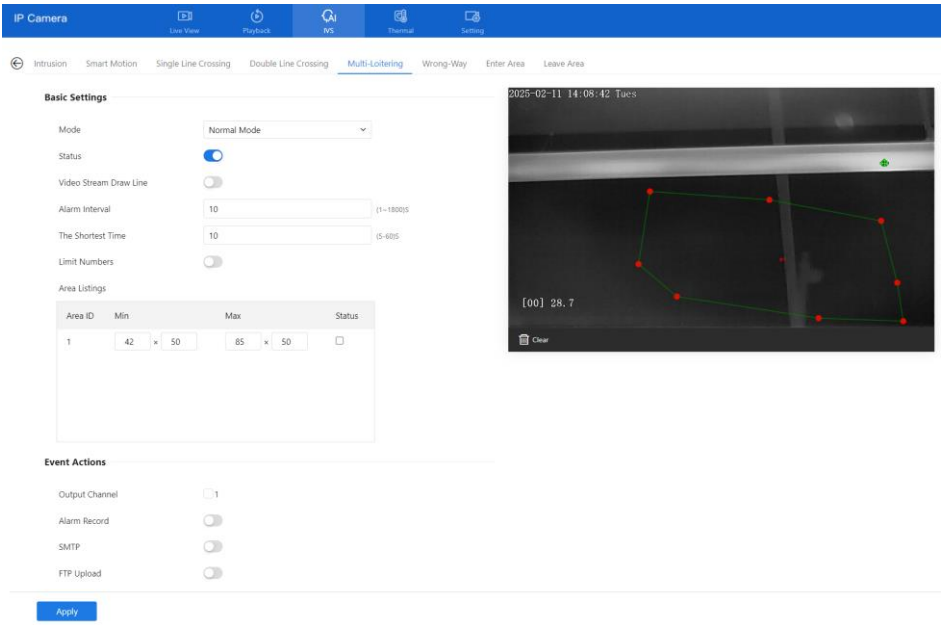
----End

5.2.5 Multi-Loitering

Multi-loitering allows setting the shortest loitering time for multiple targets of the specified type (such as person or vehicle) within the deployment area in the field of view. When the loitering time of the multiple targets within this area meets the set shortest loitering time, an alarm is generated.

1. Navigate to **IVS** > **Intelligent Analysis** > **Multi-Loitering** to access the **Multi-Loitering** setting interface, as shown in Figure 5-7.

Figure 5-7 Multi-Loitering



2. To set all parameters of multi-loitering, please refer to Chapter 5.2.1

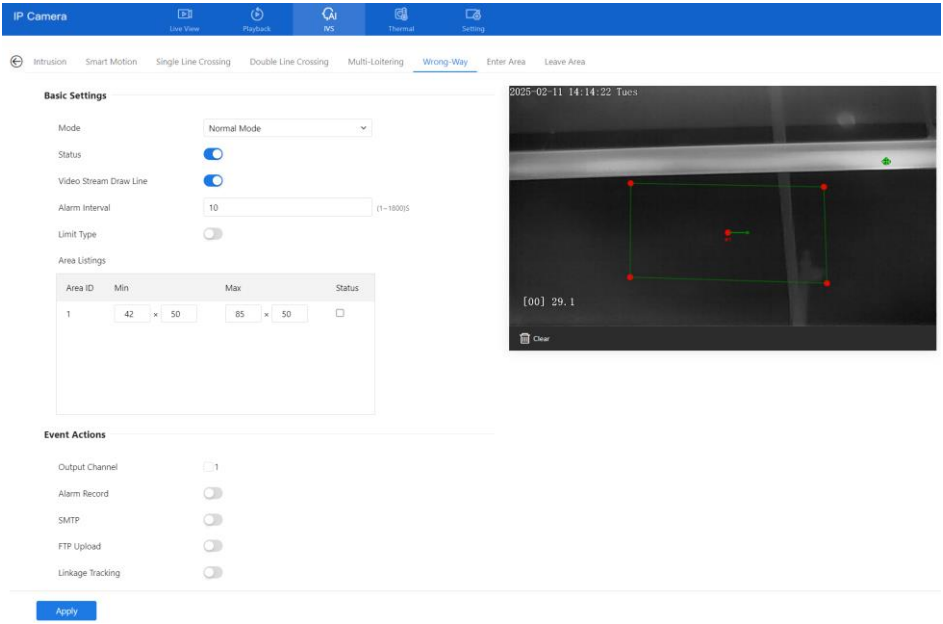
5.2.6 Wrong -Way

Wrong-way allows setting the travel direction criteria for a target within an area on the video screen.

If someone/something is moving in the opposite direction in an area, an alarm is generated.

1. Navigate to **IVS** > **Intelligent Analysis** > **Wrong-Way** to access the **Wrong-Way** setting interface, as shown in Figure 5-8.

Figure 5-8 Wrong-Way



2. Set all parameters of wrong-way, please refer to *chapter 5.2.1*

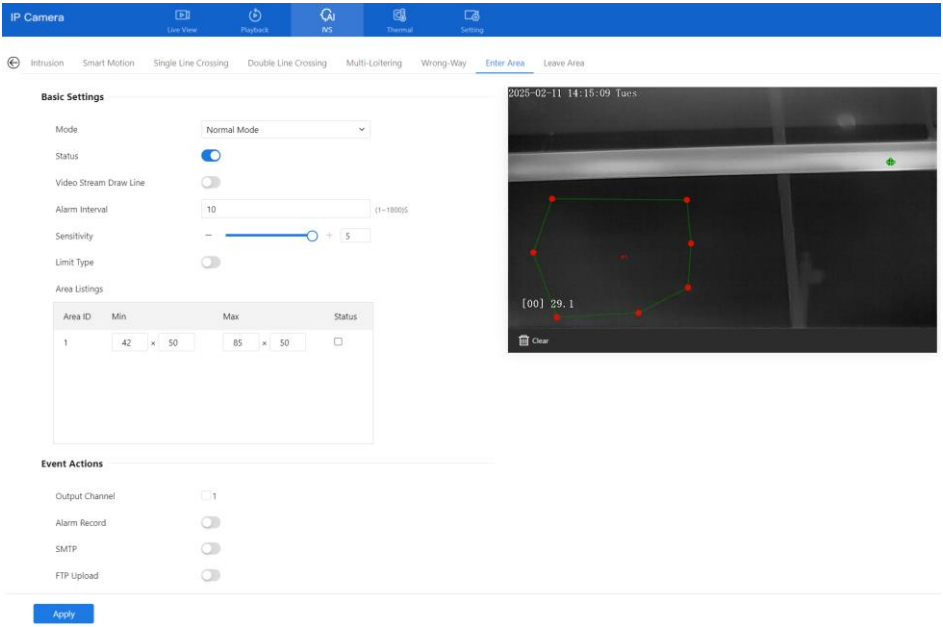
5.2.7 Enter Area

To prevent unauthorized entry into specific areas and monitor the movement of personnel and vehicles in key zones, detection areas can be set up. Once a target enters, an alert is promptly sent, enabling a rapid response.

The enter area refers to an alarm generated when a target enters the deployment area at a valid time.

1. Navigate to **IVS** > **Intelligent Analysis** > **Enter Area** to access the **Enter Area** setting interface, as shown in Figure 5-9.

Figure 5-9 Enter Area



2. Set all parameters for entering the area. Please refer to Chapter 5.2.1

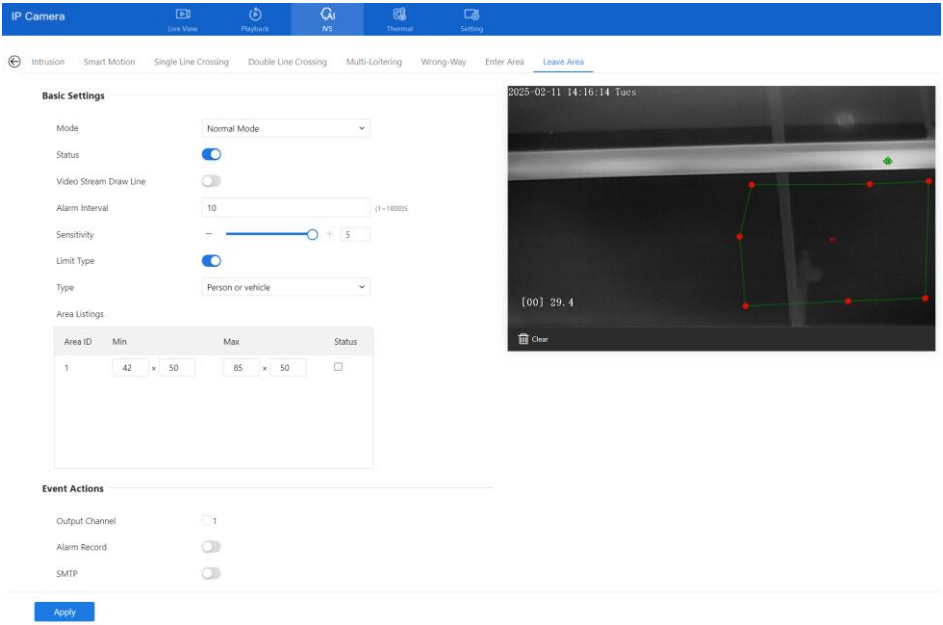
5.2.8 Leave Area

Within a designated area, prohibiting relevant targets from leaving can effectively prevent the loss of valuable items. Real-time monitoring and automatic alerts enhance security and management efficiency.

The left area refers to an alarm generated when a target leaves the deployment area at a valid time.

1. Navigate to **IVS** > **Intelligent Analysis** > **Leave Area** to access the **Leave Area** setting interface, as shown in Figure 5-10.

Figure 5-10 Leave Area

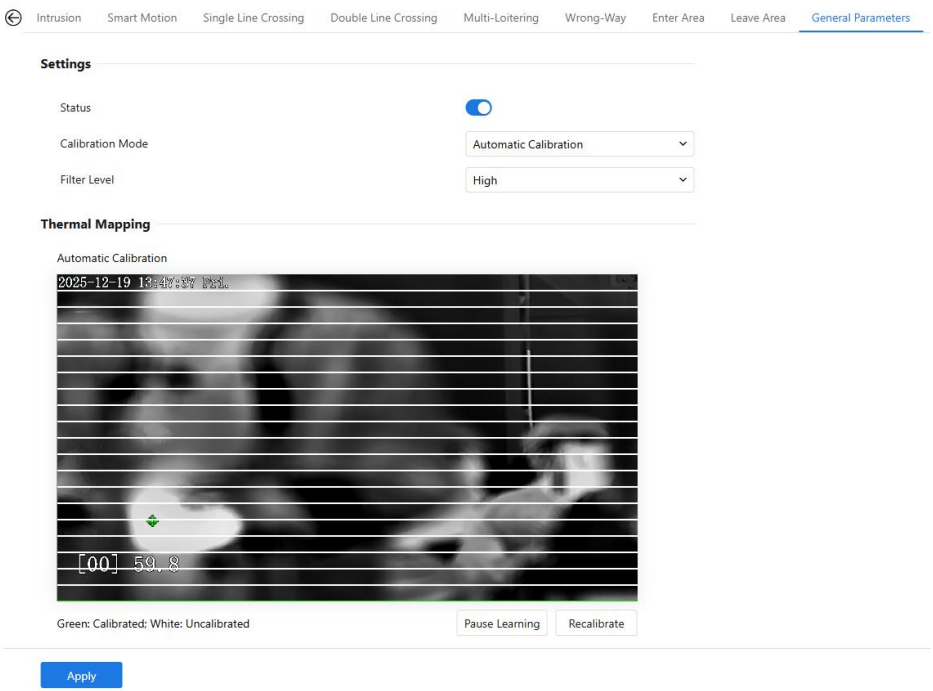


2. Set all parameters for leaving the area. Please refer to Chapter 5.2.1

5.2.9 General Parameters

The target filtering is intended to improve detection accuracy; an alarm will only be triggered when the target meets the condition. It is for all intelligent analysis actions.

Figure 5-11 General parameters



To enable **Target Filtering**, turn on the status and set the **Calibration Mode** to **Automatic Calibration**.

The Filter Level can be set to High, Middle, or Low. The filter level has two functions: it affects the calibration and the accuracy of target detection.

When using Automatic Calibration, choose the filter level and click "Continue Learning" to start calibration.

During calibration, the calibrator must go back and forth from far to near until calibration is complete (only one person should be in the frame at a time, as multiple people will affect accuracy). The algorithm automatically calculates the calibrator's height at each distance. Calibration is based on the bottom edge of the human-shaped frame; the top line in the frame generally won't turn green. There is no notification of calibration completion; you must determine whether calibration is complete by observing when the lines turn green.

Filter Level	Calibration	Detection
Low	8 green lines	The height of the target is 0.3 ~ 1.7 times the height of the calibrator, which can be detected; otherwise will be filtered.
Middle	11 green lines	The height of the target is 0.65 ~ 1.35 times of the calibrator, which can be detected; otherwise will be filtered.
High	14 green lines	The height of the target is 0.8 ~ 1.2 times the height of the calibrator, which can be detected; otherwise will be filtered.

When a target is detected, its height is compared against the calibrated target height. Targets with excessive height discrepancies are filtered out to reduce potential false alarms. Filtered target boxes turn red, and this one does not trigger alarms.

