

Thermal Network Hybrid Pan & Tilt Camera

Web Operation Manual



Foreword

General

This manual introduces the characteristics, basic configurations, daily operation and maintenance of the thermal camera (hereinafter referred to as "the Camera").

Ports

The Manual is mainly about on the web page, how to operate your Camera. For description of ports such as ports connection and ports debugging, contact technical staffs.

Safety Instructions

The following signal words might appear in the manual.

Signal Words	Meaning
 DANGER	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
 CAUTION	Indicates a potential risk which, if not avoided, could result in property damage, data loss, reductions in performance, or unpredictable results.
 ESD	Electrostatic Sensitive Devices. Indicates a device that is sensitive to electrostatic discharge.
 ELECTRIC SHOCK	Indicates dangerous high voltage. Take care to avoid coming into contact with electricity.
 LASER RADIATION	Indicates a laser radiation hazard. Take care to avoid exposure to a laser beam.
 TIPS	Provides methods to help you solve a problem or save time.
 NOTE	Provides additional information as a supplement to the text.

Revision History

Version	Revision Content	Release Time
V1.0.2	- Updated "Configuring Temperature Measurement". - Updated "Playing Back Picture". - Updated "Setting Alarm Tone". - Updated "Peripheral Management".	July 2026
V1.0.1	- Updated "Configuring IVS". - Updated "System Management".	March 2026
V1.0.0	First release.	January 2026

Privacy Protection Notice

As the device user, you might collect the personal data of individuals such as their names, email addresses, face images, audio and fingerprints. You shall be fully responsible for any activities associated with processing personal data. You commit to comply with your local privacy protection laws and regulations to protect the legitimate rights and interests of individuals, and shall implement measures which are required by applicable law, including but not limited to, providing clear and comprehensive information to individuals before processing their personal data, obtaining consent from individuals when necessary, informing individuals of the existence of the surveillance area, and providing required contact information.

Intelligent Product Usage Statement

Intelligent products utilize AI technology to effectively enhance security. The intelligent recognition and alarm functions of the product might be affected by factors such as environmental lighting, camera angles, object obstructions, and network delays, potentially leading to false alarms, missed alerts, or response delays. This intelligent product is solely intended to be used as a security assistance tool. The results from performing identification are for reference only and do not constitute absolute guarantee of personal or property safety. Users need to combine these products with necessary physical security measures to enhance overall protection. Except as otherwise provided by laws or in the event of intentional or gross negligence on the part of the company, the company shall not be liable for any losses caused by the aforementioned factors not attributable to the company.

About the Manual

- This manual is provided for general reference only. Discrepancies might exist between the product and this manual, including but not limited to printed, electronic, or any other editions.
- The manual will be updated according to the latest laws and regulations of related jurisdictions. Specifications and documentation are subject to change without prior notice. For the latest versions, as well as legal notices, consult the printed manual, the product webpage, our official website, or scan the QR code to access the electronic edition.
- The manual will be updated as necessary to reflect product changes and applicable legal requirements. These updates will not diminish your statutory rights, nor will they remove or weaken the safety information or essential instructions provided at the time of purchase.
- Although we make every effort to ensure accuracy, errors or deviations in descriptions of functions, operations, or technical data might occur. If there is any uncertainty or controversy, we reserve the right of final explanation.
- All trademarks, registered trademarks and company names referenced in this manual are the property of their respective owners.

Statement

About the Manual

To simplify the description, the following conventions are made in this manual for common functions, names, and more.

- This manual is suitable for multiple models of products, and functions and pages vary from models.
- To protect personal privacy and security, personal information such as faces and license plates appearing in this document has been masked.
- To ensure the security of devices, the IP address, MAC address, serial number and other information appearing in this document have been masked.

About the Format

Format	Description	Example
>	Menu cascade.	Select Setting > Smart Thermal > IVS .
Bold	Page names, control names, specification terms, and more.	Click Add Excluded Area to draw an excluded area on surveillance image. Right-click to end drawing.

About the Icon/Button

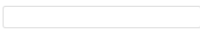
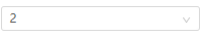
Icon/Button	Description
	Text box. You can enter numbers, letters, Chinese characters, symbols and other characters.
	Drop-down box. Click the icon to display the drop-down menu.
	Calendar. Click  , and then select the date as needed.
	Click the icon to select the corresponding item.  indicates that the item is selected. Click  to cancel the selection.
	Click the icon to select the corresponding item.
	Click  /  to go to the previous or next page.
	Go to the defined page. Enter the page and then press the Enter key.
	Adjust the value. Click  /  or drag  to adjust the value.
	Click the button to display the latest configuration.
	Click the button to restore the configuration to the factory configuration.

Table of Contents

Foreword	I
Statement.....	III
1 Product Introduction.....	1
1.1 Overview	1
1.2 Features.....	1
1.3 Functions	1
2 Configuration Flow	6
3 Device Initialization	7
3.1 Initialing Device.....	7
3.2 Changing IP Address.....	9
3.2.1 Changing One IP Address	9
3.2.2 Changing IP Addresses in Batches	12
3.3 Logging in to Web Page	13
3.4 Resetting Password	14
4 Daily Operation	16
4.1 Introduction to Main Page	16
4.2 Live.....	17
4.2.1 Live Page.....	17
4.2.2 Setting Encode.....	18
4.2.3 Live View Function Bar.....	19
4.2.4 Window Adjustment Bar.....	19
4.2.4.1 Adjustment	19
4.2.4.2 Zoom and Focus.....	19
4.2.4.3 Image Adjustment.....	20
4.2.5 Real-time Spot Temperature Monitoring.....	21
4.3 PTZ	22
4.3.1 Configuring Protocol	22
4.3.1.1 Configuring Network PTZ.....	22
4.3.1.2 Configuring Analog PTZ.....	22
4.3.1.3 Configuring PTZ Priority	23
4.3.1.4 Configuring PTZ Rotation Mode	23
4.3.2 Configuring PTZ Functions.....	24
4.3.2.1 Configuring Preset.....	24
4.3.2.2 Configuring Tour Group.....	25
4.3.2.3 Configuring Scan.....	25

4.3.2.4 Configuring Pattern.....	26
4.3.2.5 Configuring Pan.....	27
4.3.2.6 Configuring PTZ Speed	29
4.3.2.7 Configuring Idle Motion.....	30
4.3.2.8 Configuring Power Up.....	30
4.3.2.9 Configuring Scheduled Task.....	31
4.3.2.10 PTZ Maintenance.....	32
4.3.3 Calling PTZ	33
4.3.3.1 PTZ Control	33
4.3.3.2 PTZ Functions	33
4.4 Viewing Report	34
4.5 Subscribing Alarm.....	35
4.5.1 Alarm Types.....	35
4.5.2 Subscribing Alarm Information.....	36
5 AI.....	38
5.1 Configuring Event	38
5.1.1 Configuring Alarm Linkage	38
5.1.1.1 Setting Alarm-in	38
5.1.1.2 Alarm Linkage.....	39
5.1.1.2.1 Adding Schedule.....	39
5.1.1.2.2 Record Linkage.....	40
5.1.1.2.3 Snapshot Linkage	40
5.1.1.2.4 Alarm-out Linkage.....	41
5.1.1.2.5 Email Linkage.....	41
5.1.1.2.6 Audio Linkage.....	41
5.1.1.2.7 Warning Light.....	42
5.1.1.2.8 Command Linkage	42
5.1.1.2.9 PTZ Linkage	43
5.1.2 Configuring Exception	43
5.1.2.1 Configuring SD Card Exception	43
5.1.2.2 Configuring Network Exception.....	44
5.1.2.3 Configuring Burn Alarm	44
5.1.3 Configuring Video Detection.....	45
5.1.3.1 Configuring Motion Detection.....	45
5.1.3.2 Configuring Video Tampering	47
5.1.4 Configuring One-click Disarm	48
5.1.5 Configuring Auto Upload	48
5.2 Configuring Temperature Measurement	49

5.2.1 Note	49
5.2.2 Configuration Flow	50
5.2.3 Configuring Thermal Channel	50
5.2.4 Configuring Burn Alarm	55
5.2.5 Configuring Preset	56
5.2.6 Configuring Temperature Measurement Parameters	56
5.2.6.1 Configuring Temperature Measurement Rules	56
5.2.6.2 Configuring Temperature Contrast	60
5.2.6.3 Configuring Shield Area	61
5.2.6.4 Configuring Global Configuration	62
5.2.7 Configuring Global Linkage	64
5.2.7.1 Configuring Temperature Alarm	64
5.2.7.2 Configuring Temperature Early Warning	65
5.2.8 Verification	65
5.2.9 Isotherm	66
5.3 Enabling Day/Night Self-adaptation	68
5.4 Configuring IVS	69
5.4.1 Scene-Selecting Requirements	69
5.4.2 Configuration Flow	70
5.4.3 Configuring Preset	70
5.4.4 Enabling Smart Plan	71
5.4.5 Configuring Intelligent Rules	71
5.4.6 Configuring Global Setup	74
5.4.7 Configuring Auto Tracking	75
5.5 Configuring Call Detection	76
5.5.1 Configuration Flow	76
5.5.2 Configuring Preset	76
5.5.3 Enabling Smart Plan	77
5.5.4 Configuring Detection Rule	77
5.5.5 Configuring Global Setup	78
5.6 Configuring Smoking Detection	79
5.6.1 Configuration Flow	79
5.6.2 Configuring Preset	79
5.6.3 Enabling Smart Plan	80
5.6.4 Configuring Detection Rule	80
5.6.5 Configuring Global Setup	81
5.7 Configuring Cold Hot Spot	82
5.8 Configuring Heat Warning	84

5.8.1 Note.....	84
5.8.2 Configuration Flow	85
5.8.3 Configuring Burn Alarm	85
5.8.4 Configuring Pan.....	85
5.8.5 Configuring Heat	88
5.8.6 Configuring Idle Motion.....	90
5.9 Configuring PIP.....	91
5.10 Configuring Thermal Map Acquisition.....	92
6 Record	93
6.1 Playback.....	93
6.1.1 Playing Back Video.....	93
6.1.2 Clipping Video.....	95
6.1.3 Downloading Video.....	96
6.2 Setting Record Control	97
6.3 Setting Record Plan	97
6.4 Setting Storage.....	99
7 Picture	102
7.1 Playback.....	102
7.1.1 Playing Back Picture.....	102
7.1.2 Downloading Picture.....	103
7.2 Setting Snapshot Parameters.....	104
7.3 Setting Snapshot Plan.....	105
7.4 Setting Storage.....	105
7.5 Setting Auto Upload.....	105
8 Settings.....	107
8.1 Configuring Local Parameters	107
8.2 Configuring Camera Parameters	108
8.2.1 Configuring Image Parameters	108
8.2.1.1 Configuring Visible Channel	108
8.2.1.1.1 Configuring Working Mode.....	109
8.2.1.1.2 Configuring Image Parameters.....	110
8.2.1.1.3 Configuring Exposure Parameters.....	111
8.2.1.1.4 Configuring Backlight Parameters.....	113
8.2.1.1.5 Configuring White Balance Parameters.....	114
8.2.1.1.6 Configuring Day/Night Parameters.....	114
8.2.1.1.7 Configuring Illuminator Parameters.....	115
8.2.1.1.8 Configuring Defog Parameters.....	116
8.2.1.2 Configuring Thermal Channel.....	117

8.2.2 Correcting Defective Pixels.....	122
8.2.3 Configuring Encode.....	122
8.2.3.1 Configuring Encode Parameter	122
8.2.3.2 Configuring Overlay.....	124
8.2.3.2.1 Configuring Privacy Masking.....	125
8.2.3.2.2 Configuring Channel Title	125
8.2.3.2.3 Configuring Time Title.....	126
8.2.3.2.4 Configuring OSD Info.....	126
8.2.3.2.5 Configuring Font Properties	127
8.2.3.2.6 Configuring Picture Overlay.....	128
8.2.3.2.7 Configuring Voltage Information.....	128
8.2.3.2.8 Configuring Temperature Measurement Information.....	129
8.2.3.3 Configuring ROI.....	130
8.2.4 Configuring Audio.....	131
8.2.4.1 Setting Audio Parameters	131
8.2.4.2 Setting Alarm Tone.....	132
8.3 Configuring Network.....	132
8.3.1 TCP/IP.....	132
8.3.2 Port.....	135
8.3.3 PPPoE.....	136
8.3.4 DDNS.....	137
8.3.5 Email.....	138
8.3.6 UPnP.....	140
8.3.7 SNMP.....	141
8.3.8 Bonjour	143
8.3.9 Multicast.....	143
8.3.10 Auto Registration.....	144
8.3.11 QoS.....	145
8.3.12 Platform Access.....	145
8.3.12.1 P2P.....	145
8.3.12.2 ONVIF	146
8.3.12.3 RTMP.....	146
8.3.13 Basic Services.....	147
8.4 Storage.....	149
8.5 System Management.....	149
8.5.1 General.....	149
8.5.1.1 Basic.....	149
8.5.1.2 Date & Time.....	150

8.5.1.3 Positioning System	151
8.5.2 Account	151
8.5.2.1 User	152
8.5.2.1.1 Adding User	152
8.5.2.1.2 Resetting Password	154
8.5.2.2 Adding User Group	155
8.5.2.3 ONVIF User	156
8.5.3 Peripheral Management	156
8.5.4 Maintenance Management	157
8.5.4.1 Requirements	157
8.5.4.2 Maintenance	157
8.5.4.3 Import/Export	158
8.5.4.4 Default	159
8.5.5 Packet Capture	159
8.5.6 Updating	160
8.6 Viewing System Information	160
8.6.1 Version	161
8.6.2 Online User	161
8.6.3 Legal Information	161
8.7 Viewing Log	161
8.7.1 Log	161
8.7.2 Remote Log	162
9 Security	163
9.1 Security Status	163
9.2 System Service	164
9.2.1 802.1x	164
9.2.2 HTTPS	165
9.3 Attack Defense	166
9.3.1 Firewall	166
9.3.2 Account Lockout	167
9.3.3 Anti-DoS Attack	167
9.4 CA Certificate	168
9.4.1 Installing Device Certificate	168
9.4.1.1 Creating Certificate	168
9.4.1.2 Applying for and Importing CA Certificate	169
9.4.1.3 Installing Existing Certificate	170
9.4.2 Installing Trusted CA Certificate	170
9.5 A/V Encryption	171

9.6 Security Warning 172

9.7 Security Authentication 173

Appendix 1 Security Recommendation 174

1 Product Introduction

1.1 Overview

The Camera is based on requirements such as temperature measurement, fire prevention, safety protection and night vision. It can help you view videos, record videos of objects, measure temperature, warn the potential fire, track a cold/hot spot and analyze a special behavior. The Camera can be used in energy industry, transportation, building, power system, public security, government, enterprises, and other fields (such as science, education, culture and health). You can use the Camera alone or combine the Camera with other storage devices to provide solutions for intelligence city, production safety, safety protection of residential buildings and public area safety.

1.2 Features

- Safe and stable.
With a full embedded system, this Camera can implement all-day monitoring in a stable way.
- A long detection distance.
Wide monitoring range and long detection distance. Used for surveillance of wide range and long distance.
- Strong detection ability.
With night vision ability, this Camera can clearly distinguish different objects in the dark and can tell camouflage and hidden objects.
- Strong anti-interference ability.
This Camera can get rid of interference of light intensity under backlight or strong light environment.
- Adaptive capacity to complex environment.
Applicable to such environment as smoke, smog, rain, snow, and dust which will block your eyes and is very confusing in colors.

1.3 Functions

Live

Table 1-1 Function description

Function	Description
Live	You can view both the visible images and thermal images. You can use thermal images to identify an object, and then use visible images to view more details of the object.
PTZ operation	For a PTZ camera, you can set the PTZ functions such as preset, tour, pattern, pan, PTZ speed, idle motion, starting action and time task, to enlarge the surveillance range and identify details of an object..

Function	Description
Voice intercom	For cameras with voice intercom function, you can talk indoors with a person near the outdoor monitor to facilitate problem solution.
Snapshot	During live view, you can capture an abnormal image for further check and handling.
Local recording	During live view, you can record abnormal images for further check and handling.
Real-time reports	For cameras with temperature measurement, you can check the real-time temperature data of your monitoring area.
Real-time spot temperature measurement	For cameras with temperature measurement, you can check the real-time temperature data of any point in your monitoring area.
Additional functions	• Switch video bit stream. • The visible image will be adjusted to the relevant location when you zoom in or out the thermal image. • Mark information that you need in the surveillance image. • Check whether there is any alarm output. • Magnify part of the surveillance image. Or, scroll the mouse to zoom the whole surveillance image. • You can adjust focus manually on the web page. • Set a smart rule. When an alarm is triggered, you can track the target manually. • Adjust display effect of the surveillance images. • Enable or disable the intelligent rule display.

Record and Picture

Table 1-2 Description of playback function

Function	Description
Manual recording	When playing back a video, you can record the key information of the previous video for further check and handling.
Planned recording	After you set a recording plan, the system will record automatically.
Video playback and download	• Play back a video to find some valuable video fragments. • Download the valuable video fragments for further judgment.
Picture playback	Play back the captured pictures to find something valuable.
Recoding linkage	When there is an alarm, the system will take videos automatically.

Report

You need to follow certain rules such as time sequence to check history data of temperature saved in the Camera Micro SD card.

Alarm

- Set prompting mode (sound, for example) based on the alarm type.
- View alarm information.

Account Management

Table 1-3 Function description

Function	Description
Management of user group	• Add, edit or delete an account group. • Manage user permissions based on user groups.
User management	• Add, edit or delete a user account. • Set the user permissions.
ONVIF User management	Add, edit or delete an ONVIF user account.
Change password	Change users' password.

Peripheral Management

You can manage the peripheral of the Camera such as heater and wiper.

Smart Thermal

Table 1-4 Function description

Function	Description
IVS	• Both visible channel and thermal channel have intelligent rules. • When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot. • Supports adding detection area and exclusion area. • You can set the tracking mode in the linked tracking function.
Call Detection	• Available in visible channel. • When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Smoking Detection	• Available in visible channel. • When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Fire Warning	• Available in thermal channel. • When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, audio, and snapshot.
Smoke Detection	• Available in visible channel. • When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Cold/Hot spot tracking	• Available in thermal channel. • According to different colors, displays cold spots and hot spots of the surveillance scene in real time. • When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, audio, alarm light, and snapshot.
Picture in picture	• Available in visible channel. • You can put the thermal image into the visible image.

Function	Description
Thermal map acquisition	- Grasp temperature of every pixel on thermal images. - You can export the heat map

Event

Table 1-5 Function description

Function	Description
Video detection	- Motion detection and video tampering detection. - When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Audio detection	- Audio input abnormal detection and intensity change detection. - When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Temperature alarm	- When temperature satisfies the alarm conditions of temperature testing rules, an alarm is triggered. - When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Alarm settings	- An alarm is triggered when there is an alarm from an external device. - When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Abnormality	- SD card error, network disconnection, illegal access, and burn alarm. - When SD card error or illegal access is triggered, the system links alarm output and sending email. - When network disconnection alarm is triggered, the system links recording and alarm output. - When the lens aims directly to the sunlight and will be burnt, a burn alarm is triggered.

Temperature Measuring Settings

This function is available on selected models.

Table 1-6 Function description

Function	Description
Temperature measuring rules	- Supports measuring spot, line, polygon and ellipse's average temperature, maximum temperature and minimum temperature. - Supports alarm output based on different conditions. - Supports setting different alarm output conditions to different objects that need to be measured.

Function	Description
Temperature contrast	• Supports temperature contrast of different objects that need to be measured. • Supports alarm output based on different conditions. • Supports setting different alarm output conditions to different temperature contrast rules.
Temperature alarm	• When the temperature satisfies the alarm conditions of temperature testing rules, an alarm is triggered. • When there is an alarm, the system performs linkage actions such as linkage video recording, alarm output, sending email, PTZ operation and capturing images.
Heat map	Supports the output of real-time heat map information. Then, you can do the further analysis through the heat map tools.
Additional functions	• Supports enabling or disabling temperature testing rules. • Supports enabling or disabling isotherm. • Supports enabling or disabling color code articles.

2 Configuration Flow

For the device configuration flow, see Figure 2-1. For details, see Table 2-1. Configure the device according to the actual situation.

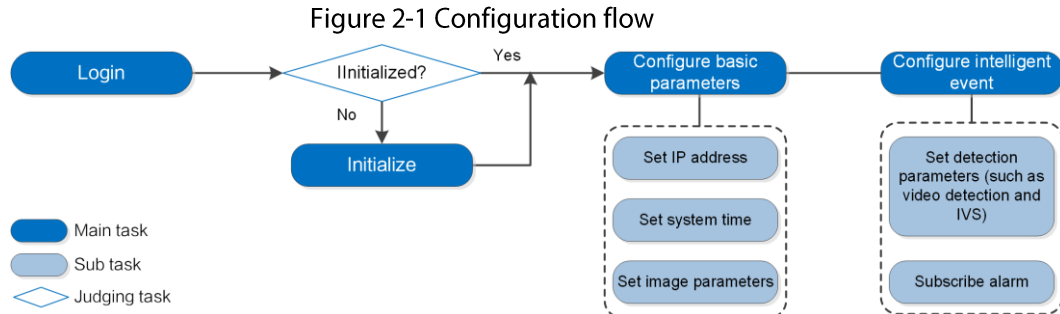


Table 2-1 Description of flow

Configuration		Description	Reference
Login		Open IE browser and enter IP address to log in to the web page, The Camera IP address is 192.168.1.108 by default.	"4.1 Introduction to Main Page"
Initialization		Initialize the Camera when you use it for the first time.	"3 Device Initialization"
Basic parameters	Camera Parameters	Configure image parameters, encoder parameters, and audio parameters to ensure the image quality.	"8.1 Configuring Local Parameters"
	Date & time	Set date and time to ensure the recording time is correct.	"8.5.1.2 Date & Time"
	IP address	Change IP address according to network planning for the first use or during network adjustment.	"8.3.1 TCP/IP"
	Subscribe alarm	Subscribe alarm event. When the subscribed alarm is triggered, the system will record the alarm on the alarm tab.	"4.5 Subscribing Alarm"
AI	AI rules	Configure the necessary detection rules, such as face detection and IVS.	"5 AI"

3 Device Initialization

3.1 Initialing Device

Device initialization is required for the first-time use. This manual is based on the operation on the web page. You can also initialize device through ConfigTool, NVR, or platform devices.



- To ensure the device safety, keep the password properly after initialization and change the password regularly.
- When initializing device, keep the PC IP and device IP in the same network.

Step 1 Open IE browser, enter the IP address of the device in the address bar, and then press the Enter key.



The IP is 192.168.1.108 by default.

Figure 3-1 Region setting

The screenshot shows the 'Device Initialization' web interface. At the top, there's a dark blue header with the text 'Device Initialization'. Below it, a light blue navigation bar contains four steps: 'Region Setting' (selected with a blue checkmark), 'Time Zone Setting' (with a clock icon), 'Password Setting' (with a key icon), and 'P2P' (with a cloud icon). The main content area is white and contains three dropdown menus: 'Area' (showing 'United States'), 'Language' (showing 'English'), and 'Video Standard' (showing 'NTSC'). At the bottom center, there is a blue button labeled 'Next'.

Step 2 Select the area, language, and video standard according to the actual situation, and then click **Next**.

Figure 3-2 Time zone setting

The screenshot shows the 'Time Zone Setting' step in the 'Device Initialization' wizard. The progress bar at the top indicates that 'Region Setting' is completed, 'Time Zone Setting' is the current step, and 'Password Setting' is pending. The main content area includes a 'Date Format' dropdown set to 'YYYY-MM-DD', a 'Time Zone' dropdown set to '(UTC-08:00)Pacific Time (US & Canada)', and a 'System Time' section showing '2020-08-13' and '17:12:46' with a 'Sync PC' button. Below this, it states 'Will be modified as 2020-08-13 01:12:46'. A blue 'Next' button is at the bottom.

Step 3 Configure the time parameters, and then click **Next**.

Figure 3-3 Password setting

The screenshot shows the 'Password Setting' step in the 'Device Initialization' wizard. The progress bar at the top indicates that 'Region Setting' and 'Time Zone Setting' are completed, and 'Password Setting' is the current step. The main content area includes a 'Username' field with 'admin', a 'New Password' field with a strength indicator, a 'Confirm Password' field with a green checkmark, and a 'Reserved Email' checkbox with a text field containing '...@...com'. Below the email field, it says 'For password reset. Recommended or improved in time.' A blue 'Next' button is at the bottom.

Step 4 Set the password for admin account.

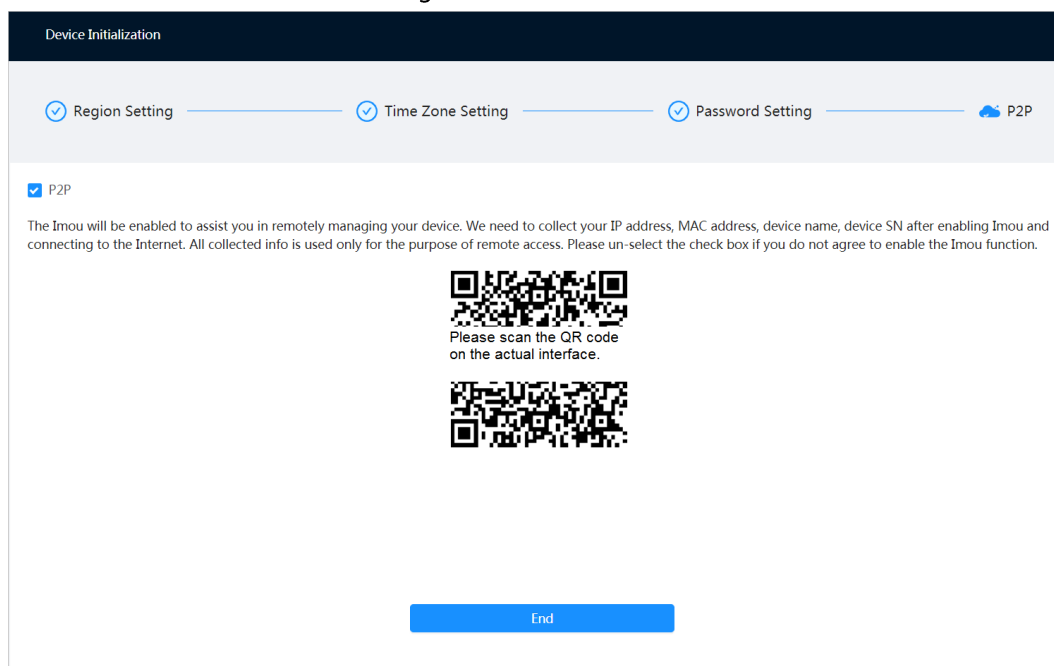
Table 3-1 Description of password configuration

Parameter	Description
Username	The default username is admin.
Password	The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &). Set a high security level password according to the password security notice.
Confirm password	

Parameter	Description
Reserved email	Enter an email address for password resetting, and it is selected by default. When you need to reset the password of the admin account, a security code for password resetting will be sent to the reserved email address.

Step 5 Click **Next**, and then **P2P** page is displayed.

Figure 3-4 P2P



3.2 Changing IP Address

Change Camera IP address and ensure it is fitted to the actual network segment to get the Camera access network.

You can change one or several IP addresses through ConfigTool. You can also log in the web client to modify IP addresses.

3.2.1 Changing One IP Address

When there are only a few Cameras or the login passwords of Cameras are different, you can change only one IP address at one time. This section uses changing IP address on web page as an example.

Step 1 Log in to the web page.

Step 2 Select  > **Network Settings** > **TCP/IP**.

Step 3 Configure TCP/IP parameters.

Figure 3-5 TCP/IP

Host Name

TPC

ARP/Ping

☒

NIC

Wired(Default) ▾

Mode

☒ Static ☐ DHCP

MAC Address

IP Version

IPv4 ▾

IP Address

Subnet Mask

Default Gateway

Preferred DNS

Alternate DNS

Apply

Refresh

Default

Table 3-2 Description of TCP/IP parameters

Parameter	Description
Host Name	Enter the host name, and the maximum length is 15 characters.

Parameter	Description
ARP/Ping	Click  to enable ARP/Ping to set IP address service. Get the Camera MAC address, and then you can change and configure the device IP address with ARP/ping command. This is enabled by default. During restart, you will have no more than 2 minutes to configure the device IP address by a ping packet with certain length, the server will be turned off in 2 minutes, or it will be turned off immediately after the IP address is successfully configured. If this is not enabled, the IP address cannot be configured with ping packet. A demonstration of configuring IP address with ARP/Ping. 1. Keep the Camera that needs to be configured and the PC within the same local network, and then get a usable IP address. 2. Get the MAC address of the Camera from device label. 3. Open command editor on the PC and enter the following command. <pre> Windows syntax↵ arp -s <IP Address> <MAC> ↵ ping -l 480 -t <IP Address> ↵ Windows example↵ arp -s 192.168.0.125 11-40-8c-18-10-11↵ ping -l 480 -t 192.168.0.125↵ UNIX/Linux/Mac syntax↵ arp -s <IP Address> <MAC> ↵ ping -s 480 <IP Address> ↵ UNIX/Linux/Mac example↵ arp -s 192.168.0.125 11-40-8c-18-10-11↵ ping -s 480 192.168.0.125↵ </pre> 4. Restart the Camera. 5. Check the PC command line, if information such as Reply from 192.168.0.125... is displayed, the configuration succeeds, and you can turn it off then. 6. Enter http://(IP address) in the browser address bar to log in.
NIC	Select the Ethernet card that need to be configured, and the default one is Wire .
Mode	The mode that the Camera gets IP: • Static Configure IP Address, Subnet Mask, and Default Gateway manually, and then click Save, the login page with the configured IP address is displayed. • DHCP When there is DHCP server in the network, select DHCP, and the Camera acquires IP address automatically.
MAC Address	Displays host MAC address.

Parameter	Description
IP Version	Select IPv4 or IPv6 .
IP Address	When you select Static in Mode , enter the IP address and subnet mask that you need.
Subnet Mask	
Default Gateway	
	 - IPv6 does not have subnet mask. - The default gateway must be in the same network segment with the IP address.
Preferred DNS	IP address of the preferred DNS
Alternate DNS	IP address of the alternate DNS

Step 4 Click **Apply**.

3.2.2 Changing IP Addresses in Batches

When there are several Cameras or the login passwords of Cameras are the same, you can modify several IP address at the same time through the ConfigTool.

Prerequisites

- You have obtained the installation package of ConfigTool. To obtain the installation package, you can consult technical support staffs.
- You have achieved network communication between PC (which is with ConfigTool) and the Camera.

Procedure

Step 1 Click  **Modify IP**.

Step 2 Click **Search Settings**.

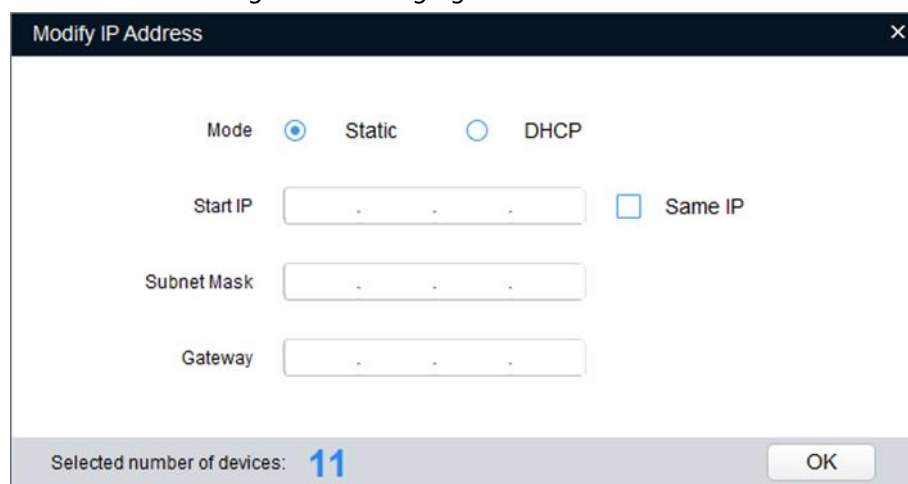
Step 3 Set the network segment of the Camera, admin and password. Then click **Save**.
After the search, the system displays Cameras that have been searched.



Default user name and password are both admin.

Step 4 Select cameras whose IP address needs to be changed and click **Batch Modify IP**.

Figure 3-6 Changing IP address



Step 5 Configure IP address.

- DHCP mode: When there is a DHCP server in the network, set the **Mode** as **DHCP** and the Camera obtains IP addresses from the DHCP server automatically.
- Manual mode: Set **Mode** as **Static** and enter **Starting IP**, **Subnet Mask** and **Gateway**. Then, IP addresses of Cameras are incrementally modified from the start IP address.



If you select the **Same IP** checkbox, the IP address of the devices will be set to the same one.

Step 6 Click **OK**.

3.3 Logging in to Web Page

After you have changed the IP addresses, you can log in to the web page of the Camera through a browser to operate, configure and maintain.

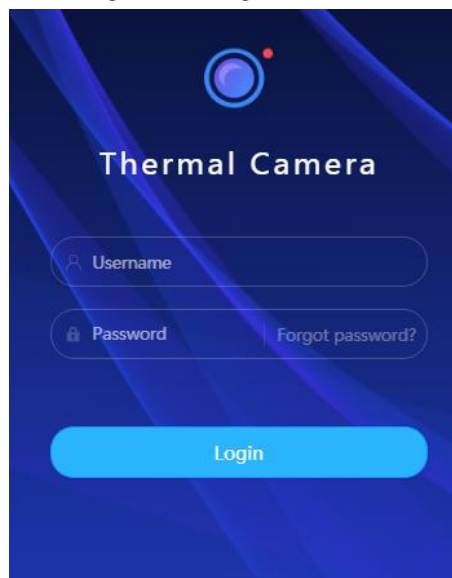
Background Information

To log in to the Camera in a smooth way, you need to make sure that the PC connected to the Camera satisfies the following requirements.

Procedure

Step 1 Open Chrome browser, enter the IP address of the Camera (192.168.1.108 by default) in the address bar and press the Enter key.

Figure 3-7 Login



Step 2 Enter the username and password, and then click **Login**.



- The default user is admin. The password is the one that was configured during initial settings.
- It will prompt you to install plug-in for the first system login. Please download and install plug-in according to the prompt.
- Functions of different Cameras might vary.

Step 3 Click  at the left-upper corner of the page to display the home page.

Related Operations

Click  **admin** on the upper right corner, and then click **Logout** to exit the page.

3.4 Resetting Password

When you need to reset the password for the admin account, there will be a security code sent to the entered email address which can be used to reset the password.

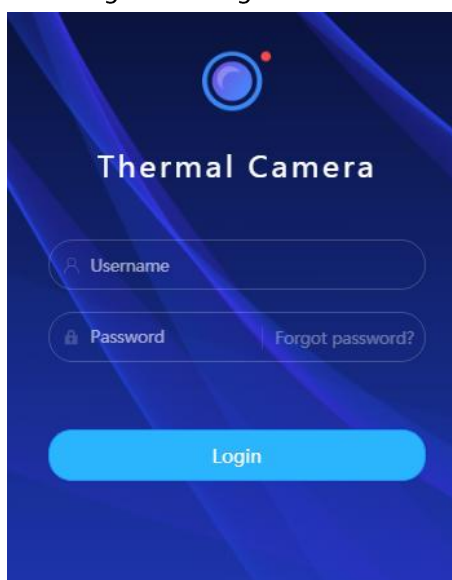
Prerequisites

You have enabled password resetting service. For details, see "3.4 Resetting Password".

Procedure

Step 1 Open IE browser, enter the IP address of the device in the address bar and press Enter.

Figure 3-8 Login



Step 2 Click **Forgot Password?**, and then you can reset the password through the email address that is set during the initialization.

Step 3 Reset the password.

Scan the QR code, and the security code will be sent to the email address you have already fulfilled. Enter the security code.



- Reset the password in time when you receive the security code, because the security code will be invalid within 24 hours.
- If you get security codes twice but do not use them, when you get the security code for the third time, the system will prompt failure. To solve this problem, you need to restore your Camera to default settings or wait 24 hours to get a new one.

Figure 3-9 Resetting the password

Please scan the QR code in the actual page.

Please scan QR code.

SN: 7L*****Q00015

Security code:

Next

Note (For admin only):

Option 1. Please download and use EasyViewer, go to Me -> Password Security -> Reset Device Password and scan the left QR code.

Option 2. Please use any APP with scanning and recognition function, scan the left QR code to get encryption strings. And then send the strings to support_gpwd@htmicrochip.com.

Email Address: y***@mail.com

Step 4 Click **Next**.

Step 5 Enter a new password and confirm it.

The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &). Set a password with high security level according to the prompt of the password's security level.

Step 6 Click **Save**.

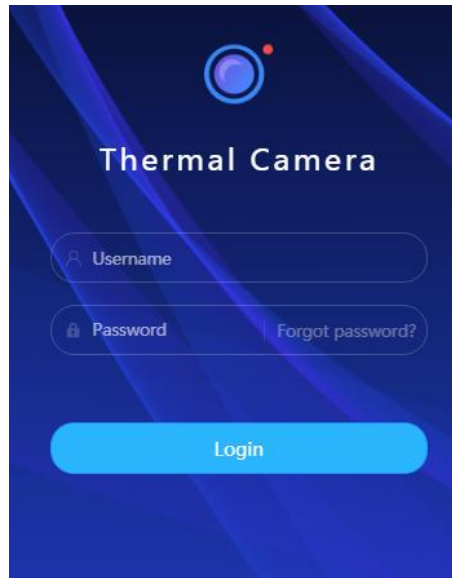
The login page is displayed.

