

Bi-spectrum Network Bullet Camera User Manual



Issue

V1.1

Date

2025-04-11

Precautions

Important Safety Information

Before using this device, it is essential to read and fully understand this document. Adhering to the instructions will help ensure safe operation. If this device is installed in a public area, please place a visible notice stating, *"You have entered an area under electronic surveillance."* Failure to follow the safety instructions could lead to fire hazards or serious injury. To prevent accidents, please read and follow these important precautions:

Symbols and Their Meanings

This document may contain the following symbols, each with a specific meaning:

Symbol	Description
 DANGER	Indicates an immediate and critical hazard. If not avoided, will result in death or life-threatening injuries.
 WARNING	Indicates a potential hazard with moderate risk. If not avoided, could lead to non-life-threatening injuries (e.g., burns, cuts, or temporary disability).
 CAUTION	Indicates a risk-prone scenario. If not avoided, may cause property damage, data loss, impaired performance, or unintended operational outcomes.
 TIP	Provides helpful tips to solve problems or save time.
 NOTE	Highlights important additional information that supplements the main content.

Safety Guidelines

- **Prevent Electric Shock:** Keep power plugs dry and clean to avoid the risk of electric shock.
- **Installation:** Ensure proper installation following all the specified requirements. The manufacturer is not responsible for any damage resulting from improper installation.
- **Electrical Safety:** Always use power adapters that meet local electrical safety standards and are marked with the LPS (Limited Power Source) standard to avoid damaging the device.
- **Use Proper Accessories:** Only use the accessories provided with this device. The input voltage must match the device's requirements.

- **Surge Protection:** If installed in areas with unstable voltage, ground the device to prevent damage from electrical surges, such as lightning strikes.
- **Water and Liquid:** Avoid allowing water or other liquids to enter the device. If liquid spills onto the device, immediately turn it off, disconnect all cables (power, network, etc.), and contact customer support.
- **Protect the Image Sensor:** Do not expose the device to direct strong light (e.g., light bulbs or sunlight) as it may shorten the lifespan of the image sensor.
- **Thunder and Lightning:** If the device is installed in areas prone to thunderstorms, ground the device nearby to prevent damage from lightning strikes.
- **Transportation and Storage:** Avoid heavy loads, jolts, or exposure to moisture during transportation and storage. The warranty does not cover damage that occurs after the original packaging has been opened.
- **Physical Protection:** Keep the device away from falling or heavy impacts. Do not install the device on surfaces that are prone to shaking or magnetic interference.
- **Cleaning:** Clean the device with a soft, dry cloth. For stubborn dirt, dampen the cloth with a mild, neutral cleanser, gently wipe, and dry the device.
- **Ventilation:** Ensure the device's ventilation openings are not blocked. Follow the installation instructions to ensure proper airflow.
- **Avoid Heat Sources:** Keep the device away from heat sources such as radiators, electric heaters, or other heating equipment.
- **Environmental Conditions:** Do not place the device in extremely hot, cold, or humid areas, or places with excessive dust or strong electrical radiation.
- **Outdoor Installation:** If installed outdoors, take preventive measures against insects and moisture to avoid circuit board corrosion, which could impact performance.
- **Long-Term Inactivity:** If the device will not be used for a long period, unplug it to avoid any potential hazards.
- **Fragile Sticker:** Before unpacking, check if the fragile sticker is damaged. If it is, contact customer service or sales personnel. The manufacturer is not responsible for any damage caused to the fragile sticker after it is removed.
- **Install Environment:** Unless otherwise specified, do not use the camera in a temperature lower than $-20\text{ }^{\circ}\text{C}$ ($-4\text{ }^{\circ}\text{F}$) or higher than $+60\text{ }^{\circ}\text{C}$ ($+140\text{ }^{\circ}\text{F}$). 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 a condition for a long time.

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. Update 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

Precautions	i
Special Announcement	ii
Contents.....	iv
1 Overview	6
1.1 Principle of Thermal Imaging and Advantages	6
1.2 Product Introduction	6
1.3 Cable Connection	7
1.4 Dimensions of Device.....	9
1.5 Installation	10
1.5.1 Wall Installation	11
1.5.2 Ceiling Installation.....	12
2 Device Login.....	15
2.1 Login and Logout	15
2.2 Homepage Layout.....	18
2.3 Homepage Elements	19
2.4 Changing Your Password.....	19
2.5 IVS Setting	22
3 Quick Start Settings.....	24
3.1 Local Network.....	24
3.2 Video Settings.....	26
3.3 Display Settings.....	30
3.3.1 Accessing the Display Settings	30
3.3.2 Mode.....	31
3.3.3 Image Settings	32
3.3.4 Scene Mode	33
3.3.5 Exposure	34
3.3.6 White Balance Setting.....	36
3.3.7 Day/Night Mode	38
3.3.8 Noise Reduction.....	42
3.3.9 Image Enhancement.....	44

3.3.10 Zoom Focus	46
3.4 Thermal Channel Display	47
3.4.1 Set Pseudocolor	47
3.4.2 FFC Control.....	49
3.5 On-Screen Display (OSD).....	51
3.6 Date and Time Settings.....	53
4 Configuring Thermal.....	56
4.1 Settings.....	56
4.1.1 Temperature Parameters.....	56
4.1.2 Ambient Temperature.....	61
4.1.3 Privacy Zone Masking.....	62
4.1.4 Thermal Mapping	63
4.1.5 Defect Pixel Correction	64
4.1.6 Version Information	66
4.2 Temperature Alarm	66
4.3 Schedule Linkage	71
A Troubleshooting	75
B Common Emission Rate	77

1 Overview

1.1 Principle of Thermal Imaging and Advantages

Any object with a temperature above absolute zero (-273.15°F) emits infrared (IR) radiation, also known as thermal radiation—even if it doesn't emit visible light. This radiation can be detected and converted into an electrical signal by a thermal imaging detector. The signal is then amplified and processed to create a thermal image that reflects the surface temperature distribution of the object. This is how thermal imaging works.

Key Benefits:

Works in Any Environment

Unlike traditional cameras that need ambient or artificial light, the IR thermal imaging camera uses the object's own IR energy to form an image. It doesn't require external light, making it ideal for 24/7 monitoring in any lighting conditions. It can detect hidden or camouflaged objects, both day and night.

Visualizes Temperature Distribution

The IR thermal imaging camera displays the temperature field of an object by converting invisible surface temperature variations into a visible thermal image. This image accurately reflects the surface temperature distribution of the object. With this real-time monitoring, users can detect temperature anomalies early and take preventive measures to reduce potential risks, such as fire.

Penetrates Cloud and Smoke

While visible and near-IR light is absorbed by air, clouds, and smoke, IR rays in the 3–5 μm (MWIR) and 8–14 μm (LWIR) ranges pass through. This allows the camera to deliver clear images even in smoky or cloudy conditions—something traditional cameras can't do.

1.2 Product Introduction

- **The Bi-spectrum network camera** combines thermal imaging, temperature measurement, visible-light fusion, and advanced image analysis.
- It features a unique dual registration system, allowing both thermal and visible images to reflect the same scene.

- With high precision and built-in automatic temperature correction, the camera offers stable and reliable performance over time.
- Intelligent alerts notify you of abnormal temperatures and provide rapid tracking of hot spots.
- Full-color technology ensures high-quality imaging in low-light environments. With smart video analysis, it adapts to various scenes, making it ideal for warehouses, schools, airports, stations, electric control rooms, and other locations that need fire prevention and security.

It is suitable for warehouses, schools, airports, stations, electric control rooms, and other public places that need to be fireproof and anti-theft.

1.3 Cable Connection

Figure 1-1 shows the multi-connector combination cable of the Bi-spectrum network camera.

Refer to Table 1-1 below for details.

Figure 1-1 Multi-connector combination cable

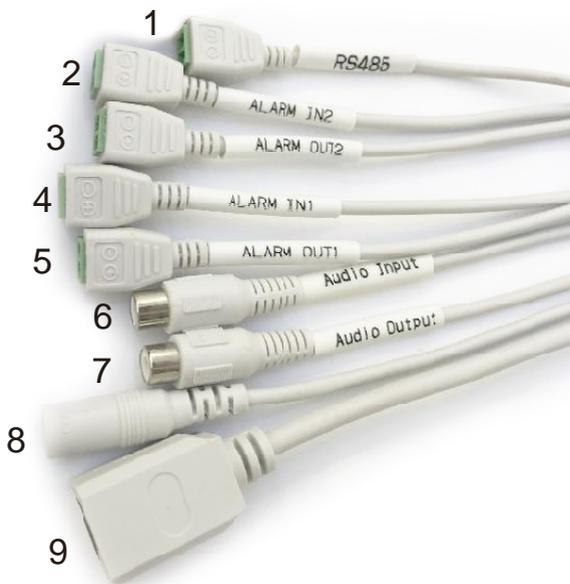


Table 1-1 Multi-connector combination cable

ID	Core of Cable	Functions
1	RS485	Connects to the external pan & tilt.
2	ALARM IN2	Connects to the alarm device.
3	ALARM OUT2	
4	ALARM IN1	
5	ALARM OUT1	
6	Audio Input	Receives analog audio signals from a sound pickup device.
7	Audio Output	Connects to an external audio device, such as a speaker.
8	DC12V (2A)	Connects to a 12V DC power supply.
9	Network interface	Connects to a standard Ethernet cable.

1.4 Dimensions of Device

 **NOTE**

The actual dimensions may vary by model. Please refer to your specific product.

Figure 1-2 General device dimensions (Unit: mm)

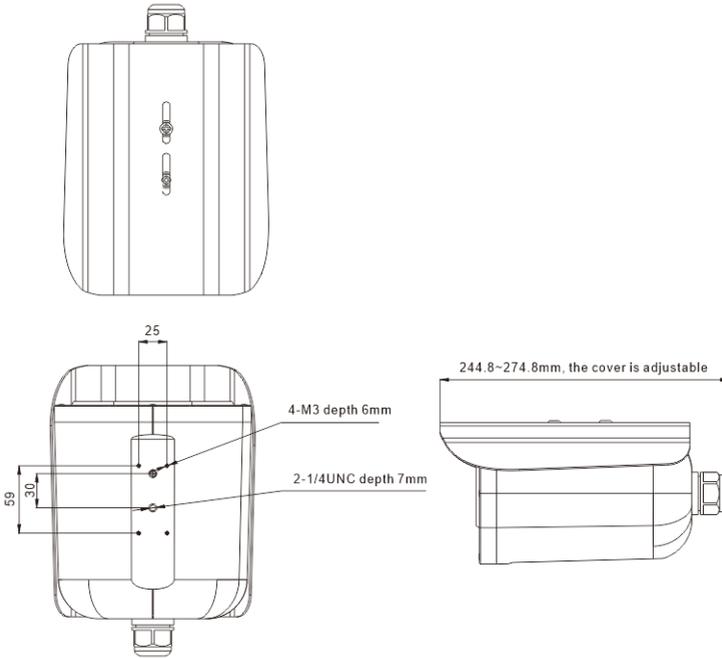


Figure 1-3 F 8mm

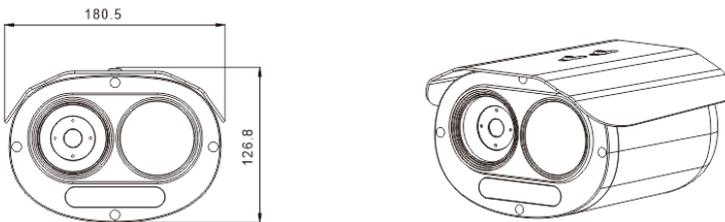


Figure 1-4 F 15 / 25 mm

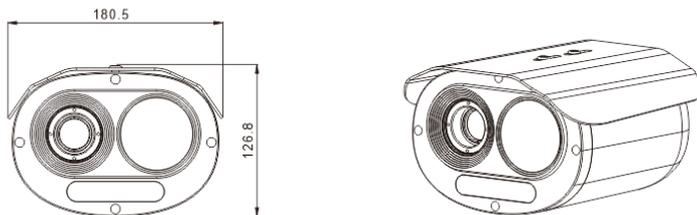


Figure 1-5 F 35 mm

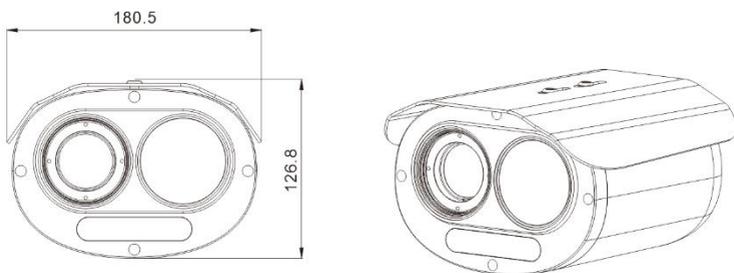
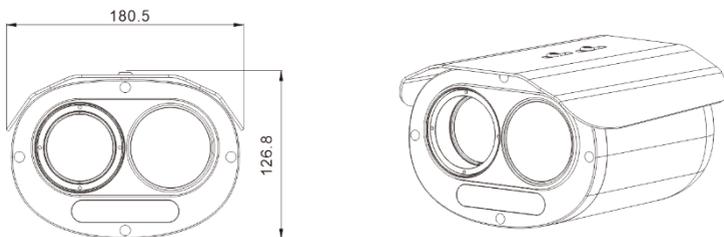