5.3 Environmental Safety Analysis

At the advanced environmental Safety Analysis interface, users can set the parameters of smoking detection, smoke and flame detection, and fire spot detection. Enable the linkage actions, and the alarm information can be sent to the user through the linkage.

5.3.1 Smoking Detection

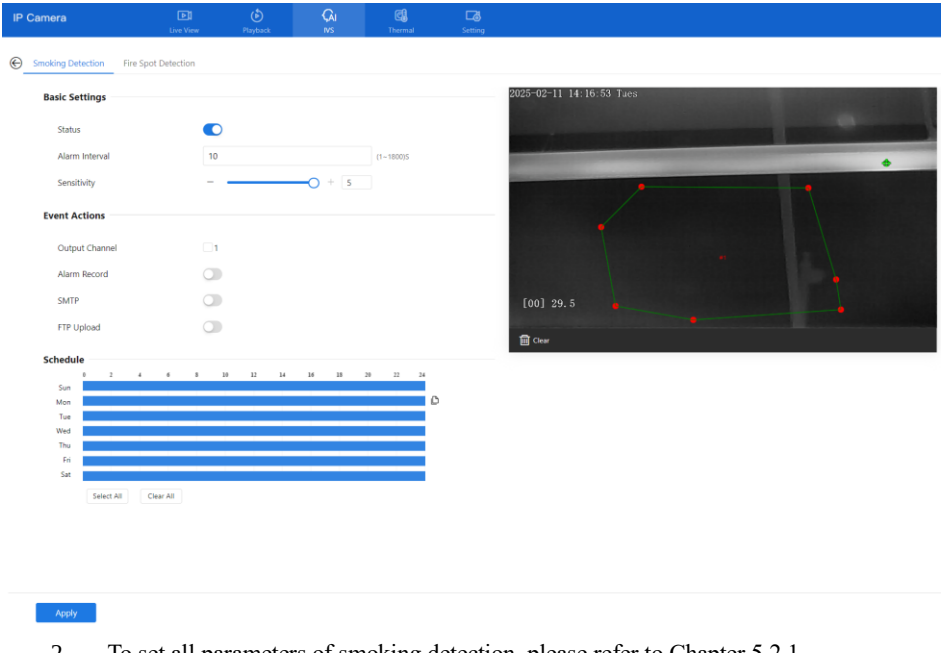
Smoking detection functionality is widely used in areas where smoking is prohibited, assisting managers in real-time monitoring of smoking behaviors to ensure safety and compliance. Through automatic alerts or recordings, it can effectively reduce health issues, safety risks, and violations caused by smoking.

Description

The smoking detection function refers to the fact that an alarm is generated when someone is smoking or generating spark at the deployment area.

1. Navigate to **IVS** > **Environmental Analysis** > **Smoking Detection** to access the **Smoking Detection** interface, as shown in Figure 5-12.

Figure 5-12 Smoking detection interface



2. To set all parameters of smoking detection, please refer to Chapter 5.2.1

----End

5.3.2 Fire Spot Detection

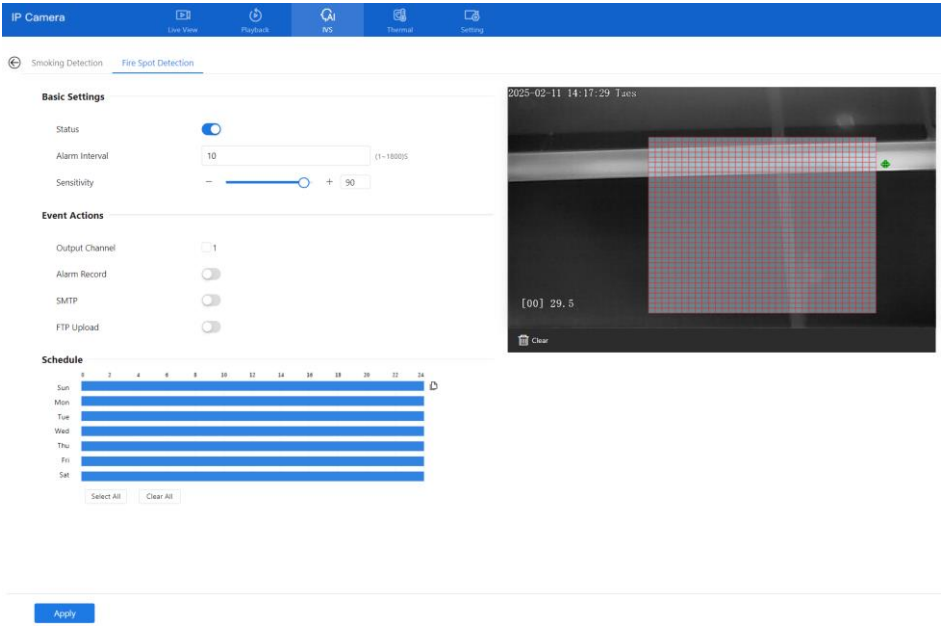
Description

The fire spot detection function refers to the fact that an alarm is generated when something is on fire in the deployment area.

Procedure

Step 1 Select **IVS** > **Environmental Analysis** > **Fire Spot Detection** to access the **Fire Spot Detection** interface, as shown in Figure 5-13

Figure 5-13 Fire spot detection interface

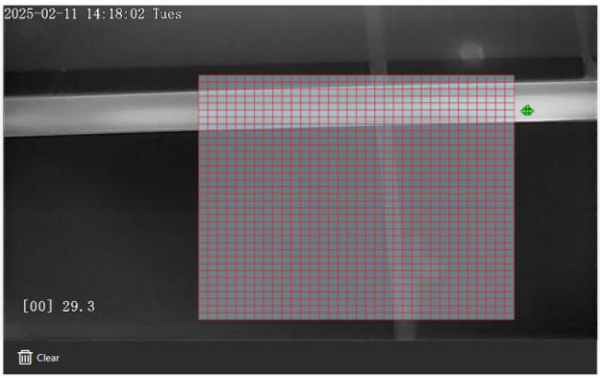


Step 2 Set all parameters of Fire Spot Detection, please see chapter 5.2.1

Step 3 Set a deployment area.

Use the mouse to draw a rectangular area. You can set several areas to deploy, as shown in Figure 5-14.

Figure 5-14 Set deployment area



Step 4 Set deployment time, please refer to Chapter 4.

Step 5 Click **Apply** to save the settings.

---End

5.4 People Counting

Users can draw a line to count the number of people in the special area.

5.4.1 Set

Procedure

1. Navigate to **IVS** > **People Counting > Set** to access the **People Counting** setting interface, as shown in Figure 5-15.
2. Set all parameters of People Counting as per Table 5-3.

Figure 5-15 People counting

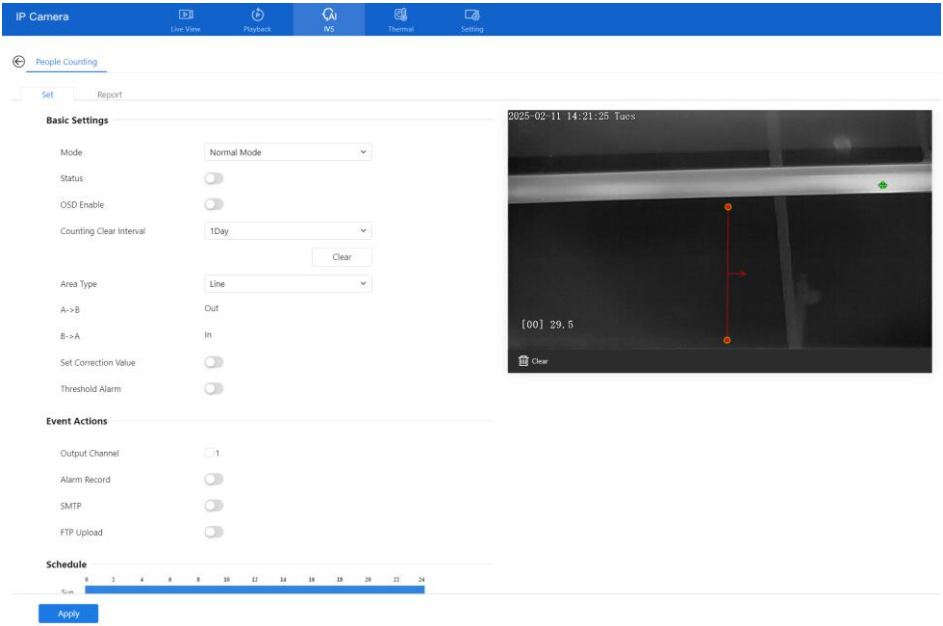


Table 5-3 Parameters of people counting

Parameter	Description	Setting
Mode	Normal mode or preset mode	[How to set] Choose from the drop-down list. [Default value] Normal mode
Status	Enable the button to enable the alarm.	[How to set] Click the button to enable. [Default value] **OFF**
OSD Enable	Enable the OSD, and the count data will show on the live video screen.	[How to set] Click Enable to enable. [Default value] **OFF**

Parameter	Description	Setting
Counting Clear Interval	The camera will clear the counting data at the setting interval. Click the "Clear Counting", clearing the data immediately.	[How to set] Choose from the drop-down list. [Default value] **1 Day**
Area Type	Draw a line on the live video screen. The labels A and B indicate out and in.	[How to set] Choose from the drop-down list. [Default value] **Line**
Set Correction Value	Enable and set the count correction value; it can be positive or negative. For example, if 30 people are entering the area before counting, input 30 to correct. If 30 people go out of the area, input -30.	[How to set] Enable /Input a value in the area box. [Default value] **0**
Threshold Alarm	Enable, when the counting number reaches the threshold value, an alarm is triggered.	[How to set] Click Enable to enable. [Default value] **OFF**
Threshold	The threshold for enabling the alarm.	[How to set] Enable /Input a value in the area box. [Default value] **1000**
Output Channel	If you check to set the Output Channel and the device is connected to an external alarm indicator, the alarm indicator signals when an alarm is triggered.	[How to set] Click to select an ID.
Audible alarm	Enable so that when an alarm occurs, it will play audio for the alarm. Choose the audible alarm file (set at the "**Configuration > Alarm > Audible Alarm Output**").	[How to set] Click to enable the Audible alarm [Default value] **OFF**
SMTP	Enable the button to enable the SMTP server. The parameters of SMTP can be set at **Configuration > Network Service > SMTP** interface.	[How to set] Click to enable SMTP. [Default value] **OFF**
FTP Upload	Enable the button to enable File Transfer Protocol.	[How to set] Click to enable FTP

Parameter	Description	Setting
	The parameters of FTP can be set at **Configuration > Network Service > FTP** interface.	Upload. [Default value] **OFF**

3. Set a deployment area.

Move the cursor to the drawing interface and click to generate a point, move the cursor to draw a line, and then click to generate another point. This is how a line is generated. In this way, continue to draw lines to form any shape, and right-click to finish the drawing.

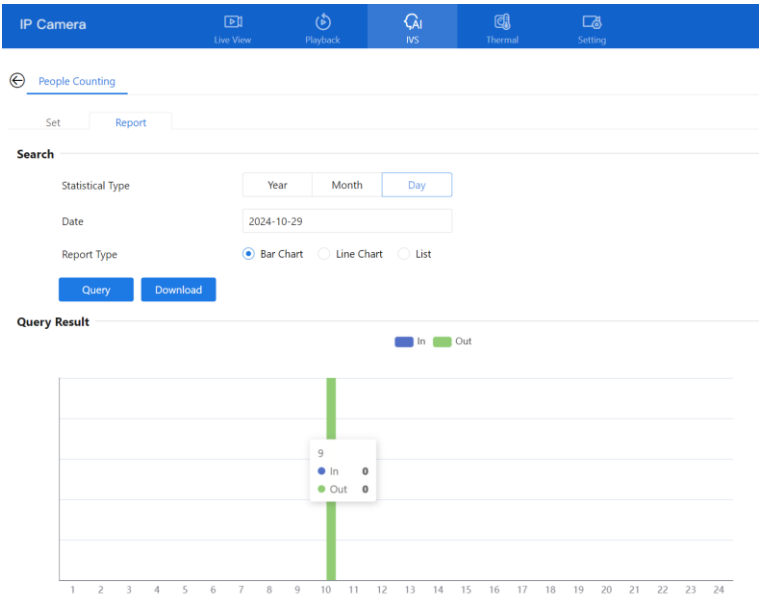
4. Set deployment time.
5. Click **Apply** to save the settings.

----End

5.4.2 Report

At the people counting report interface, you can view the data of people counting by setting the query condition (choose the detailed time in the date's pop-up window). There are three modes to show the data, such as line chart, histogram, and list, as shown in Figure 5-16.

Figure 5-16 Report of people counting



Click "Download" to download the query result.

Choose the mode of showing results, such as line chart, histogram, and list.

Click “Query” to query the data on people counting.

The data result can be saved to the local folder.