4 Daily Operation

4.1 Introduction to Main Page

- Step 1 Open Chrome browser, enter the IP address of the Camera (192.168.1.108 by default) in the address bar and press the Enter key.

Figure 4-1 Login



- Step 2 Enter the username and password, and then click **Login**.



- The default user is admin. The password is the one that was configured during initial settings. For details, see "3.4 Resetting Password".
- It will prompt you to install plug-in for the first system login. Please download and install plug-in according to the prompt.

- Step 3 Click  at the left-upper corner of the page to display the main page.

Figure 4-2 Main page

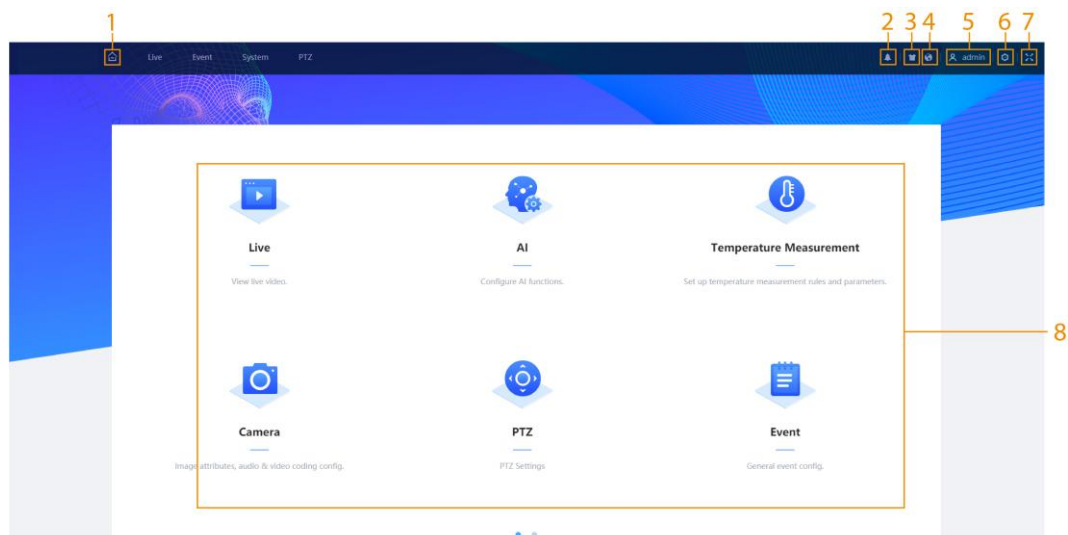


Table 4-1 Description of main page

No.	Name	Description
1		Displays the main page.
2		Subscribe alarm. For details, see "4.5 Subscribing Alarm".
3		Set the skin.
4		Set the language.
5	 admin	- Select Restart, and the Camera restarts. - Select Logout to go to the login page.  The system will sleep automatically after idling for a period of time.
6		Set the basic parameters.
7	 	Click  to enter full screen mode; click  to exit full screen mode.
8	Main page	Click   to display more modules. - Live: View the real-time monitoring image. - AI: Configure AI functions of the Camera. - Temperature Measurement: Configure temperature measurement rules and parameters. - Camera: Configure camera parameters, including image parameters, encoder parameters, and audio parameters. - PTZ: Configure the PTZ functions, including preset, tour, scan and pattern. - Event: Configure general events, including alarm linkage exception, video detection, and audio detection. - System: Configure the basic parameters of the system, manage users, peripheral, and maintain and upgrade device. - Record: Play back or download recorded video. - Picture: Play back or download image files. - Security: Check the device security status and set security functions. - Report: Search the AI event report and system report.

4.2 Live

This section introduces the layout of the live page and function configuration.

4.2.1 Live Page

Log in to the web page, and the live view page is displayed.



Pages might vary with different models.

Figure 4-3 Live

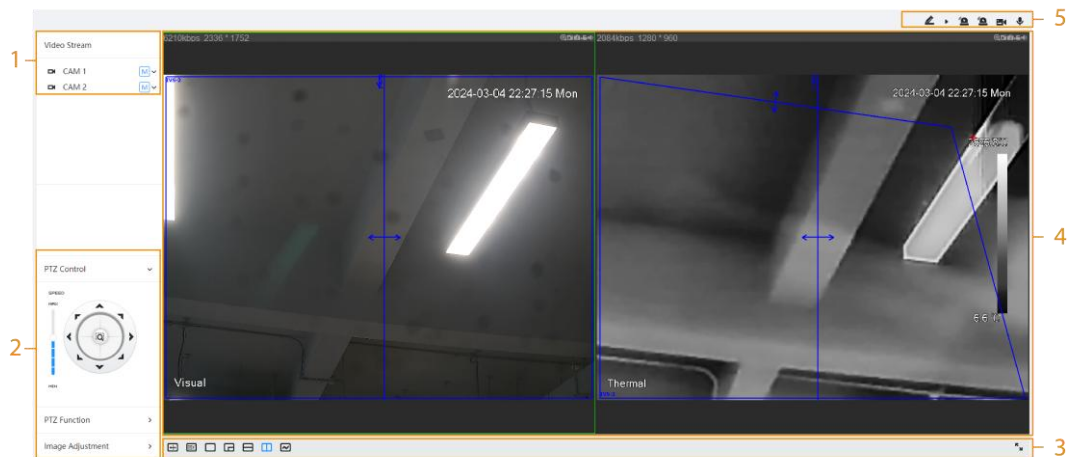


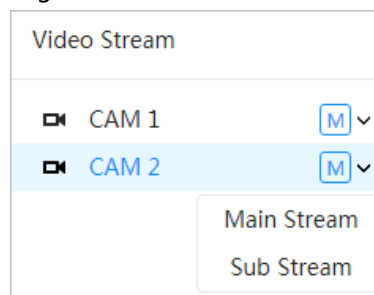
Table 4-2 Description of function bar

No.	Function	Description
1	Channel list	Displays all channels. You can select the channel as needed and set the stream type.
2	Image adjustment	Adjustment operations in live viewing. For details, see "4.2.4 Window Adjustment Bar".
3		
4	Live view	Displays the real-time monitoring image.
5	Live view function bar	Functions and operations in live viewing. For details, see "4.2.3 Live View Function Bar".

4.2.2 Setting Encode

Click , and then select the stream as needed.

Figure 4-4 Encode bar



- **Main Stream:** It has large bit stream value and image with high resolution, but also requires large bandwidth. This option can be used for storage and monitoring. For details, see "8.2.3.1 Configuring Encode Parameter".
- **Sub Stream:** It has small bit stream value and smooth image, and requires less bandwidth. This option is normally used to replace main stream when bandwidth is not enough. For details, see "8.2.3.1 Configuring Encode Parameter".
-  means the current stream is main stream;  means the current stream is sub stream.

4.2.3 Live View Function Bar

For the live view function bar, see Table 4-3.

Table 4-3 Description of live view function bar

Icon	Function	Description
	Mark	Click  to select the pen color, and then click  to mark a target on the video image.
	Force Alarm	Displays alarm sound state. Click the icon to enable or disable the alarm sound forcibly.
	Record	Click the icon to record video, and it will be saved to the configured storage path.  For details of viewing or configuring storage path, see "8.1 Configuring Local Parameters".
	Talk	Click the icon to enable or disable the audio talk.

4.2.4 Window Adjustment Bar

4.2.4.1 Adjustment

This section introduces the adjustment of image. For details, see Table 4-4.

Table 4-4 Description of adjustment bar

Icon	Function	Description
	AI Rule	Click the icon, and then select Enable to display AI rules and detection box; select Disable to stop the display. It is enabled by default.
	Optical Axis Calibration	It is used for adjusting lens position during production. Do not click it.
	Window Layout	When view multi-channel image, you can select display layout.
	Real-time Report	Click the icon to display the real-time report.

4.2.4.2 Zoom and Focus

Click **Zoom and Focus** at the lower-left corner of **Live** page to adjust focal length to zoom in or out video image; by adjusting focus manually, automatically or within a certain area, you can change image clarity or correct adjusting errors.



The focus would adjust automatically after zooming in or out.

Figure 4-5 Zoom and focus

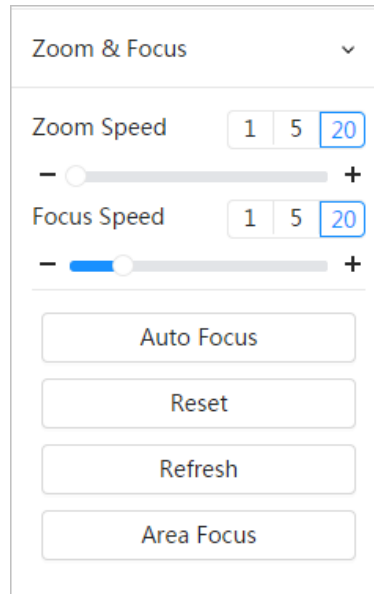


Table 4-5 Description of zoom and focus parameter

Parameter	Description
Zoom Speed	Changes the focal length of the Camera to zoom in or out the image. 1. Set the speed value. The Zoom Speed is the adjustment range in one click. The larger the value is, the more the image would zoom in or out in one click. 2. Click or hold + or – button, or drag the slider to adjust zoom.
Focus Speed	Adjusts the optical back focal length to make the image clearer. 1. Set the speed value. The Focus Speed is the adjustment range in one click. The larger the value is, the more the adjustment in one click. 2. Click or hold + or – button, or drag the slider to adjust focus.
Auto Focus	Adjusts image clarity automatically.  Do not make any other operation during auto focus process.
Reset	Restores focus to default value and corrects errors.  You can restore the focus if the image has poor clarity or has been zoomed too frequently.
Refresh	Get the latest zoom setting of the Camera.
Area Focus	Focus on the subject of a selected area. Click Area Focus, and then select an area in the image, the Camera performs auto focus in that area.

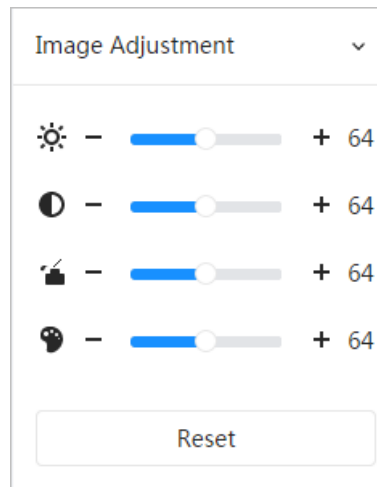
4.2.4.3 Image Adjustment

Click **Image Adjustment** at the lower-left corner of **Live** page, and click + or – button, or drag to adjust image parameters, including brightness, contrast, hue, and saturation.



The adjustment is only available on the web page, and it does not adjust the Camera parameters.

Figure 4-6 Image adjustment



-  (Brightness adjustment): Adjusts the overall image brightness, and changes the value when the image is too bright or too dark. The bright and dark areas will have equal changes.
-  (Contrast adjustment): Changes the value when the image brightness is proper but contrast is not enough.
-  (Saturation adjustment): Adjusts the image saturation, this value does not change image brightness.
-  (Hue adjustment): Makes the color deeper or lighter. The default value is made by the light sensor, and it is recommended.

Click **Reset** to restore focus to default value.



You can restore the zoom if the image has poor clarity or has been zoomed too frequently.

4.2.5 Real-time Spot Temperature Monitoring

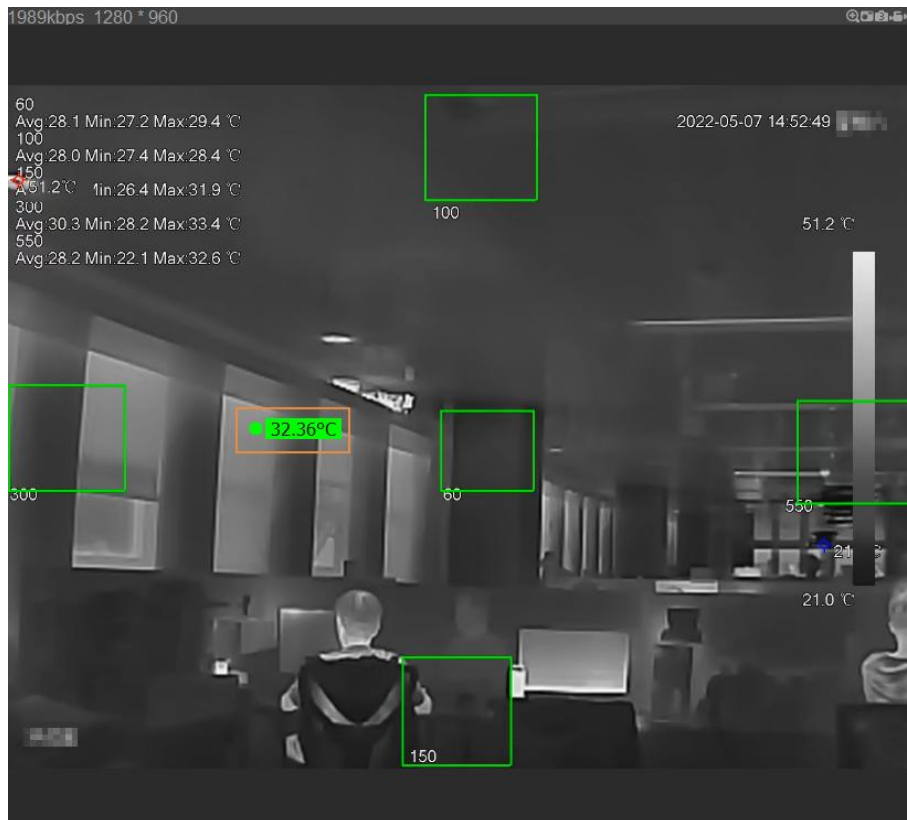
View the real-time temperature of any spot on the image.



Only cameras with temperature-monitoring function support this function, and the actual product shall prevail.

Click any position of the video image, the real-time temperature of this spot is displayed.

Figure 4-7 Real-time spot temperature monitoring



4.3 PTZ

4.3.1 Configuring Protocol

If you want to use the external devices (such as network keyboard, NVR) to control the Camera, you need to set the protocol to connect them to the Camera.

4.3.1.1 Configuring Network PTZ

- Step 1 Select  > **PTZ** > **Protocol** > **Network PTZ**.
- Step 2 Select the protocol that is matched with the Camera.

Figure 4-8 Configuring network PTZ

Network PTZ	RS-485	PTZ Priority	PTZ Rotation Mode
Protocol			
<button>Apply</button><button>Refresh</button><button>Default</button>			

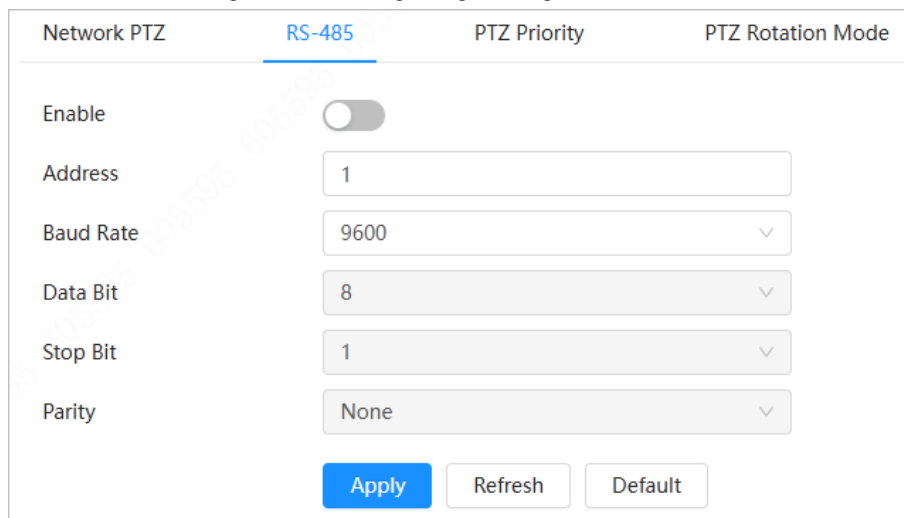
- Step 3 Click **Apply**.

4.3.1.2 Configuring Analog PTZ

- Step 1 Select  > **PTZ** > **Protocol** > **RS-485**.

Step 2 Click  to enable analog PTZ.

Figure 4-9 Configuring analog PTZ



Network PTZ	RS-485	PTZ Priority	PTZ Rotation Mode
Enable	☒		
Address	1		
Baud Rate	9600		
Data Bit	8		
Stop Bit	1		
Parity	None		
Apply Refresh Default			

Step 3 Configure the parameters.

Table 4-6 Description of analog PTZ configuration

Parameter	Description
Address	The IP address of the Camera.
Baud Rate	Select the baud rate of the external PTZ camera.  Set the baud rate same with that of the controlling camera; otherwise you cannot control the external PTZ camera through the Camera.
Data Bit	It is 8 by default.
Stop Bit	It is 1 by default.
Parity	It is None by default.

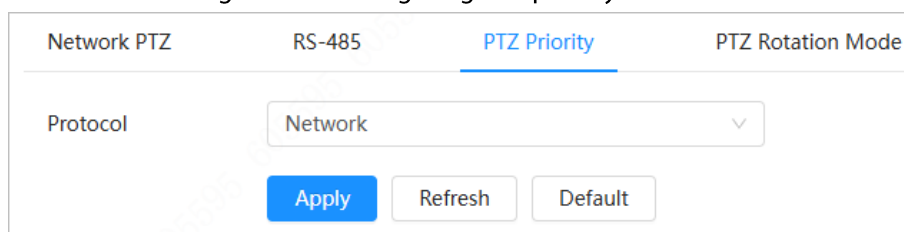
Step 4 Click **Apply**.

4.3.1.3 Configuring PTZ Priority

Step 1 Select  > **PTZ** > **Protocol** > **PTZ Priority**.

Step 2 Configure the parameters.

Figure 4-10 Configuring PTZ priority



Network PTZ	RS-485	PTZ Priority	PTZ Rotation Mode
Protocol Network			
Apply Refresh Default			

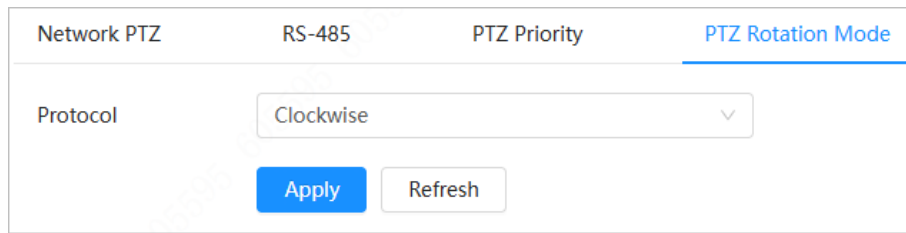
Step 3 Click **Apply**.

4.3.1.4 Configuring PTZ Rotation Mode

Step 1 Select  > **PTZ** > **Protocol** > **PTZ Rotation Mode**.

Step 2 Configure the parameters.

Figure 4-11 Configuring PTZ rotation mode



Step 3 Click **Apply**.

4.3.2 Configuring PTZ Functions

4.3.2.1 Configuring Preset

Preset means a certain position that the Camera can make quick orientation to. It includes PTZ pan and tilt angles, camera focus, and location.

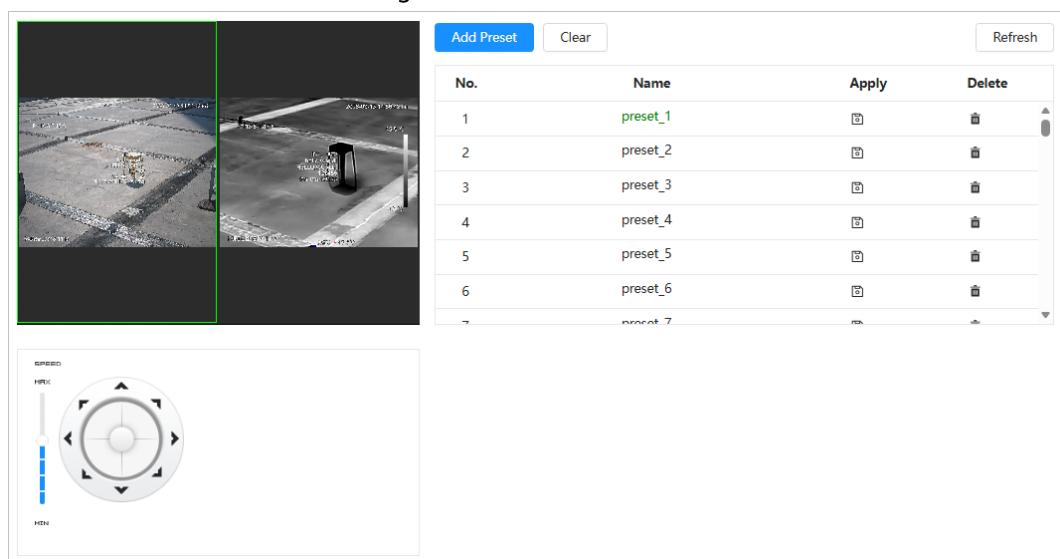
Procedure

Step 1 Select  > **PTZ** > **Preset**.

Step 2 Configure preset.

- 1) Click **Add Preset** to add a new preset.
Click the preset title to modify the title of the preset.
- 2) Operate the PTZ control panel to move the Camera lens to a specific direction that you need.
- 3) Click .

Figure 4-12 Preset



No.	Name	Apply	Delete
1	preset_1		
2	preset_2		
3	preset_3		
4	preset_4		
5	preset_5		
6	preset_6		
7	preset_7		

Related Operations

- Click  to delete a preset.
- Click **Clear** to delete all the presets that you have added.

4.3.2.2 Configuring Tour Group

Tour group arranges the presets in a certain order into an automatic tour queue through, making cameras automatically move back and forth in the predetermined order of presets.

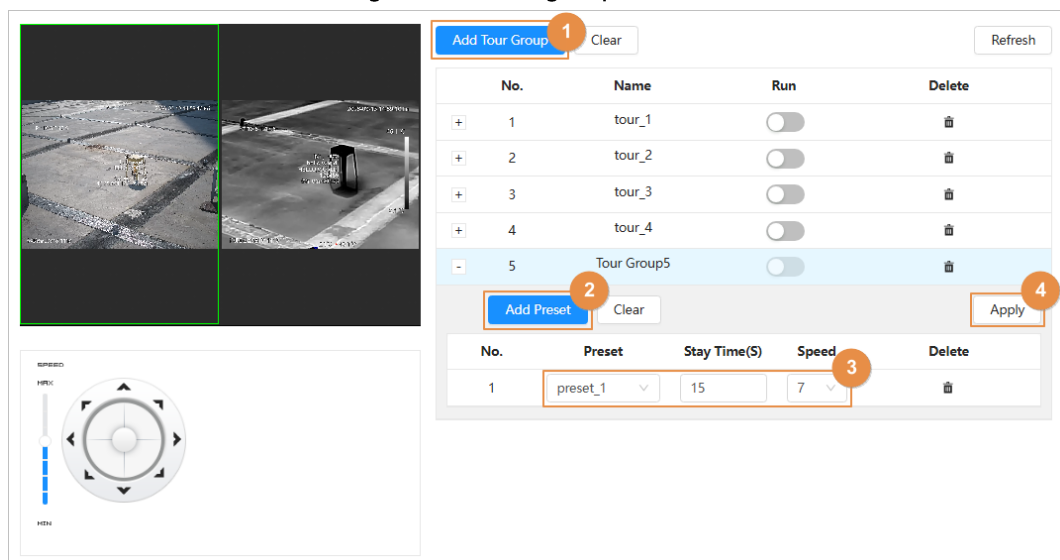
Prerequisites

You have configured several presets.

Procedure

- Step 1** Select  > **PTZ** > **Tour Group**.
- Step 2** Configure tour group.
- 1) Click **Add Tour Group** to add a tour group.
Click the tour group name that you have added to modify it.
 - 2) Click **Add Preset** to add a preset.
Click repeatedly to add several presets.
 - 3) Select a preset, and configure the stay time and speed.
 - 4) Click **Apply**.

Figure 4-13 Tour group



- Step 3** Select a tour group and click ☐ to start the tour group.
Click ☒ to stop the tour group.



If you operate the PTZ during the tour, the tour will stop.

Related Operations

Click  to delete a tour group or a preset.

4.3.2.3 Configuring Scan

Scan means the Camera moves horizontally at a certain speed between the configured left and right limits.

Procedure

- Step 1** Select  > **PTZ** > **Scan**.

Step 2 Configure scan.

1) Click **Add Scan** to add a scan.

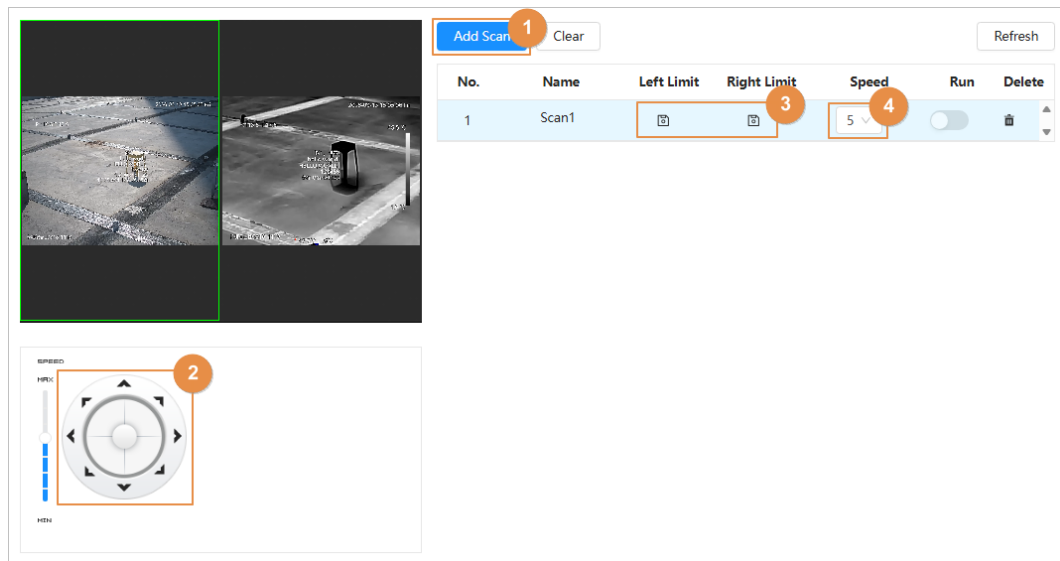
Click the scan name that you have added to modify it.

2) Set left and right limits.

- Operate the PTZ control panel to rotate the Camera to a left border that you want and then click  in **Left Limit**.
- Operate the PTZ control panel to rotate the Camera to a right border that you want and then click  in **Right Limit**

3) Select a scan and then set its **Speed**.

Figure 4-14 Scan



Step 3 Select a scan and then click  to start the scan.

Click  to stop the scan.

Related Operations

Click  to delete a scan.

4.3.2.4 Configuring Pattern

Pattern means a recording of a series of operations that you make to the Camera, and when pattern starts, the Camera performs the operations repeatedly. The operations include horizontal and vertical movements, zoom and preset calling. Record and save the operations, and then you can call the pattern path directly.

Procedure

Step 1 Select  > **PTZ** > **Pattern**.

Step 2 Configure pattern.

1) Click **Add Pattern** to add a pattern.

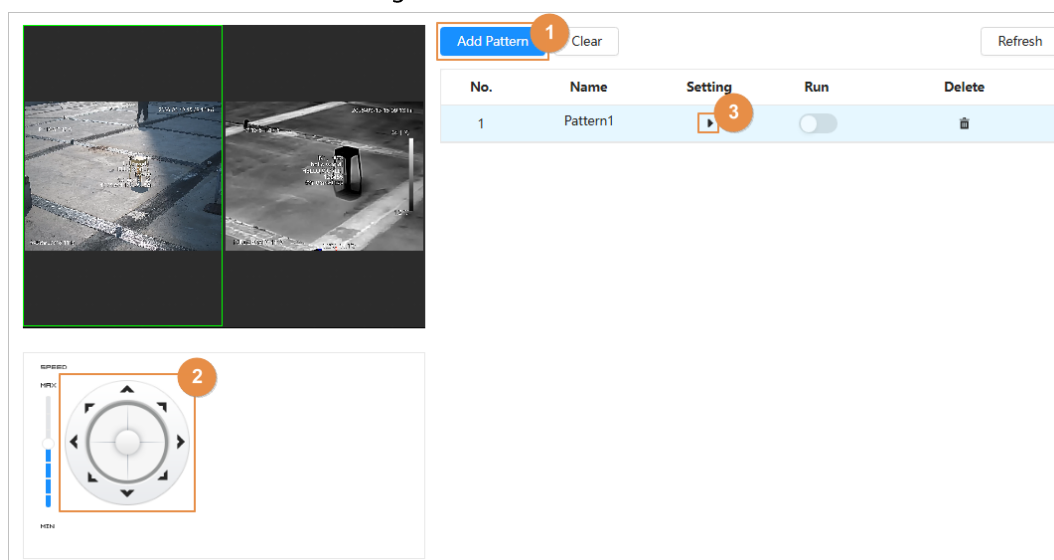
Click the pattern name that you have added to modify it.

2) Click  in **Setting**.

3) Operate the PTZ control panel to adjust the direction of the Camera.

4) Click .

Figure 4-15 Pattern



Step 3 Select a pattern and then click ☐ to start the scan.
Click ☒ to stop the scan.

Related Operations

Click  to delete a pattern.

4.3.2.5 Configuring Pan

With pan enabled, the Camera can realize continuous 360° horizontal rotations at a certain speed.

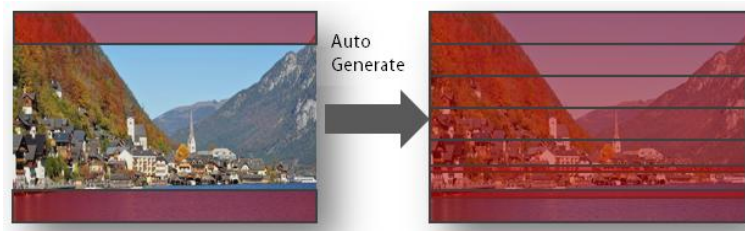
- The interval between pan circles should not be lower than the default value. High PTZ speed might cause missing alarm (see the table below for PTZ speed and time). The coverage area is area that the thermal channel covers. The recommended speeds offer reference for heat detection only; for smoke detection, make sure that the picture is not blurred during pan.

Table 4-7 PTZ speed and time

Device	PTZ speed	Time
Hybrid speed dome camera, mobile hybrid PTZ camera, multi-spectral PTZ camera	20	3'45"
	30 (recommended)	2'30"
	40	1'52"
Heavy PTZ camera	8	4'
	10 (recommended)	2'25"
	12	1'40"

- If you do not set limits, the PTZ can continuously pan 360°. We recommend you use 360° horizontal scanning for the forest fire prevention project. Multiple 360° pan circles can be set to cover the area to be detected.
- Set the left and right limits, and the PTZ pans between the limits.
- Set the scanning area, the PTZ does progressive scanning in the configured area.

Figure 4-16 Auto adding



Step 1 Select  > **PTZ** > **Pan**.

Step 2 Click the direction button to adjust the Camera angle.

Step 3 Select the scan mode.

- Horizontal scanning
 1. Select **Horizontal Scanning**.
 2. Click **Add** to add a circle on the current angle.
 3. Configure the parameters as the instructions on the page.
 4. Set the left and right limits for the single circle.

When there are towers or walls that do not need to be scanned, you can set left and right limits for scanning.

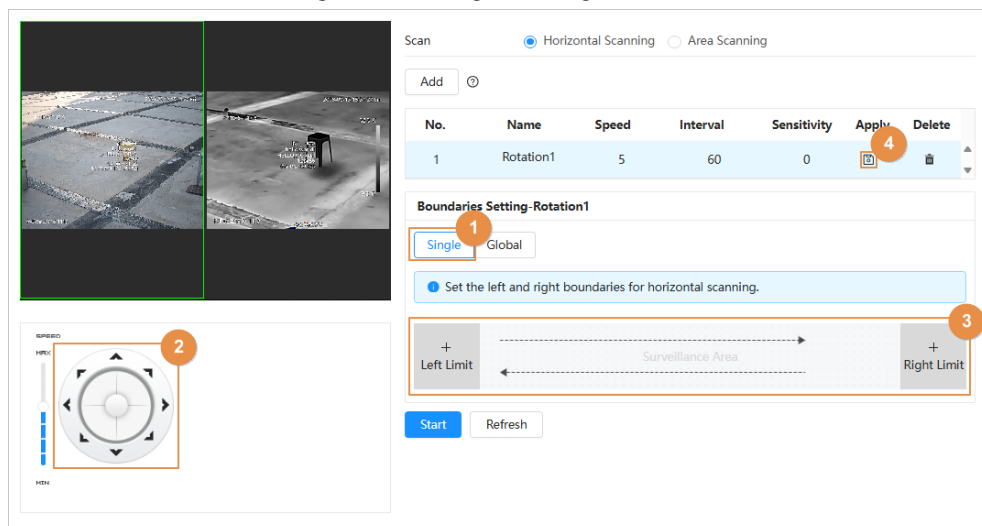
a. Click **Single**

b. Set left/right limits

- ◇ Operate the PTZ control panel to rotate the Camera to a left border that you want and then click **Left Limit**.
- ◇ Operate the PTZ control panel to rotate the Camera to a right border that you want and then click **Right Limit**.

c. Click .

Figure 4-17 Single setting



5. Set the global limit

The pan enabling global limit will use the same left and right limits.

a. Click **Global**

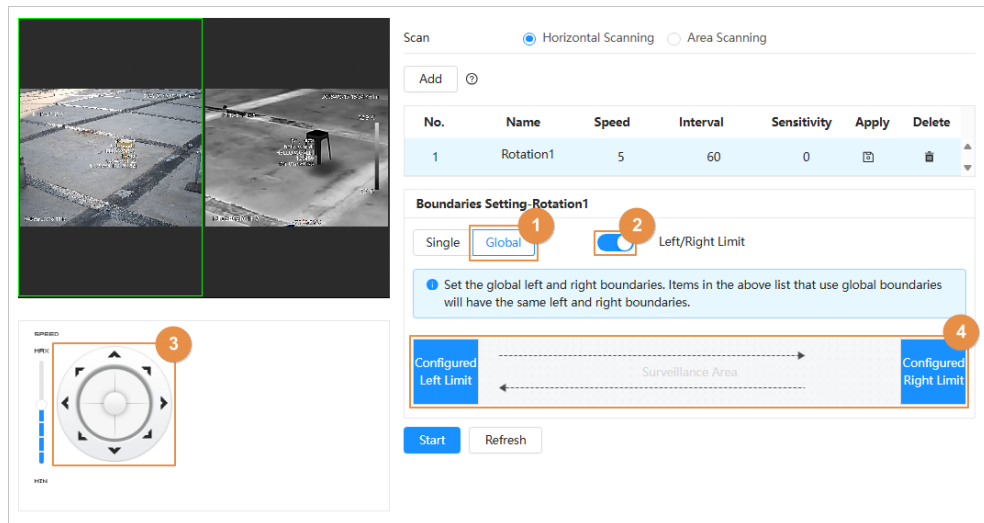
b. Click  next to **Global**.

c. Set left/right limits.

- ◇ Operate the PTZ control panel to rotate the Camera to a left border that you want and then click **Left Limit**.
- ◇ Operate the PTZ control panel to rotate the Camera to a right border that

you want and then click **Right Limit**.

Figure 4-18 Global setting



- **Area scanning**

When you want the Camera to scan the specified area, you can set the area scanning.

1. Select **Area Scanning**.
2. Click the direction button to rotate the Camera lens to the upper limit, and then click **Top Left Boundary**.
3. Click the direction button to rotate the Camera lens to the lower limit, and then click **Bottom Right Boundary**.

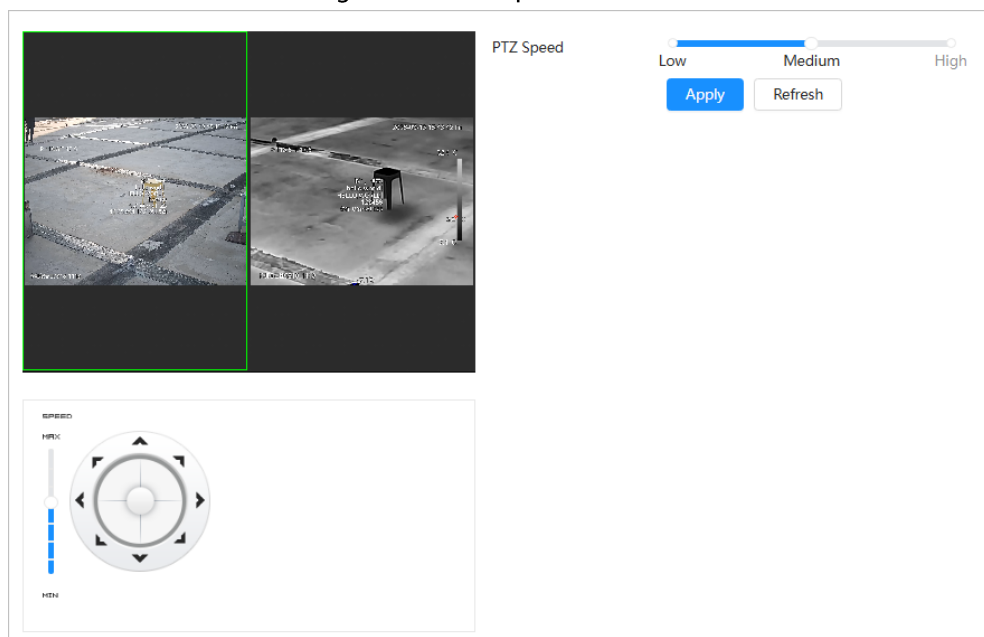
Step 4 Select the configured pan path, and then click **Start**.
Click **Stop** to stop the pan.