Figure 1-6 F 50 mm



1.5 Installation

NOTE

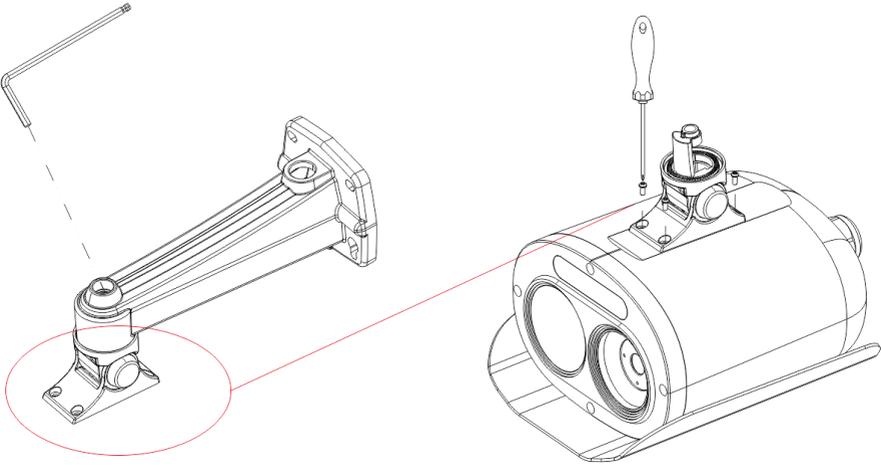
Diagrams are for reference only. Please refer to the actual product during installation.

1.5.1 Wall Installation

Step 1

Remove the bracket and hex wrench. Loosen the hex screw on the bracket. Use four M3 screws to attach the bracket base to the camera. (See Figure 1-7)

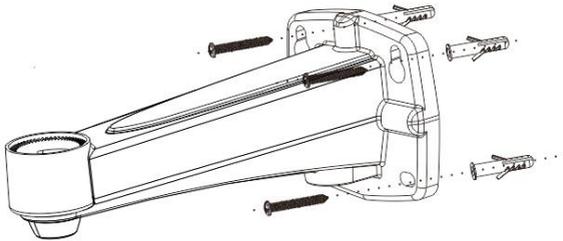
Figure 1-7 Assemble



Step 2

Place the installation sticker on the ceiling or wall. Drill four holes at the marked points. Insert plastic anchors into the holes. Mount the bracket and secure it with screws.(See Figure 1-8).

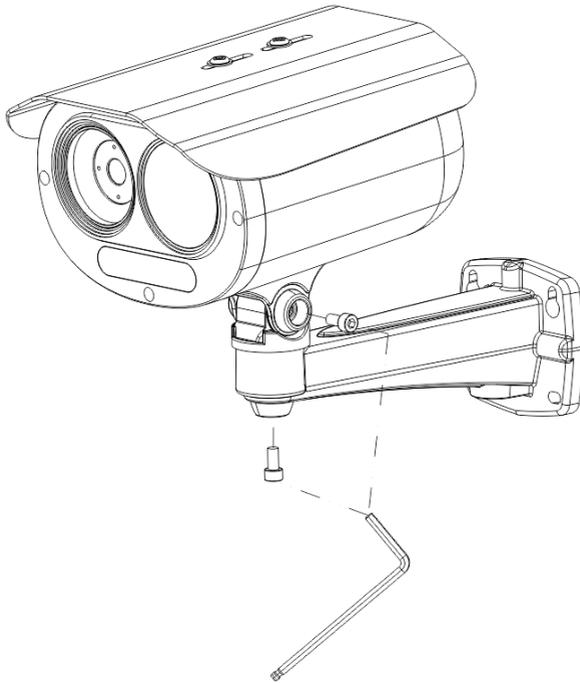
Figure 1-8 Fix bracket



Step 3

Attach the camera to the bracket, adjust its position to face the monitored area, and tighten the screw to secure it.(See Figure 1-10).

Figure 1-9 Fix camera

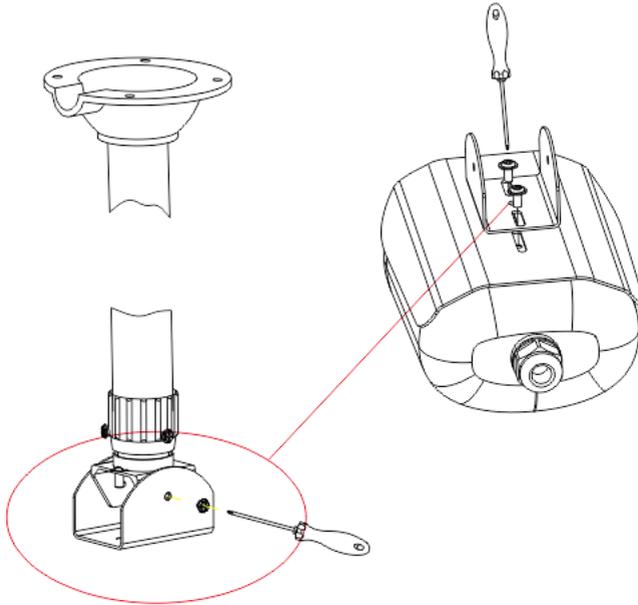


1.5.2 Ceiling Installation

Step 1

Remove the bracket and screwdriver. Loosen the two screws on the bracket base. Attach the base to the camera using two screws. (See Figure 1-10).

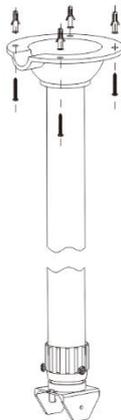
Figure 1-10 Assemble



Step 2

Stick the installation sticker on the ceiling. Drill four holes as marked, insert the plastic anchors, and secure the bracket to the ceiling. (See Figure 1-11).

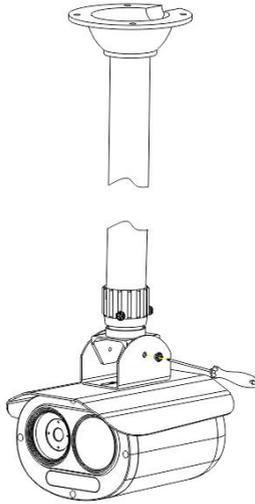
Figure 1-11 Fix bracket



Step 3

Fix the camera to the bracket, adjust its direction to cover the desired area, and tighten the screw. (See Figure 1-12).

Figure 1-12 Fix camera



2 Device Login

2.1 Login and Logout

**NOTE**

To access the camera's web interface, use **Microsoft Edge, Google Chrome, or Mozilla Firefox**. Other browsers may not support all functions.

Login

1. **Open a web browser** (Chrome recommended) and enter the camera's IP address in the address bar.
 - **Default IP address:** 192 . 168 . 0 . 121
2. **First-time users:** Create a password when prompted, then proceed to the login page.

Figure 2-1 Create password



Please Create Password

English ▾

User Name

New Password ?

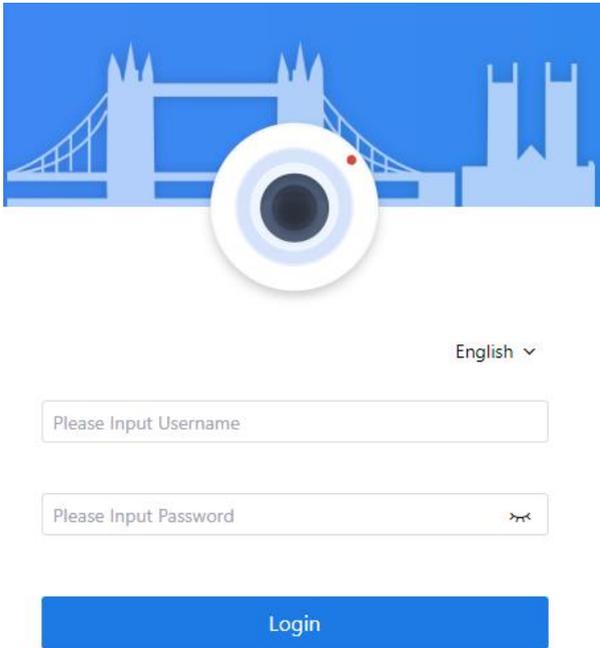
Please Input New Password

Confirm

Create

3. **Enter your username and password** to log in.
 - **Default username:** admin
 - You must set a password during the first login.
4. Click **Login** to access the homepage.

Figure 2-2 Login page

The login page features a blue header with a white camera lens icon in the center. Below the header, there is a language selector set to "English" with a dropdown arrow. Two input fields are provided: "Please Input Username" and "Please Input Password" (with a password toggle icon). A blue "Login" button is positioned below the password field.

English ▾

Please Input Username

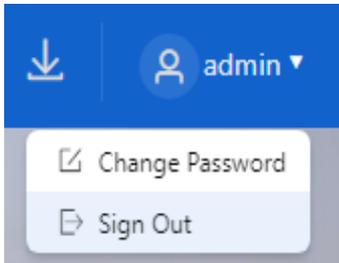
Please Input Password 

Login

**NOTE**

- The default username is admin. Users should create the password for the first time login.
- **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.

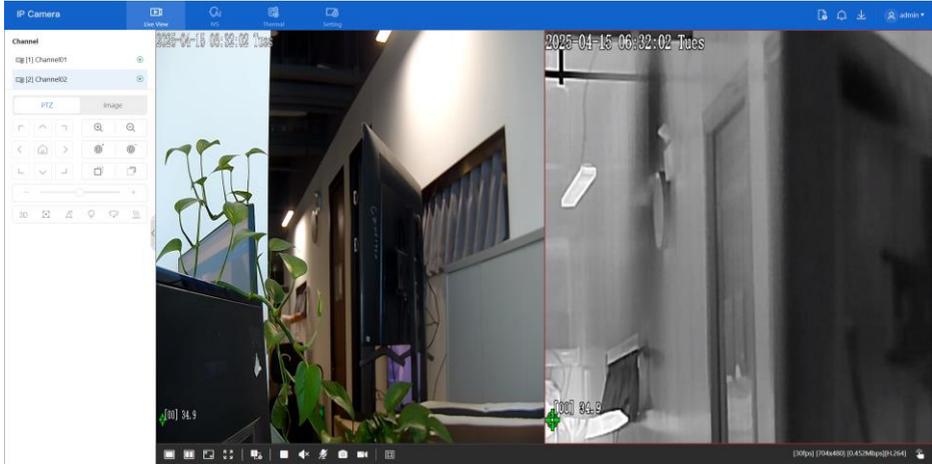
2.2 Homepage Layout

The homepage provides access to key system features, including:

- **Real-time video streaming**
- **Alarm and fault notifications**
- **System settings**
- **Password management**
- **Logout options**

(Refer to Figure 2-3 for the homepage layout and 2.4 for descriptions of each section.)