----End

6 PTZ Function Settings

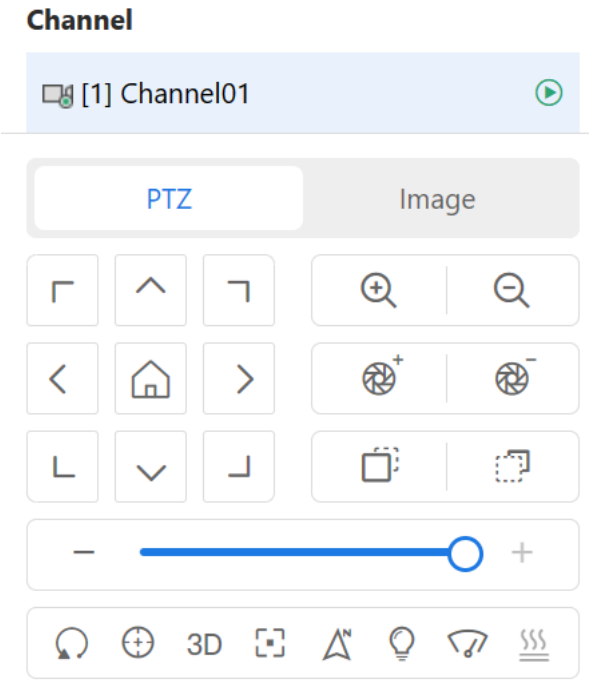
6.1 PTZ Control function

PTZ Control

When browsing Live videos shot by a dome camera or a camera connected to an external PTZ, you can control the PTZ to view Video shots in different directions.

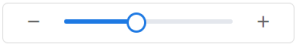
In the PTZ control area, you can click the eight arrow keys to move the PTZ in eight directions, as shown in Figure 6-1.

Figure 6-1 PTZ control zone



It may also control the iris, zoom, and focus of the camera lens through other buttons in the PTZ control zone. The functions of each button are as shown in Table 6-1.

Table 6-1 Descriptions of PTZ buttons

Button	Description
Arrow	Click the arrows to move the PTZ in eight directions.
Home	Click  to go home position.
Zoom	Click  to adjust the surveillance range of the front-end lens.
Iris	Click  to adjust the size of the front-end iris.
Focus	Click  to adjust the focus of the front-end lens.
Speed	Drag the slider on  to adjust the rotational speed of the PTZ.
	PTZ reset, click to reset the PTZ settings.
	PTZ self-test: Click to self-test the PTZ rotation.
3D	Click  to operate the lens directly, zoom +/zoom- the area, or move the focus point.
	Click to focus the lens automatically once.
	Indicates that the direction of the camera is north when the user clicks.
	Click on the light of the optical channel, and click again to turn it off.
	Click to open the wiper, and click again to close the wiper.

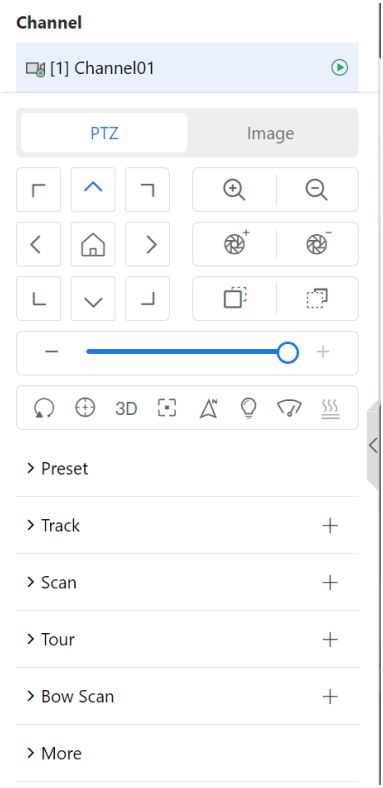
----End

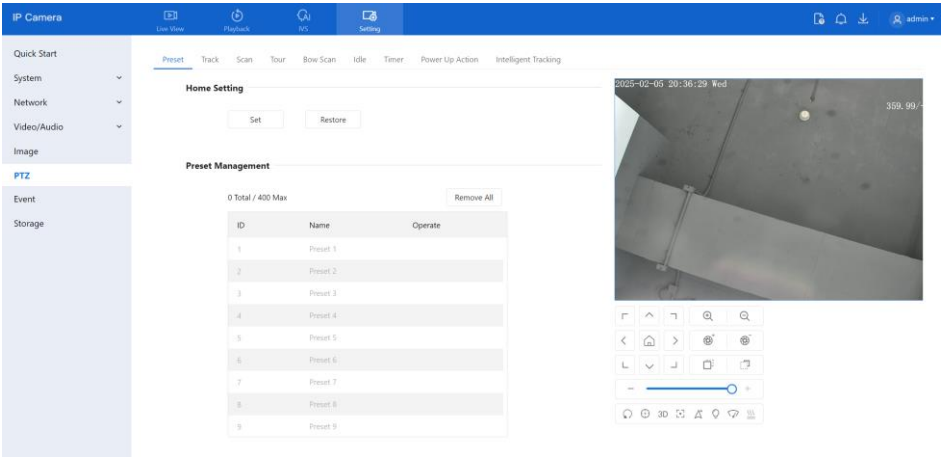
6.2 PTZ configuration

6.2.1 PTZ setting

The PTZ configuration interface is displayed on the Live Video page, under the part of PTZ control section, as shown in Figure 6-2.

Figure 6-2 PTZ configuration





Through this interface, you can perform the following operations:

Add, Delete, and Apply a Preset, Track, Scan, Tour, and Bow Scan.

Set and enable Idle.

Set the home position.

Set the direction due north.

Any direction can be set as the reference due north.

Configure Timer.

----End

6.2.2 Configure and Apply Home

You can set any point as home; the default Home is the 0.00/90.0/1X coordinate. Click  to go home position directly.

Step 1 Click **Home**.

The **Home** page is displayed as shown in Figure 6-3.

Figure 6-3 Home configuration

Step 2 Adjust the PTZ keyboard to operate the lens.

Step 3 Click **Set** to set home. Click **Restore** to restore the default home.

Step 4 Click  invoke home.

----End

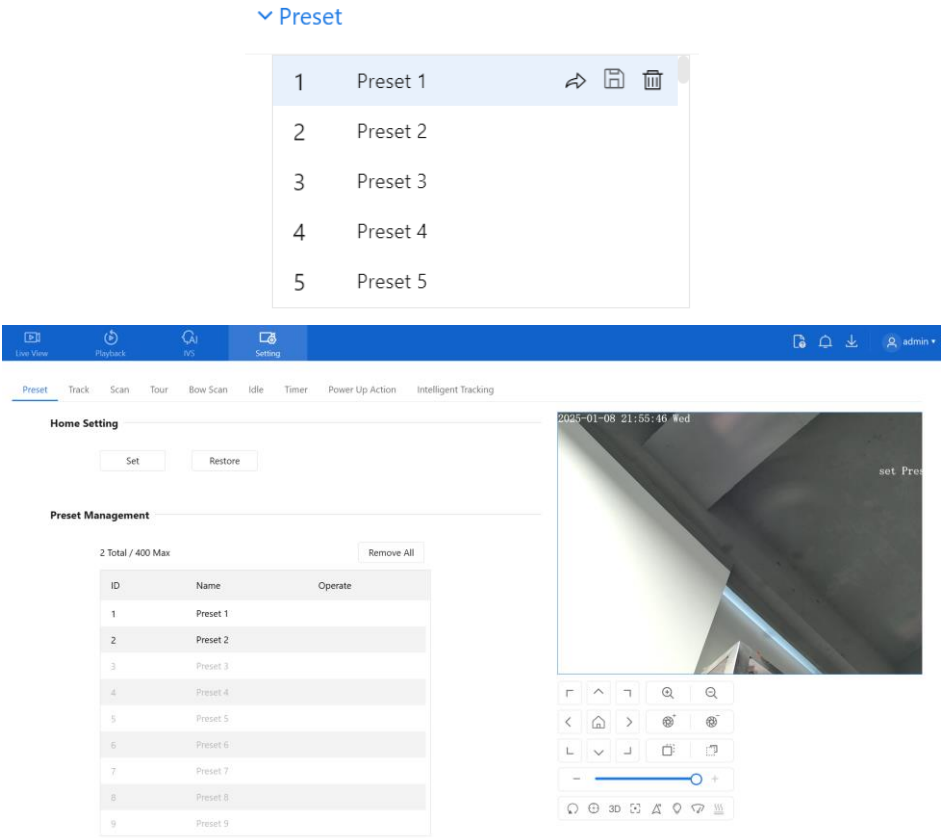
6.2.3 Configure and Apply Preset

You can configure preset positions and quickly rotate the camera to a preset position by applying the preset.

Operation procedure

Step 1 Click **Preset** in the PTZ configuration area, and the add preset list is displayed, as shown in Figure 6-4.

Figure 6-4 Preset configuration



Step 2 Operate your PTZ to the position you want, then click the save icon , and the preset will be created.

Step 3 Choose the preset you created, and click the preset name. You can modify the preset name. Please remember to save it after you change it.

Step 4 If you want to delete a preset, move your mouse to the preset you want to delete, and click the delete icon , and the preset will be deleted. There are no tips for your delete operation, so be careful to do this.

Select a preset position from the **Preset** list to invoke the preset position. Click icon to invoke.

NOTE

The special presets:

Set No.64 preset, the PTZ functions restore to factory settings.

Invoke the No.92 preset, and set the start point of the scan.

Invoke the No.93 preset, and set the end point of the scan.

Invoke No.97 preset; it will invoke SCAN 1.

Set No.97 preset, view the version of the MCU and chip.

Invoke No.99 preset, scan by rotating 360°.

Invoke the No.250 preset, and enable the MCU temperature.

Invoke No.251 preset, and disable the MCU temperature.

Set No.252 preset, the PTZ parameters will be restored to factory settings.

Invoke 103 preset, the brush works once; this function is only for PTZ cameras with a brush.

----End

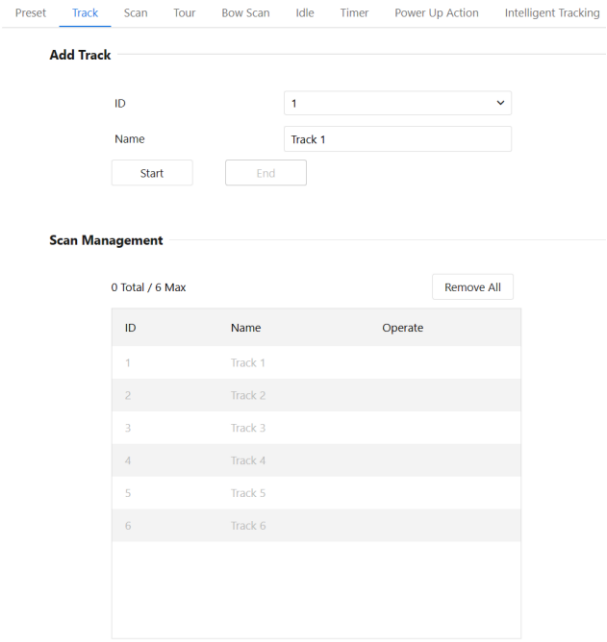
6.2.4 Configure and Apply Tracks

You can record a track to allow the camera to repeatedly rotate based on the preset track.

Operation procedure

Step 1 Click **Track** in the PTZ configuration area, the add track page is displayed as shown in Figure 6-5.

Figure 6-5 Add track



Step 2 Select a track ID from the Add Track box, and enter the track name.

Step 3 Click **Start**, then use the eight arrow keys in the **PTZ control** area to configure a track.

Step 4 Click **End** to finish the track setting.

Step 5 Select the track name from the Tracklist and click  to apply the track. If you want to delete the track, move your mouse to the track you want to delete, and click the delete icon  , and the track will be deleted.

NOTE

Up to 6 Tracks can be configured.

----End

6.2.5 Configure and Apply Scan

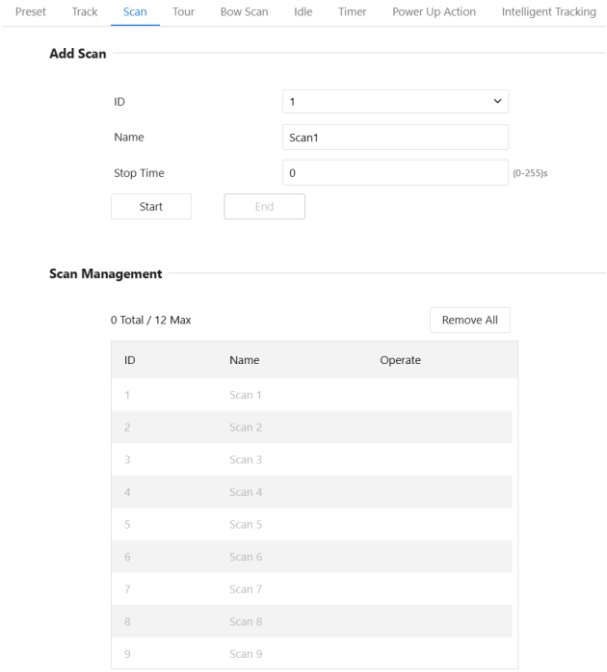
You can configure a Scan to rotate the camera between two positions by applying the Scan.

If the two coordinates need to rotate at an angle of less than 180 ° clockwise, and more than 180 ° counterclockwise, the large arc will rotate; If that angle is a clockwise rotation of more than 180 ° and a counterclockwise rotation of less than 180 °, then the small arc will rotate.

Operation procedure

Step 1 Click **Scan** in the PTZ configuration area, and the add Scan page is displayed, as shown in Figure 6-6.

Figure 6-6 Add scan



Step 2 Select Scan ID (such as 1) from the Add Scan box and enter the name of the scan.

Step 3 Click **Start**, then use the eight arrow keys in the **PTZ control** area to configure two positions, set the stop time, and then click **End** to complete adding a scan.