4.3.2.6 Configuring PTZ Speed

PTZ speed means the rotation speed of the PTZ camera during touring, pattern, or auto tracking.

Step 1 Select  > **PTZ** > **PTZ Speed**.

Figure 4-19 PTZ speed



Step 2 Select the PTZ speed from **Low**, **Middle** and **High**.

Step 3 Click **Apply**.

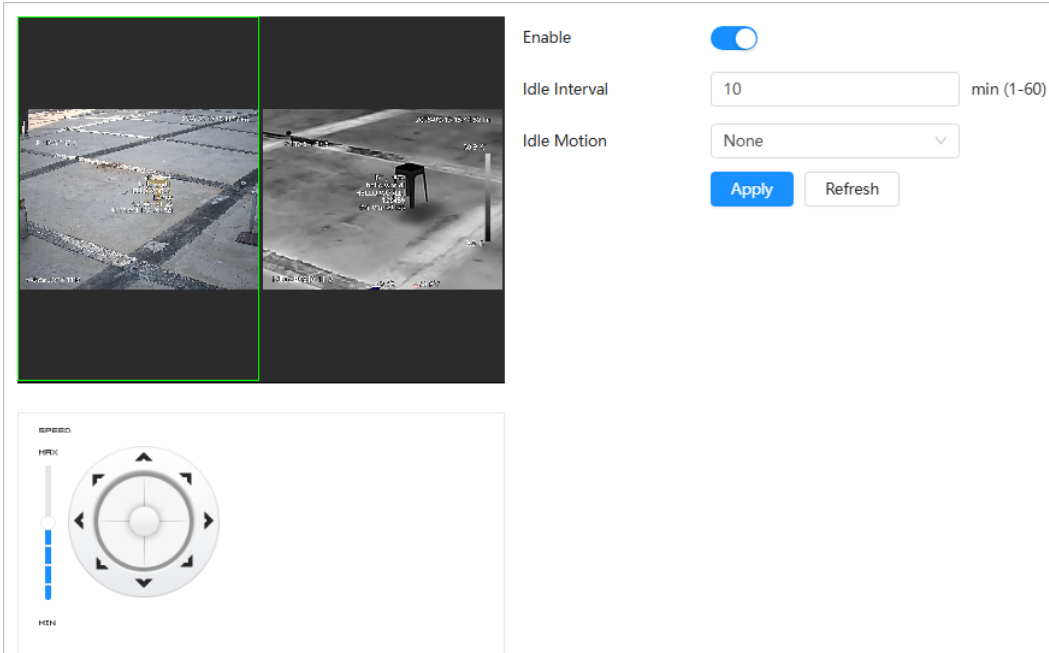
4.3.2.7 Configuring Idle Motion

Idle motion means that the PTZ camera implements the operation which is configured in advance when it does not receive any valid command within the set time.

You have configured preset, tour, scan and pattern before configuring idle motion.

Step 1 Select  > **PTZ** > **Idle Motion**.

Figure 4-20 Idle motion



The screenshot displays the PTZ Idle Motion configuration page. On the left, there is a video feed showing a parking lot with a green bounding box around a car. To the right of the video feed, there are configuration options: 'Enable' (checked), 'Idle Interval' (10 min), and 'Idle Motion' (None). Below these are 'Apply' and 'Refresh' buttons. At the bottom left, there is a PTZ control panel with a speed slider and a directional pad.

Step 2 Configure idle motion.

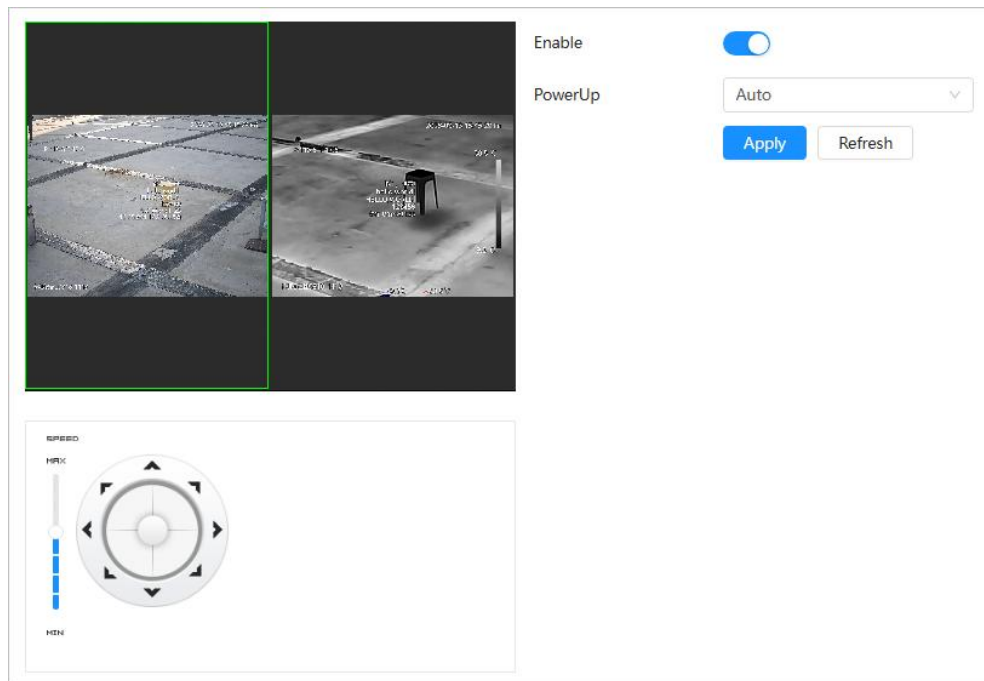
- 1) Click .
- 2) Select an idle motion and configured idle time.
- 3) Click **Apply**.

4.3.2.8 Configuring Power Up

After setting the power up motion, the Camera will perform the configured motion after it is powered on.

Step 1 Select  > **PTZ** > **PowerUp**.

Figure 4-21 Power up



Step 2 Click .

Step 3 Select the **Power Up** actions.



Select **Auto** and the PTZ will continue to implement the action before the power is off.

Step 4 Click **Apply**.

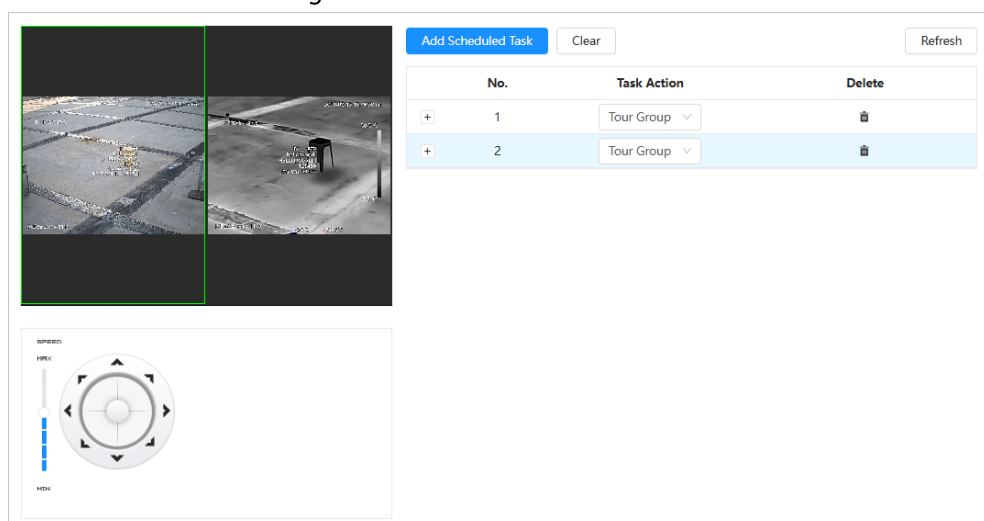
4.3.2.9 Configuring Scheduled Task

After setting time task, the Camera performs the motions during the configured period.
You have configured preset, tour, scan and pattern before configuring time task.

Procedure

Step 1 Select  > **PTZ** > **Scheduled Task**.

Figure 4-22 Scheduled task



Step 2 Configure scheduled task.

- 1) Click **Added Scheduled Task**.
- 2) Select a task in **Task Action**.
- 3) Select a time task action from **Preset, Tour, Scan** and **Pattern**.



When you set **Preset** as a scheduled task action, the **Action Number** box is displayed.
You can select the action number as needed.

- 4) In the **Auto Home** box, set the time for the Camera to return to its previous condition.



Auto home time: Time for the Camera to return to its previous condition and continue the time task when the time task is interrupted by manual operation.

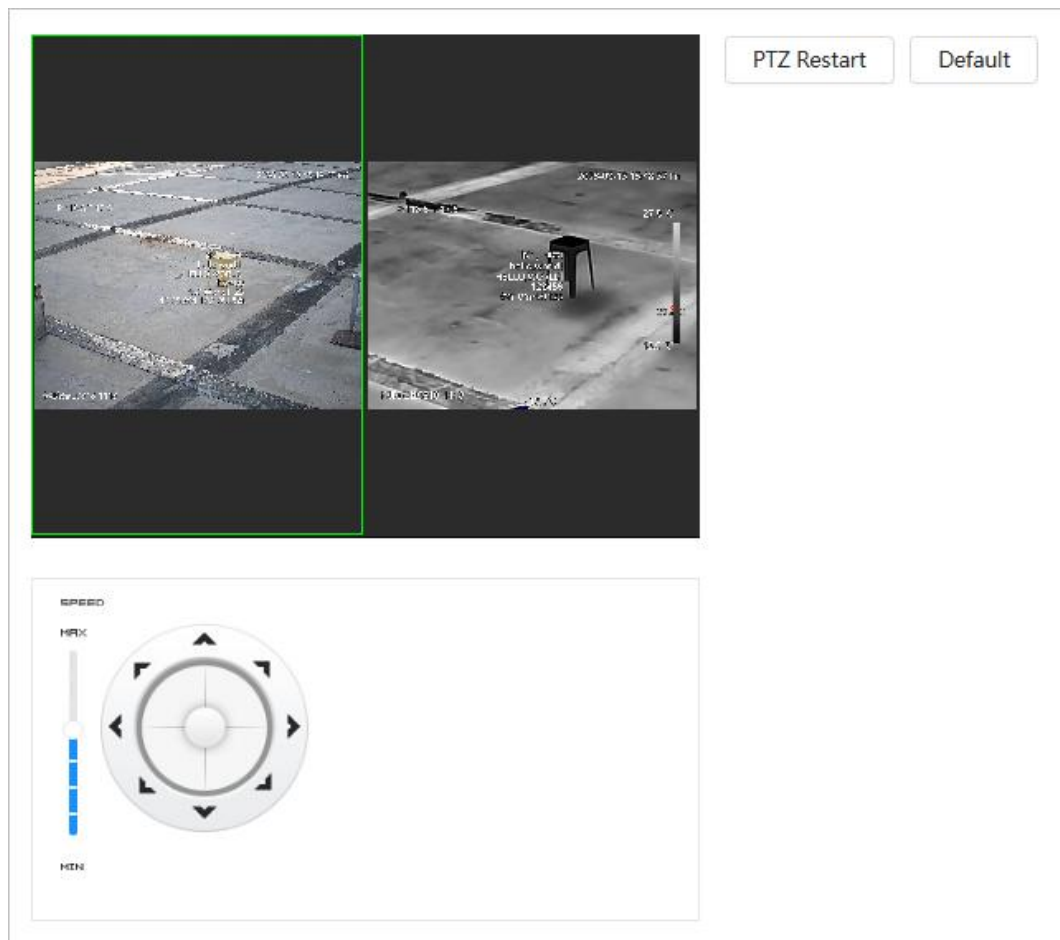
- 5) Click **Add Schedule** to set the detailed period for a scheduled task.
- 6) Click **Apply**.

Step 3 Click **Apply**.

4.3.2.10 PTZ Maintenance

Step 1 Select  > **PTZ** > **PTZ Maintenance**.

Figure 4-23 PTZ maintenance



Step 2 Restart and default PTZ.

- Click **PTZ Restart**, and then PTZ restarts.
- Click **Default**. All the PTZ configurations are restored to the default ones.

4.3.3 Calling PTZ

4.3.3.1 PTZ Control

You can rotate the Camera, adjust zoom, focus, and iris through PTZ control.
Before using the **PTZ Control** panel, you need to set the PTZ protocol by selecting **Setting > PTZ > Protocol**.

Figure 4-24 PTZ control

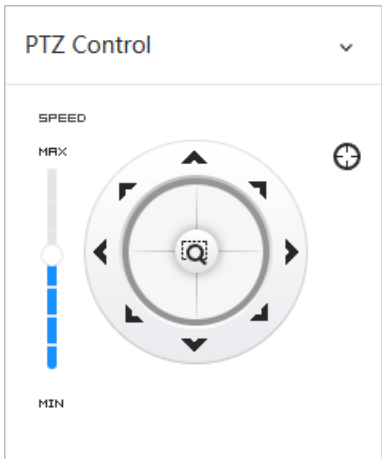


Table 4-8 Parameter description

Function	Description
	There are 8 directions: up, down, left, right, upper left, upper right, lower left, and lower right. Click  , and then draw a box on the live view with the mouse. The PTZ rotates to and focuses on the selected area rapidly.
Speed	The changing speed of PTZ direction. The higher the value, the faster the speed.

4.3.3.2 PTZ Functions

Call the configured PTZ functions on the live page. The PTZ supports multiple functions.
On the live page, click **PTZ Function**, and then select a function.
Before calling the function, configure PTZ functions first. For details, see "4.3.2 Configuring PTZ Functions".

Figure 4-25 PTZ functions

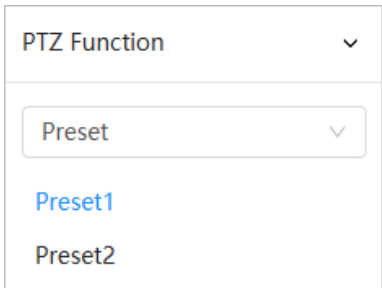


Table 4-9 Description of PTZ function

Parameter	Description
Preset	Select Preset from the list, the PTZ will rotate to the preset position.
Tour Group	- Click  next to the tour number to start the tour; click  to stop the tour. - Click Pause to pause the tour group, and click Continue to continue the tour group.
Scan	- Click  next to the scan number to start the scan; click  to stop the scan. - Click Pause to pause the scan, and click Continue to continue the scan.
Pattern	- Click  next to the pattern number to start the pattern; click  to stop the pattern. - Click Pause to pause the pattern, and click Continue to continue the pattern.
Pan	Select Pan from the list. - Click Start to start the pan; click Stop to stop the pan. - Click Pause to pause the pan, and click Continue to continue the pan.
Go to	Select Go to from the list, enter horizontal angle value, vertical angle value and zoom, and then click Go to . The Camera will turn to the position that you want.

4.4 Viewing Report

The report displays the average temperature change of the selected spot, line, and area. This function is only available on cameras supporting temperature measurement.

Prerequisites

- You have configured temperature measurement rules. For details, see "5.2.6.1 Configuring Temperature Measurement Rules".
- You have inserted an SD card to the Camera.

Procedure

- Step 1 Log in to the web page, and then select **Report**.
- Step 2 Set the conditions for searching and then click **Search**.
The corresponding report is displayed.
- Step 3 Click **Export** to export the searched report.

4.5 Subscribing Alarm

4.5.1 Alarm Types

For alarm types and preparations of alarm events, see Table 4-10.

Table 4-10 Description of alarm types

Alarm Type	Description	Preparation
Motion Detection	An alarm is triggered when moving object is detected.	Motion detection is enabled. For details, see "5.1.3.1 Configuring Motion Detection".
Disk Full	An alarm is triggered when the free space of the SD card is less than the configured value.	The SD card no space function is enabled. For details, see "5.1.2.1 Configuring SD Card Exception".
Disk Error	An alarm is triggered when there is failure or malfunction in the SD card.	SD card failure detection is enabled. For details, see "5.1.2.1 Configuring SD Card Exception".
Video Tampering	An alarm is triggered when the Camera lens is covered or there is defocus in video images.	Video tampering is enabled. For details, see "5.1.3.2 Configuring Video Tampering".
External Alarm	An alarm is triggered when there is external alarm input.	The device has alarm input port and external alarm function is enabled. For details, see "5.1.1.1 Setting Alarm-in".
Security Exception	The alarm is triggered when the device detects malicious attack.	Security exception detection is enabled. For details, see "9.1 Security Status".
Audio Detection	An alarm is triggered when there is audio connection problem.	—
AI Event	An alarm is triggered when an intelligent rule is triggered.	IVS, call detection, smoking detection, and other intelligent functions are enabled.
Temperature	When temperature satisfies alarm conditions stipulated by temperature testing rules, an alarm is triggered.	Temperature alarm is enabled. For detailed operations, see "5.2.6.1 Configuring Temperature Measurement Rules".
Temperature Contrast	When temperature difference satisfies alarm condition that you have set, an alarm is triggered.	Temperature comparison alarm is enabled. For detailed operations, see "5.2.6.2 Configuring Temperature Contrast".
Hot Spot	When temperature of a hot spot satisfies alarm condition that you have set, an alarm is triggered.	Hot/Cold spot tracing is enabled. For detailed operations, see "5.7 Configuring Cold Hot Spot".
Cold Spot	When temperature of a cold spot satisfies alarm condition you have set, an alarm is triggered.	

Alarm Type	Description	Preparation
Heat	An alarm is triggered when the device detects fire.	Heat detection is enabled. For details, see "5.8 Configuring Heat Warning".
Burn Alarm	An alarm is triggered when the lens aims directly to the sun and will be burnt.	Burn alarm is enabled. For details, see "5.1.2.3 Configuring Burn Alarm".
Abnormal Voltage	An alarm is triggered when the device detects abnormal voltage input.	—

4.5.2 Subscribing Alarm Information

You can subscribe alarm event. When a subscribed alarm event is triggered, the system records detailed alarm information at the right side of the page.



Functions of different devices might be different.

Step 1 Click  in the right-upper corner of the main page.

Figure 4-26 Alarm (subscription)

Step 2 Click  next to **Alarm**.

Step 3 Select alarm type as need. For details, see "4.5.1 Alarm Types".

The system prompts and records alarm information according to actual conditions.

When the subscribed alarm event is triggered and the alarm subscription page is not displayed, a number is displayed on , and the alarm information is recorded

automatically. Click  to view the details in the alarm list. You can click **Clear** to clear the record.

Step 4 (Optional) Click  next to **Play Alarm Tone**, and select the tone path.
The system will play the selected audio file when the selected alarm is triggered.

Step 5 (Optional) Select **One-click Disarm** to enable the one-click disarm function.



Click **Clear**, you can clear the alarm information in the list

5 AI

5.1 Configuring Event

You can go to the **Event** page through two ways.

- Log in to the main page, and click **Event**.
- Log in to the web page, click , and then select **Event**.

5.1.1 Configuring Alarm Linkage

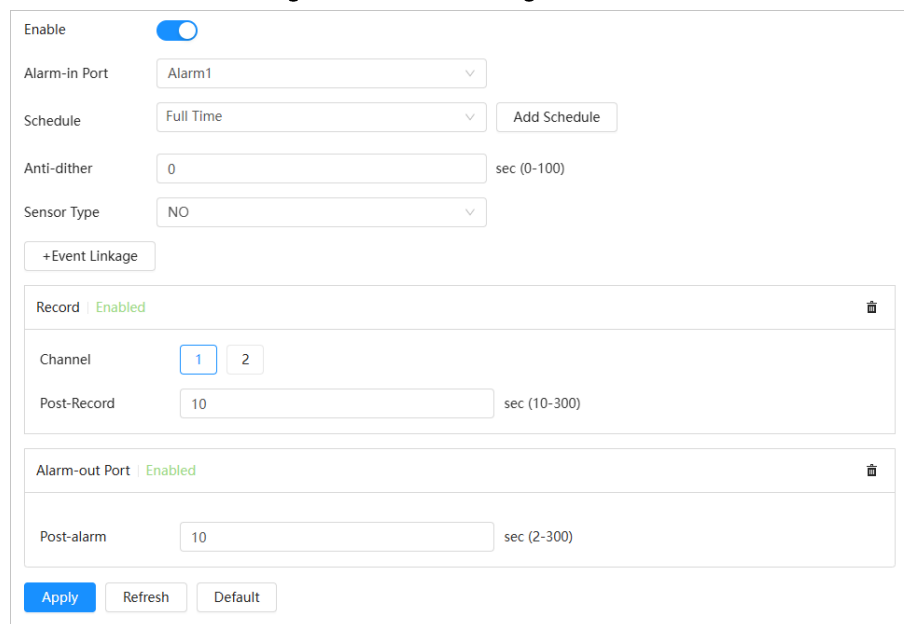
5.1.1.1 Setting Alarm-in

When an alarm is triggered by the device connected to the alarm-in port, the system performs the defined alarm linkage.

Step 1 Log in to the web page, and select  > **Event** > **Alarm**.

Step 2 Click  next to **Enable** to enable alarm linkage.

Figure 5-1 Alarm linkage



Step 3 Select an alarm-in port.

Step 4 Select the schedule and arming periods and alarm linkage actions. For details, see "5.1.1.2 Alarm Linkage". If the exiting schedules cannot meet the scene requirement, you can click **Add Schedule** to add new schedule. For details, see "5.1.1.2.1 Adding Schedule".

Step 5 Set the anti-dither time and sensor type.

- Anti-Dither: Only record one alarm event during the anti-dither period.
- Sensor Type: NO or NC.

Step 6 Click **Apply**.

5.1.1.2 Alarm Linkage

When configuring alarm events, click **Event Linkage**, and then select alarm linkages (such as record, snapshot). When the corresponding alarm is triggered in the configured arming period, the system will alarm.

Figure 5-2 Alarm linkage

The screenshot shows the 'Event Linkage' configuration window. It contains two main sections: 'Record' and 'Alarm-out Port'. Both sections have a status indicator 'Enabled'. The 'Record' section has a 'Channel' dropdown set to '1' and a 'Post-Record' input field set to '10' with a unit of 'sec (10-300)'. The 'Alarm-out Port' section has an 'Alarm Channel' dropdown set to '1' and a 'Post-alarm' input field set to '3' with a unit of 'sec (3-300)'. At the bottom, there are three buttons: 'Apply' (blue), 'Refresh' (light blue), and 'Default' (light blue).

5.1.1.2.1 Adding Schedule

Configure arming schedule. The system only performs corresponding linkage actions in the configured period.

Step 1 Click **Add Schedule** next to **Schedule**.

Step 2 Click **Time Plan Table**.

You can add multiple tables, and they will be displayed in the **Schedule** list.

Step 3 Click the table name to edit the name.

Step 4 Set the arming periods.

Green indicates that the period is armed.

1) Press the left mouse button and drag on the time bar to select the period.

Figure 5-3 Adding schedule

The screenshot shows the 'Time Plan Table' configuration window. It has a header with '+ Time Plan Table', 'Full Time', and a trash icon. Below the header is a table with days of the week (Sun, Mon, Tue, Wed, Thu, Fri, Sat) and a time bar from 0 to 24. Green bars indicate armed periods. There are 'Copy' buttons next to each day's bar. At the top right, there are 'Refresh', 'Clear', and 'Delete' buttons. At the bottom right, there are 'Apply' and 'Cancel' buttons.

2) Click the selected period, enter the specific time in the text box of start time and end time.

Figure 5-4 Setting specific time

- 3) (Optional) Click **Copy**, select the days, and then click **Apply** to copy the current plan to the selected days.
- 4) Click **Apply**.

Step 5 Click **Apply**.

5.1.1.2.2 Record Linkage

The system can link record channel when an alarm event occurs. After alarm, the system stops recording after an extended time period according to the **Post-Record** setting.

Prerequisites

- After the corresponding alarm type (**General**, **Motion**, or **Alarm**) is enabled, the record channel links recording. For details, see "6.3 Setting Record Plan".
- Enable auto record mode, the record linkage will take effect. For details, see "6.2 Setting Record Control".

Setting Record Linkage

On the alarm linkage page, select **Event Linkage** > **Record** to enable record linkage, select the channel as needed, and then configure record delay in **Post-Record**.

After record delay is configured, alarm recording continues for an extended period after the alarm ends.

Figure 5-5 Record linkage

5.1.1.2.3 Snapshot Linkage

After snapshot linkage is configured, the system can automatically alarm and take snapshots when an alarm is triggered.

Prerequisites

After the corresponding alarm type (**General**, **Motion**, or **Alarm**) is enabled, the snapshot channel links capturing picture. For details, see "6.3 Setting Record Plan".

Setting Snapshot Linkage

On the alarm linkage page, select **Event Linkage** > **Snapshot** to enable snapshot linkage, and select the channel as needed.

Figure 5-6 Snapshot linkage

Snapshot	Enabled	
Channel	1	2

5.1.1.2.4 Alarm-out Linkage

When an alarm is triggered, the system can automatically link with alarm-out device.
On the alarm linkage page, select **Event Linkage** > **Alarm-out Port** to enable alarm-out linkage, select the channel as needed, and then configure alarm delay in **Post alarm**.
When alarm delay is configured, alarm continues for an extended period after the alarm ends.

Figure 5-7 Alarm-out linkage

Alarm-out Port	Enabled	
Alarm Channel	1	2
Post-alarm	3	sec (3-300)

5.1.1.2.5 Email Linkage

When an alarm is triggered, the system will automatically send an email to users.
Email linkage takes effect only when SMTP is configured. For details, see "8.3.5 Email".
On the alarm linkage page, select **Event Linkage** > **Send Email** to enable email linkage.

Figure 5-8 Email linkage

Send Email	Enabled	
------------	---------	---

5.1.1.2.6 Audio Linkage

When an alarm is triggered, the system can automatically produce audio for warning.
On the alarm linkage page, select **Event Linkage** > **Audio Linkage** to enable audio linkage, and then set the play count and audio file.

Figure 5-9 Audio linkage

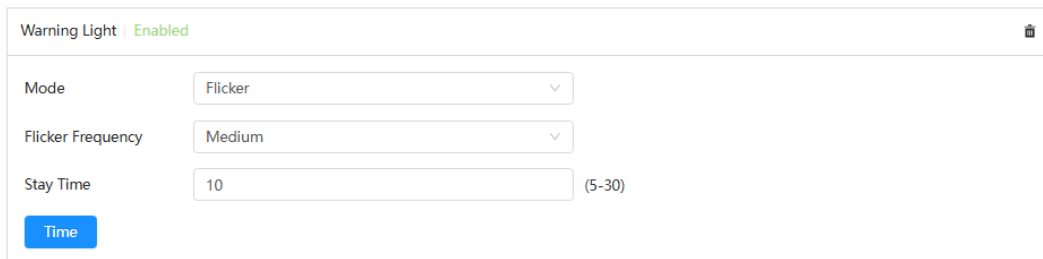
Audio Linkage	Enabled	
Play Count	5	(1-15)
File	alarm1.pcm	

5.1.1.2.7 Warning Light

When an alarm is triggered, the system can automatically produce light for warning.

On the alarm linkage page, select **Event Linkage** > **Warning Light** to enable warning light linkage, set the mode, flicker frequency, and stay time, and then click **Time** to set the arming periods.

Figure 5-10 Warning light



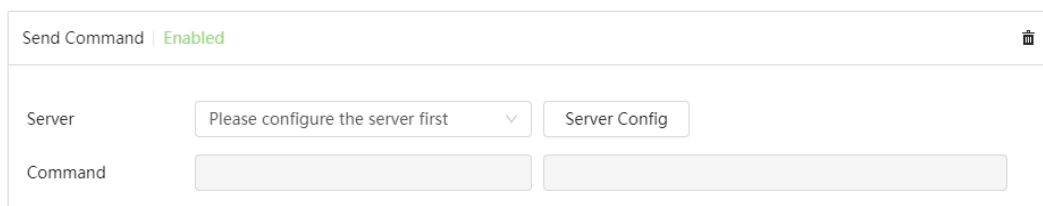
The interface shows the 'Warning Light' configuration page, which is currently 'Enabled'. It features three dropdown menus: 'Mode' set to 'Flicker', 'Flicker Frequency' set to 'Medium', and 'Stay Time' set to '10' (with a range of 5-30 indicated). A blue 'Time' button is located at the bottom left.

5.1.1.2.8 Command Linkage

When an event is triggered, a user-defined URL is linked and sent, which includes customized information such as IP address and port.

Step 1 On the alarm linkage page, select **Event Linkage** > **Send Command** to enable command linkage.

Figure 5-11 Command linkage



The interface shows the 'Send Command' configuration page, which is currently 'Enabled'. It features a 'Server' dropdown menu with the text 'Please configure the server first' and a 'Server Config' button. Below this is a 'Command' field with two input boxes.

Step 2 Configure the server.

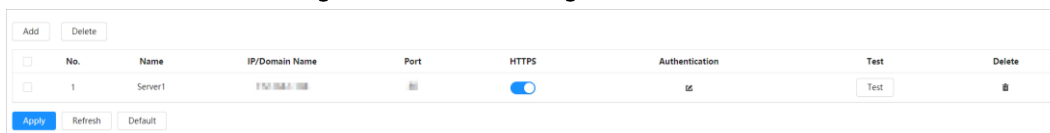
- 1) Click **Sever Config**.
- 2) Click **Add** to add servers as need.



You can add 8 servers at most.

- 3) Enter the server name, IP/Domain name, port, and then click  to enable HTTPS.

Figure 5-12 Sever configuration



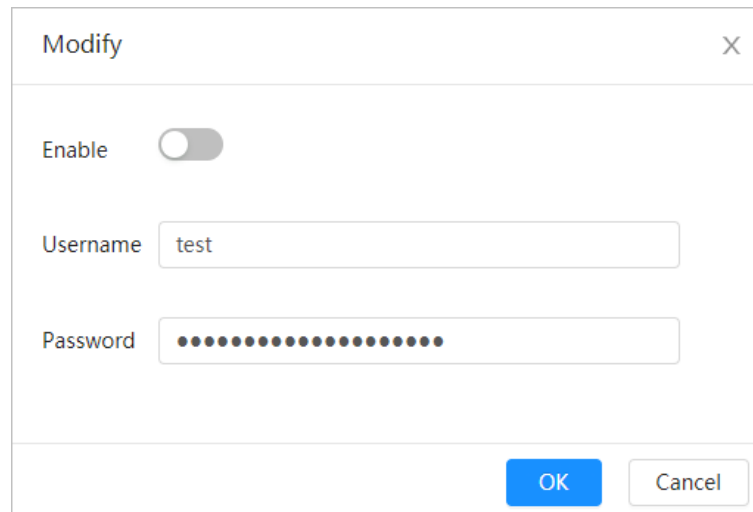
The interface shows a table for configuring servers. The table has columns: No., Name, IP/Domain Name, Port, HTTPS, Authentication, Test, and Delete. There is one row with the following data: No. 1, Name Server1, IP/Domain Name 192.168.1.100, Port 80, HTTPS enabled (toggle switch), Authentication Basic, Test Test, and Delete icon. Below the table are buttons for Apply, Refresh, and Default.

No.	Name	IP/Domain Name	Port	HTTPS	Authentication	Test	Delete
1	Server1	192.168.1.100	80		Basic	Test	

- 4) Click  to configure authentication.

The username and password will be required by the test tool.

Figure 5-13 Authentication

A 'Modify' dialog box with a close button (X) in the top right corner. It contains three fields: 'Enable' with a toggle switch currently turned off, 'Username' with a text input containing 'test', and 'Password' with a masked input showing 12 dots. At the bottom right are 'OK' and 'Cancel' buttons.

Modify	
Enable	☐
Username	test
Password	••••••••••••
OK Cancel	

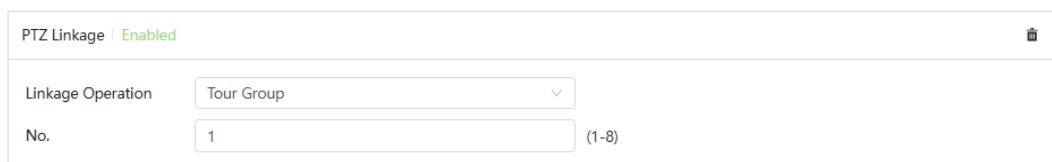
- 5) Click **OK**.
- 6) Click **Test** to test whether the connection works normally.
- 7) Click **Apply**.

Step 3 On the alarm linkage page, select the server, and then edit the command.

5.1.1.2.9 PTZ Linkage

When an alarm is triggered, the system will do the configured PTZ linkage operations.
On the alarm linkage page, select **Event Linkage** > **PTZ Linkage** to enable PTZ linkage, set the linkage operation.

Figure 5-14 PTZ linkage

The PTZ Linkage configuration interface shows 'PTZ Linkage' as 'Enabled'. Below, 'Linkage Operation' is set to 'Tour Group'. A table lists the linkage operations, with the first entry numbered '1' and a range '(1-8)' indicated.

PTZ Linkage Enabled	
Linkage Operation	Tour Group
No.	1 (1-8)

5.1.2 Configuring Exception

Exception includes SD card, network, illegal access, voltage detection, and security exception.



Only the device with SD card has the abnormality functions, including **No SD card**, **Low SD card space**, and **SD card error**.

5.1.2.1 Configuring SD Card Exception

In case of SD card exception, the system performs alarm linkage. The event types include **No SD card**, **Low SD card space**, and **SD card error**. Functions might vary with different models.

Step 1 Select  > **Event** > **Exception** > **SD Card Exception**.

Step 2 Click ☐ to enable the SD card detection functions.

When enabling **Low SD card space**, set the free space. When the remaining space of SD card is less than this value, an alarm is triggered.

Figure 5-15 SD card exception

Step 3 Set alarm linkage actions. For details, see "5.1.1.2 Alarm Linkage".

Step 4 Click **Apply**.

5.1.2.2 Configuring Network Exception

In case of network abnormality, the system performs alarm linkage. The event types include **Offline** and **IP Conflict**.

Step 1 Select > **Event** > **Exception** > **Network Error**.

Step 2 Click to enable the network detection function.

Figure 5-16 Network error

Step 3 Set alarm linkage actions. For details, see "5.1.1.2 Alarm Linkage".

Step 4 Click **Apply**.

5.1.2.3 Configuring Burn Alarm

When the lens aims directly to the sun and will be burnt, an alarm is triggered.

Step 1 Select > **Event** > **Exception** > **Burn Alarm**.

Step 2 Click to enable the burn alarm function.

Step 3 (Optional) Click next to **Anti-disturbance** to reduce false alarm of burn.

Step 4 Set the sensitivity and energy threshold.

Figure 5-17 Burn alarm

Enable ☒

Anti-disturbance ☐

Sensitivity + 40

Energy Threshold + 80

+Event Linkage

Snapshot | Enabled

Channel

Alarm-out Port | Enabled

Alarm Channel

Post-alarm sec (3-300)

Apply Refresh Default

Step 5 Set alarm linkage actions. For details, see "5.1.1.2 Alarm Linkage".

Step 6 Click **Apply**.

5.1.3 Configuring Video Detection

Check whether there are considerable changes on the video by analyzing video images. In case of any considerable change on the video (such as moving object, fuzzy image), the system performs an alarm linkage.

5.1.3.1 Configuring Motion Detection

The system performs an alarm linkage when a moving object appears in the image and its moving speed reaches the configured sensitivity.



- If you enable motion detection and smart motion detection simultaneously, and configure the linked activities, the linked activities take effect as follows:
 - ◇ When motion detection is triggered, the Camera will record and take snapshots, but other configured linkages such as sending emails, PTZ operation will not take effect.
 - ◇ When smart motion detection is triggered, all the configured linkages take effect.
- If you only enable motion detection, all the configured linkages take effect when motion detection is triggered.

Step 1 Select  > **Event** > **Video Detection** > **Motion Detection**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.



The monocular camera does not support channel selection.

Step 3 Click ☐ to enable the motion detection function.

Figure 5-18 Motion detection

Channel: 1

Enable: ☒

Schedule: Full Time Add Schedule

Anti-dither: 0 sec (0-100)

Area: Setting

+Event Linkage

Record: Enabled 🗑

Channel: 1 2

Post-Record: 10 sec (10-300)

Alarm-out Port: Enabled 🗑

Alarm Channel: 1 2

Post-alarm: 3 sec (3-300)

Apply Refresh Default

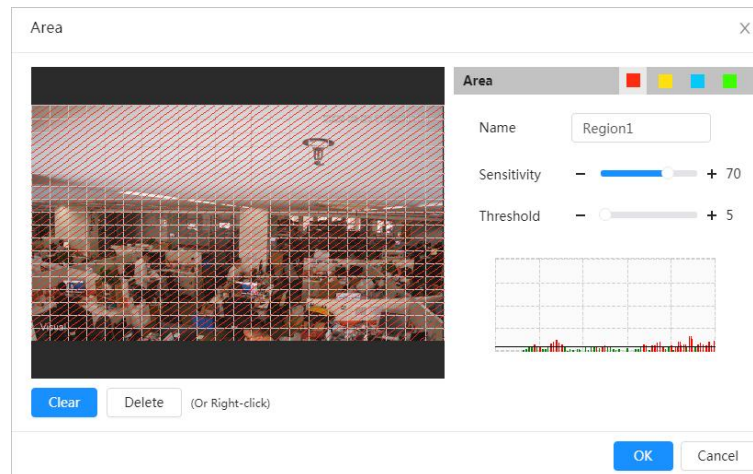
Step 4 Set the detection area.

1) Click **Setting** next to **Area**.

2) Select a color and set the region name. Select an effective area for motion detection in the image and set sensitivity and threshold.