Figure 2-3 Homepage layout



2.3 Homepage Elements

The homepage provides access to various functions, allowing users to manage live video, settings, alarms, and more. The following table outlines the key elements:

2.4 Changing Your Password

How to Change Your Password

1. Click on your **username** in the upper-right corner and select **Change Password**, OR go to **Settings > System > Change Password**.
2. Enter your **current password**, then input and confirm your **new password**.
3. Click **OK**.
 - If a message appears saying "**Password changed successfully!**", the update was successful.
 - If the password change fails, an error message will guide you (e.g., "Password must be at least 8 characters").
4. **Restart the device after three minutes** to ensure the password update is applied.

Figure 2-4 Change the default password page

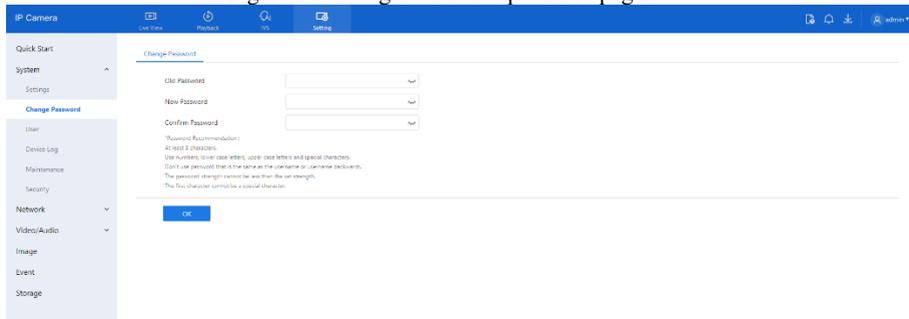


Table 2-1 Elements on the homepage

No.	Element	Description
1.	Live View	Displays real-time video footage.
2.	IVS setting	Configure the Intelligent Video System (IVS) , including AI multi-target tracking, intrusion detection, motion detection, line crossing, people counting, and more.
3.	Configuration	Set device parameters, including system settings, network, audio/video, image quality, event notifications, and storage.
4.	 Intercom Function	Manage two-way audio communication.
5.	 Alarm Notifications	If an alarm is triggered, an alarm icon will appear.  . Click the icon to view the alarm details.
6.	 SD Card Backup & Download Status	Monitor SD card video backup progress and download status.
7.	 admin User Profile	View current user information, sign out, or change the password.
8.	Channel	Channel 1 is the optical channel . Channel 2 is the thermal channel . Users can choose one to play or play two channels at the same time.

No.	Element	Description
9.	 Zoom In/Out	Adjust the video zoom level.
10.	 Iris Control	Manually adjust iris settings for brightness and clarity.
11.	 Focus Control	Adjust focus for near or distant objects.
12.	Image settings	Modify brightness, contrast, saturation, and sharpness .
13.	 One screen	One screen to play the channel's live video.
14.	 Two-screen	Two screens to play two channels' live video.
15.	 Window Scaling	Adjust the display scale of the live video.
16.	 Full Screen Mode	View live video in full screen.
17.	 Stream Selection	Switch between different video stream modes (options vary by device model). Adjust settings under Settings > Quick Start > Video .
18.	 Pause/Start	Start or stop live video streaming.
19.	 Audio Control	Enable or disable audio. Enable or disable intercom functionality.
20.	 Two-way Audio	<i>Note: A microphone must be connected to your computer for two-way audio to work.</i>
21.	 Snapshot	Capture an image from the live video and save it to a specified location.

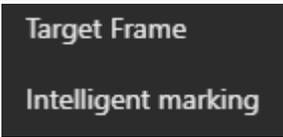
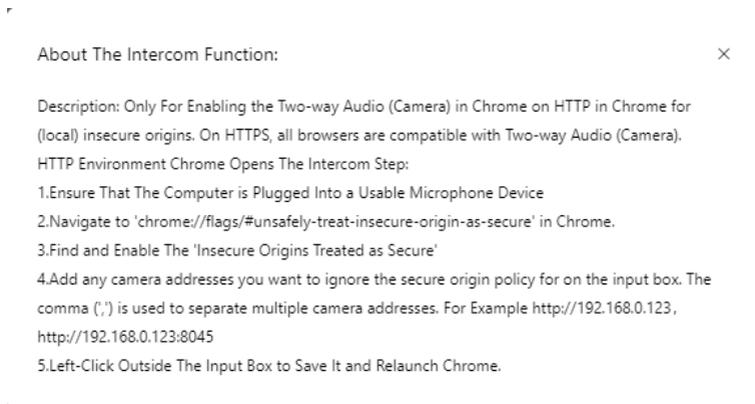
No.	Element	Description
22.	 Record Video	Start or stop manual recording and save the video to a specified location.
23.	 AI Recognition Mode	Play live video with AI-based object recognition. Click to exit AI mode.
24.	 Target Detection & Intelligent Marking	 <p>Highlights detected objects with a frame. IVS detection areas will also be outlined in the video feed.</p>
25.	 Video Information	View frame rate, resolution, bit rate, and video encoding type.
26.	 I/O Alarm Control	Manually activate or deactivate the I/O alarm output.

Figure 2-5 About the intercom function



2.5 IVS Setting

1. Click "**IVS**" to open the settings page.
2. Choose a channel to set. 1 is the optical channel, and 2 is the thermal channel.

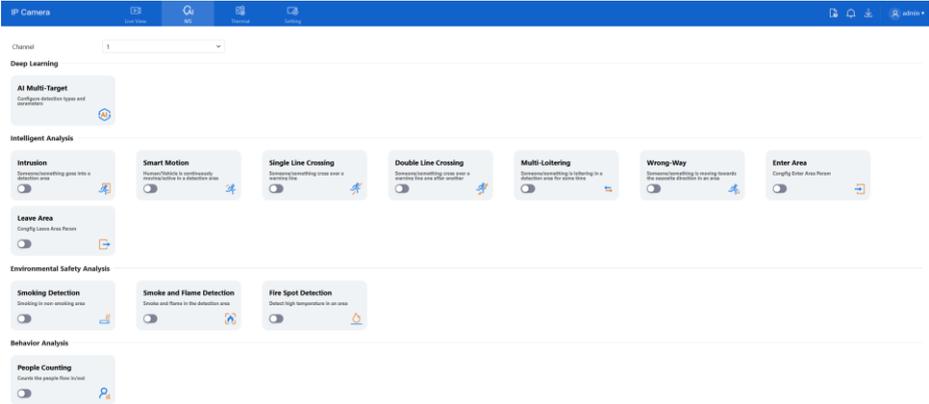
3. Configure features such as **deep learning, intelligent analysis, and behavior detection.**



NOTE

Different camera models offer different IVS features. Refer to your specific product manual for details.

Figure 2-6 IVS setting page



3 Quick Start Settings

3.1 Local Network

Overview

The local network settings allow you to configure essential parameters for your device's network connection, including:

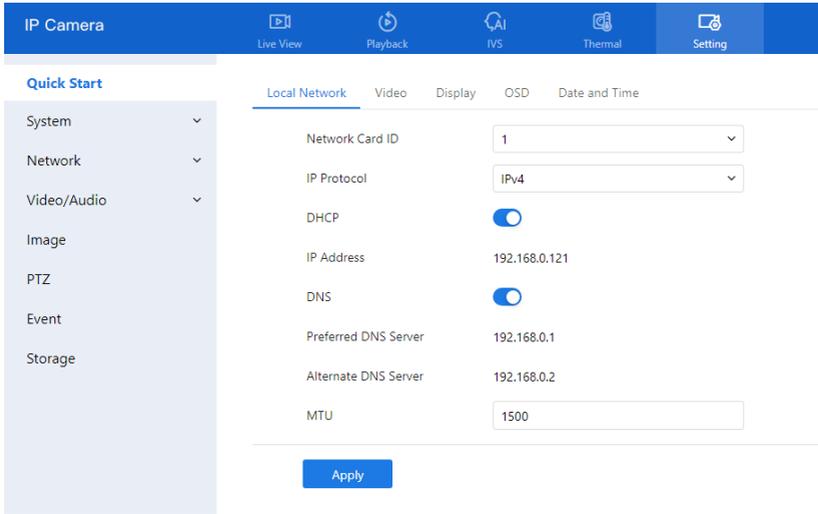
- IP protocol
- IP address
- Subnet mask
- Default gateway
- Dynamic Host Configuration Protocol (DHCP)
- Preferred and alternate Domain Name System (DNS) servers
- Maximum Transmission Unit (MTU)

By default, DHCP is enabled, meaning the device will automatically receive an IP address when connected to a network with DHCP support. If no DHCP server is available, the device will use the default IP address **192.168.0.120**. If multiple devices are connected to the same network, users must manually set unique IP addresses for each device.

Steps to Configure the Local Network

1. Navigate to **Settings > Quick Start > Local Network**.
2. Adjust the parameters as needed according to the table below:

Figure 3-1 Local network page



Set the parameters according to Table 3-1.

Table 3-1 Local network parameters

Parameter	Description	Configuration Method
Network Card ID	Identifies the network card.	[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.
IP Address	Device IP address that can be set as required.	[Setting method] Enter a value manually. [Default value] 192.168.0.120

Parameter	Description	Configuration Method
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.

Click **Apply**.

- If successful, a confirmation message will appear, and you will need to log in again with the new IP address.
- If an error message appears, check and correct the parameters before applying again.

3.2 Video Settings

Overview

Modifying video settings affects real-time streaming quality, playback, and storage efficiency. Adjust these settings based on available network bandwidth and storage capacity.

Steps to Configure Video Settings

1. Navigate to **Settings > Quick Start > Video**.
2. Adjust the parameters according to the table below:

Figure 3-2 Video setting page

Stream ID	1	2	3
Name	stream1	stream2	stream3
Video Encode Type	H264	H264	H264
Video Encode Level	Low	Low	Low
Audio Encode Type	G711_ALAW	G711_ALAW	G711_ALAW
Resolution	2688x1520	D1	CIF
Frame Rate(fps)	25	25	25
I Frame Interval	50	50	50
Bit Rate Type	CBR	CBR	VBR
Bit Rate	4096 <small>(500-18000kbps)</small>	1500 <small>(100-6000kbps)</small>	256 <small>(100-15000kbps)</small>
Image Quality	Mid	Mid	Mid
Smart Encode	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Set the parameters according to Table 3-2.