Step 4 Select the Scan from the Scan list and click  to apply the scan. If you want to delete the scan, move your mouse to the scan you want to delete, and click the delete icon  , and the scan will be deleted. The scan name did not support modification.

----End

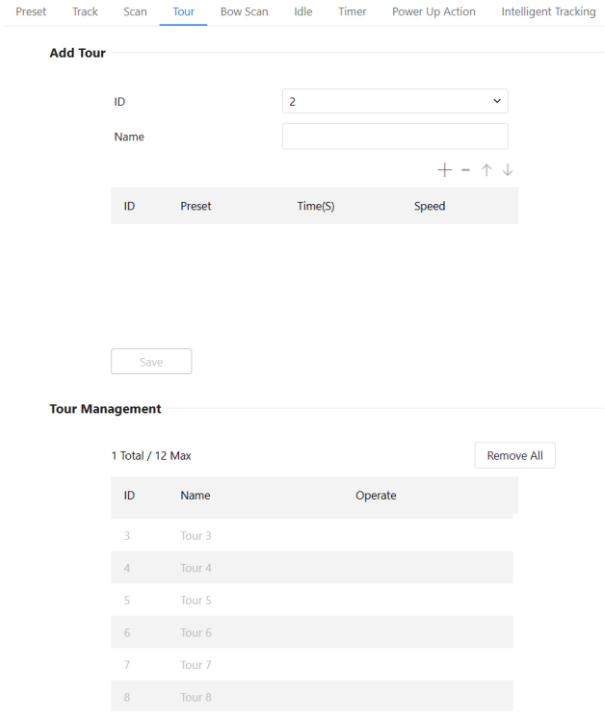
6.2.6 Configure and Apply Tour

You can configure a tour to rotate the camera between presets set by PTZ.

Operation procedure

Step 1 Click **Tour** in the PTZ configuration area, and the add tour page is displayed, as shown in Figure 6-7.

Figure 6-7 Add tour



Step 2 Select Tour ID (such as 2) from the Add Tour box, and enter the tour name.

Step 3 Select the first required position preset from the **preset** drop-down list box.

Step 4 Input the values from the **Time** area box to set the time to stay in this position preset (0 sec~ 255 sec).

Step 5 Click + to add the next position preset from the preset drop-down list box on our page; then input the values from the Time area box to set the time to stay in the next position preset (0 sec~ 255 sec).

Step 6 Click **the Save** button to begin setting the tour.

Step 7 Select a tour name and preset from the tour and preset drop-down list box, and then click  to apply the tour.

----End

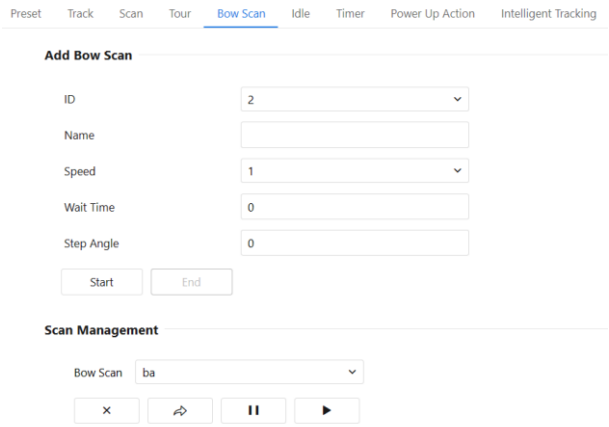
6.2.7 Configure and Apply Bow Scan

You can configure a Bow Scan to apply rotation at the setting step angle, and the camera between two positions by applying the Scan.

Operation procedure

Step 1 Click **Bow Scan** in the PTZ configuration area, and the Bow Scan page is displayed, as shown in Figure 6-8.

Figure 6-8 Bow Scan configuration



Step 2 Select Scan ID (such as 1) from the Add Scan box and enter the name of the scan.

Step 3 Enter the PTZ Speed, Wait Time, and Step Angle.

Step 4 Click **Start** to set the start position, then use the eight arrow keys in the **PTZ control** area to let the PTZ turn to the position you want, and click **End** to complete adding the scan.

Step 5 Select the Scan from the Bow Scan list and click  to apply the scan. If you want to delete the scan.

----End

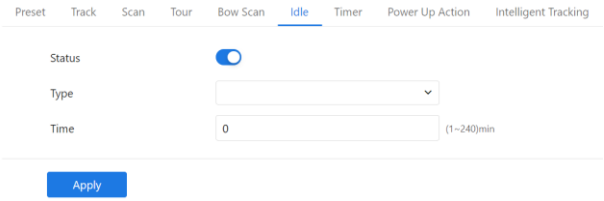
6.2.8 Configure and Apply Idle

You can configure an idle to apply a preset. Scan, Track, or Tour regularly.

Operation procedure

Step 1 Click **Idle** in the PTZ configuration area, and the idle page is displayed, as shown in Figure 6-9.

Figure 6-9 Idle configuration



Step 2 Click the Enable button to let the function work first, and select a monitor type from the **Type** drop-down list box. Monitor type can choose preset, Scan, track, or tour.

Step 3 Select a name from the **Name** drop-down list box; the name depends on what you choose in the type list.

Step 4 Input a value from the **Time** area box. Be careful, the Time unit is minutes here.

Step 5 Click **Apply** to complete adding an idle. The PTZ camera will trigger the idle action if the PTZ is without any operation.

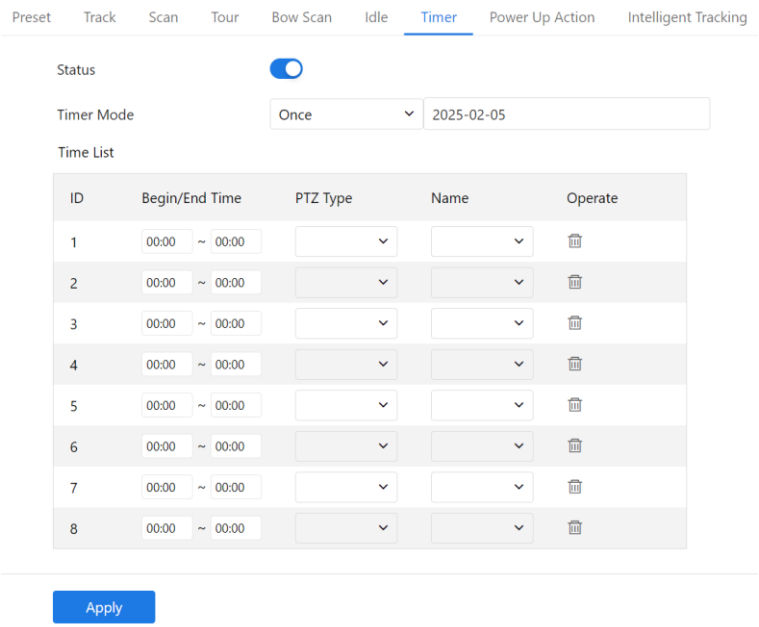
----End

6.2.9 Configure Timer

Operation procedure

Step 1 Click **Timer** in the PTZ configuration area. Click the Enable button to let the function work first, and the set timer page is displayed, as shown in Figure 6-10.

Figure 6-10 Set timer



Step 2 Select the timer mode.

Step 3 Select the required begin time at the **Begin Time** drop-down list box, and then select the required end time at the **End Time** drop-down list box.

Step 4 Select the required monitor type from the PTZ type drop-down list box. You can select preset, Scan, Track, Tour, or Cancel in the box, and then select a specific one from the **Name** drop-down list. (for example, preset 1).

Step 5 Repeat Step 3 and Step 4 to add more required time.

Step 6 Click **Apply** to complete the timer setting.

----End

6.2.10 Configure Power Up Action

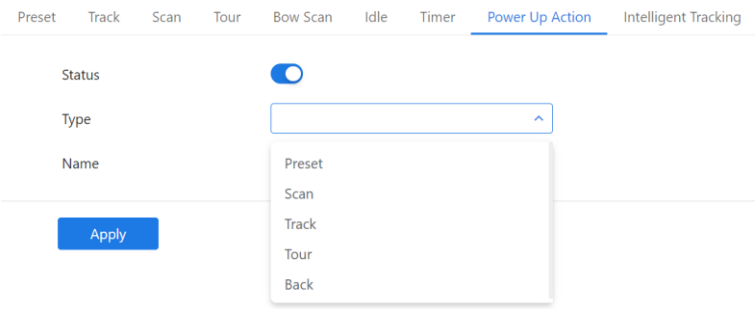
When the power-up action is enabled, the camera will perform the selected PTZ type when the camera reboots.

Step 7 Click the Power Up action button to enable the reboot action.

Step 8 Set the PTZ Type and name from the drop-down list box.

Step 9 Click Apply to finish the reboot set.

Figure 6-11 Power up action



----End

6.2.11 Configure Intelligent Tracking

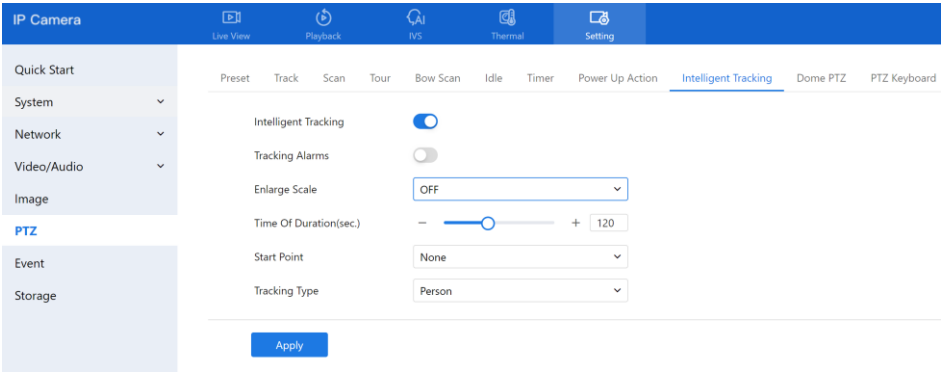
Description

Intelligent tracking can recognize the basic features such as the position, shape, contour, and color of the target with a special algorithm. After comparing and matching with images for each frame, the positions of the target in each frame of the video image are generated, and the motion track of the target is generated. The method performs a real-time monitoring of targets and automatically controls the gimbal to track moving objects. The automatic target tracking function is that the dome camera can continuously track the moving target of the pre-made scene, and automatically adjusts the camera zoom focus according to the moving target distance, and the dome automatically returns to the preset scene when the moving target disappears.

Procedure

Step 1 Choose **Setting > PTZ > Intelligent Tracking** to access the Intelligent Tracking setting interface, and enable the intelligent tracking function, as shown in Figure 6-12.

Figure 6-12 Intelligent tracking page



Step 2 Set all parameters for intelligent tracking as per Table 6-2.

Table 6-2 Parameters of intelligent tracking

Parameter	Description	Setting
Intelligent Tracking	Click the button to enable the intelligent tracking	[How to set] Click the button on. [Default value] OFF
Tracking Alarms	Enable, when the camera tracks the target, and it will send the alarm information.	[How to set] Click the button on. [Default value] OFF
Enlarge Scale	When tracking a target, the camera magnifies it according to the selected magnification ratio. Users can select 1/3, 1/4, 1/5, 1/6, 1/7, 1/8, 1/9, 1/10, or Off. The selected 1/3 magnification ratio means the target will be enlarged to one-third of the current full-screen display ratio. OFF means no changing.	[Setting method] Choose from the drop-down list. [Default value] **OFF**
Trace Magnify	It is the value of lens zoom, which has a large influence on the real-time tracking magnification; it ranges from 0 to 30.	[Setting method] Drag the slider. [Default value] **7**

Time of Duration (sec.)	The maximum time of a tracking period ranges from 0 to 300s.	[Setting method] Drag the slider. [Default value] 120
Start Point	At the start point of the tracking, you can choose a preset or none. The preset should be set in advance.	[Setting method] Choose from the drop-down list. [Default value] **None**
Tracking Type	Choose the tracking type, person, or car.	[Setting method] Choose from the drop-down list. [Default value] **Person**

Step 3 Click **Apply**. The message "Apply success!" is displayed, and the system will save the settings.

----End

6.2.12 Dome PTZ

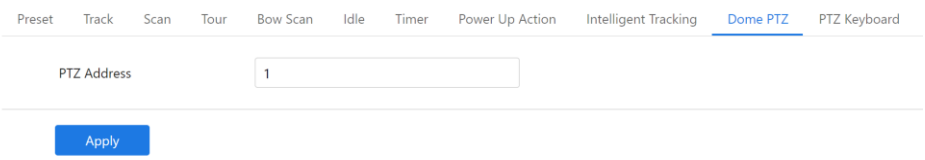
Description

The PTZ cameras are connected to 485 keyboards or cameras with 485 ports. Users can use the keyboard to control the cameras' PTZ menu.