- The whole image is the detection area by default. Select a color to set different detection parameters for each region.
- Sensitivity: Sensitive degree of outside changes. It is easier to trigger the alarm with higher sensitivity.
- Threshold: Effective area threshold for Motion Detection. The smaller the threshold is, the easier the alarm is triggered.
- The whole video image is the effective area for motion detection by default.
- The red line in the waveform indicates that motion detection is triggered, and the green one indicates that there is no motion detection is triggered. Adjust sensitivity and threshold according to the waveform.

Figure 5-19 Area



3) Click **OK**.

Step 5 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Anti-dither: After the **Anti-dither** time is set, the system only records one motion detection event in the period.

Step 6 Click **Apply**.

5.1.3.2 Configuring Video Tampering

The system performs alarm linkage when the lens is covered or video output is mono-color screen caused by light and other reasons.

Step 1 Select  > **Event** > **Video Detection** > **Video Tampering**.

Step 2 Click  to enable the video tampering function.

Figure 5-20 Video tampering

Step 3 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 4 Click **Apply**.

5.1.4 Configuring One-click Disarm

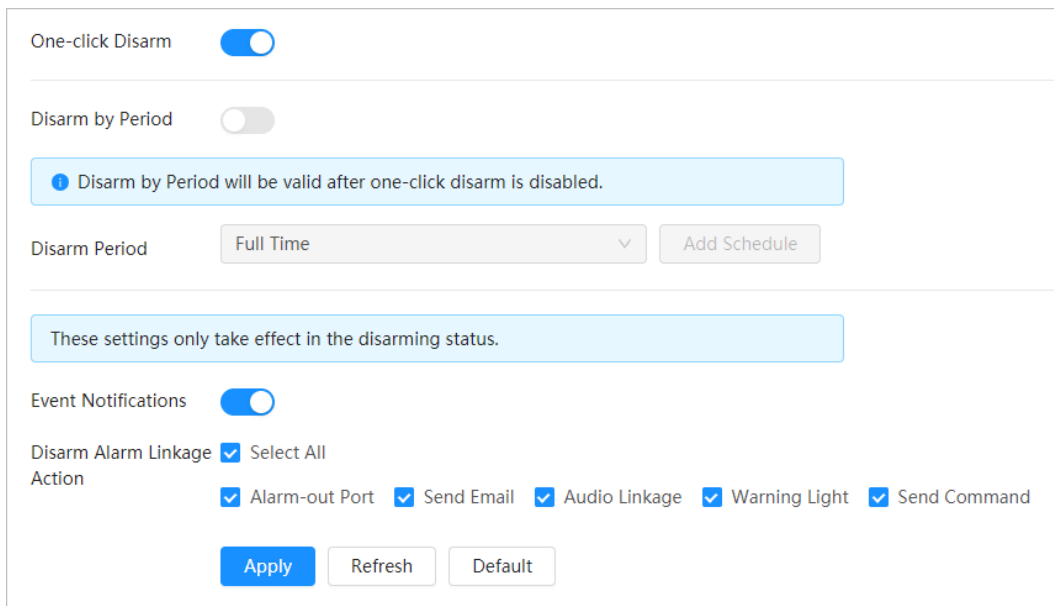
After configuring disarming, the system will not perform any linkage actions, but alarm records will still be generated.

Step 1 Select  > **Event** > **One-click Disarm**.

Step 2 Enable or disable disarming as needed.

- Click  to enable disarming, and then select the linkage actions.
- Click  to disable disarming. and then enable disarming by period and set the disarming period.

Figure 5-21 One-click disarm



Step 3 (Optional) Enable disarming by period and set the disarming period.

Step 4 (Optional) Set arming periods. For details, see "5.1.1.2 Alarm Linkage".

If the exiting schedules cannot meet the scene requirement, you can click **Add Schedule** to add a new schedule. For details, see "5.1.1.2.1 Adding Schedule".

Green indicates that the period with disarm enabled.

Step 5 (Optional) Enable or disable event notification.

After disabling event notification, all supporting clients, including mobile phone, platform, cloud platforms, cannot receive event messages from the Camera (except for network exception, storage exception, security warning, hardware failures) during the disarming period.

Step 6 Select alarm linkage actions as needed.

The system will not perform the selected linkage actions when an alarm is triggered; and perform the unselected linkage actions when an alarm is triggered.

Step 7 Click **Apply**.

5.1.5 Configuring Auto Upload

After enabling the auto upload function, the Camera will automatically report events to third-party clients through HTTP.

Step 1 Select  > **Event** > **Auto Upload**.

Step 2 Click  to enable the auto upload function.

Step 3 Click **Add**.



You can add 2 servers at most.

Step 4 Configure the server parameters.

Figure 5-22 Auto upload

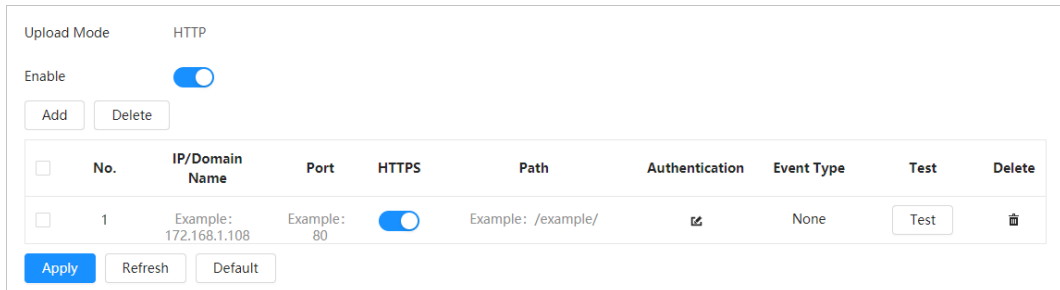


Table 5-1 Parameters description

Parameters	Description
IP/Domain Name	Enter the IP address of the server where the third-party client is located.
Port	Enter the port number of the server where the third-party client is located.
HTTPS	Click  to enable HTTPS.
Path	Enter the event or image upload path.
Authentication	Click  . Click  , and then enter the username and password on the prompt page to finish the authentication. The username and password will be required by the test tool.
Event Type	Select the event type according to the situation.
Test	Click Test to test whether the connection works normally.

Step 5 Click **Apply**.

5.2 Configuring Temperature Measurement



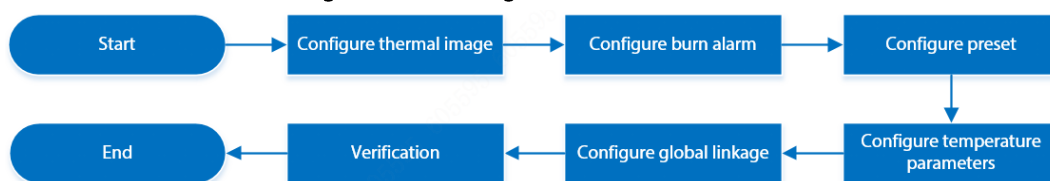
This function is available on the models with the temperature measurement function.

5.2.1 Note

- We recommend that the measuring distance is shorter than 50 m. Long-distance measurement will affect the measurement accuracy because of the humidity and transmissivity of atmosphere, reflection of the sun and heat source.
- For small targets, we recommend you install the Camera facing to the target.

5.2.2 Configuration Flow

Figure 5-23 Configuration flow



5.2.3 Configuring Thermal Channel

Configure a specific scenario where you use the Camera, including indoor scenario, outdoor scenario, and adaptive scenario. You can choose a scenario you need, and configure and check the scenario.

Step 1 Select  > **Camera** > **Image** > **Image**.

Step 2 Select **2** in **Channel**.

Step 3 Select the working mode.

- Self-adaptive: The Camera will adjust the image according to the environment. If you select **Self-adaptive**, skip to **Step5**.
- Customized scene: You can select the profile as needed. Select the profile in **Time Plan Setting** and drag the slide block to set certain time as the selected profile. For example, set 8:00–18:00 as day, and 0:00–8:00 and 18:00–24:00 as night. If you select **Customized Scene**, do **Step3–Step5**.

Step 4 Select the scene type, profile and color palettes.



The image is for reference only, and might differ from the actual page.

Figure 5-24 Image (thermal)

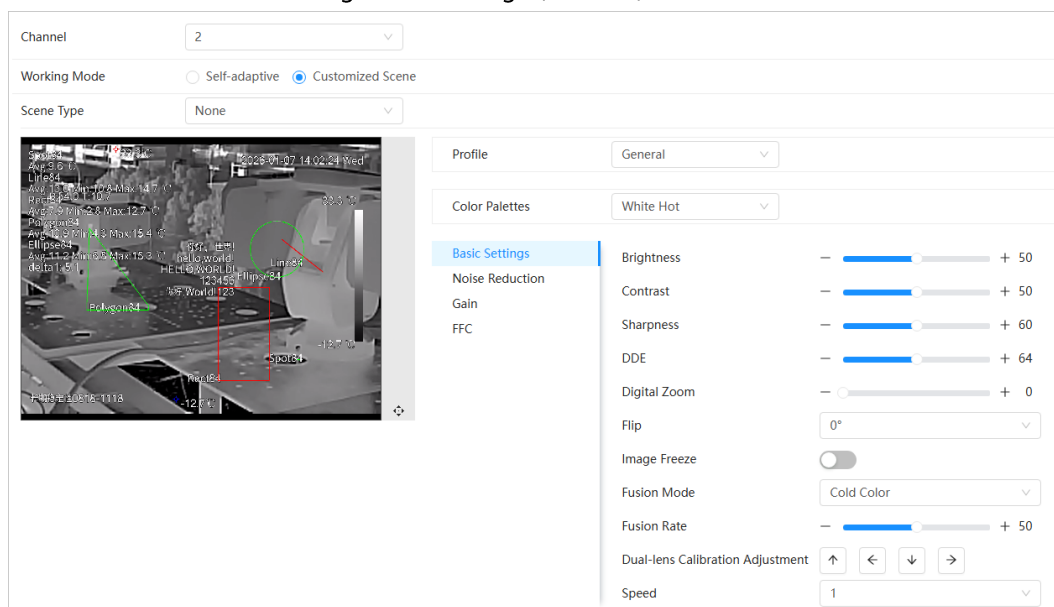


Table 5-2 Description of the parameters

Parameter	Description
Scene Type	Select different scenes based on your actual needs. Each scene has default parameters for quick setup of the thermal imaging display. • Low Dynamic: Thermal images will be displayed based on the configuration of low dynamic scene. • High Dynamic: Thermal images will be displayed based on the configuration of high dynamic scene. • Auto: Thermal images will be displayed based on the configuration of auto scene • None: Do not set the scene.
Profile	Normal, Day and Night can be selected.

Parameter	Description
Color Palettes	Add color to the thermal image and use color to indicate the temperature. "White Hot" is the default color. • White hot: Lighter when the temperature is higher in gray image. • Black hot: Lighter when the temperature is lower in gray image. • Fusion: Color is concentrated on the range of purple- red-yellow. More purple when the temperature is lower and more yellow when the temperature is higher. • Rainbow: Color is concentrated on the range of blue- green-red-yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. • Golden Autumn: Color is concentrated on the range of red- yellow. Redder when the temperature is lower and more yellow when the temperature is higher. • Midday: Color is concentrated on the range of blue- green-red-yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. • Iron Red: Its color range is similar to that of Midday, but its brightness is lower than Midday. • Amber: It's mainly represented as brown. Brighter when the temperature is higher. • Jade: Color is concentrated on the range of purple - red- yellow-green- blue. More purple when the temperature is lower and bluer when the temperature is higher. • Sunset: Color is concentrated on the range of blue- red- yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. • Icefire: In color image, high temperature objects show red and low temperature objects show blue. Ice and fire is usually used to give a warning. • Painting: Color is concentrated on the range of purple-blue-green- yellow-red. More purple when the temperature is lower and redder when the temperature is higher. • Pomegranate: It's mainly represented as wine red. Brighter when the temperature is higher. • Emerald: It's mainly represented as aquamarine. Brighter when the temperature is higher. • Spring: Color is concentrated on the range of rose red- yellow. Red when the temperature is lower and yellow when the temperature is higher. • Summer: Color is concentrated on the range of green- yellow. Green when the temperature is lower and yellow when the temperature is higher. • Autumn: Color is concentrated on the range of orange- yellow. Orange when the temperature is lower and yellow when the temperature is higher. • Winter: Color is concentrated on the range of blue- yellow. Blue when the temperature is lower and yellow when the temperature is higher.

Step 5 (Optional) Configure the advanced parameters.

When the scene cannot meet the scene requirements, configure the advanced parameters manually.

Table 5-3 Advanced parameter description

Classification	Parameter	Description
Basic Settings	Brightness	Change the overall image brightness. The bigger the value is, the brighter the image will be.
	Contrast	Changes the contrast of the image. The higher the value is, the more the contrast will be between bright and dark areas. If the value is set too big, the dark area would be too dark and bright area easier to get overexposed. The image might be hazy if the value is set too small.
	Sharpness	Change the sharpness of image edges. The larger the value, the more obvious the image edge. Do not make the value too large to prevent image noise.
	DDE	Makes the details of the image clear. The bigger the value is, the clearer the details will be.
	Digital Zoom	Enlarges the thermal image according to the zoom time that you have configured.
	Mirror	Open the mirror image and the monitor image will reverse from left to right.
	Flip	Changes the display direction of the picture, see the options below. • 0°: Normal display. • 90°: The picture rotates 90° clockwise. • 180°: The picture flips upside down. • 270°: The picture rotates 90° counterclockwise.  For some models, please set the resolution to be 1080p or lower when using 90° and 180°. For details, see "8.2.3 Configuring Encode".

Classification	Parameter	Description
	Fusion Mode	Displays the image with the gray scale information of the visible channel, and marks temperatures with color palettes, which makes the image of the thermal channel clearer. • Original: Displays the image of the thermal channel. • Warm Color: Combines the data of the visible channel and the thermal channel, and displays the image in warm color. • Cold Color: Combines the data of the visible channel and the thermal channel, and displays the image in cold color. • Fusion Rate: It ranges from 0 to 100. The larger the value, the larger the proportion of the visible channel. • Dual-lens Calibration Adjustment: You can adjust the misaligned images through direction keys. • Speed: The moving speed of the lens when adjusting the image.  • To get a better fusion effect, keep the distance 3 m between the Camera and the targets. • Only some selected models support selecting mode.
Noise Reduction	Smart Enhancement	After enabling this function, you can get a clearer image.
	2D NR	Compares one frame to the next and removes any oddity that does not appear in each frame. The larger the value is, the fuzzier the image will be.
	Basic 3D NR	Removes the grainy fuzzy appearances of

Classification	Parameter	Description
	Advanced 3D NR	low light images, will handle moving objects without leaving tails behind, and in low light, it makes an image clearer and sharper. - Basic 3D NR: The module handles noise reduction. - Advanced 3D NR: The back-end program handles noise reduction.  Generally, you can select 2D NR and Basic 3D NR. If the image is not clear, select Advanced 3D NR, and configure the parameters.
Gain	Auto Gain	The larger the gain value, the more unstable the image becomes.
Do FFC		Click Do FFC to trigger the shutter correcting for this time.

Step 6 Click **Apply**.

5.2.4 Configuring Burn Alarm

When the lens aims directly to the sun and will be burnt, an alarm is triggered.

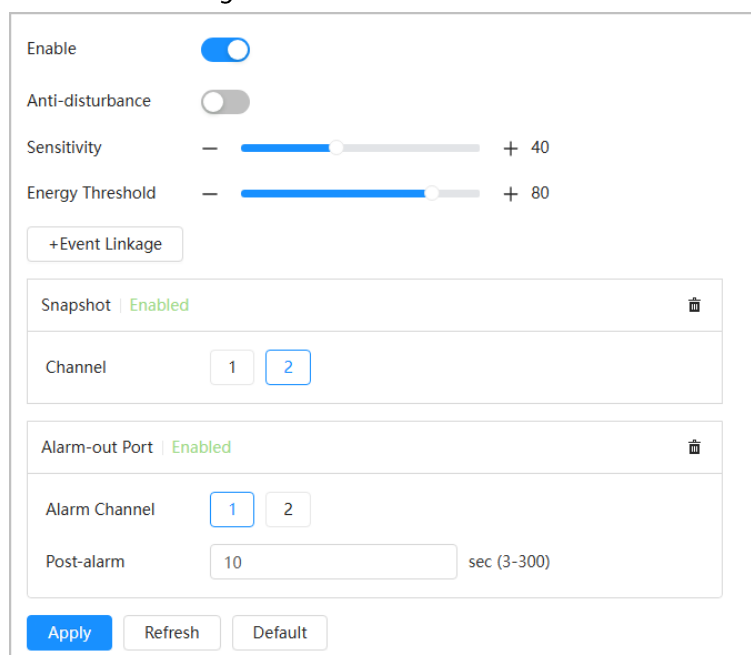
Step 1 Select  > **Event** > **Exception** > **Burn Alarm**.

Step 2 Click  to enable the burn alarm function.

Step 3 (Optional) Click  next to **Anti-disturbance** to reduce false alarm of burn.

Step 4 Set the sensitivity and energy threshold.

Figure 5-25 Burn alarm



Enable ☒

Anti-disturbance ☐

Sensitivity + 40

Energy Threshold + 80

+Event Linkage

Snapshot | Enabled 

Channel

Alarm-out Port | Enabled 

Alarm Channel

Post-alarm sec (3-300)

Apply Refresh Default

Step 5 Set alarm linkage actions. For details, see "5.1.1.2 Alarm Linkage".

Step 6 Click **Apply**.

5.2.5 Configuring Preset

Preset means a certain position that the Camera can make quick orientation to. It includes PTZ pan and tilt angles, camera focus, and location.

Procedure

Step 1 Select  > **PTZ** > **Preset**.

Step 2 Configure preset.

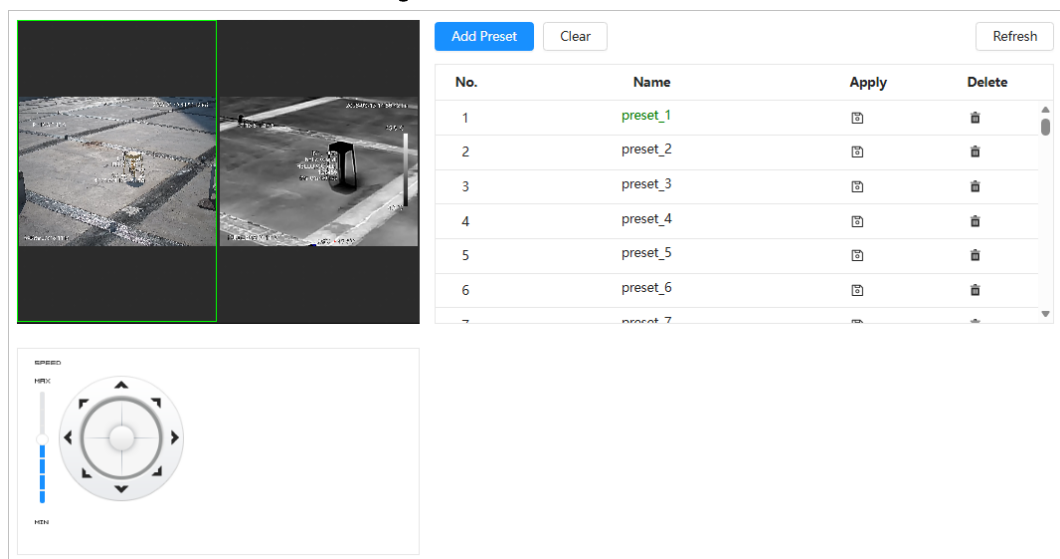
1) Click **Add Preset** to add a new preset.

Click the preset title to modify the title of the preset.

2) Operate the PTZ control panel to move the Camera lens to a specific direction that you need.

3) Click .

Figure 5-26 Preset



Related Operations

- Click  to delete a preset.
- Click **Clear** to delete all the presets that you have added.

5.2.6 Configuring Temperature Measurement Parameters

Configure temperature measurement rules, and when alarm conditions are met, an alarm will be triggered.

5.2.6.1 Configuring Temperature Measurement Rules

Step 1 On the main page, select **Temperature Measurement** > **Rule** > **Parameters**.

Figure 5-27 Configuring parameters

Measurement Rule (4/21)

No.	Type	Name	On	Reflection Filter	Engineering Truck Filter	Delete
1	Rectangle	Rectangle1	☒	Close	☐	
2	Spot	Spot1	☒	Close	☐	
3	Ellipse	Ellipse1	☒	Close	☐	
4	Polygon	Polygon1	☒	Close	☐	

Alarm - Polygon1

Config ☒

Target Radiation Coeffici... 0.97

Target Distance 1.0 m

Target Reflection Temper... 25.0 °C

Temperature Alarm ☐

Alarm Condition Max Below 20.0 °C

Temperature Error ± 0.1 °C

Temperature Duration 30 s

Temp Early Warning ☐

Temp Threshold of Early ... 30.0 °C

Temp Early Warning Dura... 30 s

Local Linkage ☒

Anti-dither 0 sec(0-100)

Time Plan Full Time Add Schedule

+Event Linkage

Record Enabled

Channel 1 2

Post-Record 10 sec (10-300)

Snapshot Enabled

Channel 1 2

Alarm-out Port Enabled

Alarm Channel 1 2

Post-alarm 10 sec (3-300)

Apply Refresh Default

Step 2 Select the drawing tools, including spot, line, polygon, rectangle, and ellipse. After selecting the tool, the corresponding rule is displayed in **Measurement Rule**. Click the name, and you can edit it; click ☒ to disable the corresponding rule.



Only some selected models support ellipse.

Step 3 Draw the rules.

- Select spot as the drawing tool, and you can click a position on the surveillance image and a spot is formed.
- Select line, rectangle or ellipse as the drawing tool, and you can hold the left mouse button to draw rules on the surveillance image.
- Select polygon as the drawing tool, and you can hold the left mouse button to draw

rules you need on the surveillance image. Right-click to end your drawing.



- Select a rule that you have drawn, and then click **Redraw Rule**, you can delete the rule and draw a new one.
- You can draw 21 rules at most.

Step 4 (Optional) Enable the reflection filter function, and then set the sensitivity.
Enabling the reflection filter function can reduce the false alarms caused by reflection.



This function is only supported by some selected models.

Step 5 (Optional) Enable the engineering truck filter function.
Enabling the engineering truck filter function can reduce the false alarms caused by engineering trucks.



This function is only supported by some selected models.

Step 6 Select an added rule, and then click  next to **Config** to configure the parameters of each rule.
If you do not enable **Config**, alarms are triggered according to the global configuration.



Click  next to **Alarm**, and then the parameter configuration page is displayed.

Table 5-4 Parameter description

Parameter	Description
Target Emissivity	Radiation coefficient of targets that are shot by this Camera. Ranges from 0.5 to 1.
Target Distance	Distance from the Camera to targets that are shot. Ranges from 0 to 10000 m.
Target Reflection Temperature	The apparent temperature of the surrounding environment reflected off the surface of the measured target. Ranges from -50 °C to 327.7 °C.

Step 7 Click  next to the **Temperature Alarm** and then configure the parameters.

Figure 5-28 Temperature alarm

Temperature Alarm



Alarm Condition

Max

Below

20.0

°C

Temperature Error

±

0.1

°C

Temperature Duration

30

s

Table 5-5 Alarm parameter description

Parameter	Description
Alarm Condition	Set the alarm condition: Alarm result + alarm condition + Alarm threshold temperature/temperature slope. - Alarm result: The display items of temperature. - Select spot as the measurement type, and average temperature and temperature slope will be displayed. - Select line, rectangle, ellipse or polygon as the measurement type, and maximum/minimum/average temperature, temperature slope and temperature difference are displayed.  Temperature difference means the difference between maximum and minimum temperatures under rules that you have set; temperature slope means temperature's varying rate under rules you have set. - Alarm condition: Below, Match and Above. - Alarm threshold temperature: The temperature that triggers alarm. - When you select alarm result as Max, Min, Average Temperature, or Temperature Difference, the parameter ranges from -40°C to $+550^{\circ}\text{C}$. - When you select alarm result as Temperature Slope, the parameter ranges from -600°C/min to $+600^{\circ}\text{C/min}$.
Temperature Error	Set a temperature error value and if the alarm threshold temperature or temperature slope is within the value you have set, linked alarms will still be triggered. Ranges from -10°C to 10°C .
Temperature Duration	You can set a lasting time of abnormal temperature after which alarms will be triggered. Ranges from 0 to 1000 s.

Step 8 Click  next to the **Temp Early Warning** and then configure the parameters.

Figure 5-29 Temp early warning

Temp Early Warning 

Temp Threshold of Early ... $^{\circ}\text{C}$

Temp Early Warning Dura... s

Table 5-6 Alarm parameter description

Parameter	Description
Temp Threshold of Early Warning	The temperature that triggers an early warning.
Temp Early Warning Duration	You can set a lasting time of abnormal temperature after which early warning will be triggered. Ranges from 0 to 1000 s.

Step 9 Click  next to the **Local Linkage** and then configure the parameters.

- Set the anti-dither time.
- Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 10 Click **Apply**.

After configuration, you can view the temperature change under the configured rules on the live image.

5.2.6.2 Configuring Temperature Contrast

Compares temperature of spots, lines or area that you have selected and displays comparison results on the image.

Prerequisites

You have configured at least two temperature measurement rules. For details, see "5.2.6.1 Configuring Temperature Measurement Rules".

Procedure

Step 1 On the main page, select **Temperature Measurement > Rule > Temperature Contrast**.

Figure 5-30 Temperature contrast

Before comparing temperatures, you need to add at least 2 measurement rules in "Parameters".

1 Add

2 Enable

3 Temp Difference = Ellipse1 - Polygon1

4 Alarm Condition Difference between Avg Temp Below 20.0 °C

5 Anti-dither 0 sec(0-100)

6 Time Plan Full Time Add Schedule

+Event Linkage

Record Enabled

Channel 1 2

Post-Record 10 sec (10-300)

Snapshot Enabled

Channel 1 2

Alarm-out Port Enabled

Alarm Channel 1 2

Post-alarm 10 sec (3-300)

Apply Refresh Default

Step 2 Click **Add** to add a temperature comparison group.

Step 3 Click ☐ to enable the temperature comparison group, and then configure the parameters.

The temperature comparison group is enabled by default.

Table 5-7 Temperature comparison group

Parameter	Description
Temp Difference	Select the targets for contrast.

Parameter	Description
Alarm Condition	Set the alarm condition: Alarm result + alarm condition + Alarm threshold temperature. - Alarm result: Select from the following three options to determine a standard of triggering an alarm. - Average temperature: Compare average temperatures of two rules. - Maximum temperature: Compare maximum temperatures of two rules. - Minimum temperature: Compare minimum temperatures of two rules.  When one of the two rules is a spot, both maximum temperature and minimum temperature are actually average temperature. - Alarm condition: Below, Match and Above. - Alarm threshold temperature: The temperature that triggers alarm, and it ranges from -40 °C to 550 °C.

Step 4 Set the anti-dither time.

After the anti-dither time is configured, the system only records one alarm event in the period.

Step 5 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 6 Click **Apply**.

After configuration, you can view the temperature contrast results on the live image.

5.2.6.3 Configuring Shield Area

After configuring shield areas, the fixed false alarm sources can be excluded.



This function is only available on some selected models.

Step 1 On the main page, select **Temperature Measurement > Rule > Shield Area**.

Step 2 Click **Add** to add a shield area.



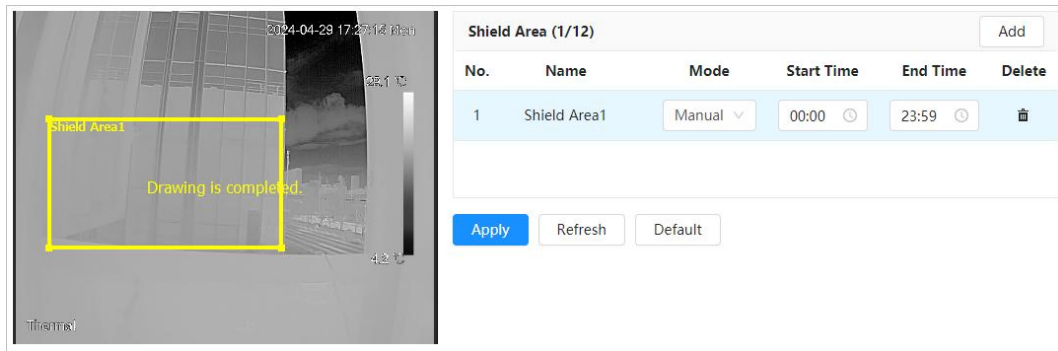
- You can add 12 shield area at most.
- Click  to delete the shield area.

Step 3 Click the name to modify the shield name.

Step 4 Configure the mode.

- Manual: Select **Manual** as the mode, and then set the begin time and end time. The shield time is valid during the configured time.
- Auto: Select **Auto** as the mode, and the shield area takes effect according to the day & night mode of the visible channel. The shield area is valid during the day time (when ICR is in color), and it is not valid during the night time (when ICR is black and white).

Figure 5-31 Configure shield area



Step 5 Click **Save**.

5.2.6.4 Configuring Global Configuration

You can enable temperature measurement, isotherm and color code.

Background Information

- **Temperature Switch:** A switch with which you can enable or disable temperature testing rules. Enable the **Temperature Switch** and the temperature testing rules you have set will be displayed on surveillance images.
- **Isotherm:** Used to highlight an object in images of high brightness. Isotherm is based on median temperature, with highest temperature and lowest temperature as its range. The part of an object whose temperature is higher than floor temperature will be represented in a bright color and the part of an object whose temperature is lower than floor temperature will be represented in a black/white color.
- **Color Code:** Enable this function, and a color code is displayed on the right side of surveillance images to show change of color between minimum temperature and maximum temperature.

Procedure

Step 1 On the main page, select **Temperature Measurement > Global Config**.

Step 2 Set the parameters.

Figure 5-32 Global configuration

Temperature ☒

Temperature Unit °C

Relative Humidity — + 0

Atmosphere Temperature — + 25.0

Target Radiation Coefficient... — + 0.97

Target Reflection Tempera... — + 25.0

Target Distance Auto

Temperature Range Low Temperature(-20~150°C)

Advanced

Isotherm ☐

Min Temperature — + 100

Max Temperature — + 140

Color Code ☐

Apply Refresh Default

Table 5-8 Global configuration

Parameter	Description
Temperature	Enable the temperature measurement function.
Temperature Unit	Includes °C and °F.
Relative Humidity	Relative humidity of environment, and it ranges from 0 RH to 100 % RH.
Atmosphere Temperature	Temperature of the environment, and it ranges from -50 °C to 327.7 °C.
Target Emissivity	Set radiation coefficient of targets that are shot by this Camera. Ranges from 0.5 to 1.
Target Reflection Temperature	Temperature of targets that are shot by this Camera. Ranges from -50 °C to 327.7 °C.
Target Distance	Distance from the Camera to targets that are shot, including Auto mode and Manual mode.
Temperature Range	The current temperature range of the Camera. - Low temperature: -20 °C to 150 °C. - High temperature: 100 °C to 650 °C. - Auto: Automatically switch between low and high temperature modes according to the temperature of the detected object.
Advanced	Set the isotherm as needed. For details, see "5.2.9 Isotherm".

Step 3 Click **Apply**.

5.2.7 Configuring Global Linkage

5.2.7.1 Configuring Temperature Alarm

After configuring the global linkages of temperature alarm rules, an alarm will be triggered when alarm conditions are met.

Prerequisites

You have configured the temperature measurement rules. For details, see "5.2.6.1 Configuring Temperature Measurement Rules".

Procedure

Step 1 On the main page, select **Temperature Measurement > Temperature**.

Step 2 Click ☐ to enable the temperature alarm function.

You can configure the rules and alarm conditions in **Temperature Measurement > Rule > Parameters**. The system will alarm according to the configuration.



If the global configuration is not consistent with the individual rule configuration, the global configuration is prior.

Figure 5-33 Temperature alarm

Step 3 Click **Copy to Rules** to copy the temperature alarm to each rule.

Step 4 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 5 Click **Apply**.

5.2.7.2 Configuring Temperature Early Warning

Configure temperature early warning rules, and when the conditions are met, an alarm will be triggered.

Prerequisites

You have configured the temperature early warning rules. For details, see "5.2.6.1 Configuring Temperature Measurement Rules".

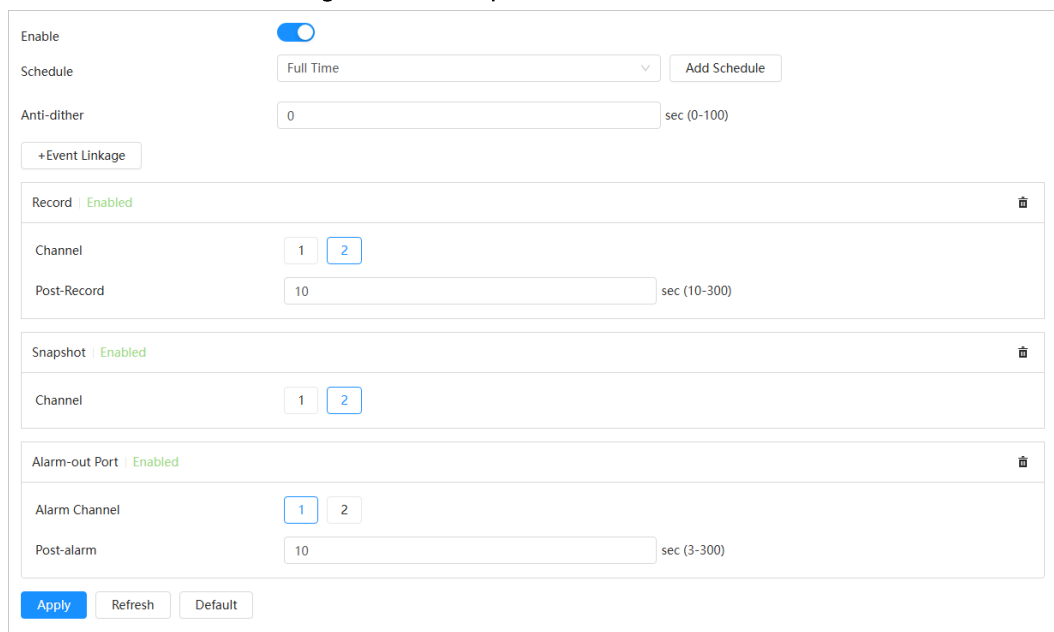
Procedure

- Step 1** On the main page, select **Temperature Measurement > Global Linkage > Temp Early Warning**.
- Step 2** Click  to enable the temperature early warning function.
You can configure the rules and alarm conditions in **Temperature Measurement > Rule > Parameters**. The system will alarm according to the configuration.



If the global configuration is not consistent with the individual rule configuration, the global configuration is prior.

Figure 5-34 Temperature alarm



Enable 

Schedule Full Time Add Schedule

Anti-dither 0 sec (0-100)

+Event Linkage

Record Enabled

Channel 1 2

Post-Record 10 sec (10-300)

Snapshot Enabled

Channel 1 2

Alarm-out Port Enabled

Alarm Channel 1 2

Post-alarm 10 sec (3-300)

Apply Refresh Default

- Step 3** Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".
- Step 4** Click **Apply**.

5.2.8 Verification

After configuration, enable **Temperature** and **Play Alarm Tone**. When an alarm is triggered, the Camera prompts and records alarm according to the actual situation.

- Step 1** Click  at the right-upper corner of the main page.

Figure 5-35 Alarm (subscription)

The screenshot shows the 'Alarm' configuration window. At the top, there's a title bar with 'Alarm' and a toggle switch that is turned on. To the right is a link 'Alarm Subscri...' with an upward arrow. Below this is a section for selecting alarm types, with a grid of checkboxes. 'All Types' is at the top. The grid includes: Motion..., Disk Full, Disk Error, Video T..., External..., Security..., Audio D..., AI Event, Scene C..., Temper... (checked), Temper..., Hot Spot, Cold Spot, Heat, Burn Ala..., and Abnorm... Below the checkboxes is a 'Play Alarm Tone' section with a toggle switch turned on and a 'Browse' button. Underneath is a 'One-click Disarm' section with a toggle switch turned off. The main part of the window is a table with columns: No., Time, Alarm Type, Source IP..., and Alarm Channel (...). The table is empty, showing a 'No Data' message with a folder icon. A 'Clear' button is located at the bottom right of the table area.

Step 2 Click  next to **Alarm**.

Step 3 Select alarm type according to the actual need. For details, see "4.5.1 Alarm Types". The system prompts and records alarm information according to actual conditions. When the subscribed alarm event is triggered and the alarm subscription page is not displayed, a number is displayed on , and the alarm information is recorded automatically. Click  to view the details in the alarm list. You can click **Clear** to clear the record.

Step 4 (Optional) Click  next to **One-click Disarm** to enable the one-click disarming function.

After enabling disarming, the system will not perform any linkage actions, but alarm records will still be generated.

Step 5 (Optional) Click  next to **Play Alarm Tone**, and select the tone path.

The system will play the selected audio file when the selected alarm is triggered.

5.2.9 Isotherm

Stands out the temperature range of the image.