Table 3-2 Parameters of stream configuration

Parameter	Description	Configuration Method
Stream ID	<p>The device supports at most three streams.</p> <p>Streams 1 and 2 adopt the H.264 code.</p> <p>Stream 1 stands for the best stream performance the device supports. Stream 2 usually offers comparatively low-resolution options.</p> <p>Stream 3 is the lowest resolution.</p> <p>Some models may only have two streams.</p>	<p>[Setting method]</p> <p>Select a value from the drop-down list box.</p>
Name	<p>Stream name.</p> <p> NOTE</p> <p>The stream name consists of characters, numbers, characters, and underlines.</p>	<p>[Setting method]</p> <p>Enter a value manually.</p> <p>The value cannot exceed 32 bytes.</p> <p>[Default value]</p> <p>Stream 1</p>

Parameter	Description	Configuration Method
<p>Video Encode Type</p>	<p>The video encoding determines the image quality and network bandwidth required by a video. Currently, the following encoding standards are supported:</p> <p style="text-align: center;">MJPEG</p> <p>MJPEG is a standard intra-frame compression encode. The compressed image quality is good. No mosaic is displayed on motion images. MJPEG does not support proportional compression and requires 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.</p> <p style="text-align: center;">H.264</p> <p>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 encode based on the decoding performance of the device.</p> <p>H.264 High Profile has the highest requirements for hardware performance, and H.264 Base Profile has the lowest requirements for hardware performance.</p> <p style="text-align: center;">H.265</p> <p>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 to make configuration optimization.</p>	<p>[Setting method] Select a value from the drop-down list box. [Default value] H.264 High Profile</p> <p>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.</p> <p>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.</p>

Quick Start Settings

Parameter	Description	Configuration Method
Audio Encode Type	<p>The following audio encoding standards are supported:</p> <p>G711_ULAW: mainly used in North America and Japan.</p> <p>G711_ALAW: mainly used in Europe and other areas.</p> <p>RAW_PCM: encode of the original audio data. This encode is often used for platform data.</p>	<p>[Setting method]</p> <p>Select a value from the drop-down list box.</p>
Resolution	<p>A higher resolution means better image quality.</p> <p> NOTE</p> <p>IP cameras support different resolutions based on the model.</p>	<p>[Setting method]</p> <p>Select a value from the drop-down list box.</p>
Frame Rate(fps)	<p>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:</p> <p>50 Hz: 1–25 f/s</p> <p>60 Hz: 1–30 f/s</p> <p> NOTE</p> <p>The frequency is set on the Device Configuration > Camera page. The biggest MJPEG coding format frame rate is 12 frames per second.</p>	<p>[Setting method]</p> <p>Select a value from the drop-down list</p>
I Frame Interval(f)	<p>I frame does not require other frames to decode. A smaller I-frame interval means better video quality but higher bandwidth.</p>	<p>[Setting method]</p> <p>Select a value from the drop-down list</p>
Bit Rate Type	<p>The bit rate is the number of bits transmitted per unit of time.</p> <p>The following bit rate types are supported:</p> <p>Constant bit rate (CBR)</p> <p>The compression speed is fast; however, improper bit rates may cause vague motion images.</p> <p>Variable bit rate (VBR)</p> <p>The bit rate changes according to the image complexity. The encoding efficiency is high and the definition of motion images can be ensured.</p>	<p>[Setting method]</p> <p>Select a value from the drop-down list box.</p>

Parameter	Description	Configuration Method
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 Quality	The video quality of the camera output.	[Setting method] 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 encodings.	[Setting method] Click the button to enable Smart Encode .

Click **Apply**.

- If the message "Apply success!" appears, the system has successfully saved the settings.
- If the message "Apply failed!" appears, you need to request Parameter Configure permission from an administrator.
- If a message indicates that the bit rate is invalid, enter a valid bit rate value.

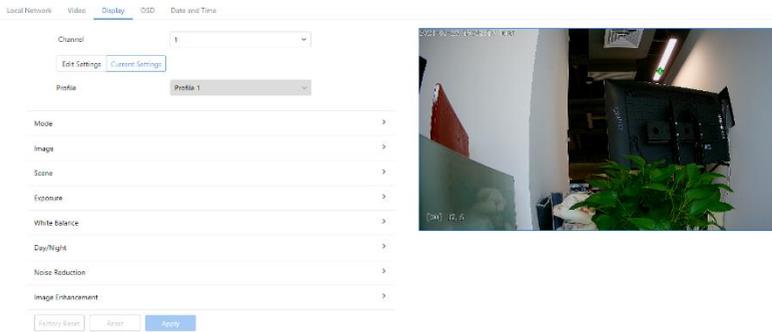
3.3 Display Settings

3.3.1 Accessing the Display Settings

Procedure:

1. Navigate to **Setting > Quick Start > Display**.
2. Choose the **channel** to set

Figure 3-3 Display settings page



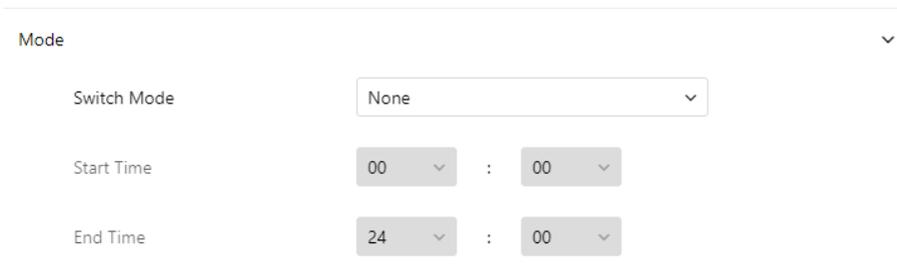
3. Select **Edit Settings** under the **Mode** section to configure the parameters. You can set up to four profiles.
 - All image settings can be modified in **Edit Settings**.
 - **Factory Reset:** Restores all parameters to factory settings.

3.3.2 Mode

Procedure:

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

Figure 3-4 Mode page



2. Select **Switch Mode** to choose from the following modes:
 - **None:** Executes the selected profile continuously.
 - **Time Mode:** Switch profiles based on the configured start and end times.
 - **D/N Linkage Mode:** Automatically switches between **Profile 1** (Day Mode) and **Profile 2** (Night Mode) based on ambient light conditions.

3. Configure the start and end times as needed.
4. Click **Apply** to save the settings.

3.3.3 Image Settings

Users can manually adjust brightness, contrast, saturation, and sharpness based on the scene.

Procedure:

1. Navigate to **Setting > Quick Start > Display > Image**.
2. Adjust the parameters as per Table 3-3:
 - **Brightness:** Adjusts the overall brightness of the image. Default: 50.
 - **Saturation:** Controls color intensity. Default: 50.
 - **Sharpness:** Enhances image clarity. Default: 50.
 - **Contrast:** Adjusts the difference between bright and dark areas. Default: 50.
3. Click **Apply** to save the settings.



Table 3-3 Parameters of image settings parameters

Parameter	Description	Configuration Method
Brightness	Adjusts the overall brightness of the image.	[Default value] 50
Saturation	Controls color intensity	[Default value] 50
Sharpness	Enhances image clarity. Default: 50.	[Default value] 50
Contrast	Adjusts the difference between bright and dark areas. Default: 50.	[Default value] 50

3.3.4 Scene Mode

Users can modify image mirroring based on installation methods and viewing preferences.

Procedure:

1. Navigate to **Setting > Quick Start > Display > Scene**.
2. Configure the settings as per Table 3-4:
 - **Scene:** Choose from the drop-down list, **Outdoor**, or **Indoor**. Default: Outdoor.
 - **Mirror:** Select image orientation (**Normal, Horizontal, Vertical, Horizontal & Vertical**). Default: Normal.
3. Click **Apply** to save the settings.

Scene ▼

Scene

Mirror

Tip: Please Update Motion Detection, Privacy Mask, Intelligent Analysis, ROI and OSD Area Settings After [Corridor Mode]/[Mirror] was Changed.

Table 3-4 Parameters of scene mode

Parameter	Description	Configuration Method
Scene	<ul style="list-style-type: none"> ○ Choose from Outdoor or Indoor. Default: Outdoor. 	[Configuration method] Select from the drop-down list [Default value] Outdoor
Mirror	<ul style="list-style-type: none"> ○ Select image orientation (Normal, Horizontal, Vertical, Horizontal & Vertical). Default: Normal. 	[Setting method] Select a value from the drop-down list. [Default value] Normal

Parameter	Description	Configuration Method
Corridor Mode	<ul style="list-style-type: none"> Rotates the image by 90° for vertical installations. Default: Disabled. 	[Setting method] Tick the corridor mode. [Default value] Disable

3.3.5 Exposure

Adjust exposure settings when brightness changes due to ambient light variations.

Procedure:

- Navigate to **Setting > Quick Start > Display > Exposure**.
- Configure the settings as per Table 3-5:
 - Exposure Mode:** Options include Auto, Manual, Shutter Priority, and Iris Priority. Default: Auto.
 - Meter Mode:** Options include Full Metering, Spot Metering, and Partial Metering. Default: Whole.
 - Max Shutter:** Controls the maximum shutter speed. Default: 1/25.
 - Max Gain:** Limits the gain level to avoid overexposure. Default: 50.
 - Iris:** Select Auto or Open Fully. Default: Auto.
 - Iris Speed:** Adjusts auto iris adjustment speed. Default: 50.
- Click **Apply** to save the settings.

Figure 3-5 Exposure interface for IP camera

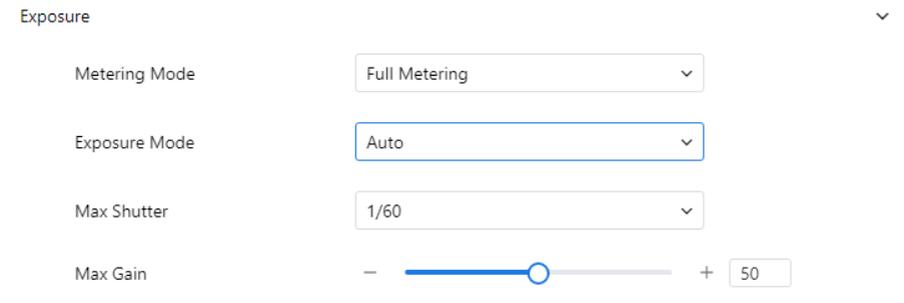


Table 3-5 Parameters of exposure

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

Parameter	Description	Configuration Method
Iris	<p>It is used to control the light admitted to the lens.</p> <p>The auto iris can be set to either of the following states:</p> <p style="text-align: center;">Auto</p> <p>The iris is automatically adjusted to control the light admitted to the lens.</p> <p style="text-align: center;">Open fully</p> <p>The iris is fully open.</p>	<p>[Setting method] Select a value from the drop-down list. [Default value] Auto</p>
Iris Speed	<p>It indicates the auto adjustment speed of the iris. As the value increases, the speed increases. Excessive speed may cause instability.</p> <p> NOTE This parameter is valid when the auto iris is enabled.</p>	<p>[Setting method] Drag the slider. [Default value] 50</p>
Fixed Gain	<p>When the exposure Mode is Manual, you can set the fixed gain.</p>	<p>[Setting method] Drag the slider. [Default value] 50</p>

3.3.6 White Balance Setting

Adjust the white balance manually for accurate color representation.

Procedure:

1. Navigate to **Setting > Quick Start > Display > White Balance**.
2. Configure the settings as per Table 3-6:
 - **Mode:** Choose from Auto, Tungsten, Fluorescent, Daylight, Shadow, or Manual. Default: Auto.
 - **Red Gain:** Adjusts red channel intensity (valid in Manual Mode). Default: 0.
 - **Blue Gain:** Adjusts blue channel intensity (valid in Manual Mode). Default: 0.
3. Click **Apply** to save the settings.