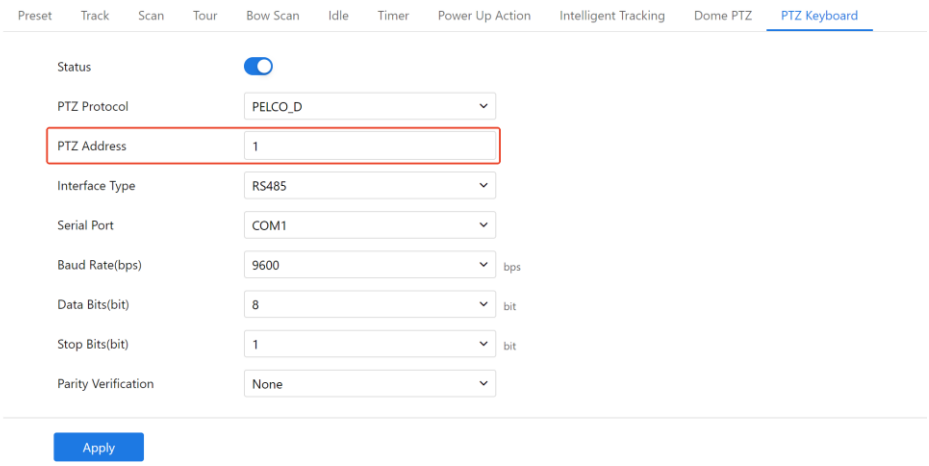
Procedure

1. Navigate to **Setting > PTZ > Dome PTZ,** as shown in Figure 6-13.

Figure 6-13 Dome PTZ page



2. Input the PTZ address; the default is 1. It will impact the PTZ address of the PTZ keyboard.



3. Click **Apply**. The message "Apply success!" is displayed, and the system will save the settings.

6.2.13 Configure PTZ Keyboard

Description

When the IP camera is connected to an external PTZ by RS485 port, you can set external PTZ parameters, such as **PTZ Protocol**, **PTZ Address**, **Baud Rate**, and **Data Bits**.

CAUTION

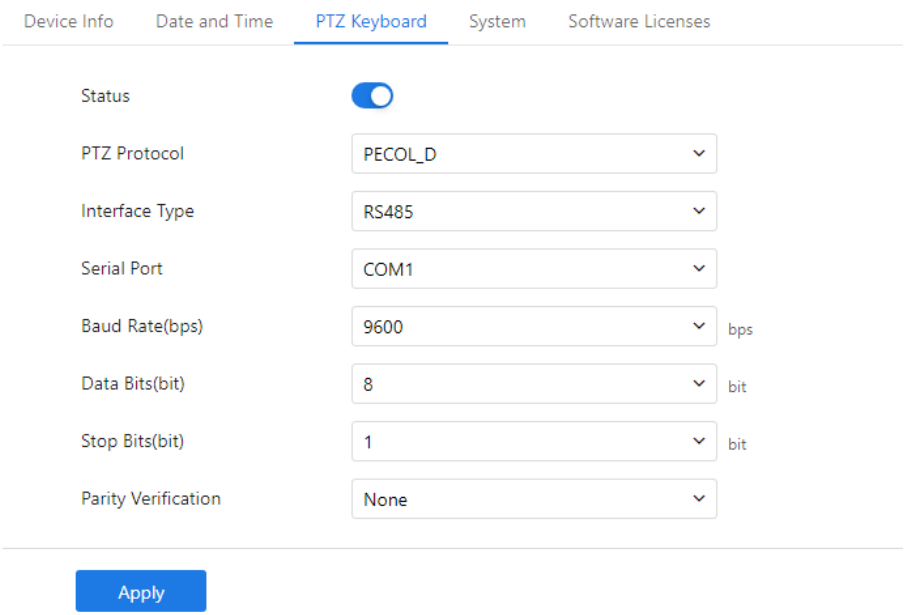
This function is available only for a camera connected to an external PTZ. The PTZ address must be set to the address of the external PTZ; otherwise, the external PTZ cannot be used.

Procedure

1. Navigate to **Setting > System > Settings > PTZ Keyboard**.

   The **PTZ** page is displayed, as shown in Figure 6-14.

Figure 6-14 PTZ page



2. Set the parameters as per Table 6-3.

Table 6-3 Parameters of PTZ Keyboard

Parameter	Description	Setting
PTZ	Enable this function if the device connects to an external PTZ. NOTE This check box is dimmed for an IP dome camera.	[Setting method] Click the button to enable PTZ configuration.
PTZ Protocol	Protocol used by the external PTZ, such as PELCO_D and PELCO_P.	[Setting method] Select a value from the drop-down list box. NOTE When external PTZ parameters are configured,
PTZ Address	Address of the external PTZ.	
Serial Port	The default value is **COM1**.	
Baud Rate	Baud rate used by the external PTZ. The value ranges from 300 bit/s to 115200 bit/s. The default value is **4800** bit/s.	

Parameter	Description	Setting
Data Bits	The value must match the setting used by the external PTZ. It can be set to a value ranging from 4 to 8. Generally, the value is 8.	these parameters must match the settings on the external PTZ.
Stop Bits	N/A	
Parity Verification	N/A	

3. Click **Apply**. The message "Apply success!" is displayed, and the system will save the settings.

7 Optical Channel

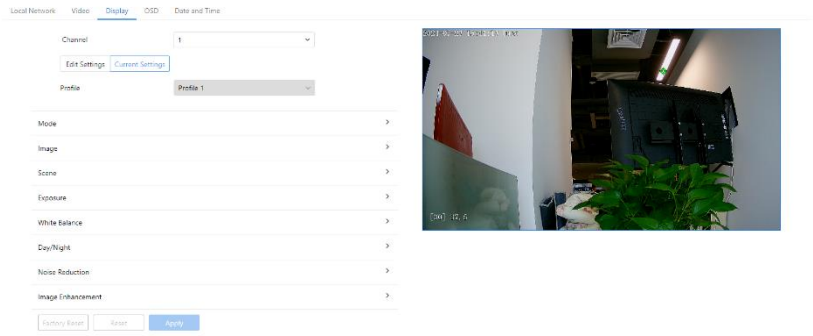
7.1 Image Display

7.1.1 Access the Display Settings

Operation Procedure:

1. Navigate to **Setting > Quick Start > Display.**

Figure 7-1 Display settings of the optical light channel page



2. Choose **Edit Settings** on the Mode item to set the parameters. You can set four profiles.

NOTE

All image settings can be modified in edit mode.
Factory Reset: All parameters will be restored to the factory settings.
Reset: the settings will be restored to the last settings.

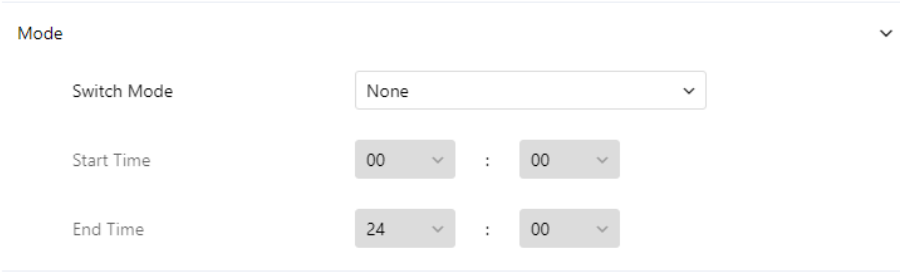
----End

7.1.2 Mode

Operation procedure:

1. Navigate to **Setting > Quick Start > Display > Mode** tag on the display interface, and the Mode page is displayed, as shown in Figure 7-2.

Figure 7-2 Mode page



2. Choose Switch Mode; there are three modes to be chosen: none, time mode, and D/N linkage mode.

   Time mode: It will switch to another profile at the set time. There are four profiles that you should set in advance.

   D/N linkage mode: when the Day/Night is set to Auto, it is Day mode, which executes Profile 1; When it is Night mode, it executes Profile 2. The specific switching conditions usually depend on the strength of the ambient light, and the camera automatically judges and switches modes through its built-in light sensor.

   None: it will carry out the current profile.

3. Set the start time and end time.
4. Click **Apply** to save the setting.

----End

7.1.3 Image Setting

1. Navigate to **Setting > Quick Start > Display > Image** tag on the display interface, as shown in Figure 7-3.

Figure 7-3 Image setting page

2. Set the parameters as per Table 7-1.

Table 7-1 Parameters of image settings

Parameter	Description	Setting
Brightness	It indicates the total brightness of an image. As the value increases, the image becomes brighter.	[Setting method] Drag the slider. [Default value] **50**
Saturation	It indicates the color saturation of an image. As the value increases, the image becomes more colorful.	[Setting method] Drag the slider. [Default value] **50**
Sharpness	It indicates the clarity of an image. As the value increases, the image becomes clearer.	[Setting method] Drag the slider. [Default value] **50**
Contrast	It indicates the contrast between the bright part and the dark part of an image. As the value increases, the contrast increases.	[Setting method] Drag the slider. [Default value] **50**

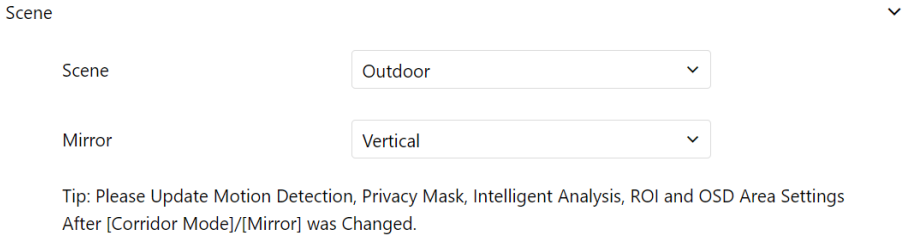
3. Click **Apply** to save the setting.

----End

7.1.4 Scene Mode

1. Navigate to **Setting > Quick Start > Display > Scene** tag on the display interface, as shown in Figure 7-4.

Figure 7-4 Scene mode page



2. Set the parameters as per Table 7-2.

Table 7-2 Parameters of FFC

Parameter	Description	Setting
Scene	It indicates the working mode of the camera. Outdoor: It applies to outdoor scenarios. Indoor: It applies to indoor scenarios.	[Configuration method] Select from the drop-down list [Default value] **Outdoor**
Mirror	It is used to select the pixel location of an image. Normal: The image does not flip. Horizontal: The image flips to the left and right. Vertical: The image flips up and down. Horizontal and vertical: The image rotates by 180 degrees.	[Setting method] Select a value from the drop-down list. [Default value] **Normal**

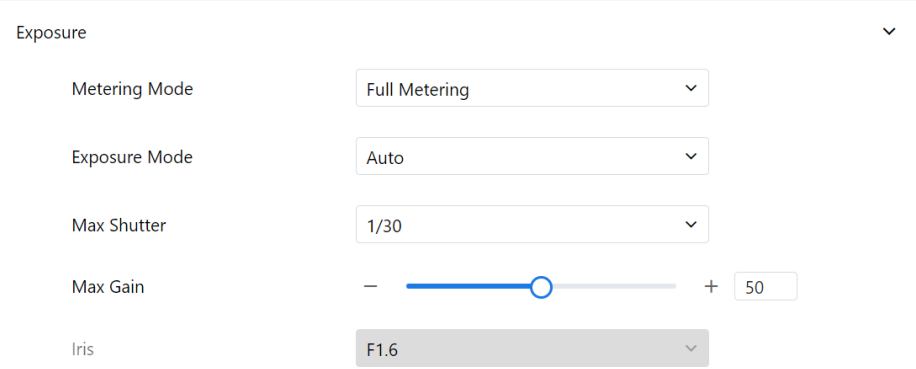
3. Click **Apply** to save the setting.

----End

7.1.5 Exposure

1. Navigate to **Setting > Quick Start > Display > Exposure** tag on the display interface, as shown in Figure 7-5.

Figure 7-5 Exposure interface



2. Set the parameters as per Table 7-3.

Table 7-3 Parameters of exposure

Parameter	Description	Setting
Metering Mode	It is used to select the metering area. **Fulling Metering**: During metering, all areas of an image have equal weight; that is, all areas are involved in the metering. **Spot Metering**: During metering, the central spot of an image has the highest weight. **Partial Metering**: During metering, the middle area (1/2 of the total area) of an image has the highest weight, and other areas have the lowest weight.	[Setting method] Select a value from the drop-down list. [Default value] **Whole**
Exposure Mode	The exposure modes include: **Auto**: The system performs auto exposure based on the monitoring environment. **Manual**: You can adjust the brightness of an image by setting the following: **Shutter Setting**, **Iris Setting,** and **Gain Setting**. **Shutter Priority**: You can set the **Shutter Setting** to fixed values. The iris and gain are automatically adjusted by the system. **Iris Priority (for high-speed dome):** You can set Iris Setting to fixed values. The shutter and gain are automatically adjusted by the system. **Gain Setting**: auto and manual to adjust.	[Setting method] Select a value from the drop-down list. [Default value] **Auto**
Max Shutter	The device automatically adjusts the shutter time based on the ambient brightness. The shutter time is less than or equal to the value of this parameter.	[Setting method] Select a value from the drop-down list. [Default value] **1/25**
Max Gain	The device automatically adjusts the gain based on the external light. The gain is less than or equal to the value of this parameter.	[Setting method] Drag the slider. [Default value] **50**
Iris	It indicates the auto-adjustment speed of the iris. As the value increases, the speed increases. Excessive	[Setting

Parameter	Description	Setting
	speed may cause instability. NOTE This parameter is valid when the auto iris is enabled.	method] Drag the slider. [Default value] **50**

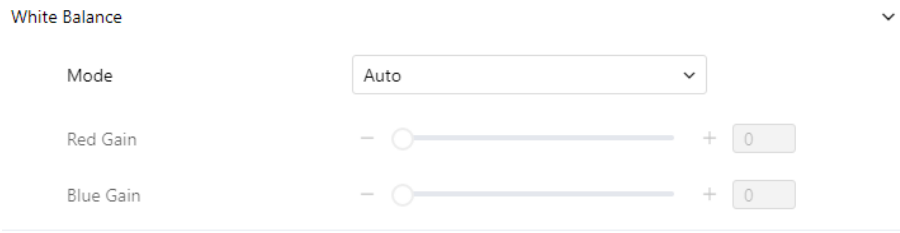
3. Click **Apply** to save the setting.