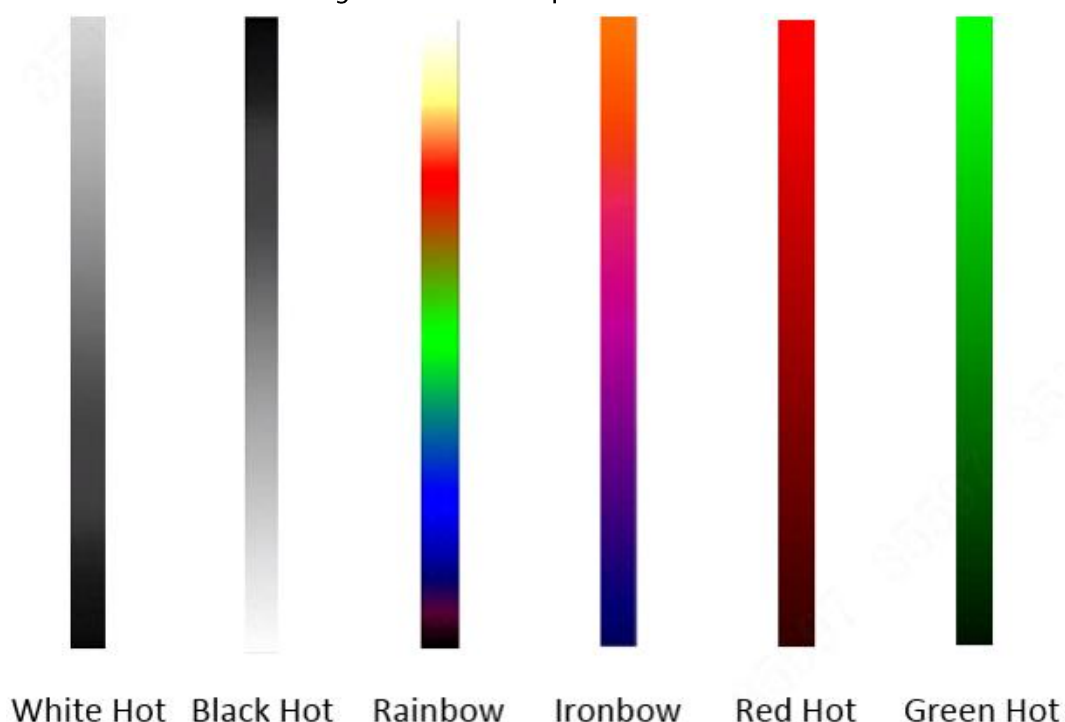
- Isotherm: Used to highlight an object in images of high brightness. Isotherm is based on median temperature, with highest temperature and lowest temperature as its range. The part of an object whose temperature is higher than min limit temperature will be represented in a bright color and the part of an object whose temperature is lower than min limit temperature will be represented in a black/white color. After enabling Isotherm, you have to make sure that min limit temperature $\leq$ max limit temperature $\leq$ ceiling temperature $\leq$ saturation temperature.

- **Color Code:** Enable this function, and a color code is displayed on the right side of surveillance images to show the change of color between minimum temperature and maximum temperature. The Camera is equipped with a color palette. Different from the traditional palette, the palette can correspond to the temperature, and different colors correspond to different temperature ranges. Different temperature ranges are displayed in different colors, thus realizing the isotherm display function. There are two types of palettes for displaying different temperatures. You can determine which type of palette to use by the color bars in the image.

Colored palettes

All the colors in the selected palette are used to color the image, but they cannot highlight the temperature. The vertical color bar in the image displays the selected palette.

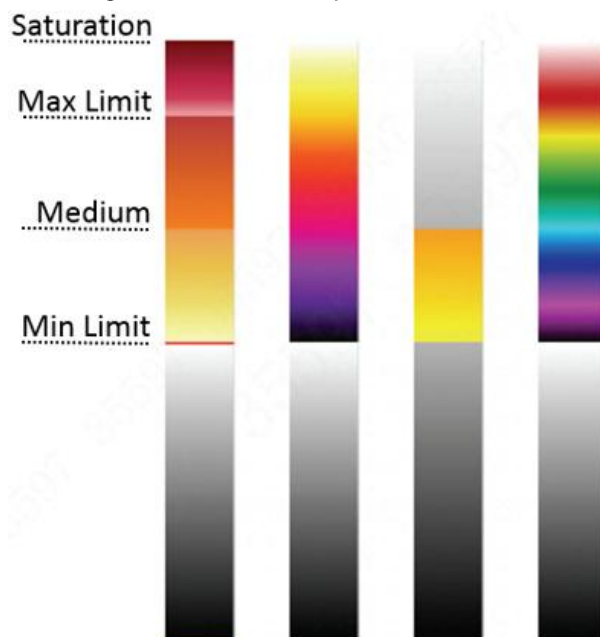
Figure 5-36 Colored palettes



Isotherm palettes

The isotherm palette can be used to isolate the predetermined temperature. The vertical color bar in the image displays the selected palettes and the input temperature standard. When exceeding the configured temperature standard, the target will be highlighted according to the configured color of the tone.

Figure 5-37 Isotherm palettes



For example, you have configured temperature limit for the target, all areas with temperature exceeding this configured threshold will be highlighted with specific colors. After receiving the alarm, you can quickly determine the alarm source through the isotherm image.

Figure 5-38 Isotherm



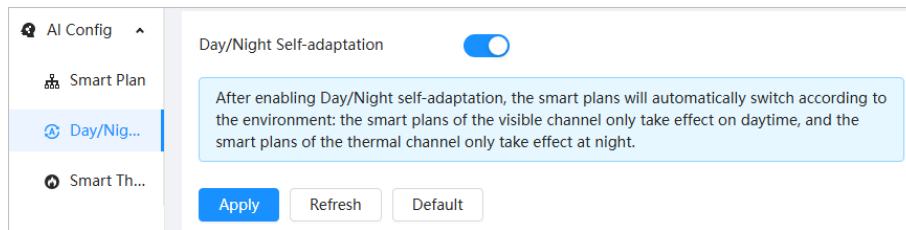
5.3 Enabling Day/Night Self-adaptation

After enabling Day/Night self-adaptation, the smart plans will automatically switch according to the environment: the smart plans of the visible channel only take effect on daytime, and the smart plans of the thermal channel only take effect at night.

Step 1 On the main page, select **AI > AI Config > Day/Night Self-adaptation**.

Step 2 Click ☐ next to **Day/Night Self-adaptation** to enable the Day/Night Self-adaptation function.

Figure 5-39 Day/Night self-adaptation



Step 3 Click **Apply**.

5.4 Configuring IVS

This section introduces the requirements of scene selection, global configuration and rule configuration.

Requirements of scene selection:

- The target should occupy no more than 10% of the whole image.
- The pixel of the target should be no less than 10×10; the pixel of abandoned object should be no less than 15×15 (CIF image); the width and height of the target should be no more than 1/3 that of the image; it is recommended that the height of the target should be set to 10% of the image height.
- The brightness difference of the target and the background should be no less than 10 gray levels.
- The target should be continuously present in the image for no less than 2 seconds, and the moving distance should be larger its width and no less than 15 pixels (CIF image) at the same time.
- Try to reduce the scene complexity as much as condition allowed; it is not recommended to use Intelligence Behavior Analysis in scenes with intensive targets, changing lighting conditions or small difference between target temperature and scene temperature.
- For thermal channel, try not to monitor scenes with glass. For visual channel, try not to monitor: scenes with reflective surfaces such as glass, bright ground or water; scenes that disturbed by tree branches, shadows or winged insects; scenes that against light or under direct light exposure. Control image proportion of objects that are with high relative ambient temperature.

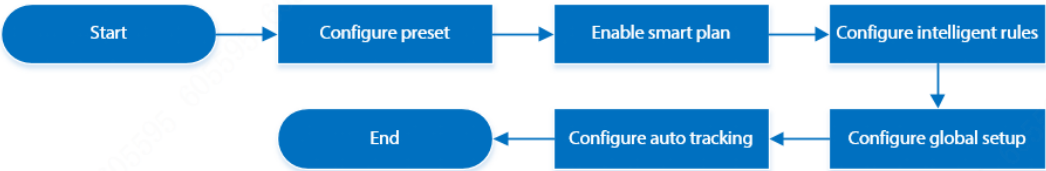
5.4.1 Scene-Selecting Requirements

- The target should occupy no more than 10% of the whole image.
- The target size in the image should be no more than 10 × 10 pixels. The size of abandoned object in the image should be no less than 15 × 15 pixels (CIF image). The target height and width should be no more less than a third of the image height and width. The recommended target height is 10% of the image height.
- The brightness difference of the target and the background should be no less than 10 gray levels.
- The target should be continuously present in the image for no less than 2 seconds, and the moving distance should be larger than its width and no less than 15 pixels (CIF image) at the same time.
- Reduce the complexity of surveillance scene as much as you can. Intelligent analysis functions are not recommended to be used in scene with dense targets and frequent illumination change.
- Avoid areas such as glass, reflective ground, water surface, and areas interfered by branch,

shadow and mosquito. Avoid backlight scene and direct light. Control image proportion of objects that are with high relative ambient temperature.

5.4.2 Configuration Flow

Figure 5-40 Configuration flow



5.4.3 Configuring Preset

Preset means a certain position that the Camera can make quick orientation to. It includes PTZ pan and tilt angles, camera focus, and location.

Procedure

- Step 1 Select > **PTZ** > **Preset**.
- Step 2 Configure preset.
- 1) Click **Add Preset** to add a new preset.
Click the preset title to modify the title of the preset.
 - 2) Operate the PTZ control panel to move the Camera lens to a specific direction that you need.
 - 3) Click .

Figure 5-41 Preset

No.	Name	Apply	Delete
1	preset_1		
2	preset_2		
3	preset_3		
4	preset_4		
5	preset_5		
6	preset_6		
7	preset_7		

Related Operations

- Click to delete a preset.
- Click **Clear** to delete all the presets that you have added.

5.4.4 Enabling Smart Plan

You need to enable the smart plan before configuring the intelligent rule function.



We recommend white hot for IVS. For details, see "8.2.1.2 Configuring Thermal Channel".

Step 1 On the main page, select **AI > AI Config > Smart Plan**.

Step 2 Click to select a preset.

A solution corresponding to presets is displayed.

Step 3 Click ☐ next to **IVS** to enable IVS of the corresponding channel.

- **Channel 1** is the visible channel.
- **Channel 2** is the thermal channel.

Step 4 Click **Next**.

5.4.5 Configuring Intelligent Rules

Set rule for IVS, including tripwire, intrusion, and crossing virtual fence.

Prerequisites

You have finished global configuration. For details, see "5.4.6 Configuring Global Setup".

Background Information

For the functions and applications of the rules, see Table 5-9. This section uses configuring tripwire as an example.

Table 5-9 Description of IVS functions

Rule	Description	Applicable Scene
Tripwire	When the target crosses tripwire from the defined motion direction, an alarm is triggered, and then the system performs configured alarm linkages.	Scenes with sparse targets and no occlusion among targets, such as the perimeter protection of unattended area.
Intrusion	When the target enters, leaves, or appears in the detection area, an alarm is triggered, and the system performs configured alarm linkages.	

Procedure

Step 1 Click the **Rule Config** tab.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.



The monocular camera does not support channel selection.

Step 3 Click **Add Rule**, and then select **Tripwire** from the drop-down list.

Click the name, and you can edit the rule name; the rule is enabled by default.

Figure 5-42 Tripwire

Rule Config

Global Config

Channel

2

Add Rule

No.	Name	Type	On	Delete
1	IVS-1	Tripwire		
2	IVS-2	Intrusion		

Step 4 Click (Tripwire) or (Intrusion) to draw rule line in the image. Right-click to finish drawing.

For requirements of drawing rules. After drawing rules, drag corners of the detection area or detection line to adjust the area range.

- Tripwire: draw a detection line.
- Intrusion: draw a detection area.



- Crossing virtual fence detection is only available on some select models.
- When drawing multiple rules, you can click to display all the drawn rules.
- Click to delete the detection rules.

Figure 5-43 Drawing rules



Step 5 (Optional) Draw a rectangle for filtering targets by pixel.

- Click , and then press and hold the left mouse button to draw a rectangle, the pixel size is displayed.
- Click to delete the detection rules.

Step 6 (Optional) Filter targets.

- Image size: You can draw one suit of filter boxes (one maximum size + one minimum size) on the image.
 1. Select **Size Filter** in **Size Filter**.
 2. Click to draw the minimum size of the target, and click to draw the maximum size of the target. Only when the target size is between the maximum

size and the minimum size, can the alarm be triggered.



For the visible channel, click  to draw the minimum size of the target, and then click  to draw the maximum size of the target.

- Image size normalization: On the image, draw a filtering model for the rule. Draw two lines with different heights according to the size of the same human target at different distances. The Camera will automatically calculate the height of the human target at different distances according to the drawn lines. This function is only available on the thermal channel.
 1. Click  to display the detection boxes.
 2. Select **Normalized Size Filter** in **Size Filter**.
 3. Draw the target.
 - ◇ Target 1: When the human target is standing close to the Camera, click , and then press and hold the left mouse button to draw a line from the target's neck to feet.
 - ◇ Target 2: When the human target is standing far away from the Camera, click , and then press and hold the left mouse button to draw a line from the target's neck to feet.
 4. Click **Apply**.
 5. Click  to verify calibration.

When the target height is higher than the calculated height, the alarm is triggered, and the calibration is successful.



- Click  to delete all drawn detection lines.
- Click **Copy to all** to copy the configuration to other IVS rules.

Step 7 Configure rule parameters for IVS.

Figure 5-44 Configuring rule parameters

Direction	Both
Auto Tracking	☒ Tracking Plan
Tracking Duration	30 sec (15-300)
Target Filter	☒
Effective Target	☒ Human ☒ Motor Vehicle
Time Plan	Full Time Add Schedule
+Event Linkage	
Snapshot Enabled	
Channel	1 2
Back Apply Refresh Default	

Table 5-10 Description of IVS parameters

Parameter	Description
Alarm Sensitivity	The higher the sensitivity is, the easier an alarm will be triggered.
Direction	Set the direction of rule detection. - When setting tripwire, select A->B, B->A, or A<->B. - When setting intrusion, select Enter, Exit, or Both.
Action	When setting intrusion action, select Appears or Cross .
Target Filter	Select Target Filter to enable this function.
Effective Target	- When you select Human as the effective target, an alarm will be triggered when the system detects persons triggering the rule. - When you select Motor Vehicle as the effective target, alarm will be triggered when the system detects vehicle triggering the rule.
Auto Tracking	Click ☐ to enable the auto tracking function. When an alarm is triggered, the Camera automatically tracks the person or object that triggers the alarm. click Tracking Target to select the tracking mode as needed. For details, see "5.4.7 Configuring Auto Tracking".
Track Duration	Click ☐ to enable the auto tracking function. When an alarm is triggered, the Camera automatically tracks the person or object that triggers the alarm. Tracking time is the duration that the Camera automatically tracks the object.

Step 8 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 9 Click **Apply**.

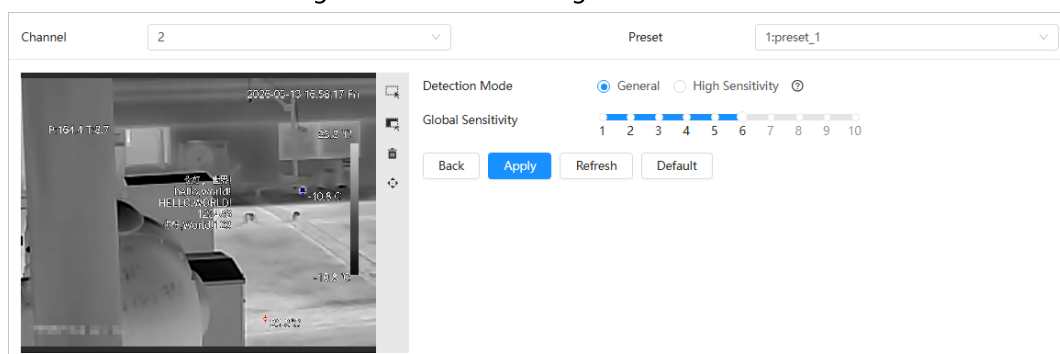
To view alarm information on the alarm subscription tab, you need to subscribe relevant alarm events. For details, see "4.5.2 Subscribing Alarm Information".

5.4.6 Configuring Global Setup

Configure global rules for IVS. You can draw the detection area and exclusion areas. When the configured rules are triggered in the detection areas (out of the exclusion areas), an alarm will be triggered. For the thermal channel, you can also configure the sensitivity.

Step 1 Click the **Global Config** tab.

Figure 5-45 Global configuration



Step 2 Select the channel.

- Select **1** in **Channel** to set the global parameters of visible channel.
- Select **2** in **Channel** to set the global parameters of thermal channel.



The monocular camera does not support channel selection.

Step 3 Add a detection area or an exclusion area.

- 1) Click  to draw a detected area on surveillance image. The whole image is the detection area by default, drag corners of the detection area to adjust the area.
- 2) Click  to draw an exclusion area on surveillance image. Right-click to finish drawing.



- Select the exclusion area, and then click  to delete the exclusion area.
- An exclusion area takes effect only when it has been drawn in the detection area
- Multiple exclusion areas can be drawn in the detected area.

Step 4 (Optional) Configure the global sensitivity. The higher the value, the easier the actions can be detected.



This step is only available on the thermal channel.

Step 5 Click **Apply**.

5.4.7 Configuring Auto Tracking

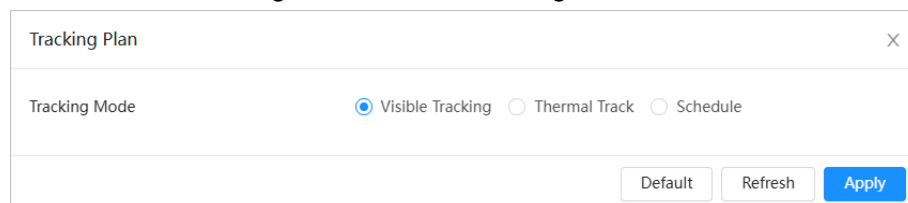
When an alarm is triggered in the detection region, the Camera automatically tracks the target triggering the alarm for a period.

Step 1 On the **Rule Config** page, click **Tracking Target**.

Step 2 Select the tracking mode as needed.

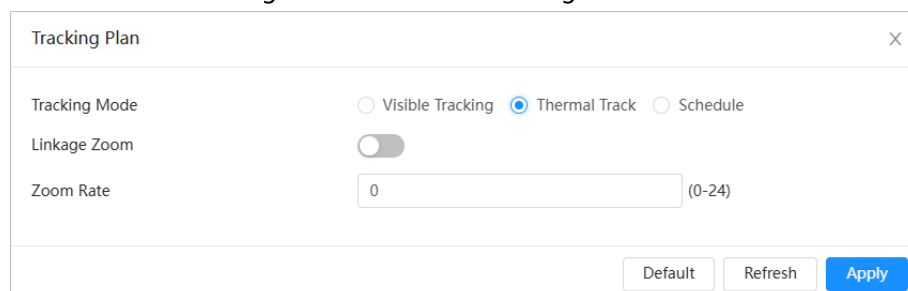
- Visible Tracking: Select **Visible Tracking**, and then click **Apply**.

Figure 5-46 Visible tracking



- Thermal Tracking: Select **Thermal Track**, enable linkage zoom, and configure zoom rate as needed, and then click **Apply**.

Figure 5-47 Thermal tracking



- Schedule: Select **Schedule**, and you can select the thermal or visible channel to track the target as need in different periods. For example, you can select the visible channel to track the target from 8:00 to 20:00, and the thermal channel to track the target from 20:01 to 8:00.

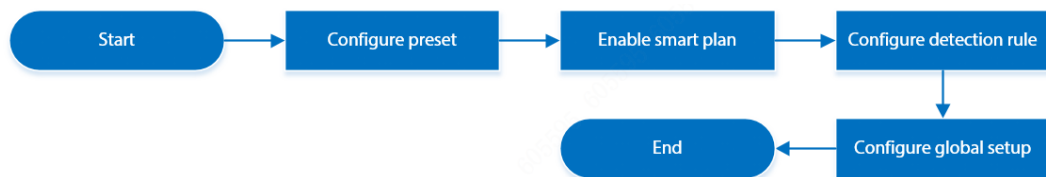
Figure 5-48 Schedule tracking

5.5 Configuring Call Detection

Configure the rule for calling in the visible channel. When a call action is detected, an alarm is triggered, and the system performs linkages such as recording, alarm output, sending email, and snapshot.

5.5.1 Configuration Flow

Figure 5-49 Configuration flow



5.5.2 Configuring Preset

Preset means a certain position that the Camera can make quick orientation to. It includes PTZ pan and tilt angles, camera focus, and location.

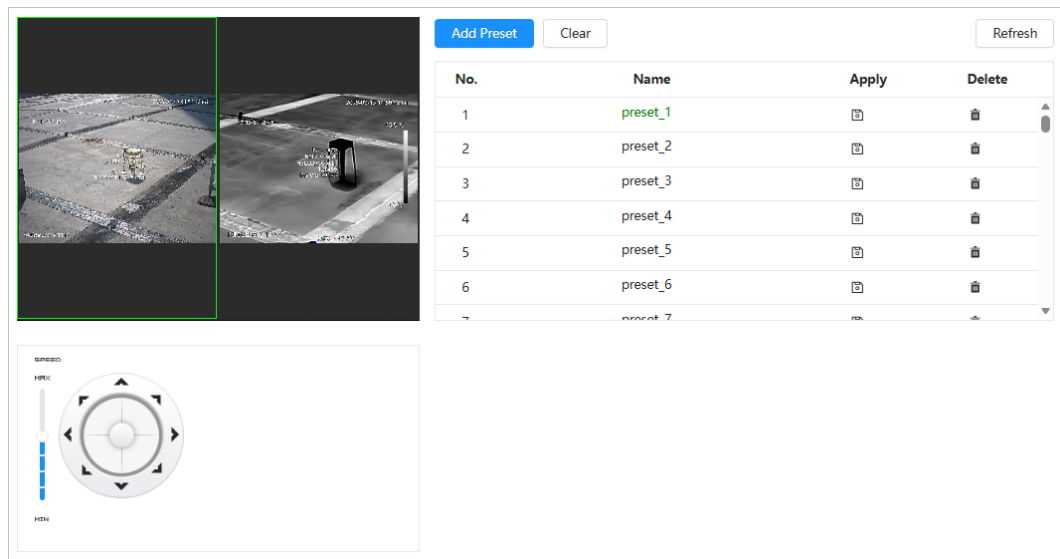
Procedure

Step 1 Select  > **PTZ** > **Preset**.

Step 2 Configure preset.

- 1) Click **Add Preset** to add a new preset.
Click the preset title to modify the title of the preset.
- 2) Operate the PTZ control panel to move the Camera lens to a specific direction that you need.
- 3) Click .

Figure 5-50 Preset



Related Operations

- Click to delete a preset.
- Click **Clear** to delete all the presets that you have added.

5.5.3 Enabling Smart Plan

You need to enable the smart plan before configuring the intelligent rule function.



Call detection and IVS cannot be enabled at the same time.

Step 1 On the main page, select **AI > AI Config > Smart Plan**.

Step 2 Click to select a preset.

A solution corresponding to presets is displayed.

Step 3 Click next to **Call Detection** to enable the call detection function.

Step 4 Click **Next**.

5.5.4 Configuring Detection Rule

Configure the rule for call detection, such as drawing rules and set linkage actions.

Prerequisites

You have finished global configuration. For details, see "5.5.5 Configuring Global Setup".

Procedure

Step 1 Click the **Rule Config** tab.

Step 2 Click to enable the call detection function.

Step 3 Click to draw a detected area on surveillance image. The whole image is the detection area by default, drag corners of the detection area to adjust the area.

Step 4 (Optional) Click other icons at the right side of the image to filter targets in the image.

- Click to draw the minimum size of the target, and then click to draw the maximum size of the target. Only when the target size is between the maximum size

and the minimum size, can the alarm be triggered.

Step 5 Set the interval and sensitivity.

- Interval: The time that calling behavior lasts. When the Camera detects the calling time beyond the configured value, an alarm is triggered.
- Sensitivity: The larger the value is, the more sensitive the call detection is. However, setting the value too large might cause false alarm.

Figure 5-51 Configuring call detection

Enable ☒

Time Plan: Full Time

Interval: 5 sec (5-600)

Sensitivity: — + 8

+Event Linkage

Record | Enabled

Channel: 1

Post-Record: 10 sec (10-300)

Snapshot | Enabled

Channel: 1

Alarm-out Port | Enabled

Alarm Channel: 1 2

Post-alarm: 10 sec (3-300)

Back Apply Refresh Default

Step 6 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 7 Click **Apply**.

To view alarm information on the alarm subscription tab, you need to subscribe relevant alarm event. For details, see "4.5.2 Subscribing Alarm Information".

5.5.5 Configuring Global Setup

Configure global rules for call detection. You can draw the detection area and exclusion areas. When the configured rules are triggered in the detection areas (out of the exclusion areas), an alarm will be triggered.

Step 1 Click the **Global Config** tab.

Step 2 Add a detection area or an exclusion area.

- 1) Click  to draw a detected area on surveillance image. The whole image is the

detection area by default, drag corners of the detection area to adjust the area.

- 2) Click  to draw an exclusion area on surveillance image. Right-click to finish drawing.



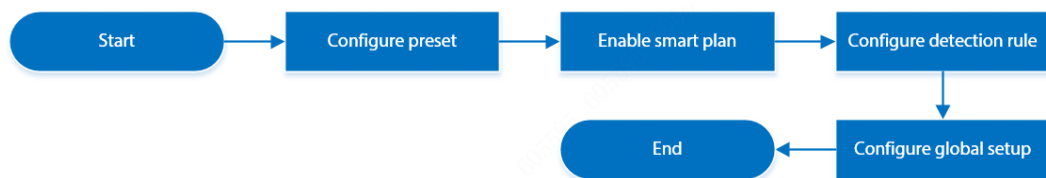
- Select the exclusion area, and then click  to delete the exclusion area.
- An exclusion area takes effect only when it has been drawn in the detection area
- Multiple exclusion areas can be drawn in the detected area.

Step 3 Click **Apply**.

5.6 Configuring Smoking Detection

5.6.1 Configuration Flow

Figure 5-52 Configuration flow



5.6.2 Configuring Preset

Preset means a certain position that the Camera can make quick orientation to. It includes PTZ pan and tilt angles, camera focus, and location.

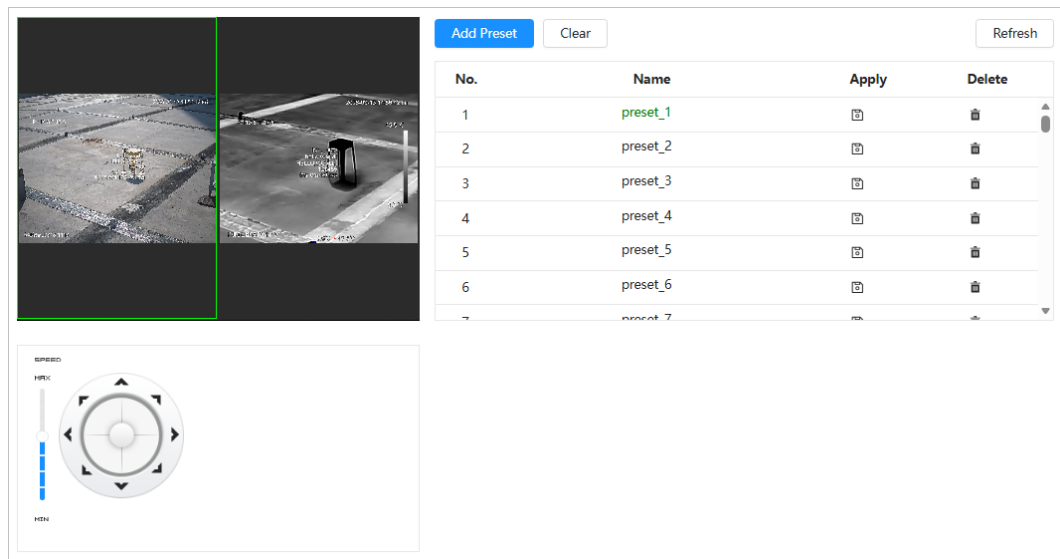
Procedure

Step 1 Select  > **PTZ** > **Preset**.

Step 2 Configure preset.

- 1) Click **Add Preset** to add a new preset.
Click the preset title to modify the title of the preset.
- 2) Operate the PTZ control panel to move the Camera lens to a specific direction that you need.
- 3) Click .

Figure 5-53 Preset



Related Operations

- Click to delete a preset.
- Click **Clear** to delete all the presets that you have added.

5.6.3 Enabling Smart Plan

You need to enable the smart plan before configuring the intelligent rule function.



Smoking detection and IVS cannot be enabled at the same time.

Step 1 On the main page, select **AI > AI Config > Smart Plan**.

Step 2 Click to select a preset.

A solution corresponding to presets is displayed.

Step 3 Click next to **Smoking Detection** to enable the smoking detection function.

Step 4 Click **Next**.

5.6.4 Configuring Detection Rule

Configure the rule for smoking detection, such as drawing rules and set linkage actions.

Prerequisites

You have finished global configuration. For details, see "5.5.5 Configuring Global Setup".

Procedure

Step 1 Click the **Rule Config** tab.

Step 2 Click to enable the call detection function.

Step 3 Click to draw a detected area on surveillance image. The whole image is the detection area by default, drag corners of the detection area to adjust the area.

Step 4 (Optional) Click other icons at the right side of the image to filter targets in the image.

- Click to draw the minimum size of the target, and then click to draw the maximum size of the target. Only when the target size is between the maximum size

and the minimum size, can the alarm be triggered.

Step 5 Set the interval and sensitivity.

- Interval: The time that smoking behavior lasts. When the Camera detects the smoking time beyond the configured value, an alarm is triggered.
- Sensitivity: The larger the value is, the more sensitive the smoking detection is. However, setting the value too large might cause false alarm.

Figure 5-54 Configuring smoking detection

Enable ☒

Time Plan Full Time Add Schedule

Interval 5 sec (3-600)

Sensitivity — + 90

+Event Linkage

Record | Enabled 🗑️

Channel 2

Post-Record 10 sec (10-300)

Snapshot | Enabled 🗑️

Channel 2

Alarm-out Port | Enabled 🗑️

Alarm Channel 1 2

Post-alarm 10 sec (3-300)

Back Apply Refresh Default

Step 6 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 7 Click **Apply**.

To view alarm information on the alarm subscription tab, you need to subscribe relevant alarm event. For details, see "4.5.2 Subscribing Alarm Information".

5.6.5 Configuring Global Setup

Configure global rules for smoking detection. You can draw the detection area and exclusion areas. When the configured rules are triggered in the detection areas (out of the exclusion areas), an alarm will be triggered.

Background Information



Smoking detection and IVS cannot be enabled at the same time.

Procedure

Step 1 Click the **Global Config** tab.

Step 2 Add a detection area or an exclusion area.

- 1) Click  to draw a detected area on surveillance image. The whole image is the detection area by default, drag corners of the detection area to adjust the area.
- 2) Click  to draw an exclusion area on surveillance image. Right-click to finish drawing.



- Select the exclusion area, and then click  to delete the exclusion area.
- An exclusion area takes effect only when it has been drawn in the detection area
- Multiple exclusion areas can be drawn in the detected area.

Step 3 Click **Apply**.

5.7 Configuring Cold Hot Spot

After enabling **Cold Hot Spot**, spot with the highest temperature and spot with the lowest temperature are displayed with different colors.

Step 1 Select **AI > AI Config > Smart Thermal**.

Step 2 Click **Edit** in **Cold Hot Spot**.

Figure 5-55 Cold hot spot

Hot Spot ☒

Cold Spot ☒

Select Color ☐ Auto ☒ Manual

Hot Spot Color

Cold Spot Color

Alarm Condition Meet at least one condition below

☒ Hot Spot Temp > °C

☒ Cold Spot Temp < °C

Anti-dither sec(0-100)

Time Plan Full Time Add Schedule

+Event Linkage

Record Enabled

Channel 1 2

Post-Record sec (10-300)

Snapshot Enabled

Channel 1 2

Alarm-out Port Enabled

Post-alarm sec (2-300)

Apply Refresh Default

Step 3 Click ☐ to enable the function.

Step 4 Select the hot spot color and cold spot color.

- Auto: The hot spot color is red, and the cold spot color is blue by default.
- Manual: You can customize the colors for the hot spot and cold spot.

Step 5 Click ☐ next to **OSD**. The temperature of hot/cold spot will be displayed.

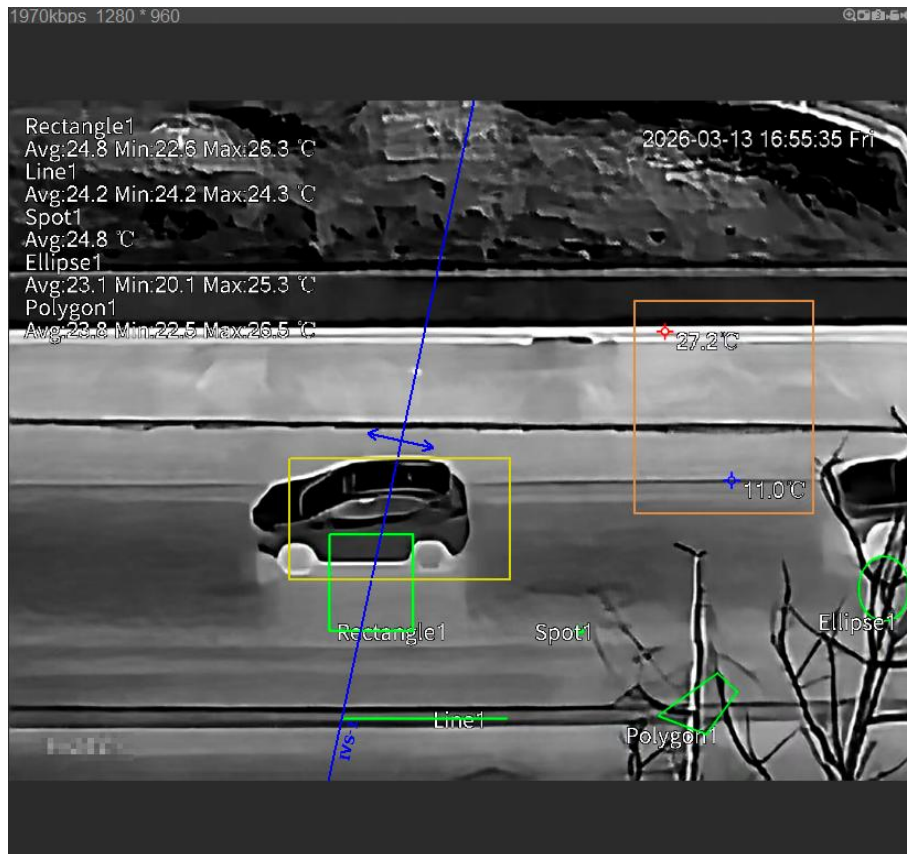
Step 6 Set the alarm condition and anti-dither as needed.

When the alarm condition is met, the system alarms, and only record one alarm event during the anti-dither period.

Step 7 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 8 Click **Apply**.

Figure 5-56 Cold hot spot



5.8 Configuring Heat Warning

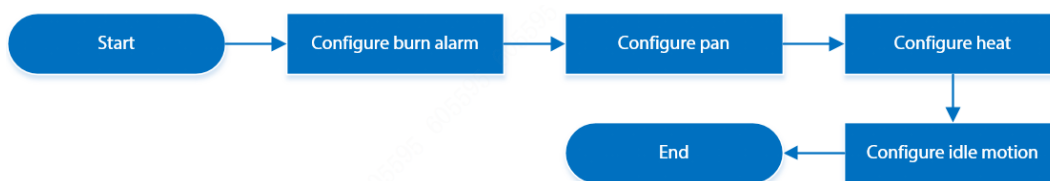
This function should be used with PTZ pan, and the coverage area is the area that the thermal channel covers.

5.8.1 Note

- Install the Camera (with looking down) on a high point to avoid obstruction in the scanning range and direct sunlight. Ensure that there is no interference in device rotation and pitching. The recommended installation height is 10-40 m.
- We recommend angle steel tower for tower mount. Install the Camera on the top of the tower to avoid the obstruction from the tower. When installing on the side, the iron tower/wall will cause a detection blind area, which is not conducive to heat detection.
- The Camera should be installed horizontally to avoid the slope of the base, to ensure the accurate calibration function of the heat point. We recommend you use two nuts and spring washers at each hole of the PTZ to make the tower steady, so that the Camera keeps horizontal.
- Make sure that the mounting surface can sustain at least 8 times the weight of the Camera and its mounting structural components. The heavy PTZ (the weight of bare machines is about 40–70 kg) should be installed on the installation plane that can sustain more than 1 T weight.

5.8.2 Configuration Flow

Figure 5-57 Configuration Flow



5.8.3 Configuring Burn Alarm

When the lens aims directly to the sun and will be burnt, an alarm is triggered.

- Step 1 Select  > **Event** > **Exception** > **Burn Alarm**.
- Step 2 Click ☐ to enable the burn alarm function.
- Step 3 (Optional) Click ☐ next to **Anti-disturbance** to reduce false alarm of burn.
- Step 4 Set the sensitivity and energy threshold.

Figure 5-58 Burn alarm

The screenshot shows the 'Burn alarm' configuration window. It includes the following settings:

- Enable:** A toggle switch that is currently turned on (blue).
- Anti-disturbance:** A toggle switch that is currently turned off (grey).
- Sensitivity:** A slider control ranging from - to + 40, with the current value set around 20.
- Energy Threshold:** A slider control ranging from - to + 80, with the current value set around 40.
- +Event Linkage:** A button to add linkage actions.
- Snapshot:** A section with a status 'Enabled' and a trash icon.
- Channel:** Two buttons labeled '1' and '2', with button '2' selected.
- Alarm-out Port:** A section with a status 'Enabled' and a trash icon.
- Alarm Channel:** Two buttons labeled '1' and '2', with button '1' selected.
- Post-alarm:** A text input field containing '10' and the unit 'sec (3-300)'.
- Buttons:** 'Apply' (blue), 'Refresh' (grey), and 'Default' (grey) buttons at the bottom.

- Step 5 Set alarm linkage actions. For details, see "5.1.1.2 Alarm Linkage".
- Step 6 Click **Apply**.

5.8.4 Configuring Pan

With pan enabled, the Camera can realize continuous 360° horizontal rotations at a certain speed.