Figure 3-6 White balance settings page

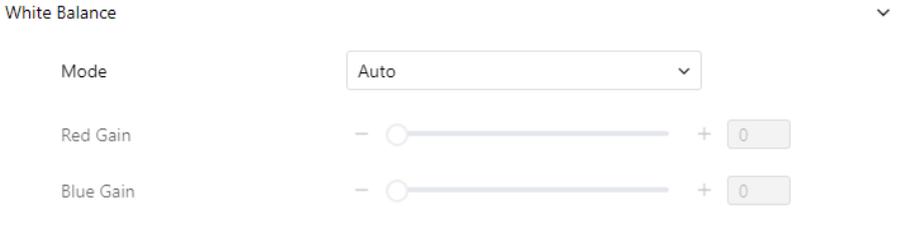


Table 3-6 Parameters of WB setting

Parameter	Description	Configuration Method
Mode	<p>Select WB mode according to different scenes for better image color reproduction.</p> <p>Auto: In automatic white balance (WB) mode, the system automatically performs white balance based on the monitoring environment.</p> <p>Tungsten</p> <p>Fluorescent</p> <p>Daylight</p> <p>Shadow</p> <p>Manual: In manual WB mode, you can manually select a WB mode based on the monitoring environment.</p>	<p>[Setting method] Select a value from the drop-down list.</p> <p>[Default value] Auto</p>
Red Gain	<p>It indicates the gain applied to red channels. As the value increases, the color temperature becomes lower.</p> <p> NOTE</p> <p>This parameter is valid when Manual Mode is set to Customized.</p>	<p>[Setting method] Drag the slider.</p> <p>[Default value] 0</p>

Parameter	Description	Configuration Method
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

3.3.7 Day/Night Mode

Users can switch Day/Night modes based on ambient lighting conditions.

Procedure:

1. Navigate to **Setting > Quick Start > Display > Day/Night**.
2. Configure the settings as per Table 3-7:
 - **Setting:** Options include Auto, Day, Night, and Timer. Default: Auto.
 - **Delay (s):** Adjust the delay for switching modes. Default: 0.
 - **Illumination:** Choose from IR LED, White LED, Intelligent Dual Light, or None.
 - **Strength:** Adjust IR LED intensity. Default: 50.
 - **DTN Time:** Set the transition time from day to night. Default: 18:00.
 - **NTD Time:** Set the transition time from night to day. Default: 6:00.
 - **Anti-Overexposure:** Enable to prevent overexposure.
3. Click **Apply** to save the settings.

Figure 3-7 Day/Night page (timer)

Day/Night ▼

Setting Timer ▼

DTN Time 18 ▼ : 00 ▼

NTD Time 06 ▼ : 00 ▼

Illumination IR LED ▼

IR LED Auto ▼

Strength -  + 50

Anti Overexposure

Figure 3-8 Day/Night mode page (auto)

Day/Night ▼

Setting Auto ▼

Delay(S) -  + 5

TRANSI.(D->N) -  + 70

TRANSI.(N->D) -  + 30

Illumination IR LED ▼

IR LED Auto ▼

Near -  + 50

Far -  + 50

Anti Overexposure

Table 3-7 Parameters of Day/Night

Parameter	Description	Configuration Method
Setting	<p>It can be set to Auto, Day, Night, or Timer.</p> <p>Auto mode</p> <p>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.</p> <p>Day mode</p> <p>The image is colored, and the filter is in the day state, preventing infrared light from entering the sensor.</p> <p>Night mode</p> <p>The image is black and white, and the filter is in the night state, allowing infrared light to enter the sensor.</p> <p>Timer</p> <p>Switching between day mode and night mode according to the set time.</p>	<p>[Setting method]</p> <p>Select a value from the drop-down list.</p> <p>[Default value]</p> <p>Auto</p>
Delay(s)	<p>The delay time of day to night or night to day.</p> <p> NOTE</p> <p>This parameter is valid in auto mode.</p>	<p>[Setting method]</p> <p>Drag the slider.</p> <p>[Default value]</p> <p>0</p>
Illumination	<p>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.</p>	<p>[Setting method]</p> <p>Select a value from the drop-down list.</p>

Parameter	Description	Configuration Method
IR LED	<p>Auto: The infrared lamp is enabled or disabled based on the external environment identified by the light-dependent resistor (LDR).</p> <p>ON: The system enters the night mode forcibly.</p> <p>OFF: The infrared lamp is disabled. The filter and image color are switched based on the external environment identified by the LDR.</p> <p> NOTE This parameter is valid in auto mode.</p>	<p>[Setting method] Select a value from the drop-down list. [Default value] Auto</p>
Strength	Strength of IR LED, as the value increases, the image becomes brighter.	<p>[Setting method] Drag the slider. [Default value] 50</p>
DTN Time	Time of day to night.	<p>[Setting method] Select a value from the drop-down list. [Default value] 18:00</p>
NTD Time	Time of night to day.	<p>[Setting method] Select a value from the drop-down list. [Default value] 6:00</p>
Anti Overexposure	To keep away over-exposure.	<p>[Setting method] Tick</p>

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 30 s 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 turn on the fill light (it can be selected according to the four modes of the fill light).

Auto mode: Automatically switch 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.

3.3.8 Noise Reduction

Adjust noise reduction settings to improve image clarity in low-light conditions.

Procedure:

1. Navigate to **Settings> Quick Start > Display > Noise Reduction**.
2. Configure noise reduction settings according to the environment and requirements.
3. Click **Apply** to save the settings.

Figure 3-9 Noise reduction page (auto)

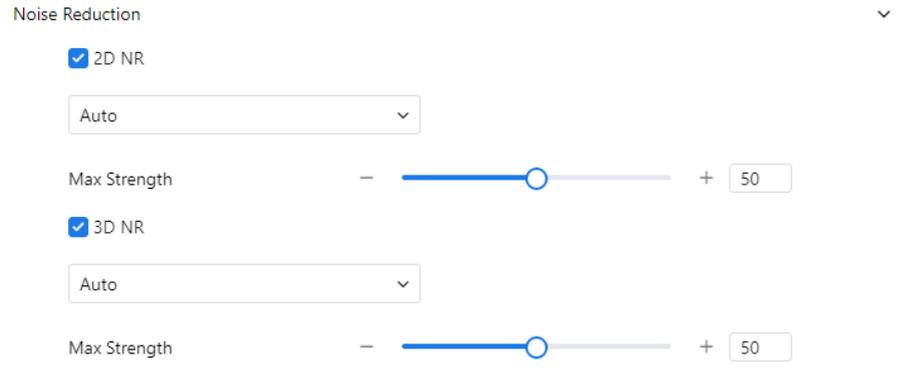
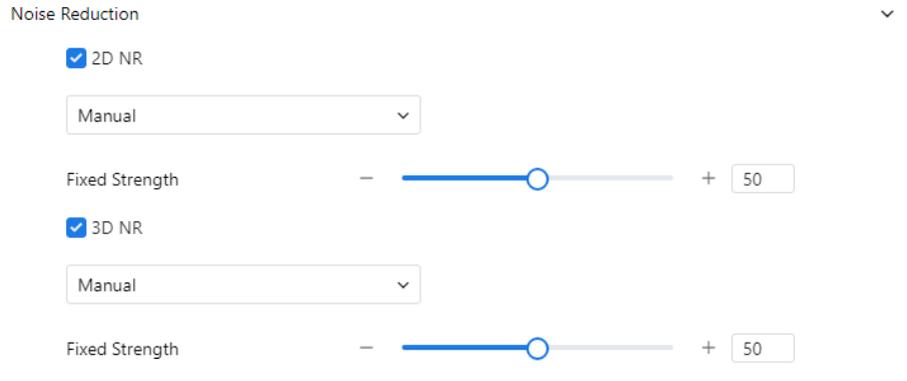


Figure 3-10 Noise reduction page (manual)



Set the parameters according to Table 3-8.

Table 3-8 Parameters of noise reduction

Parameter	Description	Configuration Method
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	Configuration Method
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

3.3.9 Image Enhancement

The **Image Enhancement** feature improves visibility and detail in different lighting conditions, ensuring clearer surveillance images.

- **Wide Dynamic Range (WDR):** Helps balance high contrast between bright and dark areas, improving visibility in challenging lighting conditions. It prevents overexposure in bright areas while enhancing details in darker regions, making it ideal for scenes with strong backlight or nighttime surveillance with headlights and streetlights.
- **High Light Compensation (HLC):** Reduces the glare caused by bright light sources, such as headlights and streetlights, preventing overexposure and ensuring a clearer view of objects in front of the light.
- **Backlight Compensation (BLC):** Adjusts brightness levels to improve visibility in backlit environments. It enhances objects in the foreground while preventing the background from becoming excessively bright.
- **Defog:** Enhances image clarity in foggy, hazy, rainy, or snowy conditions by optimizing contrast and reducing distortion caused by environmental factors.

How to Configure Image Enhancement:

1. Go to **Settings > Quick Start > Display > Image Enhancement**.
2. Adjust the following parameters:

Quick Start Settings

Image Enhancement ▼

WDR
-  +

HLC
-  +

BLC
-  +

Defog
-  +

Table 3-9 Parameters of enhanced image

Parameter	Description	Configuration Method
WDR	Balances bright and dark areas in high-contrast environments.	Enable WDR and adjust the slider. [Default value] 50
HLC	Reduces glare from strong light sources.	Enable HLC and adjust the slider. [Default value] 50
BLC	Enhances visibility in backlit environments.	Enable BLC and adjust the slider. [Default value] 50
Anti-shake	Reduces image shake when the camera is slightly moved.	Enable Anti-Shake mode.
DeFog	Enhances clarity in foggy or low-visibility conditions.	Enable Defog and adjust the slider. [Default value] 50

3. Click **Apply** to save your settings.

3.3.10 Zoom Focus

The **Zoom Focus** feature ensures that the camera maintains a sharp and clear focus, whether switching between day and night modes or zooming in on objects.

How to Configure Zoom Focus:

1. Go to **Settings > Quick Start > Display > Zoom Focus**.
2. Adjust the following parameters:

Figure 3-11 Zoom focus page

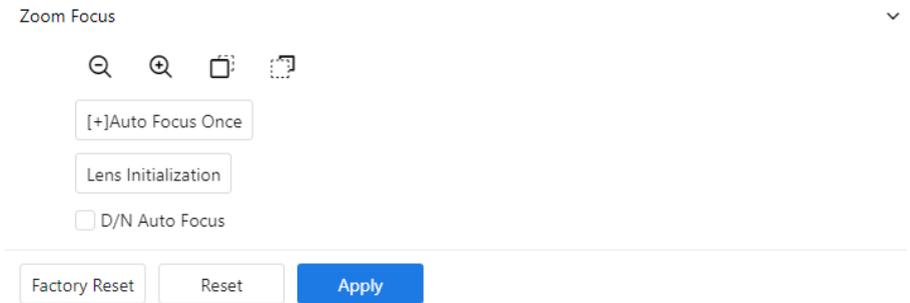


Table 3-10 Parameters of zoom focus

Parameter	Description	Configuration Method
D/N Auto Focus	Automatically adjusts focus when switching between day and night mode.	Enable the Autofocus.
Auto Focus Once	Manually triggers autofocus.	Click the button.
Initial	Resets the camera lens to its original position	Click the button.
Digital Zoom	Enables digital zoom after 37x optical zoom.	Enable Digital Zoom.

Parameter	Description	Configuration Method
Focus Mode	<p>Determines how easily the camera refocuses on slight image changes.</p> <p>Autofocus mode: The system automatically triggers focus based on application scenarios.</p> <p>Manual focus mode: You can trigger focus by using the buttons on the client.</p> <p>Semi-automatic focus mode: The system only automatically triggers focus once when the PTZ moves or zooms in a scene.</p>	<p>Select from the drop-down list</p> <p>[Default value]</p> <p>Semi-automatic</p>
Auto Focus Sensitivity	<p>Determines how easily the camera refocuses on slight image changes.</p>	<p>Adjust the slider.</p> <p>[Default value]</p> <p>50</p>
Minimum Focus Distance	<p>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.</p> <p> NOTE</p> <p>This parameter applies only to visible light.</p>	<p>Select from the drop-down list</p> <p>[Default value]</p> <p>4m</p>

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

3.4 Thermal Channel Display

Some display settings in the thermal channel are the same as those in the optical channel. Therefore, descriptions of **Mode, Image, Scene, Noise Reduction, and Image Enhancement** are omitted here. Please refer to the earlier section of the document for those details.