----End

7.1.6 White Balance Setting

1. Navigate to **Setting > Quick Start > Display > White Balance** tag on the display interface, as shown in Figure 7-6.

Figure 7-6 White balance settings page



2. Set the parameters as per Table 7-4.

Table 7-4 Parameters of WB setting

Parameter	Description	Setting
Mode	Select WB mode according to different scenes for better image color reproduction. **Auto**: In automatic white balance (WB) mode, the system automatically performs white balance based on the monitoring environment. **Tungsten** **Fluorescent** **Daylight** **Shadow** **Manual**: In manual WB mode, you	[Setting method] Select a value from the drop-down list. [Default value] **Auto**

Parameter	Description	Setting
	can manually select a WB mode based on the monitoring environment.	
Red Gain	It indicates the gain applied to red channels. As the value increases, the color temperature becomes lower. NOTE This parameter is valid when **Manual Mode** is set to **Customized**.	[Setting method] Drag the slider. [Default value] **0**
Blue Gain	It indicates the gain applied to blue channels. As the value increases, the color temperature becomes higher. NOTE This parameter is valid when **Manual Mode** is set to **Customized**.	[Setting method] Drag the slider. [Default value] **0**

3. Click **Apply** to save the setting.

----End

7.1.7 Day/Night

1. Navigate to **Setting > Quick Start > Display > Day/Night** tag on the display interface, as shown in Figure 7-7. The day-night mode settings vary based on device models. For details, see the following sections.

Figure 7-7 Day/Night page (timer)

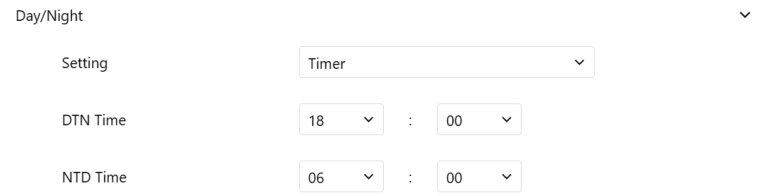
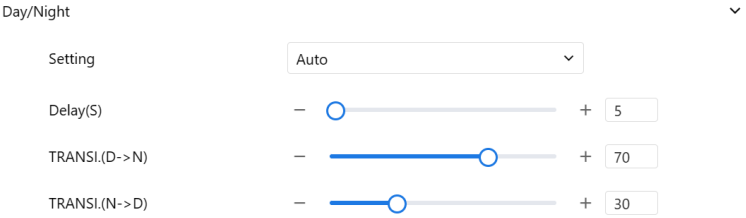


Figure 7-8 Day/Night mode page (auto)



2. Set the parameters according to Table 7-5.

Table 7-5 Parameters of Day/Night

Parameter	Description	Setting
D/N Setting Mode	It can be set to **Auto**, **Day**, **Night,** or **Timer**. Auto mode The image color and filter status are automatically switched based on the ambient brightness. The filter keeps infrared light from reaching the sensor during the day; The filter allows all light to reach the sensor at night. Day mode The image is colored, and the filter is in the day state, preventing infrared light from entering the sensor. Night mode The image is black and white, and the filter is in the night state, allowing infrared light to enter the sensor. Timer Switching between day mode and night mode according to the set time.	[Setting method] Select a value from the drop-down list. [Default value] **Auto**

Parameter	Description	Setting
D/N Switch Sensitivity	The sensitivity of switching day and night. The higher value of sensitivity and the lower light intensity will switch to day. NOTE This parameter is valid in auto mode.	[Setting method] Drag the slider. [Default value] **50**
Delay(s)	The delay time from day to night or night to day. NOTE This parameter is valid in auto mode.	[Setting method] Drag the slider. [Default value] **0**
Illumination	For different models, you can choose the light modes, such as IR LED, White LED, Intelligent dual light (there are two lights in the camera, IR LED and white LED), and none. It depends on the performance of the cameras.	[Setting method] Select a value from the drop-down list.
DTN Time	Time of day to night.	[Setting method] Select a value from the drop-down list. [Default value] **18:00**
NTD Time	Time of night to day.	[Setting method] Select a value from the drop-down list. [Default value] **6:00**

Fill light settings

The camera fill light has four modes, including intelligent dual light (the current fill light will switch to warm light after an alarm is triggered, and switch back to the original fill light for fill light 30s after the alert is released.), warm light, infrared lamp, and close (Choose to close the fill light and the color of the image will stay in the previous mode).

Different cameras can be set in different fill light modes. Please set them according to the actual scene.

Day mode: It can be used in the scene with sufficient ambient light for 24 hours, where the image will be colorful without enabling the fill light.

Night mode: It can be used in a scene where there is insufficient ambient light for 24 hours, and turns on the fill light (it can be selected according to the four modes of the fill light).

Auto mode: Automatically switches the set fill light mode according to the brightness of the environment.

Timer mode: Set the start and end time of the day; this period is in day mode.

The brightness of the supplemental light can be set to either automatic or manual. In automatic mode, it adjusts based on the current environment. In manual mode, you can adjust the brightness by dragging the slider or setting a specific value.

3. Click **Apply** to save the setting.

----End

7.1.8 Noise Reduction

1. Navigate to **Setting > Quick Start > Display > Noise Reduction** tag on the display interface. Figure 7-9 shows the Noise Reduction interface.

Figure 7-9 Noise reduction page (auto)

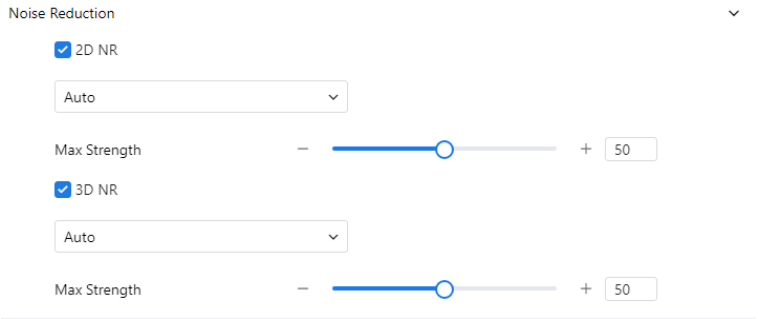
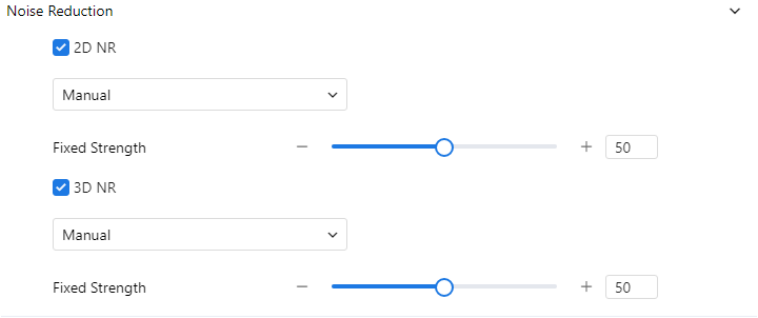


Figure 7-10 Noise reduction page (manual)



2. Set the parameters according to Table 7-6.

Table 7-6 Parameters of Noise Reduction

Parameter	Description	Setting
2D NR	Reduce the noise of the image.	[Configuration method] Select from the drop-down list [Default value] **Auto**
3D NR	Reduce the noise of the image.	[Configuration method] Select from the drop-down list [Default value] **Auto**

Parameter	Description	Setting
Max Strength	It is valid in auto noise filter mode. When the parameter value is **0**, the noise filter is disabled. When the parameter value is greater than **0**, the noise filter is enabled, and the system automatically adjusts the noise filter level based on the ambient brightness without exceeding the value of this parameter.	[Setting method] Drag the slider. [Default value] **50**
Fixed Strength	It is valid in a manual noise filter mode.	[Setting method] Drag the slider. [Default value] **50**

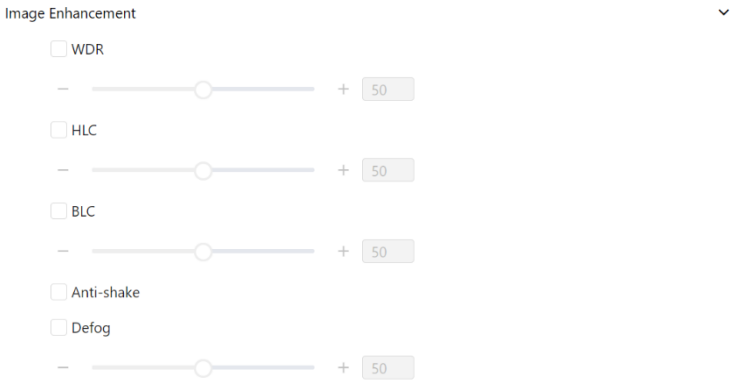
3. Click **Apply** to save the setting.

----End

7.1.9 Image Enhancement

1. Navigate to **Setting > Quick Start > Display > Image Enhancement** tag on the display interface. Figure 7-11 shows the enhanced image interface, and Table 7-7 shows the enhanced image parameters.

Figure 7-11 Image enhancement page



2. Set the parameters as per Table 7-7.

Table 7-7 Parameters of enhance image

Parameter	Description	Setting
WDR	It is used to display the foreground and background at the same time in the environment with a large brightness difference. When the brightness difference is larger, you can increase the WDR level to obtain a better image effect.	[Setting method] Tick the WDR mode and drag the slider. [Default value] **50**
HLC	It provides a clearer view of an image in the highlight environment. When HLC is enabled, the total brightness of an image is reduced, allowing you to view objects in front of the highlight.	[Setting method] Tick the HLC mode and drag the slider. [Default value] **50**
BLC	It provides a clearer view of an image in the backlight environment. When BLC is enabled, the total brightness of an image increases, allowing you to view objects in front of the backlight. Meanwhile, the objects behind the backlight are exposed excessively.	[Setting method] Tick the BLC mode and drag the slider. [Default value] **50**
Anti-shake	The shakes and visual angle of the image will reduce when the camera shakes slightly, and the anti-shake is enabled.	[Setting method] Tick the Anti-shake mode.
Defog	It provides a clearer view of an image in the fogged environment when DeFog is enabled. As the value increases, the image becomes clearer. Only applies to some models.	[Setting method] Tick the Defog mode and drag the slider. [Default value] **50**

3. Click **Apply** to save the setting.

----End

7.1.10 Zoom Focus

1. Navigate to **Setting > Quick Start > Display > Zoom Focus** tag on the display interface as shown in Figure 7-12.
2. Set the parameters as per Table 7-8.

Figure 7-12 Zoom focus

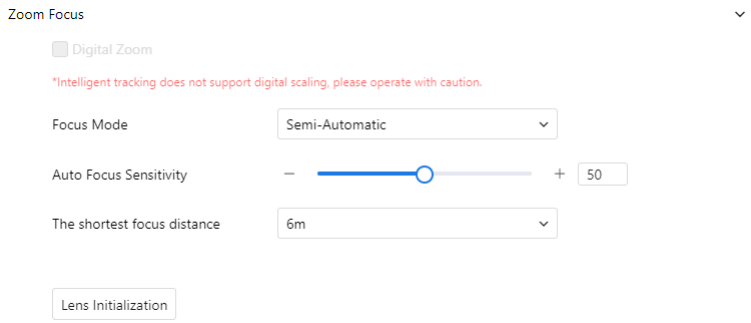


Table 7-8 Parameters of zoom focus

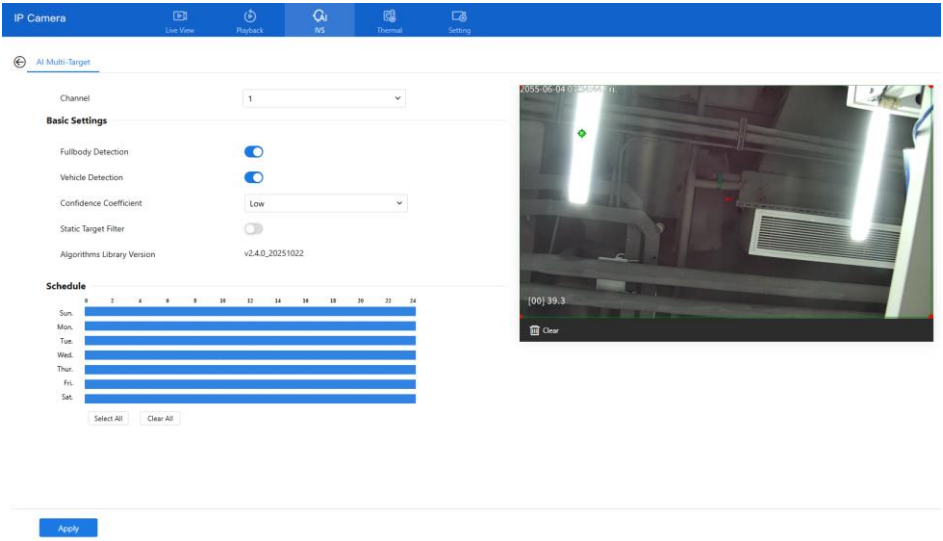
Parameter	Description	Setting
Focus Mode	It can be set to the auto, manual, or semi-automatic mode. Auto focus mode: The system automatically triggers focus based on application scenarios. Manual focus mode: You can trigger focus by using the buttons on the client. Semi-automatic focus mode: The system only automatically triggers focus once when the PTZ moves or zooms in a scene.	[Configuration method] Select from the drop-down list [Default value] **Semi-automatic**
Auto Focus Sensitivity	It indicates the sensitivity of autofocus. When the sensitivity is high, the camera movement is more likely to focus again on slight changes in an image.	[Setting method] Drag the slider. [Default value] **50**
The Least Focus Distance	It indicates the minimum focus distance. A camera does not focus when the distance is smaller than this value. For example, if the minimum focus distance is set to 1.5 m, a camera focuses only on objects more than 1.5 m away, and the changes in objects less than 1.5 m away do not affect the focus. NOTE This parameter applies only to optical light.	[Configuration method] Select from the drop-down list [Default value] **6 m**
Lens Initialization	Click the button to initialize the lens.	[Configuration method **Click**