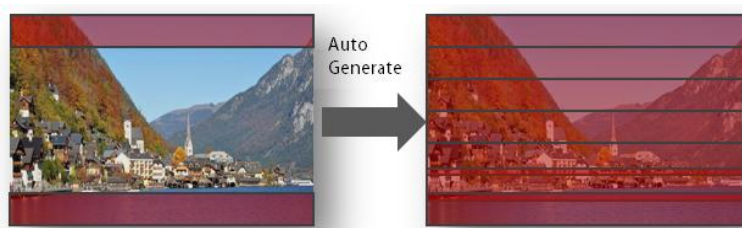
- The interval between pan circles should not be lower than the default value. High PTZ speed might cause missing alarm (see the table below for PTZ speed and time). The coverage area is area that the thermal channel covers. The recommended speeds offer reference for heat detection only; for smoke detection, make sure that the picture is not blurred during pan.

Table 5-11 PTZ speed and time

Device	PTZ speed	Time
Hybrid speed dome camera, mobile hybrid PTZ camera, multi-spectral PTZ camera	20	3'45"
	30 (recommended)	2'30"
	40	1'52"
Heavy PTZ camera	8	4'
	10 (recommended)	2'25"
	12	1'40"

- If you do not set limits, the PTZ can continuously pan 360°. We recommend you use 360° horizontal scanning for the forest fire prevention project. Multiple 360° pan circles can be set to cover the area to be detected.
- Set the left and right limits, and the PTZ pans between the limits.
- Set the scanning area, the PTZ does progressive scanning in the configured area.

Figure 5-59 Auto adding



Step 1 Select  > **PTZ** > **Pan**.

Step 2 Click the direction button to adjust the Camera angle.

Step 3 Select the scan mode.

- Horizontal scanning
 1. Select **Horizontal Scanning**.
 2. Click **Add** to add a circle on the current angle.
 3. Configure the parameters as the instructions on the page.
 4. Set the left and right limits for the single circle.

When there are towers or walls that do not need to be scanned, you can set left and right limits for scanning.

a. Click **Single**

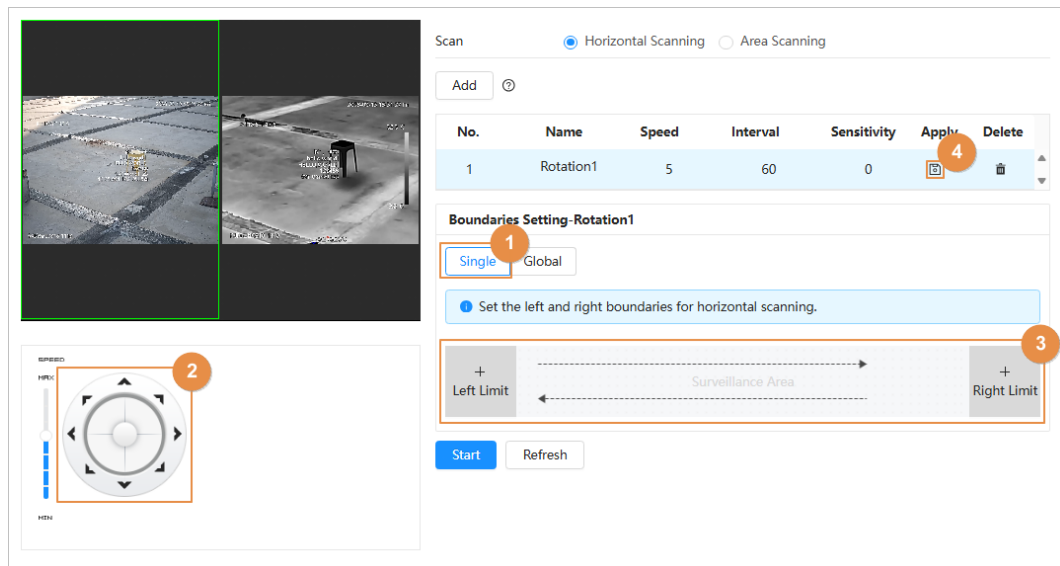
b. Set left/right limits

◇ Operate the PTZ control panel to rotate the Camera to a left border that you want and then click **Left Limit**.

◇ Operate the PTZ control panel to rotate the Camera to a right border that you want and then click **Right Limit**.

c. Click .

Figure 5-60 Single setting



5. Set the global limit

The pan enabling global limit will use the same left and right limits.

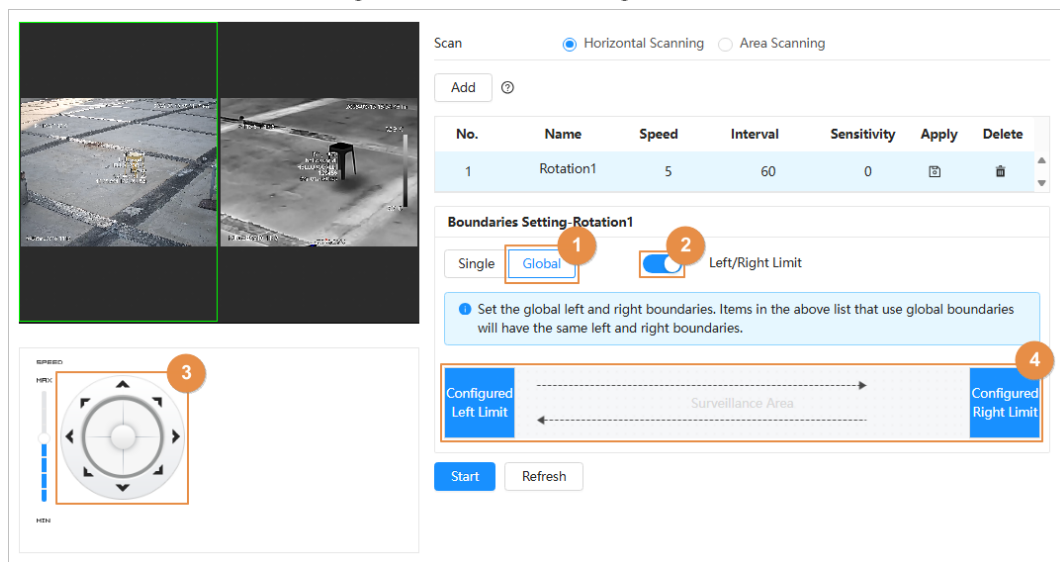
a. Click **Global**

b. Click ☐ next to **Global**.

c. Set left/right limits.

- ◇ Operate the PTZ control panel to rotate the Camera to a left border that you want and then click **Left Limit**.
- ◇ Operate the PTZ control panel to rotate the Camera to a right border that you want and then click **Right Limit**.

Figure 5-61 Global setting



• Area scanning

When you want the Camera to scan the specified area, you can set the area scanning.

1. Select **Area Scanning**.

2. Click the direction button to rotate the Camera lens to the upper limit, and then click **Top Left Boundary**.

3. Click the direction button to rotate the Camera lens to the lower limit, and then click **Bottom Right Boundary**.

- Step 4** Select the configured pan path, and then click **Start**.
Click **Stop** to stop the pan.

5.8.5 Configuring Heat

When the Camera detects a heat point, an alarm is triggered and then the Camera performs linkage actions. Heat mode includes preset and space excluded area.

- Step 1** On the main page, select **AI > Smart Thermal > Heat > Heat**.
Step 2 Select **2** in **Channel**.
Step 3 Select the heat mode, and configure the rule. **Space Excluded Area** is recommended.

Figure 5-62 Heat

Heat Mode ☐ Preset ☒ Space Exclusion Area ☐

Enable ☒ ☐

Mode ☒ Anti-disturbance ☐ High Response ☐

Distance Mode ☐ Short Distance ☒ Long Distance

Heat Point Wait Mode ☒ Auto ☐ Manual ☐

Stay Time sec

Sensitivity

Target Filter ☐ Visible Engineering Truck Filter ☐ Moving Target Filtering ☐ Reflection Filter

No.	Area	Operation
1	Region 1	⊙

Anti-dither sec(0-100)

Time Plan

+Event Linkage

Record ☒ Enabled

Channel

Post-Record sec (10-300)

Alarm-out Port ☒ Enabled

Post-alarm sec (2-300)

- **Space Excluded Area:** Detects heat point during the PTZ rotation. This is recommended.
 1. Select **Space Excluded Area** in **Heat Mode**.
 2. Select the **Enable** checkbox.
 3. Set the parameters.
 - ◇ **Mode:** When you select **Anti-disturbance**, the Camera detects the suspected heat point several times. The detection accuracy is higher, but the detection speed is lower. When you select **High Response**, and the Camera detects heat point quickly, but the detection accuracy is lower.
 - ◇ **Heat Point Wait Mode:** When you select **Auto** and set the stay time to be 25 s, the PTZ stops working when a heat alarm is triggered, and will recover the

operations after the alarm duration (25 s). When you select **Manual**, the PTZ stops working when a heat alarm is triggered, and will not recover the operations after the alarm duration.

- ◇ **Second Check After:** Only one alarm is triggered by the same alarm source in the configured duration.
- ◇ **Sensitivity:** The sensitivity of heat detection. The larger the value is, the higher the sensitivity is. We recommended 75–90. We recommend you track and test the value for a period, and adjust it according to the actual situation.



Heat point warning mode (**Anti-disturbance** or **High Response**) is available for all detection areas.

4. (Optional) Filter targets.

When you select **Anti-disturbance** in **Mode**, you can filter targets as needed.

- ◇ **Visible Engineering Truck Filter:** When engineering vehicles are working, the temperatures of chimney and engine are high, which might cause false alarms. Selecting checkbox can reduce false alarms caused by engineering vehicles and improve detection accuracy. This function is mainly used in scenes with good lighting conditions in the daytime.
- ◇ **Thermal Engineering Truck Filter:** When engineering vehicles are working, the temperatures of chimney and engine are high, which might cause false alarms. Selecting checkbox can reduce false alarms caused by engineering vehicles and improve detection accuracy. This function is mainly used in scenes with poor lighting conditions at night.
- ◇ **Reflection Filter:** The temperature of reflection caused by the smooth planes (such as glass or mirrors) is high, which might cause false alarms. Selecting the checkbox can reduce false alarms and improve detection accuracy.
- ◇ **Moving Target Filtering:** When the displacement of the target exceeds a certain distance, the system considers it as a moving target. When the temperature of the moving target exceeds the configured threshold, an alarm will be triggered. Selecting the checkbox can reduce false alarms caused by such targets and improve detection accuracy.

5. Set the shield area, and its sensitivity.

Manually configure shield areas to filter fixed false alarm sources, such as the chimney in residential area, family stove and other areas. In addition, high engine temperature might also cause false alarm in the areas where vehicles pass, such as roads, parking lots, gas stations, and these false alarms can also be filtered by setting shield areas. You can select default mode or compatibility mode for shield area, and both modes can take effect at the same time.



- ◇ Click **Add** to add shield areas, and you can add 255 areas at most.
- ◇ Click **Delete** to delete the shield area.

- **Preset:** Detects heat points on the preset.

1. Select **Preset** in **Heat Mode**.
2. Select the configured preset.

The Camera lens rotates to the select preset.

3. Select the **Enable** checkbox.
4. Select the heat point warning mode as needed.

When you select **Anti-disturbance**, the Camera detects the suspected heat point several times. The detection accuracy is higher, but the detection speed is lower.

When you select **High Response**, and the Camera detects heat point quickly, but the detection accuracy is lower.



Heat point warning mode is available for all detection areas. If you want the PTZ to detect heat point during the rotation, select **Anti-jamming**.

5. Select a color block in , set the area name and sensitivity, and then drag the mouse on the image.
 - ◇ The higher the sensitivity is, the easier a heat alarm will be triggered.
 - ◇ The whole image is the detection area by default. You can draw multiple detection areas.

Step 4 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 5 Click **Apply**.

To view alarm information on the alarm subscription tab, you need to subscribe relevant alarm event. For details, see "4.5.2 Subscribing Alarm Information".

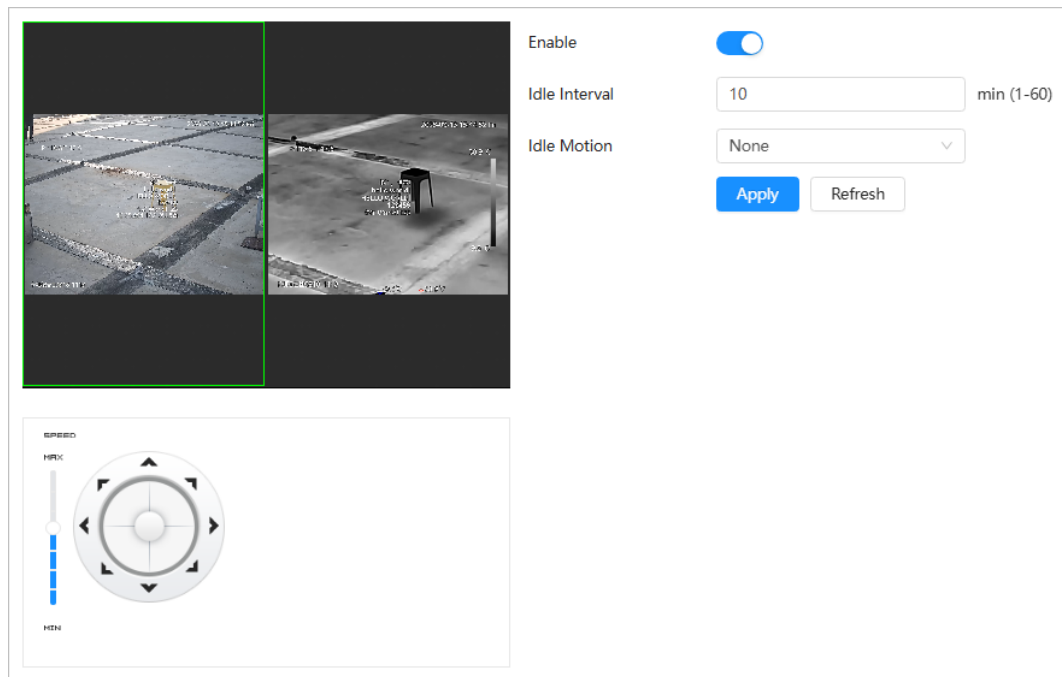
5.8.6 Configuring Idle Motion

Idle motion means that the PTZ camera implements the operation which is configured in advance when it does not receive any valid command within the set time.

You have configured preset, tour, scan and pattern before configuring idle motion.

Step 1 Select  > **PTZ** > **Idle Motion**.

Figure 5-63 Idle motion



Step 2 Configure idle motion.

- 1) Click .
- 2) Select an idle motion and configured idle time.
- 3) Click **Apply**.

5.9 Configuring PIP

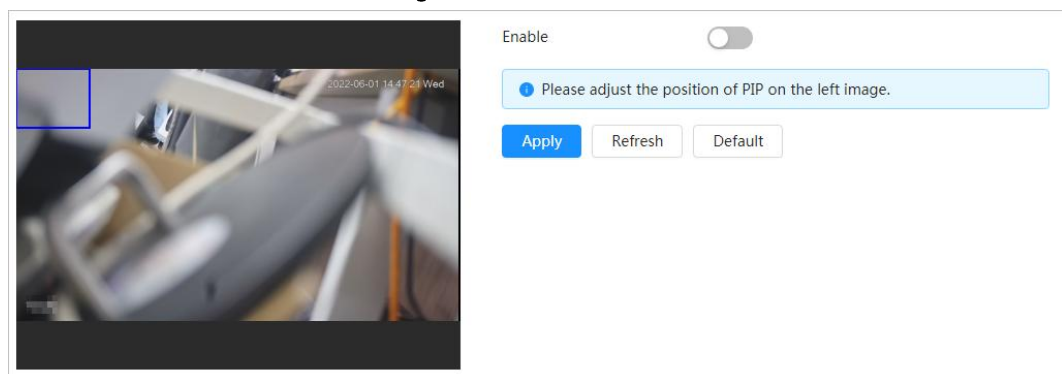
Overlay the thermal image on the visible image.

Step 1 On the main page, select **AI > AI Config > Smart Thermal**.

Step 2 Click **Edit** in **PIP**.

Step 3 Click  to enable the function.

Figure 5-64 PIP



Step 4 Click the blue box on the image, and drag it to the proper position. You can drag any corner of the box to adjust the size.

Step 5 Click **Apply**.

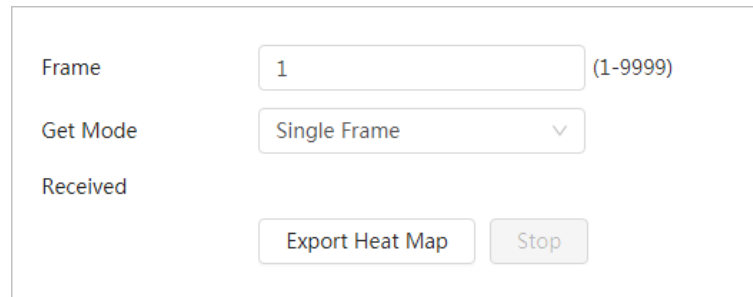
5.10 Configuring Thermal Map Acquisition

Grasp grayscale value of every pixel on thermal images, and you can export the heat map.

Step 1 On the main page, select **AI > AI Config > Smart Thermal**.

Step 2 Click **Edit** in **Thermal Map Acquisition**.

Figure 5-65 Thermal map acquisition



The screenshot shows a configuration window for thermal map acquisition. It contains three input fields: 'Frame' with the value '1' and a range '(1-9999)', 'Get Mode' with a dropdown menu set to 'Single Frame', and 'Received' which is currently empty. Below these fields are two buttons: 'Export Heat Map' and 'Stop'.

Step 3 Configure the parameters.

- **Frame:** The frame of the thermal map that you can acquire.
- **Get Mode**
 - ◇ Single Frame: Acquires thermal map by single frame. There is interval between the previous frame and next frame.
 - ◇ Continuous: Acquires thermal map by continuous frame. There is no interval between the previous frame and next frame.

Step 4 Click **Export Heat Map**.

Thermal map files will be saved under the path that you have configured. For details, see "8.1 Configuring Local Parameters".

6 Record

This section introduces the functions and operations of video playback.

6.1 Playback

6.1.1 Playing Back Video

This section introduces the operation of video playback.

Prerequisites

- This function is available on the Camera with SD card.
- Before playing back video, configure record time range, record storage method, record schedule and record control. For details, see "6.2 Setting Record Control", "6.3 Setting Record Plan", and "6.4 Setting Storage".

Procedure

Step 1 Select **Record** > **Search Video**.

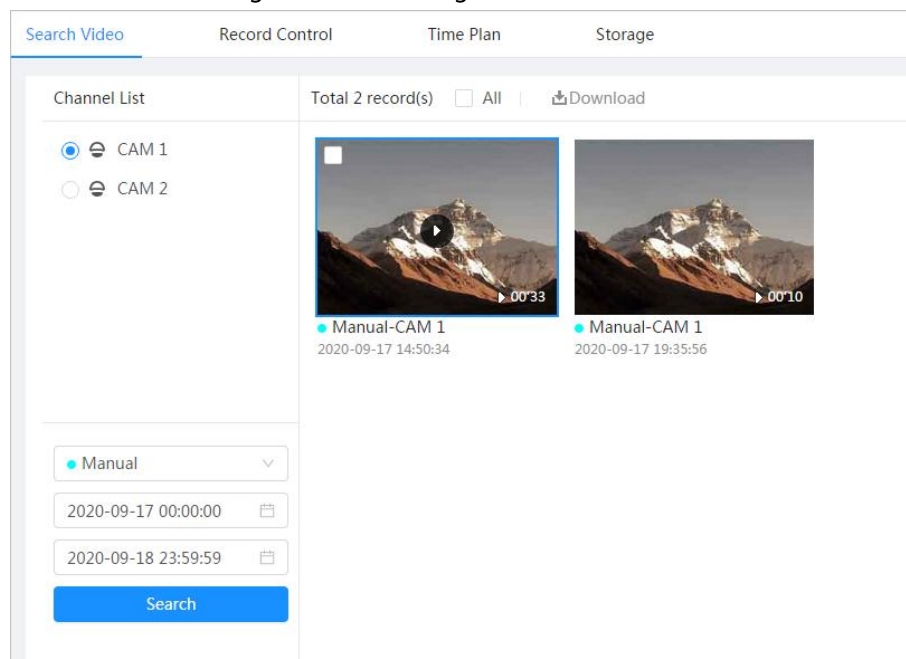
Step 2 Select the channel, the record type, and record time, and then click **Search**.

- Click **All**, and select the record type from the drop-down list, you can select from **All**, **General**, **Event**, **Alarm**, and **Manual**.

When selecting **Event** as the record type, you can select the specific event types, such as **Motion Detection**, **Video Tamper** and **Scene Changing**.

- The dates with blue dots indicate there are videos recorded on those days.

Figure 6-1 Searching for videos



Step 3 Point to the searched video, and then click  to play back the selected video. The video playback page is displayed.

Figure 6-2 Video playback

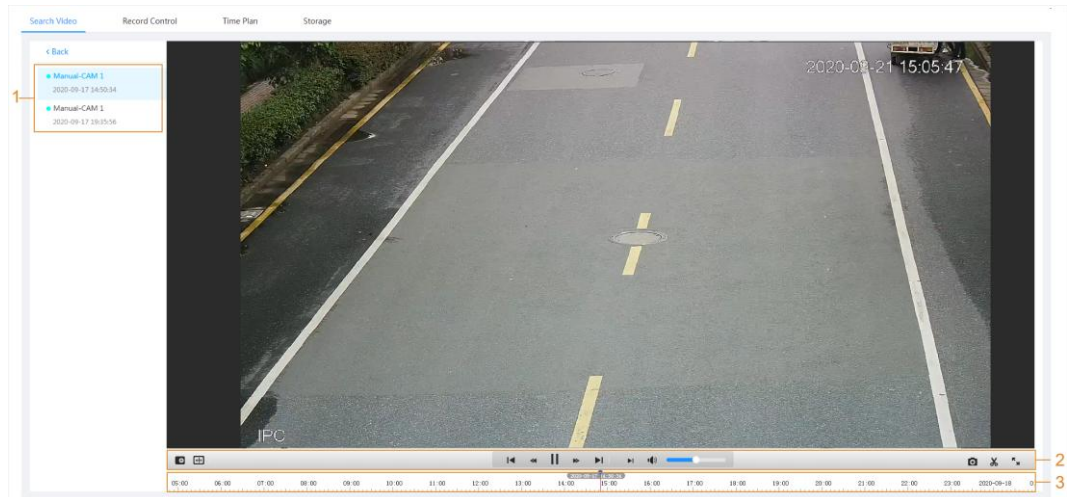


Table 6-1 Description of video playback page

No	Function	Description
1	Recorded video list	Displays all searched recorded video files. Click any files to play back it. Click Back at the upper-left corner to go to the Search Video page.
2	Digital Zoom	You can zoom video image of the selected area through two operations. - Click the icon, and then select an area in the video image to zoom in; right-click on the image to resume the original size. In zoom in state, drag the image to check other area. - Click the icon, and then scroll the mouse wheel in the video image to zoom in or out.
	AI Rule	Click , and then select Enable to display AI rules and detection box; select Disable to stop the display. It is enabled by default.  AI rules is valid only when you enabled the rule during recording.
	Play control bar	Controls playback. : Click the icon to play back the previous recorded video in the recorded video list. : Click the icon to slow down the playback. : Click the icon to stop playing back recorded videos. The icon changes to , click the icon to play back recorded videos. : Click the icon to speed up the playback. : Click the icon to play back the next recorded video in the recorded video list. : Click the icon to play the next frame.

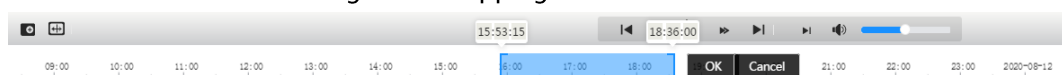
No	Function	Description
	Sound	Controls the sound during playback. 🔇: Mute mode. 🔊: Vocal state. You can adjust the sound.
	Snapshot	Click 📷 to capture one picture of the current image, and it will be saved to the configured storage path. 📖 About viewing or configuring storage path, see "8.2 Configuring Camera Parameters".
	Video clip	Click 📏, and clip a certain recorded video and save it. For details, see "6.1.2 Clipping Video".
	Full Screen	Click 🖥️, and the image is displayed in full-screen mode; double-click the image or press Esc button to exit full-screen mode.
3	Progress bar	Displays the record type and the corresponding period. - Click any point in the colored area, and the system will play back the recorded video from the selected moment. - Each record type has its own color, and you can see their relations in Record Type bar

6.1.2 Clipping Video

Step 1 Click 📏.

Step 2 Drag the clipping box on the progress bar to select the start time and end time of the target video

Figure 6-3 Clipping a video



Step 3 Click **OK** to download the video.

Step 4 Select the download format and storage path.

Figure 6-4 Downloading a video

Download Video

No.	Type	Start Time	End Time	Duration
1	Video Clip	2020-08-11 18:49:30	2020-08-11 21:32:15	02:42:45

Download

☒ dav

☐ mp4

Format

Storage Path

C:\Users\45363\WebDownload\VideoClips

Browse...

Start Download

Step 5 Click **Start Download**.

The playback stops and the clipped file is saved in the configured storage path. For details of storage path, see "8.2 Configuring Camera Parameters".

6.1.3 Downloading Video

Download videos to a defined path. You can download a single video, or download them in batches.



- Playback and downloading at the same time is not supported.
- Operations might vary with different browsers.
- For details of viewing or setting storage path, see "8.2 Configuring Camera Parameters".

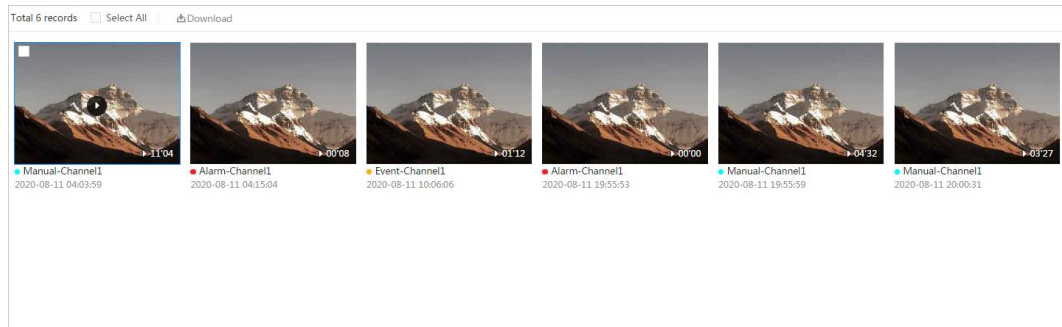
Step 1 Select **Record** > **Search Video**.

Step 2 Select the channel, the record type, and record time, and then click **Search**.

Step 3 Select the videos to be downloaded.

- Select ☐ at the upper-right corner of each video file to select one or multiple videos.
- Select ☐ next to **Select All** to select all searched videos.

Figure 6-5 Searching for video files



Step 4 Click **Download**.

Step 5 Select the download format and storage path.

Figure 6-6 Downloading a video

Download Video

No.	Type	Start Time	End Time	Duration	Size
1	Manual	2020-08-11 04:03:59	2020-08-11 04:15:03	00:11:04	277.8M
2	Event	2020-08-11 04:15:04	2020-08-11 04:15:12	00:00:08	0.6M
3	Event	2020-08-11 10:06:06	2020-08-11 10:07:18	00:01:12	4.6M
4	Event	2020-08-11 19:55:53	2020-08-11 19:55:53	00:00:00	0M
5	Manual	2020-08-11 19:55:59	2020-08-11 20:00:31	00:04:32	102M
6	Manual	2020-08-11 20:00:31	2020-08-11 20:03:58	00:03:27	86.6M

Size471.8M

Download

☒ dav

☐ mp4

Format

Storage Path

C:\Users\45363\WebDownload\PlaybackRecord

Browse...

Start Download

Step 6 Click **Start Download**.

The downloaded files are saved in the configured storage path. For details of storage path, see "8.2 Configuring Camera Parameters".

6.2 Setting Record Control

Set parameters such as pack duration, pre-event record, disk full, record mode, and record stream.

Step 1 Click **Record** in the main page, and then click the **Record Control** tab.

Figure 6-7 Record control

The screenshot shows a configuration panel for record control. It contains the following elements:

- Max Duration:** A text input field with the value '1' and a unit label 'min (1-120)'.
- Channel:** A dropdown menu with the value '1' and a downward arrow.
- Pre-Record:** A text input field with the value '5' and a unit label 'sec (0-5)'.
- Record Mode:** Three radio buttons labeled 'Auto', 'Manual' (which is selected), and 'Off'.
- Record Stream:** A dropdown menu with the value 'Main Stream' and a downward arrow.
- Buttons:** Three buttons at the bottom: 'Apply' (blue), 'Refresh' (light gray), and 'Default' (light gray).

Step 2 Set parameters.

Table 6-2 Description of record control parameters

Parameter	Description
Max Duration	The time for packing each video file.
Pre-Record	The time to record the video in advance of a triggered alarm event. For example, if the pre-event record is set to be 5 s, the system saves the recorded video 5 s before the alarm is triggered.  When an alarm or motion detection links recording, and the recording is not enabled, the system saves the video data within the pre-event record time to the video file.
Record Mode	When you select Manual , the system starts recording; when you select Auto , the system starts recording in the configured time period of record plan.
Record Stream	Select record stream, including Main Stream and Sub Stream .

Step 3 Click **Apply**.

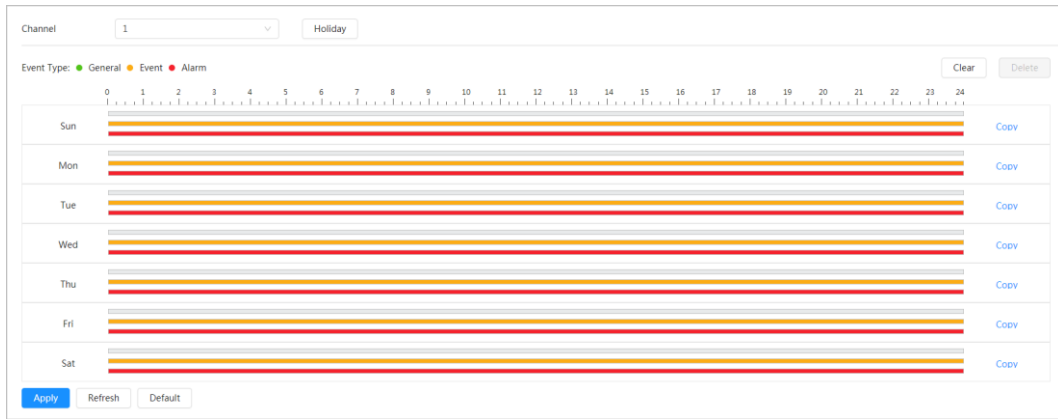
6.3 Setting Record Plan

After the corresponding alarm type (**Normal**, **Motion**, and **Alarm**) is enabled, the record channel links recording.

Set certain days as holiday, and when the **Record** is selected in the holiday schedule, the system records video as holiday schedule defined.

Step 1 Click **Record** on the main page, and then click the **Time Plan** tab.

Figure 6-8 Time plan



Step 2 Set record plan.

Green represents normal record plan (such as timing recording); yellow represents motion record plan (such as recording triggered by intelligent events); red represents alarm record plan (such as recording triggered by alarm-in). Select a record type, such as **Normal**, and directly press and drag the left mouse button to set the time period for normal record on the timeline.

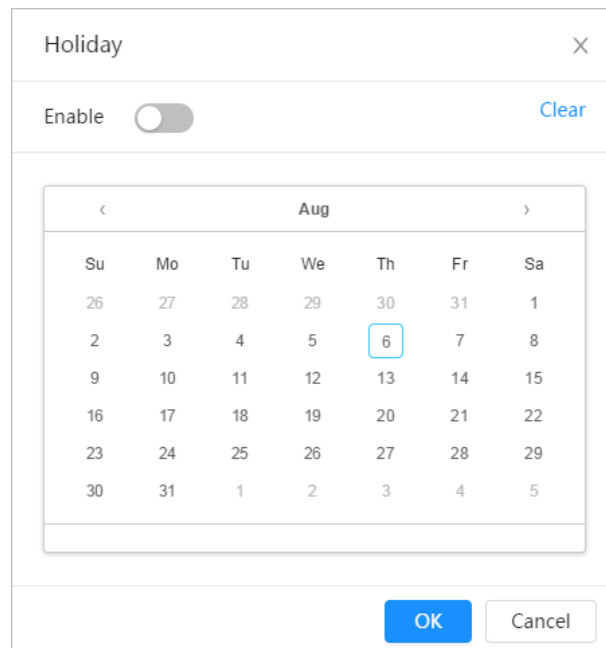


- Click **Copy** next to a day, and select the days that you want to copy to in the prompt page, you can copy the configuration to the selected days. Select the **Select All** check box to select all day to copy the configuration.
- You can set 6 time periods per day.

Step 3 Click **Apply**.

Step 4 Click **Holiday** to set holidays.

Figure 6-9 Time plan



- Step 5** Click ☐ to enable the holiday configuration, and select the days that you need to set as holiday
- Click **Clear** to cancel the selection.



When holiday schedule setting is not the same as the general setting, holiday schedule setting is prior to the general setting. For example, with holiday schedule enabled, if the day is holiday, the system snapshots or records as holiday schedule setting; otherwise, the system snapshots or records as general setting.

Step 6 Click **OK**.

6.4 Setting Storage

This section introduces the configuration of the storage method for the recorded videos.

Step 1 Select **Record** > **Storage**.

Figure 6-10 Storage

Event Type ☒ Scheduled ☒ Motion ☒ Alarm

Disk Full ☒ Overwrite ☐ Stop

Storage Method Local Storage

Apply Refresh Default

Step 2 Select the storage method that you need for different types of recorded videos.

Table 6-3 Description of storage parameters

Parameter	Description
Event Type	Select from Scheduled , Motion Detection and Alarm .
Disk Full	Recording strategy when the disk is full. • Overwrite: Cyclically overwrite the earliest video when the disk is full. • Stop: Stop recording when the disk is full.
Storage Method	Select from Local storage and Network storage • Local storage: Save the recorded videos in the internal SD card.  Local storage is displayed only on models that support SD card. • Network storage: Save the recorded videos in the FTP server or NAS.

Step 3 Configure network storage parameters. Do this step when selecting **Network storage** in **Storage Method**.

- FTP

Figure 6-11 FTP

Event Type ☒ Scheduled ☒ Motion ☒ Alarm

Disk Full ☒ Overwrite ☐ Stop

Storage Method

Enable ☒

FTP may be at risk. Continue?

Server IP

Port (0~65535)

Username

Password

Storage Path

Directory Structure

Level 1 Directory

Level 2 Directory

Level 3 Directory

Urgently store to local ☐

Table 6-4 Description of FTP parameters

Parameter	Description
Server IP	The IP address of the FTP server.
Port	The port number of the FTP server.
Username	The username to log in to the FTP server.
Password	The password to log in to the FTP server.
Storage Path	The destination path in the FTP server.
Directory Structure	Set the directory structure, and you can select Use Level 1 Directory , Use Level 2 Directory , and Use Level 3 Directory
Level 1 Directory	Set the Level 1 directory name, and you can select from Device name , Device IP , and Custom . When you select Custom , please enter the custom directory.
Level 2 Directory	Set the Level 2 directory name, and you can select from File Type , Date , File Type_Channel Number , and Custom . When you select Custom , please enter the custom directory.
Level 3 Directory	
Urgently store to local	Click ☐ , and when the FTP server does not work, all the files are saved to the internal SD card.

- NAS

Figure 6-12 NAS

The screenshot shows a configuration window for Network Attached Storage (NAS). It includes the following fields and controls:

- Event Type:** Three checked checkboxes for 'Scheduled', 'Motion', and 'Alarm'.
- Disk Full:** Two radio buttons, 'Overwrite' (selected) and 'Stop'.
- Storage Method:** A dropdown menu currently showing 'Network Storage'.
- NAS:** A dropdown menu currently showing 'NAS'.
- Protocol Type:** A dropdown menu currently showing 'SMB'.
- Enable:** A toggle switch currently in the 'off' position.
- Server IP:** A text input field containing '0.0.0.0'.
- Storage Path:** An empty text input field.
- Username:** A text input field containing 'anonymity'.
- Password:** A password input field with masked characters (dots).
- Buttons:** 'Apply' (highlighted in blue), 'Refresh', and 'Default'.

Table 6-5 Description of NAS parameters

Parameter	Description
Server IP	The IP address of the NAS server.
Storage Path	The destination path in the NAS server.
Username	When selecting SMB protocol, you are required to enter username and password. Enter them as needed.
Password	

Step 4 Click **Apply**.

7 Picture

This section introduces the related functions and operations of picture playback.

7.1 Playback

7.1.1 Playing Back Picture

This section introduces the operation of picture playback.