3.4.1 Set Pseudocolor

When quick **temperature identification** is needed—such as in low-contrast environments or for applications like building and energy detection, fire rescue, and temperature screening—Pseudocolor settings can be adjusted.

You can switch between different Pseudocolor modes depending on the scene, including options like iron red, rainbow, or high contrast black and white. For example:

- **Black hot / White hot:** Best for highlighting fine details and object contours.
- **Rainbow:** Ideal for showing a broad range of temperature variations.
- **Cool:** Useful for quickly identifying extreme temperatures.

To set Pseudocolor:

1. Go to **Settings > Quick Start > Display > Set Pseudocolor.**
2. Adjust the available parameters to your preference.
3. Click **Apply** to save your settings.

Figure 3-12 Set Pseudocolor interface



Table 3-11 Pseudocolor parameter

Parameter	Description	Setting
Pseudo-Colors	<p>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 the 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 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.</p>	<p>[How to set] Select from the drop-down list box. [Default value] White Hot</p>

Quick Start Settings

Legend of Temperature Value	It is on, the live video will show, otherwise there is no legend.	[How to set] Select from the drop-down list box. [Default value] Close
-----------------------------	---	--

3.4.2 FFC Control

The thermal imaging camera may include an internal mechanical correction mechanism designed to periodically enhance image quality. This mechanism is known as **Flat Field Correction (FFC)**.

During FFC, the sensor array is temporarily shielded so that each part of the sensor captures a uniform temperature field (flat field). This process allows the camera to update its correction coefficients, resulting in more consistent and uniform images.

While FFC is in progress, the video image freezes for about two seconds and a static frame is displayed. Once the correction is complete, the live image automatically resumes.

Performing FFC regularly helps prevent issues such as grainy images or image degradation. FFC is particularly important when the camera undergoes temperature changes—for example, right after powering on or when the ambient temperature shifts. In such cases, it is recommended to perform FFC immediately.

1. Go to **Settings > Quick Start > Display > FFC Control**.
2. Adjust the parameters according to Table 3-12:
3. Click **Apply** to save the settings.

Figure 3-13 FFC interface

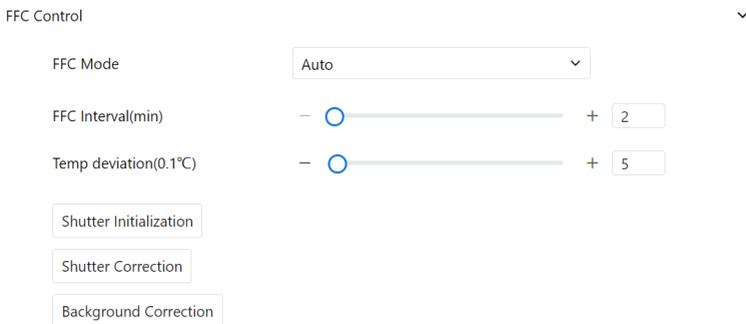


Table 3-12 FFC control parameter description

Parameter	Description	Setting
FFC Mode	<p>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 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.</p> <p>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.</p>	<p>[How to set] Select from the drop-down list box. [Default value] Auto</p>
FFC Interval (min)	In the automatic FFC mode, the FFC interval ranges from 5 to 255 minutes.	<p>[How to set] Drag the slider. [Default value] 5</p>
Temper deviation(0.1 °C)	In the automatic FFC mode, the FFC interval ranges from 0.2 to 25.5 centigrade.	<p>[How to set] Drag the slider. [Default value] 5</p>
Shutter Initialization	Click the icon to initialize the shutter.	N/A
Shutter Correction	Click the icon to adjust exposure immediately.	N/A
Background Correction	Click the icon and cover the camera with something to adjust the image. Remove the thing to finish the adjustment.	N/A

----End

3.5 On-Screen Display (OSD)

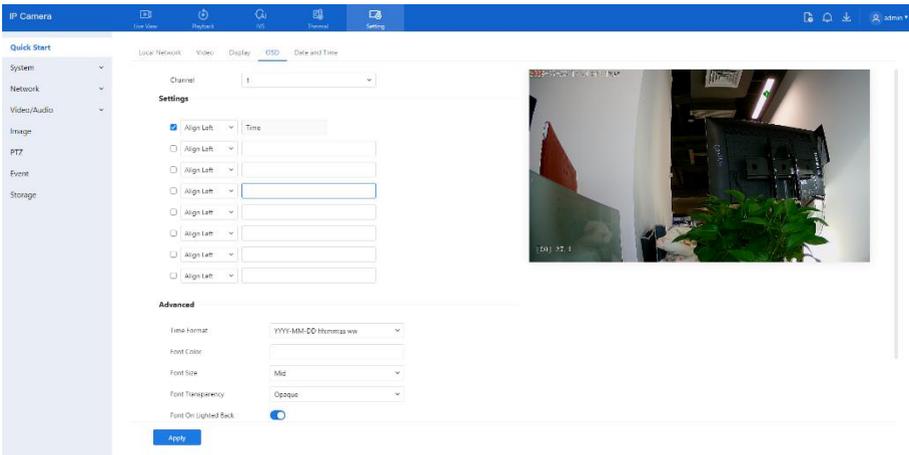
The On-Screen Display (OSD) feature overlays important information directly onto the live video feed, improving the practicality and management of your monitoring system. Commonly displayed details include time, camera location, device status, operational actions, and additional notes. It's important to arrange the information effectively to ensure it's useful without blocking the view of the footage.

What You Can Display

The OSD allows you to show the device name, channel ID, time, and other customizable content on your videos. You can drag the OSD frames to any location on the screen.

- For resolutions such as D1 and CIF, the OSD customization can display up to 22 characters.
- The OSD supports simplified Chinese, English, numbers, and some special characters.

Figure 3-14 OSD page



Steps to Configure OSD

1. Go to **Settings > Quick Start > OSD**. The OSD configuration page will appear.
2. Set the parameters as outlined in the table below:

Table 3-13 Parameters of OSD

Parameter	Description	Configuration Method
Time	Option to display the time on the screen.	Tick the box to show the time.

Parameter	Description	Configuration Method
Custom OSD	Customize the text that will appear on the video.	<ol style="list-style-type: none"> 1. Tick the custom OSD list. 2. Set the position of OSD showing. Or drag the frame of OSD to adjust the position on live video. 3. Enter the characters. Click Apply to save the value.
Time Format	Choose the format in which the time is displayed.	Select from the dropdown menu. [Default value] YYYY-MM-DD hh:mm:ss ww
Font Color	Set the color of the text	Select from the dropdown menu. [Default value] Blank
Font Size	Choose the text size	Select from the dropdown. [Default value] Mid
Font Transparency	Set the transparency of the text.	Choose from the dropdown. [Default value] Opaque
Font on Lighted Back	Enable or disable a lighted background for the text.	Click to enable
Device Name	Option to display the device name.	Click to enable
Status Display of Focus	Show focus status on the video.	Click to enable
Twelve-hour System	Display time in a 12-hour format.	Click to enable
Display Week	Show the day of the week.	Click to enable

3. Click **Advanced** to customize settings for **Time Format**, **Font Color**, **Font Transparency**, and other options.
4. Click **Apply** to save your settings. You should see a confirmation message, "Apply success!" indicating that your settings have been saved.

3.6 Date and Time Settings

Description

The Date and Time settings allow you to adjust the device's time, including time zone, daylight-saving time (DST), and synchronization with an NTP server (Network Time Protocol).

Settings You Can Modify

- Time Zone
- Device Time
- NTP Server

Steps to Configure Date and Time

1. Go to **Settings > Quick Start > Date and Time**. The Date and Time page will appear.
2. Modify the settings as shown in the table below:

Figure 3-15 Date and time page

Local Network Video Display OSD **Date and Time**

Time Zone (GMT) Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London

Device Time 2024-07-24 10:37:18

Set Manually 2024-07-24 10:37:13

Synchronize with PC time

NTP

Daylight Savings Time

Begin Time Mar 5Th Sun 1:00AM

End Time Oct 5Th Sun 2:00AM

Apply

Table 3-14 Parameters of date and time

Parameter	Description	Configuration Method
Time Zone	N/A	Choose from the dropdown list. [Default: GMT]
Device Time	Adjust the device's current time.	Sync with your PC or set it manually.
Set Manually	Option to set the time manually.	Click to enter the time in the format YYYY-MM-DD HH:MM: SS.
NTP Server	Enable synchronization with an NTP server.	Type the server's IP address or domain name.
Server Address	Enter the NTP server's address.	Type the server's IP address or domain name.
Port	Set the port number for the NTP server.	Enter the port number. [Default: 123]
Interval	Set how often the device checks the NTP server for time synchronization	Enter the time interval in minutes. [Default: 60]

Quick Start Settings

Parameter	Description	Configuration Method
Daylight Saving Time	Enable or disable DST adjustments.	[Setting method] Click the button to enable Daylight Saving Time .

3. Click **Apply** to save your settings. The confirmation message "Apply success!" will appear, indicating the changes have been saved.

4 Configuring Thermal

4.1 Settings

4.1.1 Temperature Parameters

Temperature parameters include:

- Basic Temperature settings
- Temperature showing
- Area temperature type
- Measure mode
- Temperature alarm interval
- Advanced settings

Operation Procedure

1. Go to **Thermal > Settings > Temperature Parameters** as shown in Figure 4-1.
2. Modify the settings as shown in the table below:
3. Click **Apply** to save settings.

Figure 4-1 Temperature Parameters Interface

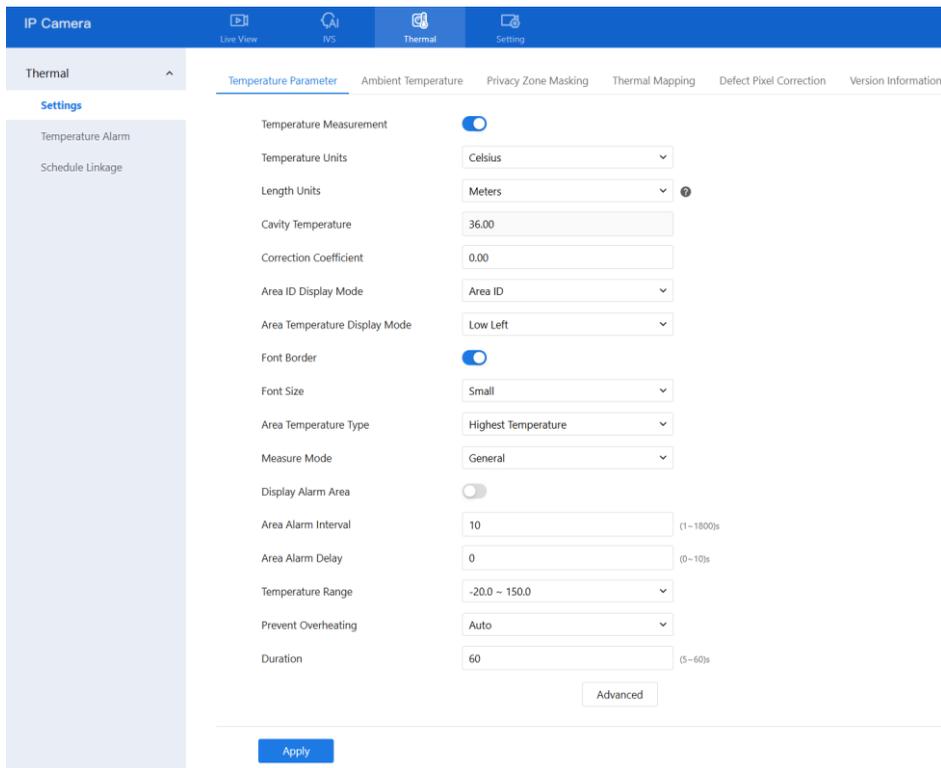


Table 4-1 Temperature Parameters

Parameter	Description	Setting
Temperature Measurement	It is enabled by default. If it is disabled, the thermal channel will not function.	[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 length units are available.	[Setting method] Select a value from the drop-down list box. [Default value] Meters