7.2 IVS of Optical Channel

7.2.1 Configure AI Multi-Target

1. Go to **IVS > Deep Learning > AI Multi-Target** to set the parameters of the detected face, full body, and vehicle.

Figure 7-13 AI Multi-Target page



2. Set the parameters as per Table 7-9.

Table 7-9 Parameters of AI Multi-Target

Parameter	Description	Setting
Full body detection	The camera will snap the whole body when someone appears in the live video. The detection frame is blue.	Enable
Vehicle detection	The camera will snap the license when the vehicle appears in live video. The detection frame is yellow.	Enable
Confidence Coefficient	In the range of snapshots, there are three types: high, mid, and low. The higher the confidence, the better the snap quality and the fewer snapshots.	Choose from the drop list.
Static Target Filter	If the target is static, the device will filter this target. For example, if a vehicle stops for a long time, the device will be filtered.	Enable

3. Set deployment time, please refer to Chapter 4.
4. Click **Apply**. The message "Apply succeeded!" is displayed, and the system will save the settings.

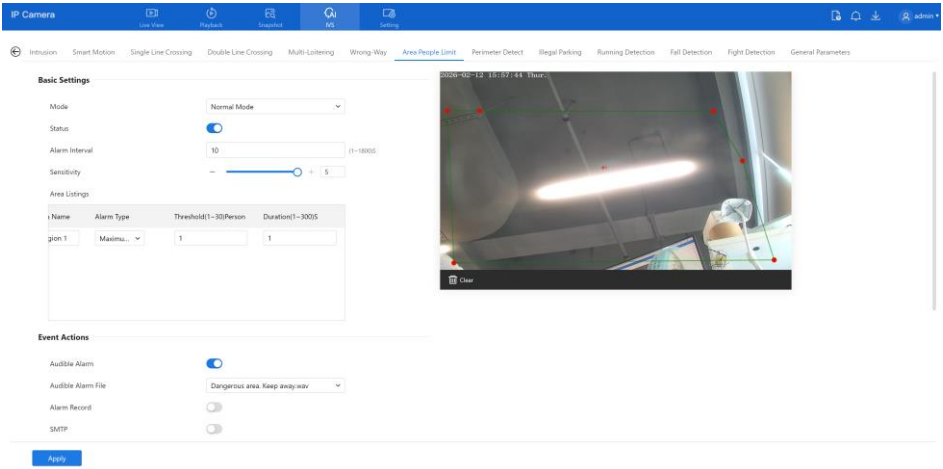
----End

7.2.2 Area People Limit

Area People Limit means the number of people is over the set maximum number, or is less than the set minimum number, in deployed areas. It will trigger the alarm.

1. Navigate to **IVS > Intelligent Analysis** > **Area People Limit** to access the Area People Limit settings interface, as shown in Figure 7-14.

Figure 7-14 Area People Limit settings page



2. Set all parameters of the Area People Limit. Please refer to Chapter 5.2.1
3. Set the Area list parameters.

   Set the Area Name.

   Choose the Alarm Type, Maximum Number, or Minimum Number.

   Set the Threshold Person; it ranges from 1 to 30.

   Persons stay in the area for more than the set duration.

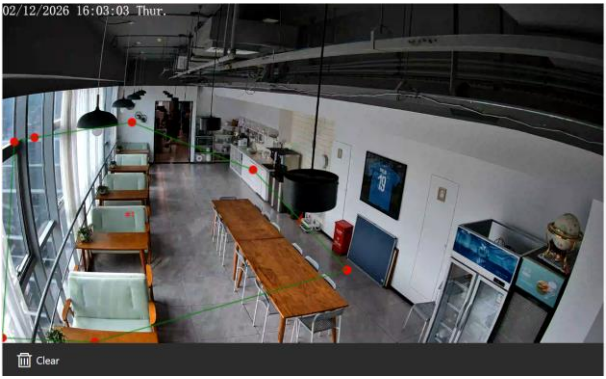
4. Define the deployment area.

   Move the cursor on the video interface and click to create a point.

   Continue clicking to form lines and enclose a custom shape.

   Right-click to finish the area drawing.

Figure 7-15 Deployment area setting interface



NOTE

Lines **must not intersect**, or the drawing will fail.

A **maximum of 8 sides per shape** and **up to 8 zones** are supported.

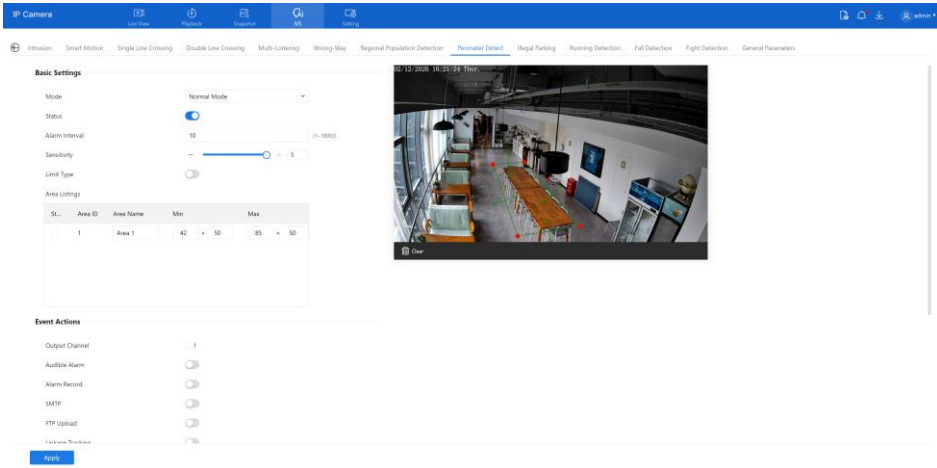
5. Set deployment time. Please refer to Chapter 5.2.1
6. Click **Apply**. The system will save your settings and display the message **"Apply success!".**

7.2.3 Perimeter Detection

When targets (person or vehicle) are across the perimeter of the set detection area during the scheduled period, the alarm will be triggered.

1. Navigate to **IVS > Intelligent Analysis** > **Perimeter Detection** to access the Perimeter Detection settings interface, as shown in Figure 7-16.

Figure 7-16 Perimeter detection settings page



2. Set all parameters of Perimeter Detection. Please refer to Chapter 5.2.1
3. Define the **detection area**:

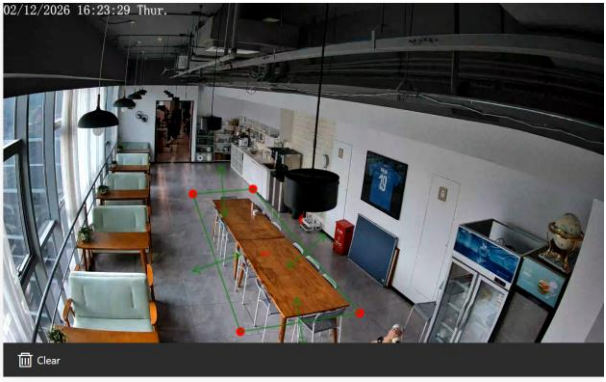
   Move the cursor to the live view.

   Click to place the first point.

   Continue clicking to form a polygonal area.

   Right-click to finish drawing.

Figure 7-17 Deployment area setting interface



NOTE

Lines **must not intersect**.

You can draw a shape with up to **8 sides**.

You can define up to **8 deployment areas**.

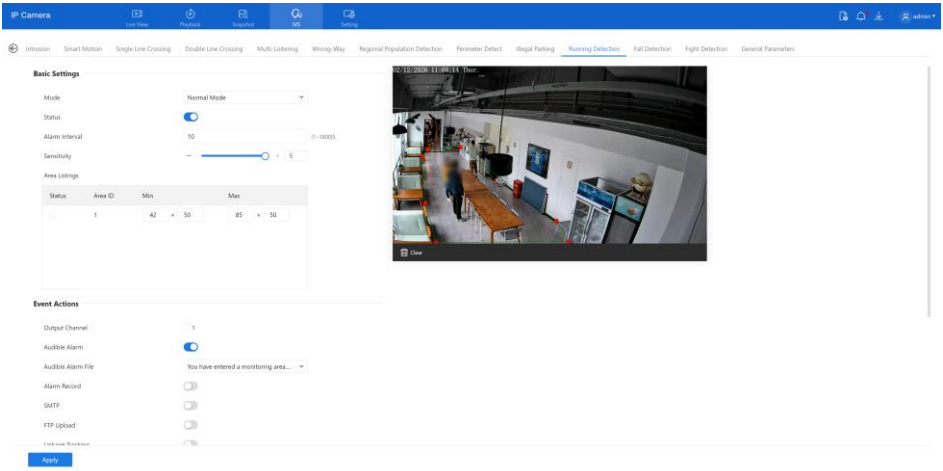
4. Click **Apply**. A message "Apply success!" will confirm that the settings have been saved.

7.2.4 Running Detection

When a person is running in the set detection area during the scheduled period, the alarm will be triggered.

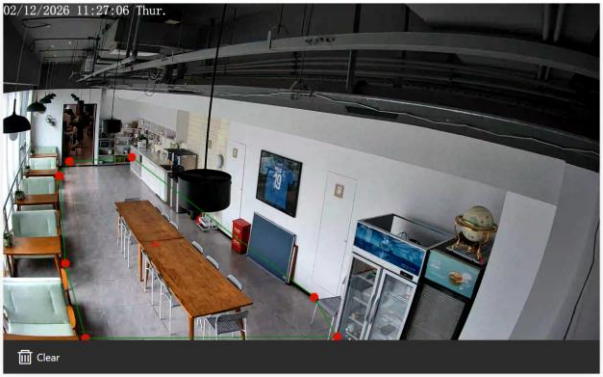
1. Go to **IVS > Intelligent Analysis > Running Detection**, as shown in Figure 7-18.

Figure 7-18 Running detection



2. Set all parameters of Running Detection. Please refer to Chapter 5.2.1 .
3. Define the detection area:
    1. Move the cursor to the live view.
    2. Click to place the first point.
    3. Continue clicking to form a polygonal area.
    4. **Right-click** to finish drawing.

Figure 7-19 Deployment area setting interface



NOTE

Lines **must not intersect**.

You can draw a shape with up to **8 sides**.

You can define up to **8 deployment areas**.

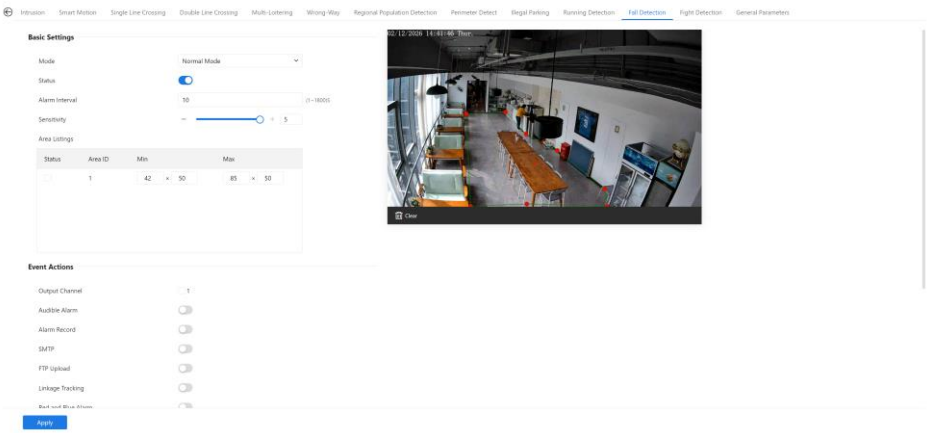
4. Set the deployment time. Please refer to Chapter 4.3 Step 4.
5. Click **Apply**. A message "Apply success!" will confirm that the settings have been saved.

7.2.5 Fall Detection

When the person falls over the set detection area during the scheduled period, the alarm will be triggered.

1. Navigate to **IVS > Intelligent Analysis** > **Fall Detection** to access the Fall Detection settings interface, as shown in Figure 7-20.