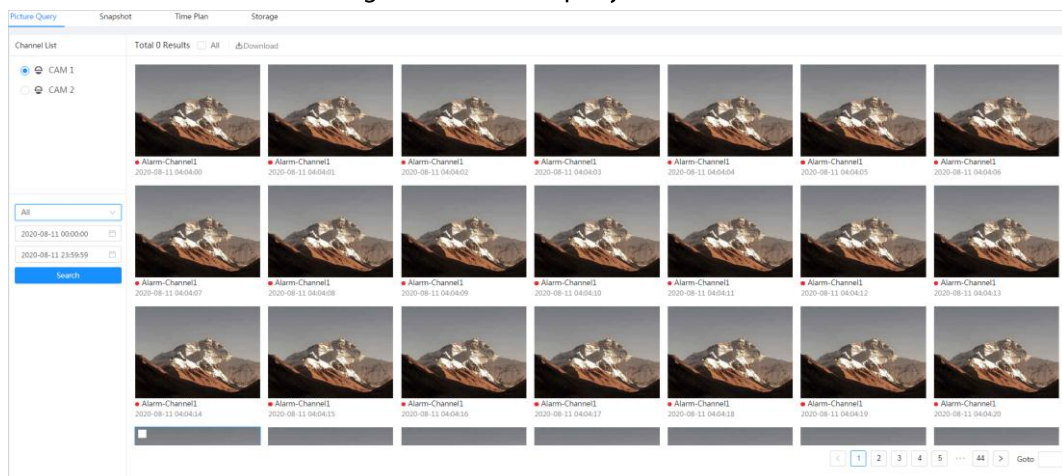
Prerequisites

- This function is available on the Camera with SD card.
- Before playing back picture, configure snapshot time range, snapshot storage method, snapshot plan. For details, see "7.3 Setting Snapshot Plan".

Procedure

- Step 1** On the main page, select **Picture** > **Picture Query**.
- Step 2** Select the channel, the snapshot type, and snapshot time, and then click **Search**.
- Click **All**, and select the record type from the drop-down list, you can select from **All**, **General**, **Event**, and **Alarm**.
When selecting **Event** as the snapshot type, you can select the specific event types, such as **Motion Detection**, **Video Tamper** and **Scene Changing**.
 - The dates with blue dots indicate there are snapshots on those days.

Figure 7-1 Picture query



- Step 3** Point to the searched picture, and then click  to play back the selected picture. The picture playback page is displayed.

Figure 7-2 Picture playback

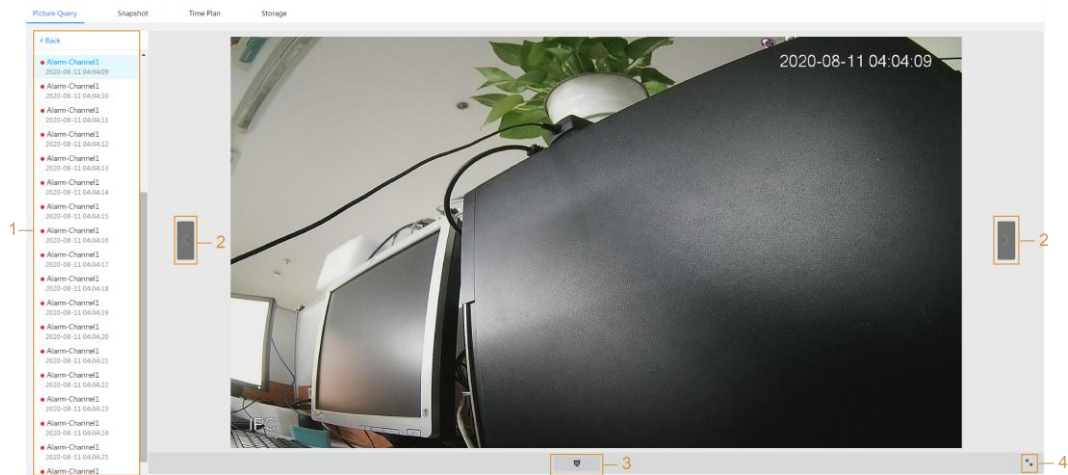


Table 7-1 Description of playback page

No	Function	Description
1	Snapshot list	Displays all searched snapshots. Click any files to play back it. Click Back at the upper-left corner to go to the Picture Query page.
2	Manual display	- Click  to display the previous snapshot in the snapshot list. - Click  to display the next snapshot in the snapshot list.
3	Slide show	Click  to display the snapshots list one by one in slide show mode.
4	Full screen	Click  , and the snapshot is displayed in full-screen mode; double-click the image or press Esc button to exit full-screen mode.

7.1.2 Downloading Picture

Download pictures to a defined path. You can download a single picture, or download them in batches.



- Operations might vary with different browsers.
- For details of viewing or setting storage path, see "8.2 Configuring Camera Parameters".

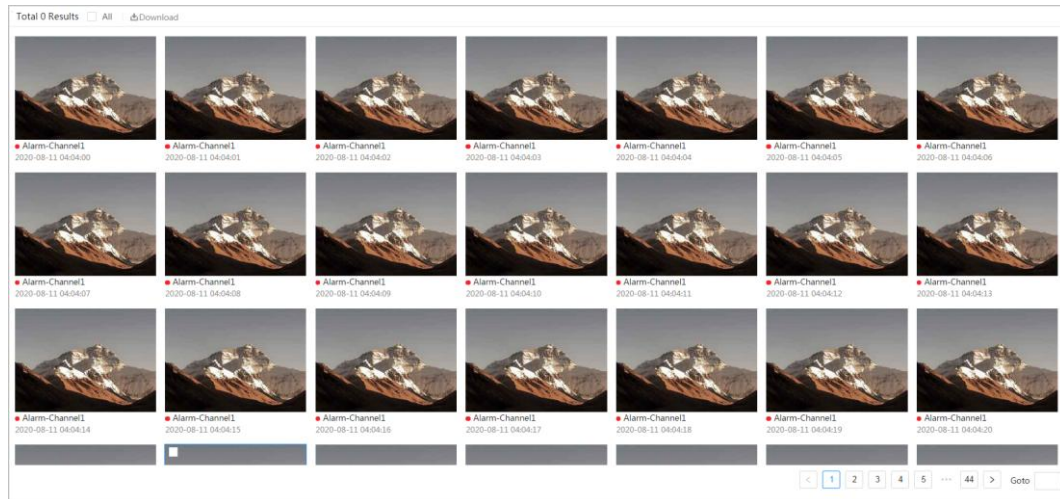
Step 1 On the main page, select **Picture** > **Picture Query**.

Step 2 Select the channel, the snapshot type, and snapshot time, and then click **Search**.

Step 3 Select the pictures to be downloaded.

- Select ☐ at the upper-right corner of each picture file to select one or multiple pictures.
- Select ☐ next to **All** to select all searched pictures.

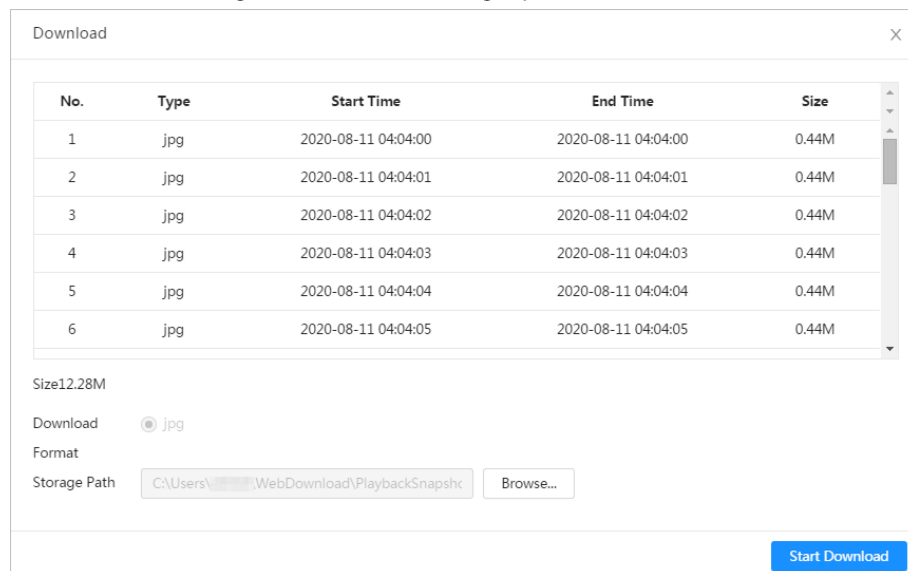
Figure 7-3 Selecting picture files



Step 4 Click **Download**.

Step 5 Select the download format and storage path.

Figure 7-4 Downloading a picture



Step 6 Click **Start Download**.

The downloaded pictures are saved in the configured storage path. For details of storage path, see "8.2 Configuring Camera Parameters".

7.2 Setting Snapshot Parameters

Set the snapshot parameters, including type, size, quality and Interval.

Step 1 On the main page, select **Picture** > **Snapshot**.

Step 2 Select the channel and set the parameters.

Figure 7-5 Snapshot

The screenshot shows a configuration window for snapshots. It includes the following elements:

- Channel:** A dropdown menu with '1' selected.
- Type:** A dropdown menu with 'General' selected.
- Size:** A text field displaying '2336x1752 (2336*1752)'.
- Quality:** A horizontal slider with markers from 1 to 6. The slider is currently positioned at 5.
- Interval:** A dropdown menu with '1 sec' selected.
- Buttons:** Three buttons at the bottom: 'Apply' (highlighted in blue), 'Refresh', and 'Default'.

Table 7-2 Description of snapshot parameters

Parameter	Description
Type	You can select from Scheduled and Event. • Scheduled: Capture images in configured period. For details, see "7.3 Setting Snapshot Plan". • Event: Capture images when configured event is triggered, such as Motion Detection, Video Tamper and Scene Changing.  Make sure that you have enable the corresponding event detection and the snapshot function.
Size	It is same with the resolution of the main stream.
Quality	Set the quality of the snapshot. The higher the value, the better the quality.
Interval	Set the frequency of snapshot. You can select Custom to set the frequency as needed.

Step 3 Click **Apply**.

7.3 Setting Snapshot Plan

According to the configured snapshot plan, the system enables or disables snapshot at corresponding time. For detailed operation, see "6.3 Setting Record Plan".

7.4 Setting Storage

Set the storage method for the snapshot. For detailed operation, see "6.4 Setting Storage".

7.5 Setting Auto Upload

After enabling the auto upload function, the Camera can send the images to the third-party clients

through HTTP when an event is triggered.

Step 1 On the main page, select **Picture > Auto Upload**.

Step 2 Click ☐ to enable the auto upload function.

Step 3 Click **Add** to add the information of the server which you will upload the image to.



You can add two servers at most.

Step 4 Configure the server parameters.

Figure 7-6 Auto upload

No.	IP/Domain Name	Port	HTTPS	Path	Authentication	Event Type	Test	Delete
1	Example: 172.168.1.108	Example: 80	☐	Example: /example/		None	Test	

Table 7-3 Description of server parameters

Parameter	Description
IP/Domain Name	The IP address and port of the server which you will upload the image to.
Port	
HTTPS	Click ☐ to enable the HTTPS transmission.
Path	The URL in HTTP protocol.
Authentication	Click , the Modify page is displayed. Click ☐ , and then enter the server username and password to complete authentication. Basic and digest are supported.
Event Type	Select the event type of auto upload from the box. You can select multiple events.
Test	Click Test to check whether the network between the Camera and the configured server works properly.

Step 5 Click **Apply**.

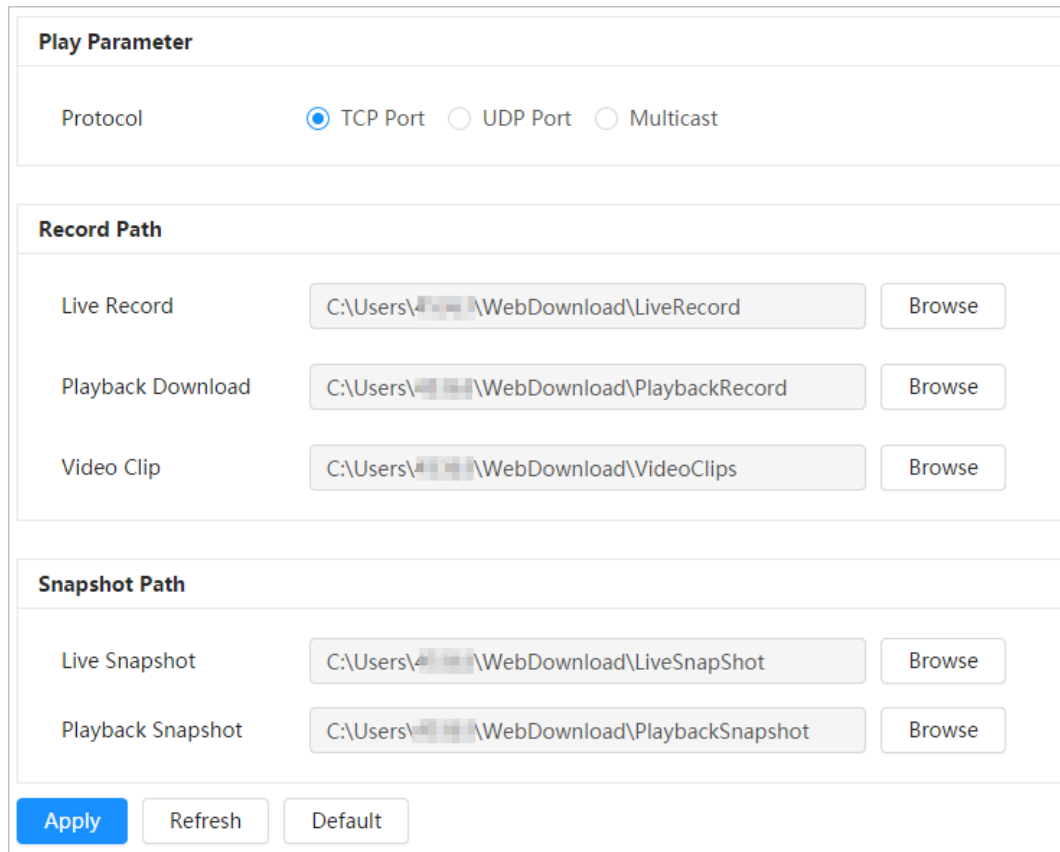
8 Settings

8.1 Configuring Local Parameters

You can select protocol and configure the storage path for live snapshot, live record, playback snapshot, playback download, and video clips.

Step 1 Select  > **Local**.

Figure 8-1 Local



Play Parameter

Protocol ☒ TCP Port ☐ UDP Port ☐ Multicast

Record Path

Live Record C:\Users\...WebDownload\LiveRecord Browse

Playback Download C:\Users\...WebDownload\PlaybackRecord Browse

Video Clip C:\Users\...WebDownload\VideoClips Browse

Snapshot Path

Live Snapshot C:\Users\...WebDownload\LiveSnapShot Browse

Playback Snapshot C:\Users\...WebDownload\PlaybackSnapshot Browse

Apply Refresh Default

Step 2 Click **Browse** to select the storage path for live snapshot, live record, playback snapshot, playback download, and video clips.

Table 8-1 Description of local parameter

Parameter	Description	
Protocol	You can select the network transmission protocol as needed, and the options are TCP , UDP and Multicast .  Before selecting Multicast , make sure that you have set the Multicast parameters.	
Live Record	The recorded video of live page. The default path is C:\Users\admin\WebDownload\LiveRecord.	 Admin in the path refers to the account being used.
Playback Download	The downloaded video of playback page. The default path is C:\Users\admin\WebDownload\PlaybackRecord.	

Parameter	Description	
Video Clips	The clipped video of playback page. C:\Users\admin\WebDownload\VideoClips.	
Live Snapshot	The snapshot of live page. The default path is C:\Users\admin\WebDownload\LiveSnapshot.	
Playback Snapshot	The snapshot of playback page. The default path is C:\Users\admin\WebDownload\PlaybackSnapshot.	

Step 3 Click **Save**.

8.2 Configuring Camera Parameters

This section introduces the Camera setting, including image parameters, encoder parameters, and audio parameters.

You can go to the Camera page through two ways.

- Log in to the main page, and click **Camera**.
- Log in to the web page, click , and then select **Camera**.



Camera parameters of different devices might vary.

8.2.1 Configuring Image Parameters

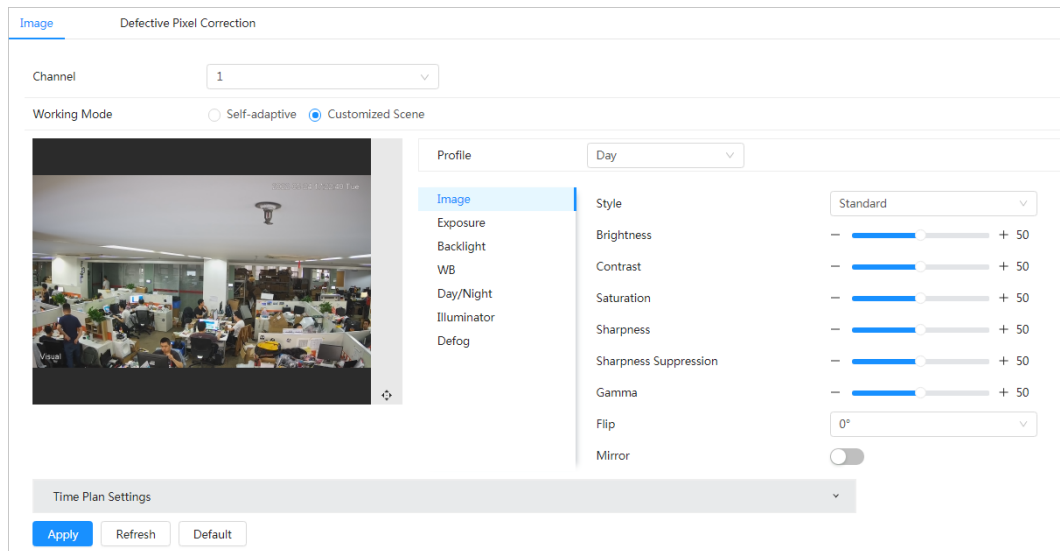
Configure the parameters such as image, exposure, backlight, and WB.

8.2.1.1 Configuring Visible Channel

Configure camera parameters of visible channel to improve the scene clarity, and ensure that surveillance goes properly. Adjust the image parameters to ensure proper surveillance.

Select  > **Camera** > **Image** > **Image**, and then select **1** in **Channel**. Select the working mode (self-adaptive or customized scene) and profile (day, night, or general)).

Figure 8-2 Image-visible



8.2.1.1.1 Configuring Working Mode

Select the working mode as needed, including self-adaptive mode and customized scene mode.

Step 1 Select  > **Camera** > **Image** > **Image**

Step 2 Select the working mode.

- Self-adaptive: The Camera will adjust the image according to the environment. If you select **Self-adaptive**, skip to **Step5**.
- Customized scene: You can select the profile as needed. Select the profile in **Time Plan Setting** and drag the slide block to set certain time as the selected profile. For example, set 8:00–18:00 as day, and 0:00–8:00 and 18:00–24:00 as night. If you select **Customized Scene**, do **Step3–Step5**.

Step 3 Select the profile.

You can select the profile from **General**, **Day**, and **Night**.

Step 4 Configure the time plan.

You can configure the time plan for each day of a month.

Figure 8-3 Time plan setting



1) Click **Time Plan Setting** or .

2) Click the profile type, such as **General**, and the drag the mouse on the time bar to set

the period to use general profile. For **Day** and **night**, the operations are the same.



Day profile is set by default, click **Delete** or **Clear**, and then configure the time plan as needed.

3) (Optional) Click **Copy**, select months, and then click **Apply**.

The configured time plan is copied to the selected months.

Step 5 Click **Apply**.

8.2.1.1.2 Configuring Image Parameters

You can configure image parameters as needed, including brightness, contrast, saturation, sharpness, sharpness suppression gamma, flip, and mirror.

Step 1 Select  > **Camera** > **Image** > **Image**.

Step 2 Configure image parameters.

Figure 8-4 Image

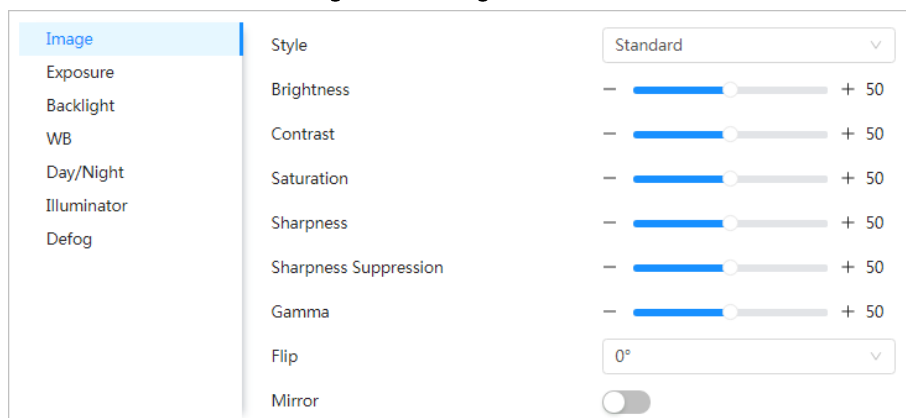


Table 8-2 Description of picture parameters

Parameter	Description
Style	Select the picture style from soft, standard and vivid. • Soft: Default image style, displays the actual color of the image. • Standard: The hue of the image is weaker than the actual one, and contrast is smaller. • Vivid: The image is more vivid than the actual one.
Brightness	Changes the value to adjust the image brightness. The higher the value is, the brighter the image will be, and the smaller the darker. The image might be hazy if the value is configured too big.
Contrast	Changes the contrast of the image. The higher the value is, the more the contrast will be between bright and dark areas, and the smaller the less. If the value is set too big, the dark area would be too dark and bright area easier to get overexposed. The image might be hazy if the value is set too small.
Saturation	Makes the color deeper or lighter. The higher the value is, the deeper the color will be, and the lower the lighter. Saturation value does not change image brightness.

Parameter	Description
Sharpness	Changes the sharpness of image edges. The higher the value is, the clearer the image edges will be, and if the value is set too big, image noises are more likely to appear.
Sharpness Suppression	The bigger the value, the stronger the sharpness suppression.
Gamma	Changes the image brightness and improves the image dynamic range in a non-linear way. The higher the value is, the brighter the image will be, and the smaller the darker.
Flip	Changes the display direction of the picture, see the options below. • 0°: Normal display. • 90°: The picture rotates 90° clockwise. • 180°: The picture flips upside down. • 270°: The picture rotates 90° counterclockwise.  For some models, please set the resolution to be 1080p or lower when using 90° and 180°. For details, see "8.2.3 Configuring Encode".
Mirror	Click  , and the image will display with left and right side reversed.

Step 3 Click **Apply**.

8.2.1.1.3 Configuring Exposure Parameters

Configure iris and shutter to improve image clarity.



Cameras with true WDR do not support long exposure when WDR is enabled in **Backlight**.

Step 1 Select  > **Camera** > **Image** > **Exposure**.

Step 2 Configure exposure parameters.

Figure 8-5 Exposure

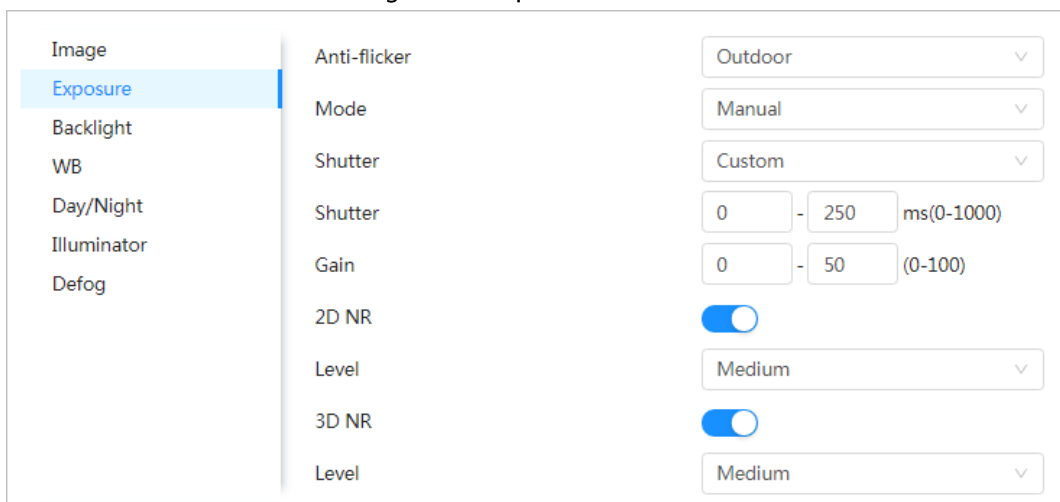


Image	Anti-flicker	Outdoor
Exposure	Mode	Manual
Backlight	Shutter	Custom
WB	Shutter	0 - 250 ms(0-1000)
Day/Night	Gain	0 - 50 (0-100)
Illuminator	2D NR	☒
Defog	Level	Medium
	3D NR	☒
	Level	Medium

Table 8-3 Description of exposure parameters

Parameter	Description
Anti-flicker	You can select from 50 Hz, 60 Hz and Outdoor. • 50 Hz: When the electric supply is 50 Hz, the system adjusts the exposure according to ambient light automatically to ensure that there is no stripe appears. • 60 Hz: When the electric supply is 60 Hz, the system adjusts the exposure according to ambient light automatically to ensure that there is no stripe appears. • Outdoor: You can select any exposure mode as needed.
Mode	Device exposure modes. • Auto: Adjusts the image brightness according to the actual condition automatically. • Gain Priority: When the exposure range is normal, the system prefers the configured gain range when auto adjusting according to the ambient lighting condition. If the image brightness is not enough and the gain has reached upper or lower limit, the system adjusts shutter value automatically to ensure the image at ideal brightness. You can configure gain range to adjust gain level when using gain priority mode. • Shutter priority: When the exposure range is normal, the system prefers the configured shutter range when auto adjusting according to the ambient lighting condition. If the image brightness is not enough and the shutter value has reached upper or lower limit, the system adjusts gain value automatically to ensure the image at ideal brightness. • Manual: Configure gain and shutter value manually to adjust image brightness.  When the Anti-flicker is set to Outdoor, you can select Auto, Gain priority, Shutter priority or Manual in the Mode list.
Shutter	When selecting Shutter Priority or Manual in Mode, you can set Shutter. Set the effective exposure time. The smaller the value, the shorter the exposure time will be.
Gain	When selecting Gain Priority or Manual in Mode, you can set Gain. With minimum illumination, the Camera increases Gain automatically to get clearer images.
Auto Iris	This configuration is available only when the Camera is equipped with auto-iris lens. • When auto iris is enabled, the iris size changes automatically according to the ambient lighting condition, and the image brightness changes accordingly. • When auto iris is disabled, the iris stays at full size and does not change no matter how ambient lighting condition changes.

Parameter	Description
3D NR	Works with multi-frame (no less than 2 frames) images and reduces noise by using the frame information between previous and latter frames.
Level	This configuration is available only when the 3D NR is enabled. The higher the level is, the better the result will be.

Step 3 Click **Apply**.

8.2.1.1.4 Configuring Backlight Parameters

You can select backlight mode from Off, BLC, WDR, and HLS.

Step 1 Select  > **Camera** > **Image** > **Backlight**.

Step 2 Configure backlight parameters.

Figure 8-6 Backlight

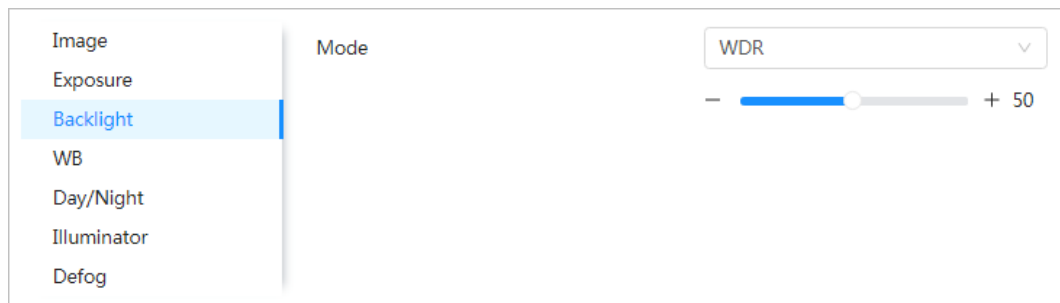


Table 8-4 Description of backlight parameters

Backlight mode	Description
BLC	Enable BLC, the Camera can get clearer image of the dark areas on the target when shooting against light. You can enable or disable Customized mode. - When you enable Customized mode, the system auto adjusts exposure only to the set area according to ambient lighting condition to ensure the image of the set area at ideal brightness. - When you disable Default mode, the system adjusts exposure according to ambient lighting condition automatically to ensure the clarity of the darkest area.
WDR	The system dims bright areas and compensates dark areas to ensure the clarity of all the area. The higher the value is, the brighter the dark will be, but the more the noise will be.  There might be a few seconds of video loss when the device is switching to WDR mode from other mode.
HLC	Enable HLC when extreme strong light is in the environment (such as toll station or parking lot), the Camera will dim strong light, and reduce the size of Halo zone to lower the brightness of the whole image, so that the Camera can capture human face or car plate detail clearly. The higher the value is, the more obvious the HLC effect will be.

Step 3 Click **Apply**.

8.2.1.1.5 Configuring White Balance Parameters

WB function makes the image color display precisely as it is. When in WB mode, white objects would always display white color in different environments.

Step 1 Select  > **Camera** > **Image** > **WB**.

Step 2 Configure WB parameters.

Figure 8-7 WB

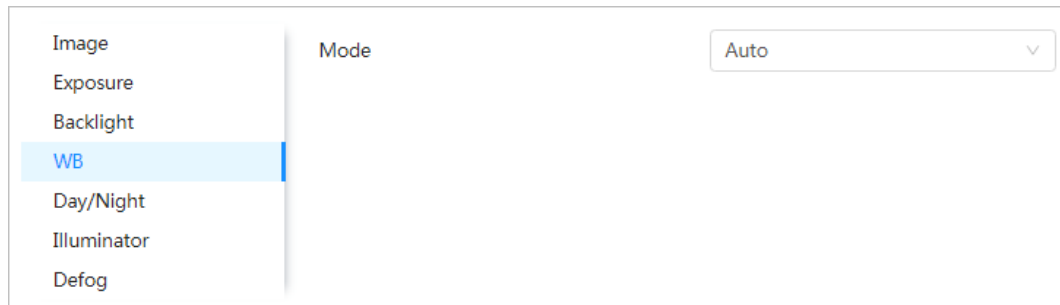


Table 8-5 Description of WB parameters

WB mode	Description
Auto	The system compensates WB according to color temperature to ensure color precision.
Natural	The system auto compensates WB to environments without artificial light to ensure color precision.
Street Lamp	The system compensates WB to outdoor night scene to ensure color precision.
Indoor	The system auto compensates WB to indoor environments to ensure color precision.
ATW	The system auto compensates WB when the Camera is tracking targets.
Outdoor	The system auto compensates WB to most outdoor environments with natural or artificial light to ensure color precision.
Manual	Configure red and blue gain manually; the system auto compensates WB according to color temperature.

Step 3 Click **Apply**.

8.2.1.1.6 Configuring Day/Night Parameters

Configure the display mode of the image. The system switches between color and black-and-white mode according to the actual condition.

Step 1 Select  > **Camera** > **Image** > **WB**.

Step 2 Configure day and night parameters.

Figure 8-8 Day/Night

Table 8-6 Description of day and night parameters

Parameter	Description
Type	Select the type from Electronic and ICR. • ICR: Switch day and night through a light filter. • Electronic: Switch day and night through the image processing methods.
Mode	You can select device display mode from Color, Auto, and B/W. Day/Night configuration is independent from profile management configuration. • Color: The system displays color image. • Auto: The system switches between color and black-and-white display according to the actual condition. • B/W: The system displays black-and-white image.
Sensitivity	This configuration is available only when you set Auto in Mode. You can configure camera sensitivity when switching between color and black-and-white mode.
Delay	This configuration is available only when you set Auto in Mode. You can configure the delay when camera switching between color and black-and-white mode. The lower the value is, the faster the Camera switches between color and black-and-white mode.

Step 3 Click **Apply**.

8.2.1.1.7 Configuring Illuminator Parameters

This configuration is available only when the device is equipped with illuminator.

Step 1 Select > **Camera** > **Image** > **Illuminator**.

Step 2 Configure illuminator parameters.

Figure 8-9 illuminator

Table 8-7 Description of illuminator parameters

Parameter	Description	
Mode	Manual	Adjust the brightness of illuminator manually, and then the system will supply illuminator to the image accordingly.
	Auto	The system adjusts the illuminator intensity according to the ambient lighting condition.
Light Type	Select the light type.  When the warning light is white light, the warning light configuration shall prevail.	

Step 3 Click **Apply**.

8.2.1.1.8 Configuring Defog Parameters

The image quality is compromised in foggy or hazy environment, and defog can be used to improve image clarity.

Step 1 Select  > **Camera** > **Image** > **Defog**.

Step 2 Configure defog parameters.

Figure 8-10 Defog

Table 8-8 Description of defog parameters

Defog	Description
Manual	Configure function intensity manually, and then the system adjusts image clarity accordingly. Set the intensity higher when the image is not clear.
Auto	The system adjusts image clarity according to the actual condition.
Off	Defog function is disabled.

Step 3 Click **Apply**.

8.2.1.2 Configuring Thermal Channel

Configure a specific scenario where you use the Camera, including indoor scenario, outdoor scenario, and adaptive scenario. You can choose a scenario you need, and configure and check the scenario.

Step 1 Select  > **Camera** > **Image** > **Image**.

Step 2 Select **2** in **Channel**.

Step 3 Select the working mode.

- Self-adaptive: The Camera will adjust the image according to the environment. If you select **Self-adaptive**, skip to Step 5.
- Customized scene: You can select the profile as needed. Select the profile in **Time Plan Setting** and drag the slide block to set certain time as the selected profile. For example, set 8:00–18:00 as day, and 0:00–8:00 and 18:00–24:00 as night. If you select **Customized Scene**, do Step 3–Step 5.

Step 4 Select the scene type, profile and colorization.



The image is for reference only, and might differ from the actual page.

Figure 8-11 Image (thermal)

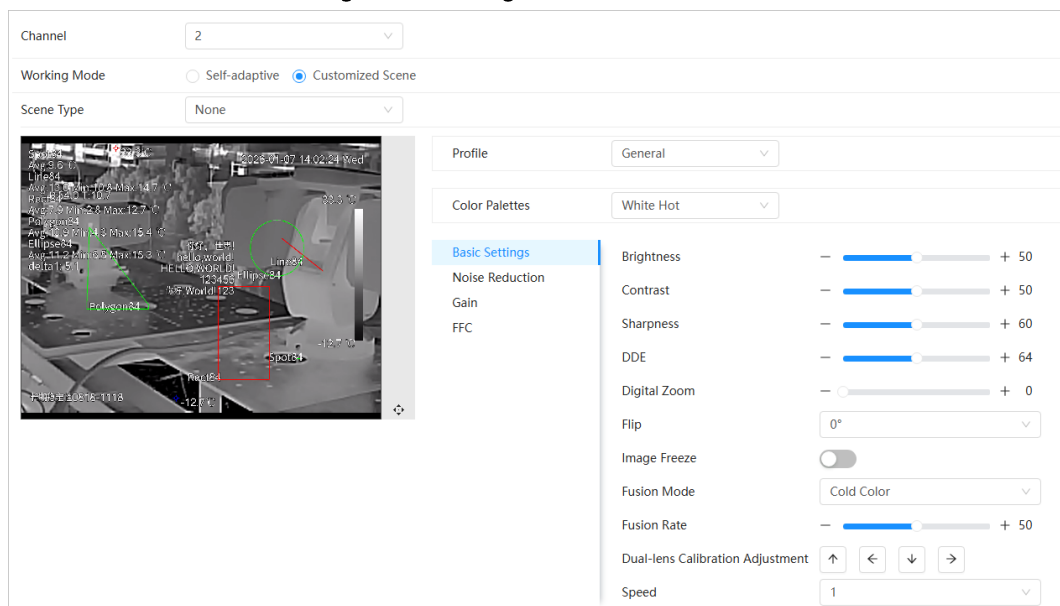


Table 8-9 Description of the parameters

Parameter	Description
Scene Type	Select the duplicate frame and set the frequently used video parameter as the user-defined scene. Or, you can select the default scene and set the display of the thermal image. • Low Dynamic: Thermal images will be displayed based on the configuration of low dynamic scene. • High Dynamic: Thermal images will be displayed based on the configuration of high dynamic scene. • Auto: Thermal images will be displayed based on the configuration of auto scene • None: Do not set the scene.
Profile	Normal, Day and Night can be selected.

Parameter	Description
Color Palettes	Add color to the thermal image and use color to indicate the temperature. "White Hot" is the default color. • White hot: Lighter when the temperature is higher in gray image. • Black hot: Lighter when the temperature is lower in gray image. • Fusion: Color is concentrated on the range of purple- red-yellow. More purple when the temperature is lower and more yellow when the temperature is higher. • Rainbow: Color is concentrated on the range of blue- green-red-yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. • Golden Autumn: Color is concentrated on the range of red- yellow. Redder when the temperature is lower and more yellow when the temperature is higher. • Midday: Color is concentrated on the range of blue- green-red-yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. • Iron Red: Its color range is similar to that of Midday, but its brightness is lower than Midday. • Amber: It's mainly represented as brown. Brighter when the temperature is higher. • Jade: Color is concentrated on the range of purple - red- yellow-green- blue. More purple when the temperature is lower and bluer when the temperature is higher. • Sunset: Color is concentrated on the range of blue- red- yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. • Icefire: In color image, high temperature objects show red and low temperature objects show blue. Ice and fire is usually used to give a warning. • Painting: Color is concentrated on the range of purple-blue-green- yellow-red. More purple when the temperature is lower and redder when the temperature is higher. • Pomegranate: It's mainly represented as wine red. Brighter when the temperature is higher. • Emerald: It's mainly represented as aquamarine. Brighter when the temperature is higher. • Spring: Color is concentrated on the range of rose red- yellow. Red when the temperature is lower and yellow when the temperature is higher. • Summer: Color is concentrated on the range of green- yellow. Green when the temperature is lower and yellow when the temperature is higher. • Autumn: Color is concentrated on the range of orange- yellow. Orange when the temperature is lower and yellow when the temperature is higher. • Winter: Color is concentrated on the range of blue- yellow. Blue when the temperature is lower and yellow when the temperature is higher.