Parameter	Description	Setting
Cavity Temperature	The cavity temperature of the camera.	N/A
Correction Coefficient	<p>The correction coefficient refers to the deviation between the measured object temperature and the actual temperature, which is the offset value.</p> <p>For example:</p> <ol style="list-style-type: none"> 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. <p>NOTE</p> <p>The user should contact the technical support staff of our company at this condition to make sure to apply</p>	<p>[Setting method] Enter a value manually.</p> <p>[Default value] 0.00</p>
Area ID display mode	Two modes to display, area ID and area name	<p>[Setting method] Select a value from the drop-down list box.</p> <p>[Default value] Area ID</p>
Area Temperature Display Mode	The display position of temperature information on the live video image.	<p>[Setting method] Select a value from the drop-down list box.</p> <p>[Default value] Low left</p>
Font Border	Enable to bold the font	<p>[Setting method] Enable or disable</p> <p>[Default value] Disable</p>
Font size	Three font sizes can be chosen, small/mid/big	<p>[Setting method] Enable or disable</p> <p>[Default value] Mid</p>

Parameter	Description	Setting
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	Check to display the setting alarm area on live video. When alarm is triggered in the area, the alarm detection area of the object will be drawing the frame to reminder. The corresponding information is only displayed in the thermal main stream.	[Setting method] Enable or disable [Default value] Disable
Area Alarm Interval (1-1800s)	During the interval, the same alarm will only be sent once.	[Setting method] Enter a value manually ranging from 1 to 1800. [Default value] 10
Area Alarm delay (0-10S)	The area alarm information will delay for setting time.	[Setting method] Enter a value manually ranging from 1 to 10. [Default value] 10
Temperature range	Different devices offer different modes, with three available temperature ranges: -20°C to 150°C, 0°C to 550°C, and Auto. Auto: When the temperature of the measured area is below 160°C, the device automatically selects the -20°C to 150°C range. If the temperature is above 160°C, it switches to the 0°C to 550°C range.	[Setting method] Select a value from the drop-down list box.

Parameter	Description	Setting
Prevent Overheating	Open if the temperature in the testing area becomes too high, you can enable this function to activate the overheat protection. The control cover will automatically lower to keep the detector safe. This function is available in two modes: manual and auto .	[Setting method] Select a value from the drop-down list box.
Duration(5-60 S)	Prevent over heat" mode is automatic. If the device overheats, the control cover will automatically block for a set period of time to allow cooling.	[Setting method] Enter a value manually ranging from 5 to 60.

Figure 4-2 Advanced Interface

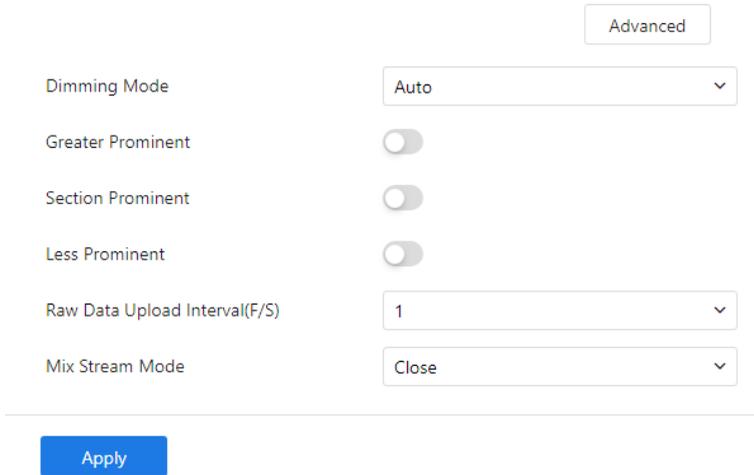


Table 4-2 Advance Parameters

Parameter	Description	Setting
Dimming Mode	There are two options available: Auto and Manual . Auto: Displays based on the full-screen temperature. Manual: it will show on the manual value.	[Setting method] Select a value from the drop-down list box. [Default value] Auto

Parameter	Description	Setting
Greater Prominent	When enabled, the image will display the selected color if the temperature exceeds the set value.	[Setting method] Select a value from the drop-down list box. [Default value] Auto
Section Prominent	When enabled, the image will display the selected color if the temperature is between the defined minimum and maximum values.	[Setting method] Enter the desired value manually and choose a color to display.
Less Prominent	When enabled, the image will display the selected color if the temperature is below the set value.	[Setting method] Enter the values manually and choose a color to display.
Raw Data Upload Interval(F/S)	Specifies the interval for uploading raw data.	[Setting method] Enter the values manually and choose a color to display.
Mix Stream Mode	This function allows mixing of thermal and optical imaging. To adjust the position, go to the thermal channel under “ Setting > Display > Pseudocolor ”. There are three options: Close , Mode 1 , and Mode 2 . Note: Display options may vary depending on the model. Please refer to your specific product for details.	[Setting method] Select a value from the drop-down list box. [Default value] 1

----End

4.1.2 Ambient Temperature

Ambient Temperature:

In most cases, no configuration by the user is necessary. The current ambient temperature only needs to be set manually if the device has just been powered on and the user needs to start temperature measurement immediately.

Self-adaptive Temperature: The camera will automatically detect and apply the ambient temperature value.

Steps to Configure Ambient Temperature

1. Go to **Thermal > Settings > Ambient Temperature**
2. Click **Apply** to save your settings.

Figure 4-3 Ambient Temperature

Temperature Parameter	Ambient Temperature	Privacy Zone Masking	Thermal Mapping	Defect Pixel Correction	Version Information
Ambient Temperature	<input type="text" value="25.00"/>				
Self-adaptive Temperature	<input type="text" value="22.60"/>				
<input type="button" value="Apply"/>					

----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. Go to **Thermal > Settings > Privacy Zone Masking**.
2. Click **Apply** to save your settings.

Figure 4-4 Privacy Zone Masking

Temperature Parameter	Ambient Temperature	Privacy Zone Masking	Thermal Mapping	Defect Pixel Correction	Version Information
Status	<input checked="" type="checkbox"/>				
Privacy Zone Masking Display	<input checked="" type="checkbox"/>				
					
<input type="button" value="Apply"/>					

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

4. Click **Clear** to clear the setting area.
5. Click **Apply** to save.

----End

4.1.4 Thermal Mapping

Thermal mapping is used to accurately align the location of the detecting area with the optical channel. The mapping process involves three points. Users can select appropriate locations for mapping, ensuring that the three points are not positioned too closely together.

NOTE

The images have been calibrated before leaving the factory and can be used directly. If the highest temperature detection points are deviating from the optical channel image, they need to be re-calibrated.

Operation Procedure

1. Choose **Thermal > Settings > Thermal Mapping**, as shown in Figure 4-5.
2. The detailed settings are as per Table 4-3.

Figure 4-5 Thermal Mapping Interface

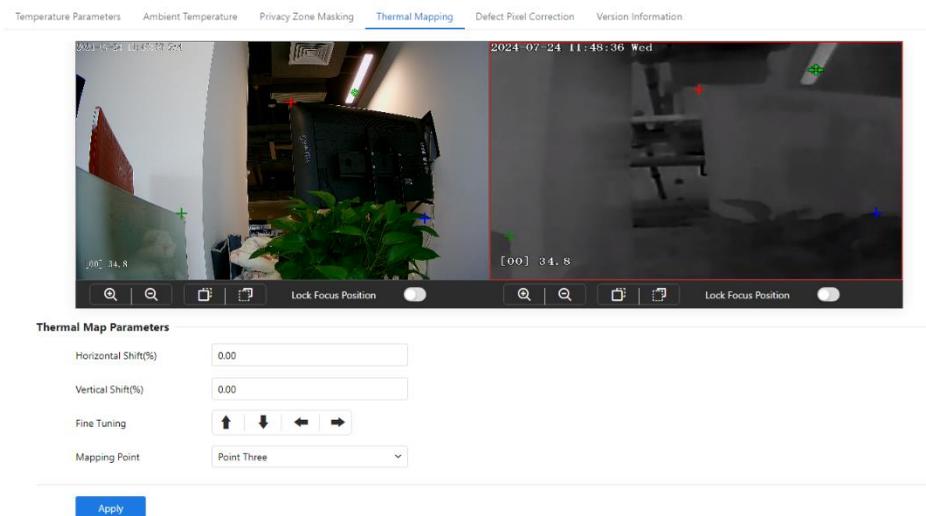


Table 4-3 Parameter of Thermal Mapping

Parameter	Description	Setting
	Zoom in / zoom out	[Setting method] Click

Parameter	Description	Setting
	Near focus / far focus	[Setting method] Click
Lock focus position	Users adjust the position for mapping to lock this position	[Setting method] Enable
Horizontal shift(%)	Adjust the horizontal position of the area which is on the optical image.	[Setting method] Input value
Vertical shift(%)	Adjust the vertical position of the area which is on the optical image.	[Setting method] Input value
Fine tuning	Click the icon to adjust the position trifle.	[Setting method] Click
Mapping point	<p>You are required to map three points across two channels. Each point corresponds directly between the channels.</p> <p>Ensure the three points are spread to cover the majority of the area, with two of the points positioned diagonally across the image for optimal coverage.</p> <ul style="list-style-type: none"> - Point one is marked by the green cross. - Point two is marked by the red cross. - Point three is marked by the blue cross. 	[Setting method] Select from the drop-down list.

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

---End

4.1.5 Defect Pixel Correction

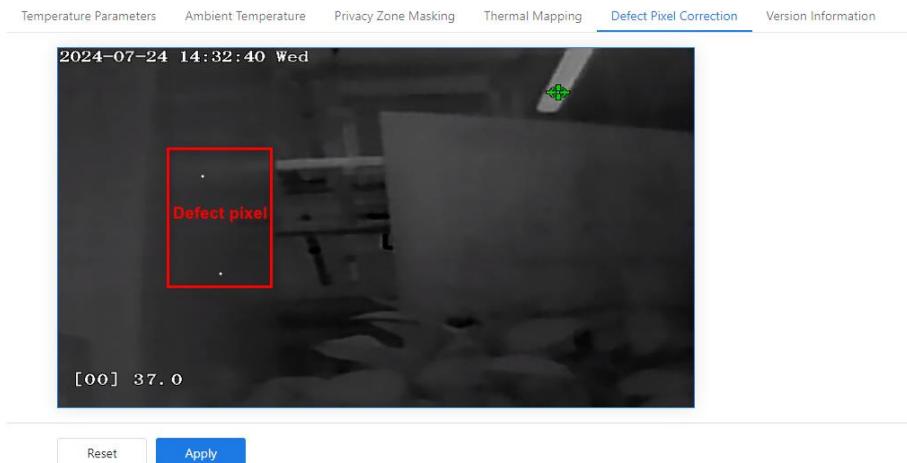
If the image contains a white dot (as shown in the example), you can use the **Defect Pixel Correction** feature to fix the defect. Please contact technical support before proceeding to confirm the application of this function.

Operation Procedure

- Go to **Thermal > Settings > Defect Pixel Correction**.

The **Defect Pixel Correction** page is displayed, as shown in Figure 4-6.

Figure 4-6 Defect pixel correction



2. Click the white point at the image, and click **Refresh** to recover the **defect pixel**, as shown in Figure 4-7.

Figure 4-7 Recover Defect Pixel



3. Click **Apply**. A confirmation message saying "**Apply success**" will appear, and the system will save the settings

---End

4.1.6 Version Information

Use this section to check the **MCU version** and **MCU sequence number** for easy traceability.