Figure 7-20 Fall detection settings page



2. Set all parameters of Fall Detection. Please refer to Chapter 5.2.1 .
3. Define the **detection area**:

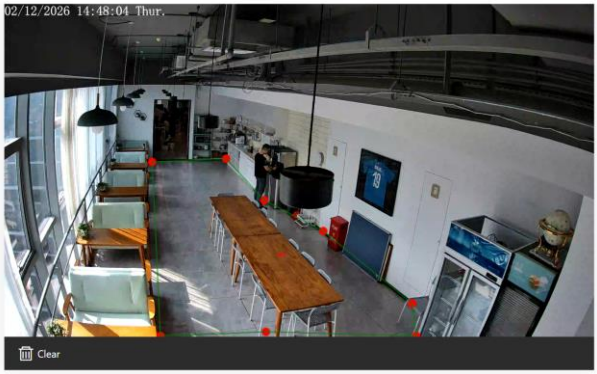
   Move the cursor to the live view.

   Click to place the first point.

   Continue clicking to form a polygonal area.

   Right-click to finish drawing.

Figure 7-21 Deployment area setting interface



NOTE

Lines **must not intersect**.

You can draw a shape with up to **8 sides**.

You can define up to **8 deployment areas**.

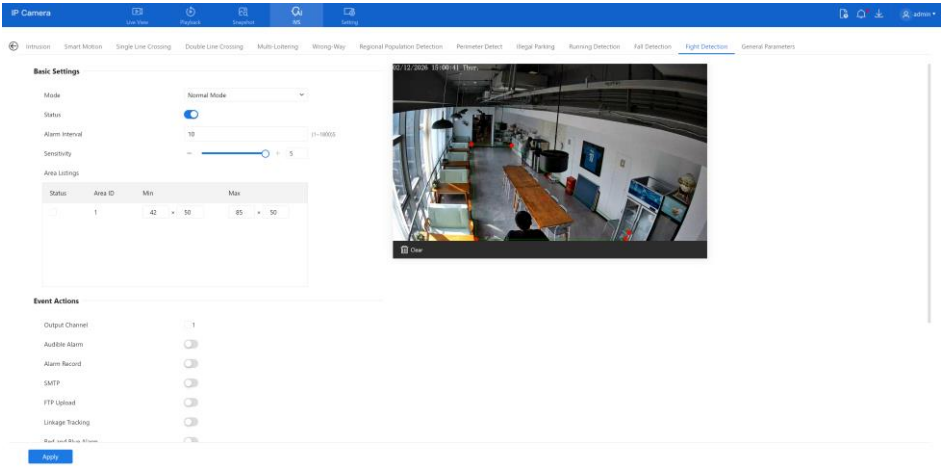
5. Click **Apply**. A message "Apply success!" will confirm that the settings have been saved.

7.2.6 Fight Detection

When people fight set detection area during the scheduled period, the alarm will be triggered.

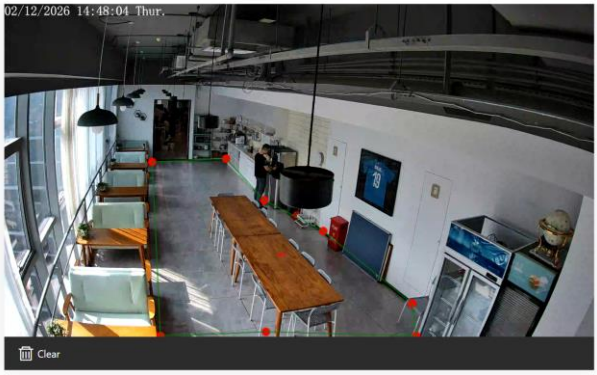
1. Navigate to **IVS > Intelligent Analysis** > **Fight Detection** to access the Fall Detection settings interface, as shown in Figure 7-22.

Figure 7-22 Fight detection settings page



2. Set all parameters of Fall Detection. Please refer to Chapter 5.2.1 .

Figure 7-23 Deployment area setting interface



NOTE

Lines **must not intersect**.

You can draw a shape with up to **8 sides**.

You can define up to **8 deployment areas**.

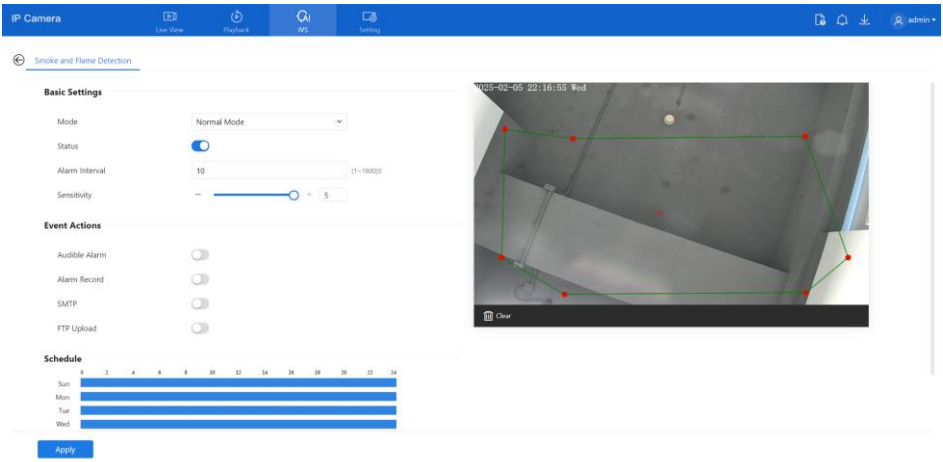
3. Click **Apply**. A message "Apply success!" will confirm that the settings have been saved.

7.2.7 Smoke and Flame Detection

The smoke flame detection function refers to the fact that an alarm is generated when something is smoking or generating flame in the deployment area.

1. Go to **IVS > Advanced Intelligent Analysis > Smoke and Flame Detection** to access the Smoke and Flame Detection interface, as shown in Figure 7-24.

Figure 7-24 Smoke and flame detection interface



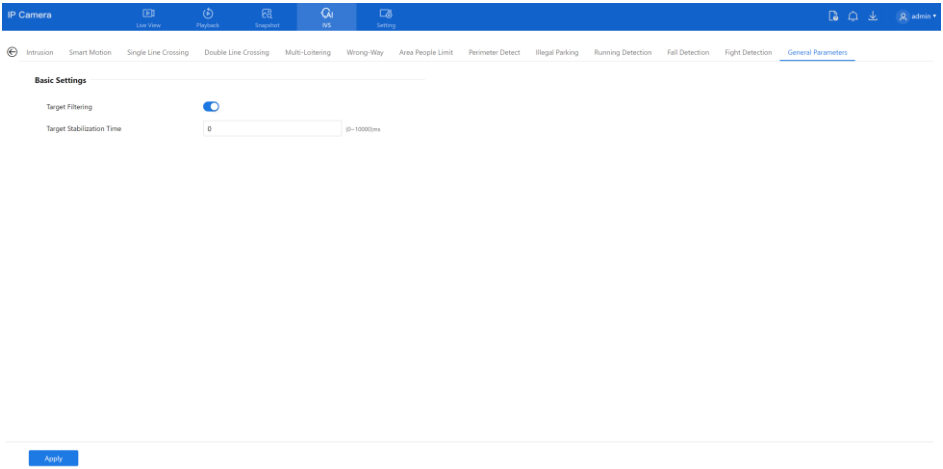
2. Set all parameters for smoke and flame detection. Please refer to Chapter 5.2.1

----End

7.2.8 General Parameters

Set the target filtering parameters for all Intelligent Analysis functions of optical channel (intrusion, smart motion, single line crossing, double line crossing, multi-loitering, wrong-way, area people limit, perimeter detection, running detection, fall detection, fight detection, and so on); The alarm can only be triggered if the target appears in the set area for more than the filtering time. For example, if the target stabilization time value is 5000ms, the relevant intelligent analysis actions will only be detected after the target is within the area for 5 seconds.

Figure 7-25 General parameters



1. Enable Target Filtering.
2. Set the target stabilization time.
3. Click Apply to save the settings.

A Troubleshooting

Common Trouble	Possible Cause	Solution
Unable to access the web	The network is not connected.	Connect the network cable of the camera to the PC to check whether the network cable is in good contact. Run the ping command to check the network connection and whether the device works normally.
	The IP address is occupied.	Directly connect the camera to the PC, and reset the IP address of the camera.
	The IP addresses of the PC and the device are in different networks.	Check the IP address, subnet mask, and gateway setting of the camera.
PTZ or high-speed dome is out of control.	The protocol, bit rate, or address setting of the PTZ is incorrect.	Modify the address of the PTZ on the web.
	The signal cable is unconnected or not connected correctly.	Check the signal strength and reconnect the signal cable.
The measured temperature is not accurate.	The device is just powered on, and the temperature of the cavity is unstable.	The temperature of the cavity is stable within 15 to 30 min after the device is powered on.
	The FFC mode is incorrect.	The FFC mode is automatic by default. If the mode is set to manual, there will be no block calibration, which may lead to fuzzy pictures and inaccurate temperature.
	The target configuration is incorrect.	Check whether the emission rate and distance of the target are configured correctly.

Common Trouble	Possible Cause	Solution
An error occurs in accessing the web of the device after the upgrade.	The data in the cache of the browser is not updated in time.	Delete the cache of the browser. The steps are as follows: 1. Press **Ctrl + Shift + Delete,** and the pop-up window shows the **Clear browsing data** dialog box. 2. Select all checkboxes. 3. Click **Clear now**. 4. Log in to the web page of the camera.
Upgrade failed.	No network cable is connected.	Ensure the upgraded network is connected.
	The network setting is incorrect.	Check whether the network setting is correct.
	The upgrade package is incorrect.	Perform the correct upgrade package again.
No self-test no image output	There is a broken line in the circuit	Find breakpoints and rewiring.
	Low supply voltage	Replace the power adapter to increase the output voltage.
Self-test exception	Low supply voltage	Replace the power adapter to increase the output voltage.
Equipment control is normal, image instability (Analog video)	Poor video circuit contact	Troubleshooting, rewiring
	Access device exception	Replacement access device
Equipment control is normal, image instability (Web video)	The network line has a bad contact	Dismantling bad points, re-wiring.
	Access to computer performance is insufficient, take up CPU usage	Lower stream and resolution
	Lack of network bandwidth	Replacement of industrial Gigabit switches

Common Trouble	Possible Cause	Solution
	Access decoder performance decoder	Replacement of high-performance
Self-test normal, cannot control	Wrong wiring	Rewiring
	Set the baud rate, protocol, address, and device mismatch	Screen configuration according to device parameters
Repeated restart	Insufficient supply voltage or voltage instability	To ensure that the input device voltage stability
Cannot control the lens to perform zoom and Focus action	Wiring error	Re-connect the lens control line
	Circuit board lens control problems	Replacement circuit board (please contact after-sales rework processing, do not replace parts or repair)
Cannot recall the set lens preset point	The DIP switch relative to the set lens preset dialing is not set to ON	DIP switch control lens preset dialing dial into ON
The image is lost when the control device rotates	The rotation process at the same location lost the image	Conductive slip ring, there is a bad contact, replace the parts (please contact after-sales rework, do not replace parts or repair)

B Common Emission Rate

Emission Rate
The emission rate is the capability of an object to emit or absorb energy. An ideal transmitter provides an emission rate of emitting 100% of the intake energy. An object with an emission rate of 0.8 can absorb 80% of the intake energy and reflect the remaining 20%. The emission rate is the ratio of the energy emitted by an object at a specific temperature to that emitted by an ideal radiator at the same temperature. The range of emission rate values is 0.0 to 1.0 generally.

Materials	Temperature (℃/℉)	Emissivity
Gold (High-purity)	227/440	0.02
Aluminum foil	27/81	0.04
Aluminum sheet	27/81	0.18
Aluminum used for families (flat)	23/73	0.01
Aluminum plate (98.3% purity)	227/440	0 04
	577/1070	0.06
Aluminum plate (rough)	26/78	0.06
Aluminum (oxidized @ 599℃)	199/390	0.11
	599/1110	0.19
Polished aluminum	38/100	0.22
Tin (light tinned Iron sheet)	25/77	0.04
Nickel wire	187/368	0.1
Lead (99.9% purity, No oxidized)	127/260	0.06

Copper	199/390	0.18
Cobalt	599/1110	0.19
Steel	199/390	0.52
	599/1110	0.57
Tinned iron sheet (Light)	28/82	0.23
Brass(High-polish)	247/476	0.03
Brass (Tough rolled, polished metal wire)	21/70	0.04
Tinned Iron (Light)	-	0.13
Iron plate (Rust-eaten)	20/68	0.69
Rolled steel sheet	21/71	0.66
Ferric oxide	100/212	0.74
Wrought-iron	21/70	0.94
Fused iron	1299-1399/2370-2550	0.29
Copper (Polished)	21-117/70-242	0.02
Copper(Polished, not reflected)	22/72	0.07
Copper (Heavy oxide Board)	25/77	0.78
Enamel (Fuse on iron)	19/66	0.9
Formica Plate	27/81	0.94
Frozen soil	-	0.93
Brick (Red, rough)	21/70	0.93
Brick (Unglazed, rough)	1000/1832	0.8

Carbon (T - carbon 0.9% ash)	127/260	0.81
Concrete	-	0.94
Glass (Glossy)	22/72	0.94
Granite (Surfaced)	21/70	0.85
Ice	0/32	0.97
Marble (I Polished, grey)	22/72	0.93
Asbestos board	23/74	0.96
Asbestos paper	38/100	0.93
	371/700	0.95
Asphalt (Paving the road)	4/39	0.97
Paper (Black tar)	-	0.93
Paper (White)	-	0.95
Plastic (White)	-	0.91

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