4.2 Temperature Alarm

Operation Procedure

1. Go to **Thermal > Temperature Alarm** as shown in Figure 4-8.

Figure 4-8 Temperature Area and Alarm Configuration

Measure Mode: General

<input type="checkbox"/>	ID	Name	Type	Alarm Type	Warning Value	Alarm Value	Maximum Alarm ...	Duration(1-10)
<input checked="" type="checkbox"/>	0	Area0	Rectangle	Threshold ...	48	50	60.00	1.00
<input type="checkbox"/>	1	Area1	Point	Threshold ...	48	50	60.00	1.00
<input type="checkbox"/>	2	Area2	Point	Threshold ...	48	50	60.00	1.00
<input type="checkbox"/>	3	Area3	Point	Threshold ...	48	50	60.00	1.00
<input type="checkbox"/>	4	Area4	Point	Threshold ...	48	50	60.00	1.00
<input type="checkbox"/>	5	Area5	Point	Threshold ...	48	50	60.00	1.00
<input type="checkbox"/>	6	Area6	Point	Threshold ...	48	50	60.00	1.00

Measure Mode: General

Emission Rate	Distance(m)	Reflectivity	Reflection Tempe...	Ignore Object	Alarm	Masking	Group ID
0.95	15	<input type="checkbox"/>	50	None	<input type="checkbox"/>	<input type="checkbox"/>	None
0.95	15	<input type="checkbox"/>	50	None	<input type="checkbox"/>	<input type="checkbox"/>	None
0.95	15	<input type="checkbox"/>	50	None	<input type="checkbox"/>	<input type="checkbox"/>	None
0.95	15	<input type="checkbox"/>	50	None	<input type="checkbox"/>	<input type="checkbox"/>	None
0.95	15	<input type="checkbox"/>	50	None	<input type="checkbox"/>	<input type="checkbox"/>	None
0.95	15	<input type="checkbox"/>	50	None	<input type="checkbox"/>	<input type="checkbox"/>	None

2. Adjust the parameters as outlined in the table below.

Table 4-4 Alarm configuration

Parameter	Description	Setting
Measure Mode	Set at temperature parameter interface. Preset mode: choose one preset to set.	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 point /line /polygon.	[Setting method] Select a value from the drop-down list box. [Default value] Point
Alarm Type	<p>Temperature difference alarm: When the area's temperature difference (Highest temperature minus Average temperature) is over the setting value (Warning temperature or Alarm temperature), it will generate the alarm.</p> <p>Temperature rise alarm: In the duration time. If the rising temperature value is more than the set value (Warning temperature or Alarm temperature), it will generate the alarm.</p> <p>Temperature threshold alarm: When the temperature is higher than the threshold, the alarm will be triggered.</p> <p>Section Alarm: If the temperature value is within the set temperature range, it will generate the alarm.</p>	[Setting method] Select a value from the drop-down list box. [Default value] Threshold 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
Alarm Value	The camera will alarm when the object temperature reaches the alarm value.	[Setting method] Enter a value manually. [Default value] 50

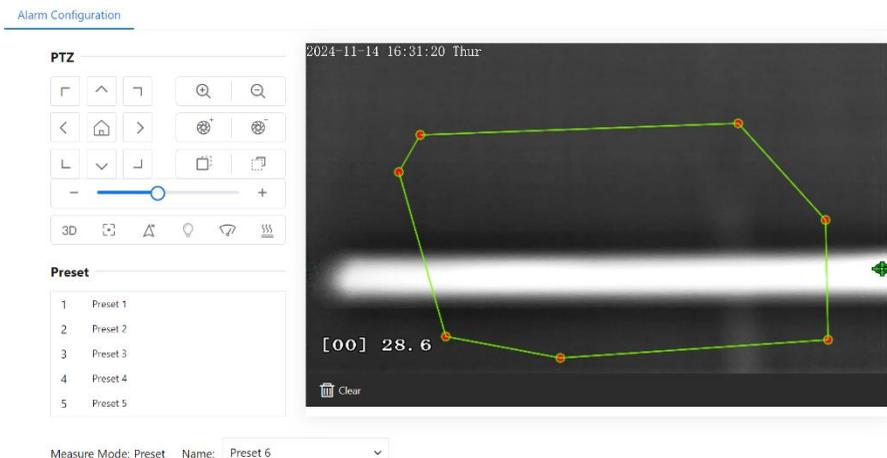
Parameter	Description	Setting
Maximum Alarm Value	At section alarm type, the device would not alarm when the temperature is higher than the maximum alarm value.	[Setting method] Enter a value manually. [Default value] 60.00
Duration (1-10S)	Choose a temperature rise alarm, and set the duration. The temperature 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 to 15m.
Reflection Enable	When there are some high-temperature objects on the scene, and the temperature reflects to the other object, you can enable this function to calibrate the temperature.	[Setting method] Tick to enable
Reflection Temperature	The temperature of high-temperature objects.	[Setting method] Enter a value manually. [Default value] 50.00
Ignore Object	Enable to shield the temperature of area capturing AI objects.	[Setting method] Select a value from the drop-down list box.
Alarm	Enable or disable the alarm output and linkage of the area.	[Setting method] Tick to enable the alarm.

Parameter	Description	Setting
Masking	Enable, the device will shield this area's temperature.	[Setting method] Tick to shield.
Group ID	<p>The ID can be chosen into one of six groups or no group. The group will be alarm following the following rules:</p> <p>A=The highest temperature of groups (the highest temperature of N regions is the largest)</p> <p>B=Average temperature of groups (average temperature of N regions)</p> <p>WA=Warning value</p> <p>AA=Alarm value</p> <p>a. If $A-B \geq WA$, 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)</p> <p>b. If $A-B \geq AA$, 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)</p> <p>c. If the warning and alarm conditions are met at the same time, the alarm signal will be generated first.</p>	[Setting method] Select a value from the drop-down list box.

3. Set 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 4-9. Right-click to finish the area selected.

Figure 4-9 Temperature Area Setting Interface



4. Click **Apply**, the message “Apply success” is displayed, and the temperature area is set successfully.

 **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.

Delete a temperature area:

1. Select an area ID.
2. Click **Clear**.
3. Remove the tick of the area ID.

---End

4.3 Schedule Linkage

Operation Procedure

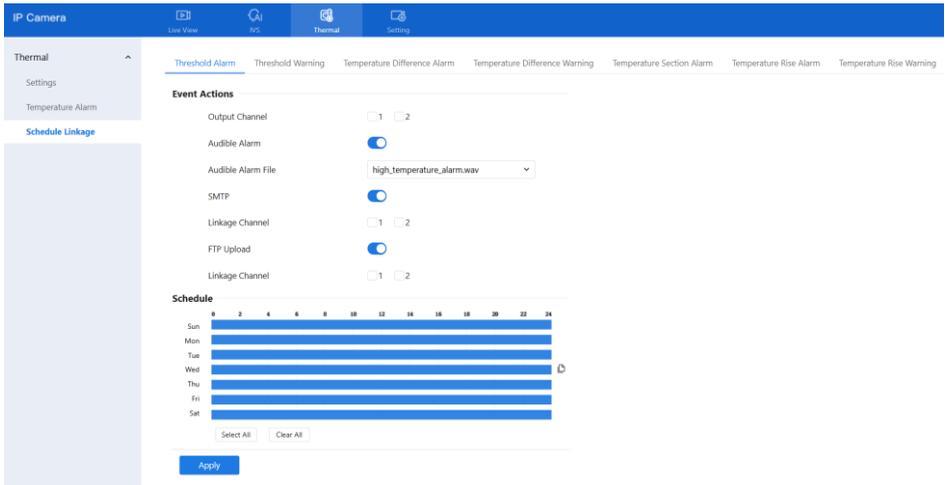
1. Go to **Thermal > Schedule Linkage**.

There are seven types of alarm linkage:

- Threshold Alarm
- Threshold Warning
- Temperature Difference Alarm
- Temperature Difference Warning
- Temperature Section Alarm
- Temperature Rise Alarm
- Temperature Rise Warning

The **Schedule Linkage** page is displayed, as shown in Figure 4-10.

Figure 4-10 Schedule Linkage



2. Tick the output channel.
3. Enable wanted linkage: “Alarm Record”, “SMTP”, “FTP upload”, “Audible Alarm”.
4. Set schedule linkage.

Method 1: Hold down the left mouse button, drag and release the mouse to select the deployment time from 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 4-11 Copy

Copy:

All

Sun

Mon

Tue

Wed

Thu

Fri

Sat

OK

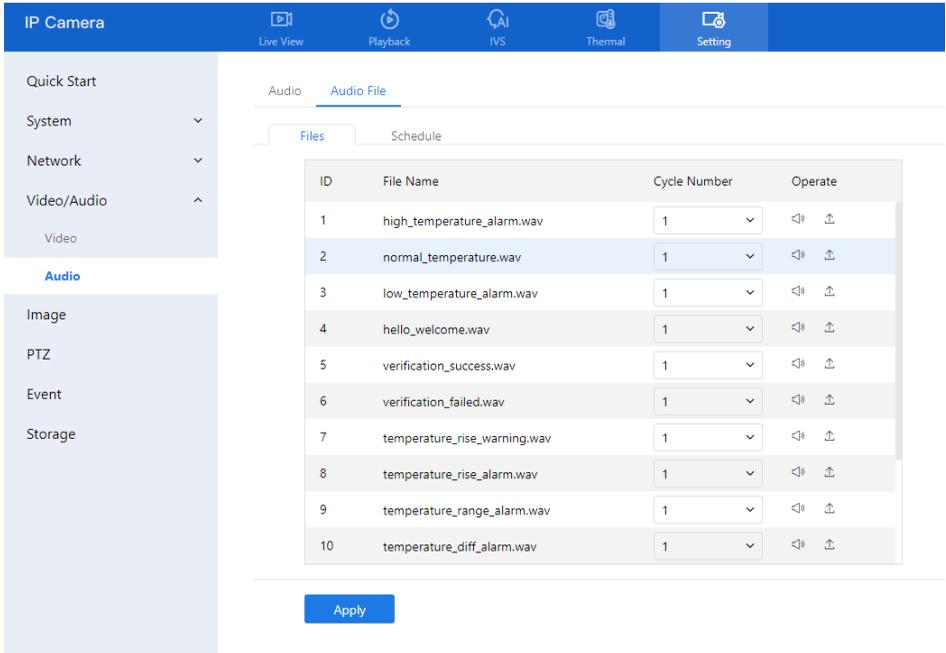
Delete schedule time: click **Clear All** to delete all time.

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 4-12 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 4-13.

Figure 4-13 Upload audio file



----End

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.
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 minutes after the device is powered on.
	The target configuration is incorrect.	Check whether the emission rate and distance of the target are configured correctly.
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 (taking Edge as an example): Open the Edge. Press Ctrl + Shift + Delete on the keyboard. The Delete Browsing History dialog box appears. Select all checkboxes. Click Clear to delete. Relogin the web page of the camera.
Upgrade failed.	No network cable is connected. The network setting is incorrect.	Ensure the upgraded network is connected. Check whether the network setting is correct.
	The upgrade package is incorrect.	Perform the correct upgrade package again.

Common Trouble	Possible Cause	Solution
The temperature is too high.		<ol style="list-style-type: none"><li data-bbox="542 164 1027 244">1. Make sure 'thermal mapping' and 'thermal calibration are configured correctly' by checking the highest temperature object at two channels.<li data-bbox="542 252 1027 309">2. Check if the temperature data is inconsistent with the actual temperature, the temperature may be too high.

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 intake energy. An object with an emission rate of 0.8 can absorb 80% of 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 value is 0.0 to 1.0 generally.

Materials	Temperature (°C/°F)	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°C)	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

170-16-20-0052-02

V1.1