Step 5 (Optional) Configure the advanced parameters.

When the scene cannot meet the scene requirements, configure the advanced parameters manually.

Table 8-10 Advanced parameter description

Classification	Parameter	Description
Basic Settings	Brightness	Change the overall image brightness. The bigger the value is, the brighter the image will be.
	Contrast	Changes the contrast of the image. The higher the value is, the more the contrast will be between bright and dark areas. If the value is set too big, the dark area would be too dark and bright area easier to get overexposed. The image might be hazy if the value is set too small.
	Sharpness	Change the sharpness of image edges. The larger the value, the more obvious the image edge. Do not make the value too large to prevent image noise.
	DDE	Makes the details of the image clear. The bigger the value is, the clearer the details will be.
	Digital Zoom	Enlarges the thermal image according to the zoom time that you have configured.
	Mirror	Open the mirror image and the monitor image will reverse from left to right.
	Flip	Changes the display direction of the picture, see the options below. • 0°: Normal display. • 90°: The picture rotates 90° clockwise. • 180°: The picture flips upside down. • 270°: The picture rotates 90° counterclockwise.  For some models, please set the resolution to be 1080p or lower when using 90° and 180°. For details, see "8.2.3 Configuring Encode".

Classification	Parameter	Description
	Fusion Mode	Displays the image with the gray scale information of the visible channel, and marks temperatures with color palettes, which makes the image of the thermal channel clearer. • Original: Displays the image of the thermal channel. • Warm Color: Combines the data of the visible channel and the thermal channel, and displays the image in warm color. • Cold Color: Combines the data of the visible channel and the thermal channel, and displays the image in cold color. • Fusion Rate: It ranges from 0 to 100. The larger the value, the larger the proportion of the visible channel. • Dual-lens Calibration Adjustment: You can adjust the misaligned images through direction keys. • Speed: The moving speed of the lens when adjusting the image.  • To get a better fusion effect, keep the distance 3 m between the Camera and the targets. • Only some selected models support selecting mode.
Noise Reduction	Smart Enhancement	After enabling this function, you can get a clearer image.
	2D NR	Compares one frame to the next and removes any oddity that does not appear in each frame. The larger the value is, the fuzzier the image will be.
	Basic 3D NR	Removes the grainy fuzzy appearances of

Classification	Parameter	Description
	Advanced 3D NR	low light images, will handle moving objects without leaving tails behind, and in low light, it makes an image clearer and sharper. • Basic 3D NR: The module handles noise reduction. • Advanced 3D NR: The back-end program handles noise reduction.  Generally, you can select 2D NR and Basic 3D NR. If the image is not clear, select Advanced 3D NR, and configure the parameters.
Gain	Auto Gain	The larger the gain value, the more unstable the image.
Do FFC		Click Do FFC to trigger the shutter correcting for this time.

Step 6 Click **Apply**.

8.2.2 Correcting Defective Pixels

When there are a few defective pixels to be corrected, you can correct them manually.

Step 1 Select  > **Camera** > **Image** > **Defective Pixel Correction**.

Step 2 Click  to enable the function.

Step 3 Select the calibration mode. Generally, you can select **Picture**, and for the image with defective pixels that appears occasionally, select **Video**.

Step 4 Click  on the right side of the image.

Step 5 Click a defective pixel in the image, and  is displayed near the defective pixel.

Step 6 Roll the mouse wheel to zoom in the image.

Step 7 Click the defective pixel again, and  overlaps the defective pixel.

Step 8 Click **Calibration Confirmed**.

Step 9 Click **Setting**.

Step 10 Click **Save**.



To correct multiple defective pixels at the same time, calibrate one defective pixel, repeat Step1–Step8, and then do Step9–Step10.

8.2.3 Configuring Encode

8.2.3.1 Configuring Encode Parameter

Configure video stream parameters, such as compression, resolution, frame rate, bit rate type, bit rate, I frame interval, SVC, and watermark.

Step 1 Select  > **Camera** > **Encode** > **Encode**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.



The monocular camera does not support channel selection.

Step 3 Configure encode parameters.

Figure 8-12 Encode

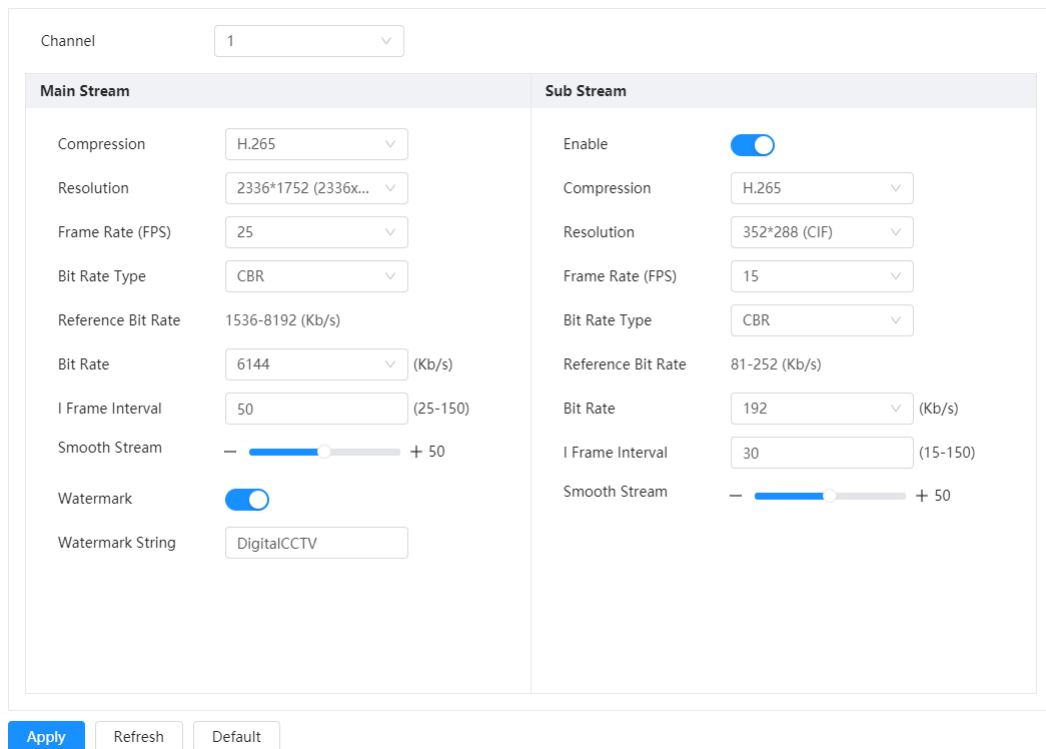


Table 8-11 Description of encode parameters

Parameter	Description
Sub Stream	Click  to enable sub stream, it is enabled by default.  You can enable multiple sub streams simultaneously.
Compression	Select encode mode. • H.264: Main profile encode mode. Compared with H.264B, it requires smaller bandwidth. • H.264H: High profile encode mode. Compared with H.264, it requires smaller bandwidth. • H.264B: Baseline profile encode mode. It requires smaller bandwidth. • H.265: Main profile encode mode. Compared with H.264, it requires smaller bandwidth. • MJPEG: When under this mode, the image requires high bit rate value to ensure clarity, you are recommended to set the Bit Rate value to the biggest value in the Reference Bit Rate.

Parameter	Description
Resolution	The resolution of the video. The higher the value is, the clearer the image will be, but the bigger the required bandwidth will be.
Frame Rate (FPS)	The number of frame in one second of video. The higher the value is, the clearer and smoother the video will be.
Bit Rate Type	The bit rate control type during video data transmission. You can select bit rate type from: • CBR (Constant Bit Rate): The bit rate changes a little and keeps close to the defined bit rate value. • VBR (Variable Bit Rate): The bit rate changes as monitoring scene changes.  The Bit Rate Type can only be set as CBR when Encode Mode is set as MJPEG.
Quality	This parameter can be configured only when the Bit Rate Type is set as VBR. The better the quality is, but the bigger the required bandwidth will be.
Reference Bit Rate	The most suitable bit rate value range recommended to user according to the defined resolution and frame rate.
Bit Rate	This parameter can be configured only when the Bit Rate Type is set as CBR. Select bit rate value in the list according to actual condition.
I Frame Interval	The number of P frames between two I frames, and the I Frame Interval range changes as FPS changes. It is recommended to set I Frame Interval twice as big as FPS.
SVC	Scaled video coding, is able to encode a high quality video bit stream that contains one or more subset bit streams. When sending stream, to improve fluency, the system will quit some data of related lays according to the network status. • 1: The default value, which means that there is no layered coding. • 2, 3 and 4: The lay number that the video stream is packed.
Smooth Stream	The larger the smooth stream value is, the larger the I Frame is.
Watermark	You can verify the watermark to check if the video has been tampered.
Watermark String	

Step 4 Click **Apply**.

8.2.3.2 Configuring Overlay

Configure overlay information, and it will be displayed on the **Live** page.

8.2.3.2.1 Configuring Privacy Masking

You can enable this function when you need to protect the privacy of some area on the image.

Step 1 Select  > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.



The monocular camera does not support channel selection.

Step 3 Click the **Privacy Masking** tab.

Step 4 Click  next to **Enable**.

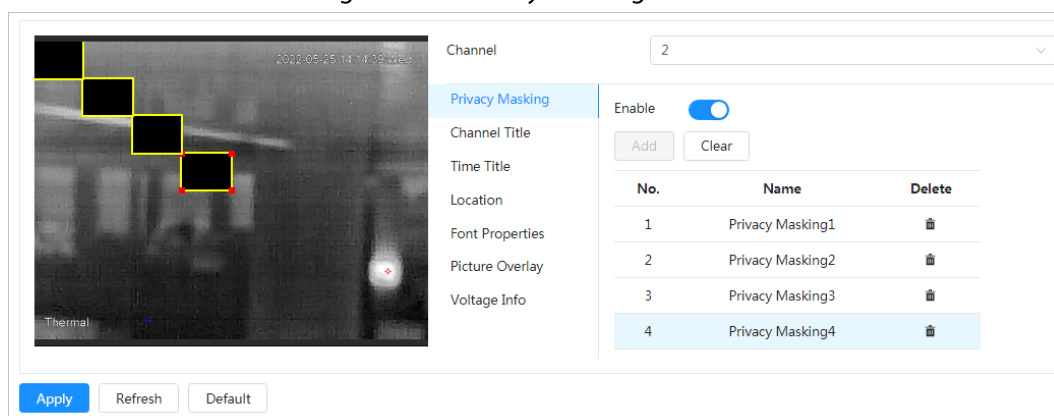
Step 5 Click **Add**, and then drag the block to the area that you need to cover.



- You can draw four blocks at most.
- Click **Clear** to delete all the area boxes; you can also just select one block, and click  to delete it.

Step 6 Adjust the size of the rectangle to protect the privacy.

Figure 8-13 Privacy masking



Step 7 Click **Apply**.

8.2.3.2.2 Configuring Channel Title

You can enable this function when you need to display channel title on the image.

Step 1 Select  > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.



The monocular camera does not support channel selection.

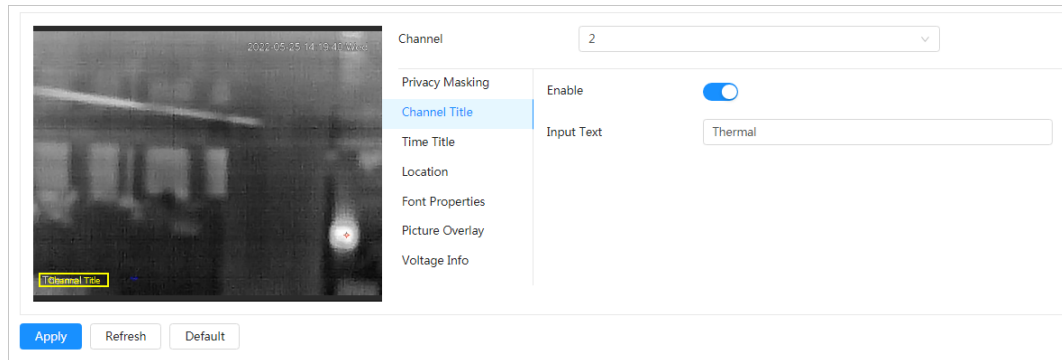
Step 3 Click the **Channel Title** tab.

Step 4 Click  next to **Enable**.

Step 5 Enter the title in **Input Texture**.

Step 6 Move the title box to the position that you want in the image.

Figure 8-14 Channel title



Step 7 Click **Apply**.

8.2.3.2.3 Configuring Time Title

You can enable this function when you need to display time on the image.

Step 1 Select > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.



The monocular camera does not support channel selection.

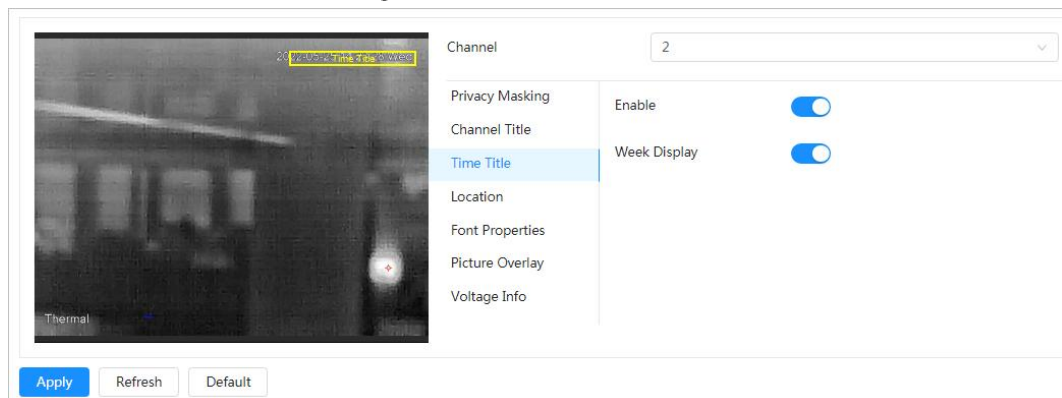
Step 3 Click the **Time Title** tab.

Step 4 Click next to **Enable**.

Step 5 (Optional) Click next to **Week Display**, and then the week information displays on the image.

Step 6 Move the time box to the position that you want in the image.

Figure 8-15 Time title



Step 7 Click **Apply**.

8.2.3.2.4 Configuring OSD Info

You can enable this function if you want to display preset title, temperature, PTZ life warning, coordinates, zoom, north direction, pattern, RS-485, battery information, and other information on the video image.

Step 1 Select > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

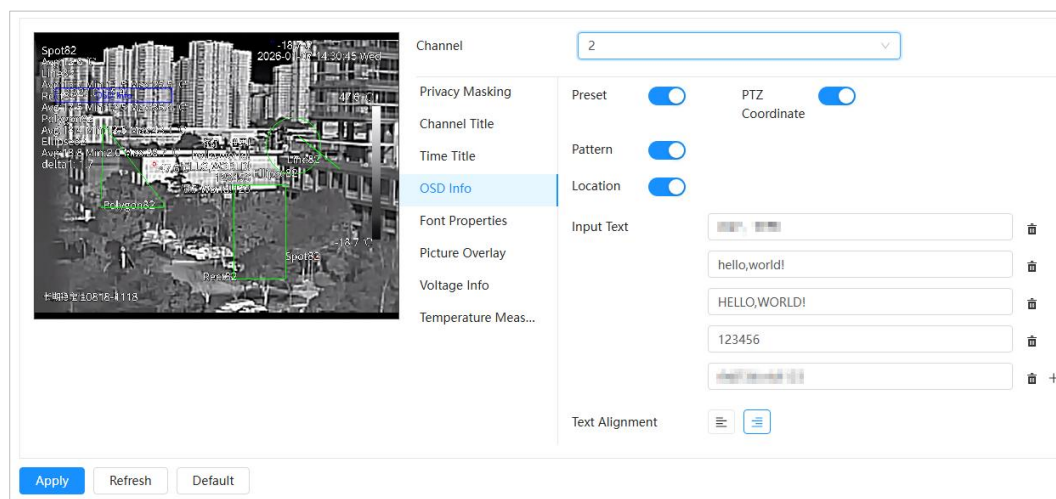
- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.



The monocular camera does not support channel selection.

Step 3 Click **OSD Info**.

Figure 8-16 OSD Info



Step 4 Configure OSD information.

Parameter	Description
Preset	Select the Enable checkbox, and the preset name is displayed on the image when the Camera turns to the preset, and it will disappear 3 s later.
PTZ Coordinate	Select the Enable checkbox, and the PTZ coordinates information is displayed on the image.
Pattern	Select the Enable checkbox, and the pattern information is displayed on the image.
Location	Select the Enable checkbox, and then enter text. The text is displayed on the image.
Input Text	
Text Align	Set the alignment mode of the displayed information on the image.

Step 5 Move the OSD box to the position that you want on the image.

Step 6 Click **Save**.

8.2.3.2.5 Configuring Font Properties

You can enable this function if you need to adjust the font size on the image.

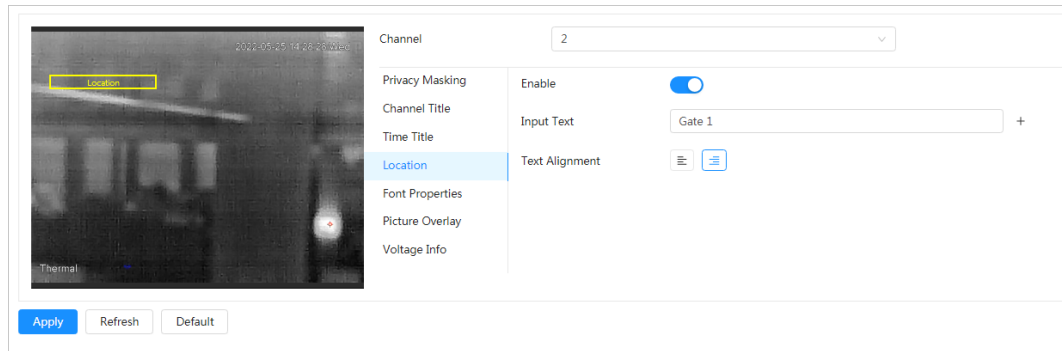
Step 1 Select  > **Camera** > **Encode** > **Overlay**.

Step 2 Click the **Font properties** tab.

Step 3 Select color and size of the font as needed.

You can customize the color.

Figure 8-17 Font properties



Step 4 Click **Apply**.

8.2.3.2.6 Configuring Picture Overlay

You can enable this function if you need to display picture information on the image.



Text overlay and picture overlay cannot work at the same time.

Step 1 Select  > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.



The monocular camera does not support channel selection.

Step 3 Click the **Picture Overlay** tab.

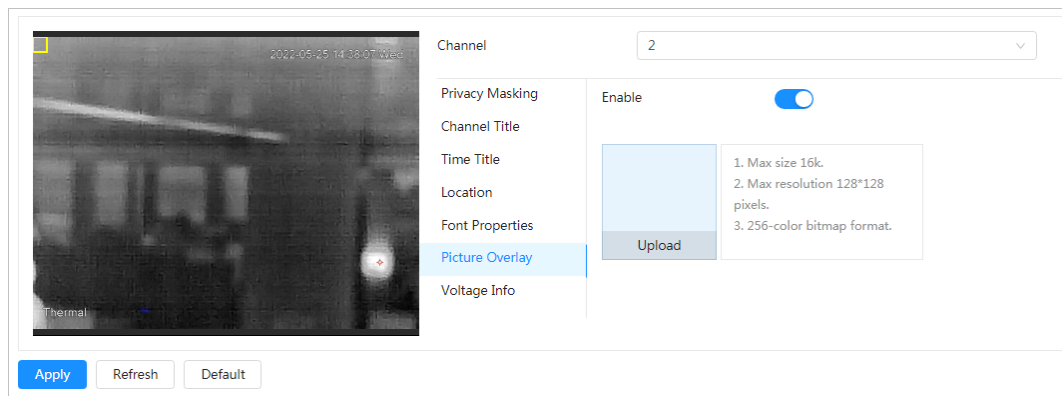
Step 4 Click  next to **Enable**.

Step 5 Click **Upload**, and then select the picture to be overlaid.

The picture is displayed on the video image.

Step 6 Move the overlaid picture to the position that you want in the image.

Figure 8-18 Picture overlay



Step 7 Click **Apply**.

8.2.3.2.7 Configuring Voltage Information

After enabling voltage information, the image displays the voltage information when the voltage is

abnormal.

Step 1 Select  > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.



The monocular camera does not support channel selection.

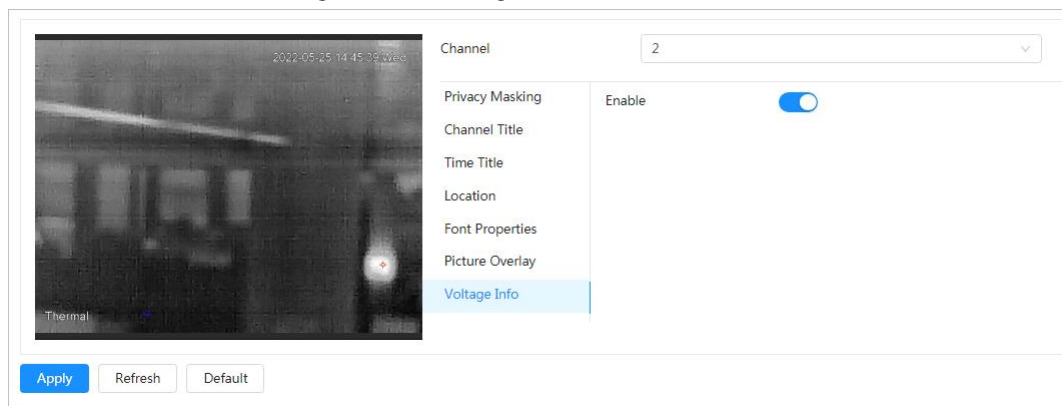
Step 3 Click the **Voltage Info** tab.

Step 4 Click  next to **Enable**.



After enabling voltage information, picture overlay will be disabled.

Figure 8-19 Voltage information



Step 5 Click **Apply**.

8.2.3.2.8 Configuring Temperature Measurement Information

After enabling temperature measurement information, the temperature measurement information will be displayed on the image.

Step 1 Select  > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

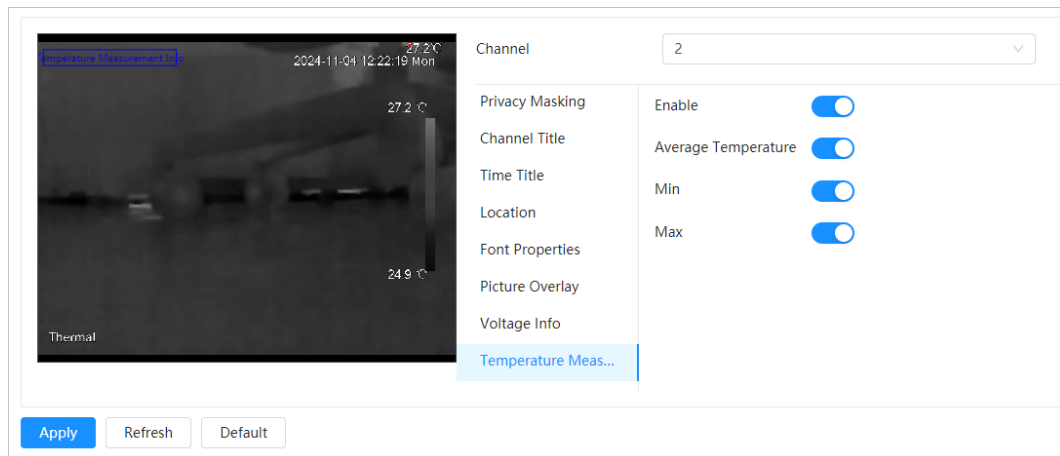


The monocular camera does not support channel selection.

Step 3 Click the **Temperature Measurement** tab.

Step 4 Click  next to **Enable**.

Figure 8-20 Temperature measurement information



Step 5 Click **Apply**.

8.2.3.3 Configuring ROI

Select ROI (region of interest) on the image and configure the image quality of ROI, and then the selected image is display at defined quality.

Step 1 Select > **Camera** > **Encode** > **ROI**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.



The monocular camera does not support channel selection.

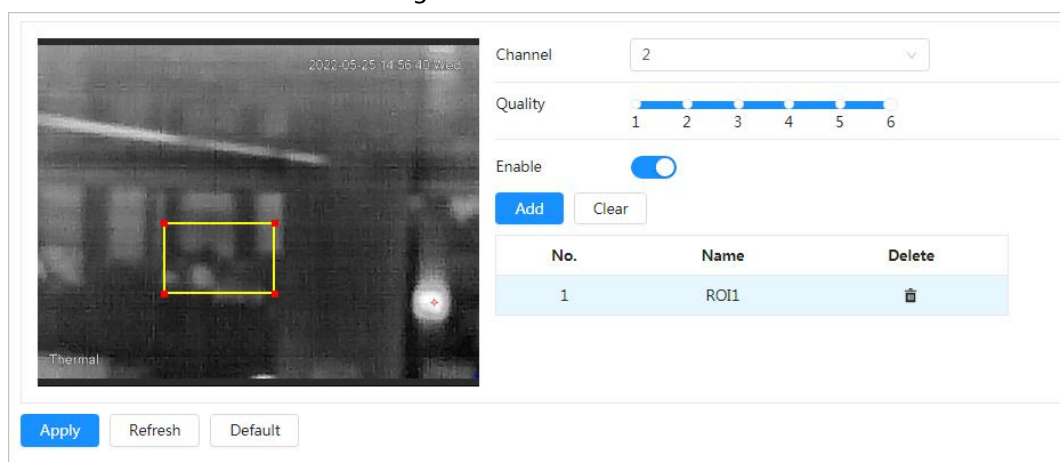
Step 3 Click next to **Enable**.

Step 4 Click **Add**, and then adjust and drag the rectangle on the image, and then configure the image quality of ROI.



- You can draw 4 area boxes at most.
- The higher the image quality value is, the better the quality will be.
- Click **Clear** to delete all the area boxes; select one box, and then click to delete it.

Figure 8-21 ROI



Step 5 Click **Apply**.

8.2.4 Configuring Audio

You can configure audio parameters and alarm audio.

8.2.4.1 Setting Audio Parameters

This section introduces audio parameters, including encode mode, sampling frequency, audio in type, and noise filter.

Step 1 Select  > **Camera** > **Audio** > **Audio**.

Step 2 Click  next to **Enable** in **Main Stream** or **Sub Stream**.



Please carefully activate the audio acquisition function according to the actual requirements of the application scenario.

Step 3 Configure audio parameters.

Figure 8-22 Audio

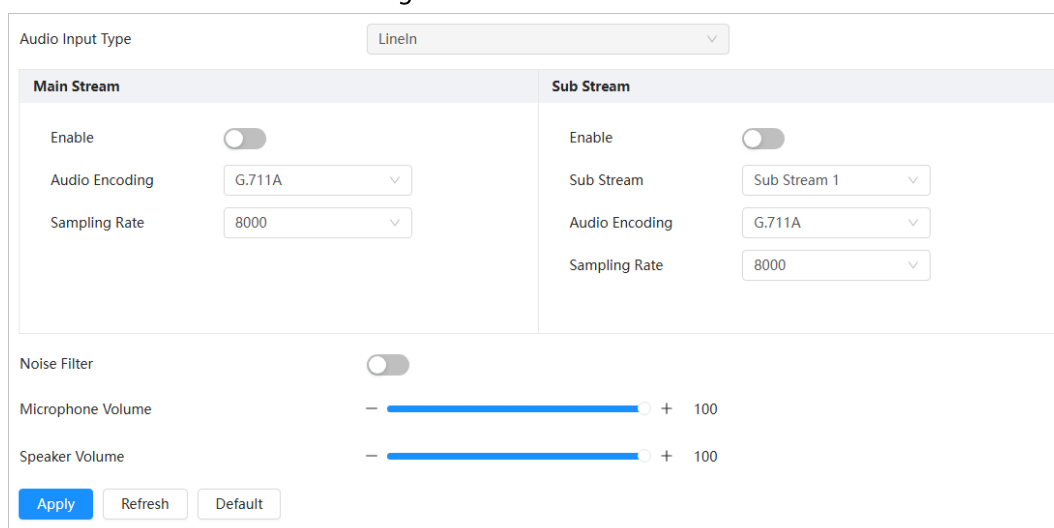


Table 8-12 Description of audio parameters

Parameter	Description
Audio Input Type	You can select audio input type from: • Lineln: Requires external audio device. • Mic: Not require external audio device.
Audio Encoding	You can select audio encode mode from PCM , G.711A , G.711Mu , and AAC . The configured audio encode mode applies to audio and intercom. You are recommended to use the default mode.
Sampling Frequency	Sampling number per second. The higher the sampling frequency is, the more the sample in a second will be, and the more accuracy the restored signal will be.
Noise Filter	Enable this function, and the system auto filters ambient noise.
Microphone Volume	Adjusts microphone volume.
Speaker Volume	Adjusts speaker volume.

Step 4 Click **Apply**.

8.2.4.2 Setting Alarm Tone

You can record or upload alarm audio file. The audio file will be played when the alarm is triggered.

Procedure

Step 1 Select  > **Camera** > **Audio** > **Alarm Tone**.

Step 2 Click **Add**.

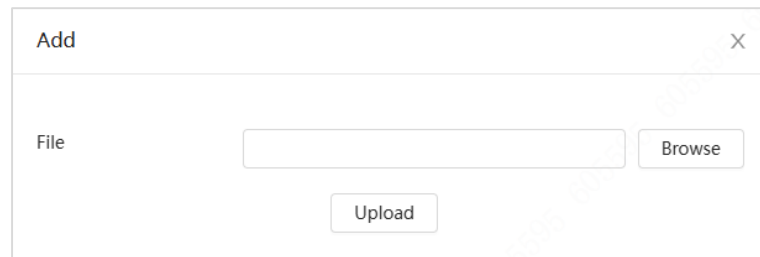
Step 3 Configure the audio file.

Click **Browse** to select the audio file to be uploaded, and then click **Upload**.



- The Camera supports recording audio file in .pcm format only. Recording is only supported by selected models.
- You can upload audio files in .pcm, .wav2, .mp3, or .aac format.
- You can edit and delete the recorded and upload files:
 - ◇ **Edit audio file**
Click  to edit the file name.
 - ◇ **Delete audio file**
Click  to delete the file name.

Figure 8-23 Add alarm tone



Related Operations

- Play audio file
Click  to play the file name.
- Download audio file
Click  to download the file name.

8.3 Configuring Network

8.3.1 TCP/IP

You can configure IP address and DNS (Domain Name System) server and so on according to network planning.

Prerequisites

The Camera has connected to the network.

Procedure

Step 1 Select  > **Network Settings** > **TCP/IP**.

Step 2 Configure TCP/IP parameters.

Figure 8-24 TCP/IP

The screenshot displays a TCP/IP configuration window. At the top, the 'Host Name' field is set to 'IPC'. Below this, the 'ARP/Ping' toggle is turned on. The 'NIC' dropdown menu shows 'Wired(Default)'. The 'Mode' section has 'Static' selected with a radio button, while 'DHCP' is unselected. The 'MAC Address' field is populated with a hexadecimal value. The 'IP Version' dropdown is set to 'IPv4'. The 'IP Address', 'Subnet Mask', 'Default Gateway', 'Preferred DNS', and 'Alternate DNS' fields are all empty, each featuring a small grid of icons for manual entry. At the bottom, there are three buttons: 'Apply' (highlighted in blue), 'Refresh', and 'Default'.

Table 8-13 Description of TCP/IP parameters

Parameter	Description
Host Name	Enter the host name, and the maximum length is 15 characters.

Parameter	Description
ARP/Ping	Click  to enable ARP/Ping to set IP address service. Get the Camera MAC address, and then you can change and configure the device IP address with ARP/ping command. This is enabled by default. During restart, you will have no more than 2 minutes to configure the device IP address by a ping packet with certain length, the server will be turned off in 2 minutes, or it will be turned off immediately after the IP address is successfully configured. If this is not enabled, the IP address cannot be configured with ping packet. A demonstration of configuring IP address with ARP/Ping. 1. Keep the Camera that needs to be configured and the PC within the same local network, and then get a usable IP address. 2. Get the MAC address of the Camera from device label. 3. Open command editor on the PC and enter the following command. <pre> Windows syntax arp -s <IP Address> <MAC> ping -l 480 -t <IP Address> Windows example arp -s 192.168.0.125 11-40-8c-18-10-11 ping -l 480 -t 192.168.0.125 UNIX/Linux/Mac syntax arp -s <IP Address> <MAC> ping -s 480 <IP Address> UNIX/Linux/Mac example arp -s 192.168.0.125 11-40-8c-18-10-11 ping -s 480 192.168.0.125 </pre> 4. Restart the Camera. 5. Check the PC command line, if information such as Reply from 192.168.0.125... is displayed, the configuration succeeds, and you can turn it off then. 6. Enter http://(IP address) in the browser address bar to log in.
NIC	Select the Ethernet card that need to be configured, and the default one is Wire .
Mode	The mode that the Camera gets IP: • Static Configure IP Address, Subnet Mask, and Default Gateway manually, and then click Save, the login page with the configured IP address is displayed. • DHCP When there is DHCP server in the network, select DHCP, and the Camera acquires IP address automatically.
MAC Address	Displays host MAC address.

Parameter	Description
IP Version	Select IPv4 or IPv6 .
IP Address	When you select Static in Mode , enter the IP address and subnet mask that you need.
Subnet Mask	
Default Gateway	
	 - IPv6 does not have subnet mask. - The default gateway must be in the same network segment with the IP address.
Preferred DNS	IP address of the preferred DNS
Alternate DNS	IP address of the alternate DNS

Step 3 Click **Apply**.

8.3.2 Port

Configure the port numbers and the maximum number of users (includes web, platform client, and mobile phone client) that can connect to the device simultaneously.

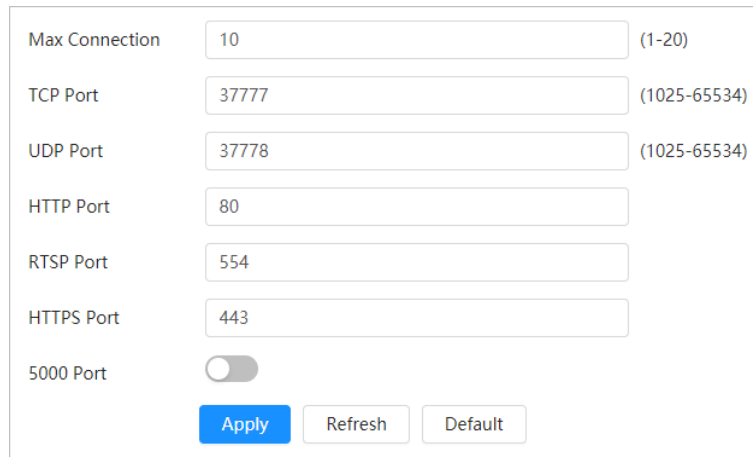
Step 1 Select  > **Network Settings** > **Port**.

Step 2 Configure port parameters.



- 0–1024, 1900, 3800, 5000, 5050, 9999, 37776, 37780–37880, 39999, 42323 are occupied for specific uses.
- Do not use the same value of any other port during port configuration.

Figure 8-25 Port



Max Connection	10	(1-20)
TCP Port	37777	(1025-65534)
UDP Port	37778	(1025-65534)
HTTP Port	80	
RTSP Port	554	
HTTPS Port	443	
5000 Port	☐	

Apply Refresh Default

Table 8-14 Description of port parameters

Parameter	Description
Max Connection	The max number of users (web client, platform client or mobile phone client) that can connect to the device simultaneously. The value is 10 by default.
TCP Port	Transmission control protocol port. The value is 37777 by default.
UDP Port	User datagram protocol port. The value is 37778 by default.
HTTP Port	Hyper text transfer protocol port. The value is 80 by default.

Parameter	Description
RTSP Port	- Real time streaming protocol port, and the value is 554 by default. If you play live view with QuickTime, VLC or Blackberry smart phone, the following URL format is available. - When the URL format requiring RTSP, you need to specify channel number and bit stream type in the URL, and also username and password if needed. - When playing live view with Blackberry smart phone, you need to turn off the audio, and then set the codec mode to H.264B and resolution to CIF. URL format example: rtsp://username:password@ip:port/cam/realmonitor?channel=1&subtype=0 Among that: - Username: The username, such as admin. - Password: The password, such as admin. - IP: The device IP, such as 192.168.1.112. - Port: Leave it if the value is 554 by default. - Channel: The channel number, which starts from 1. For example, if you are using channel 2, then the channel=2. - Subtype: The bit stream type; 0 means main stream (Subtype=0) and 1 means sub stream (Subtype=1). Example: If you require the sub stream of channel 2 from a certain device, then the URL should be: rtsp://admin:admin@10.12.4.84:554/cam/realmonitor?channel=21&=1 If username and password are not needed, then the URL can be: rtsp://ip:port/cam/realmonitor?channel=11&=0
RTMP Port	Real Time Messaging Protocol. The port that RTMP provides service. It is 1935 by default.
HTTPS Port	HTTPS communication port. It is 443 by default.
5000 Port	The service port for Windows XP. It is Off by default.

Step 3 Click **Apply**.



The configuration of **Max Connection** takes effect immediately, and others will take effect after reboot.

8.3.3 PPPoE

Point-to-Point Protocol over Ethernet, is one of the protocols that device uses to connect to the internet. Get the PPPoE username and password from the internet service provider, and then set up network connection through PPPoE, the Camera will acquire a WAN dynamic IP address.

Prerequisites

- The Camera has connected to the network.

- You have gotten the account and password from Internet Service Provider.

Procedure

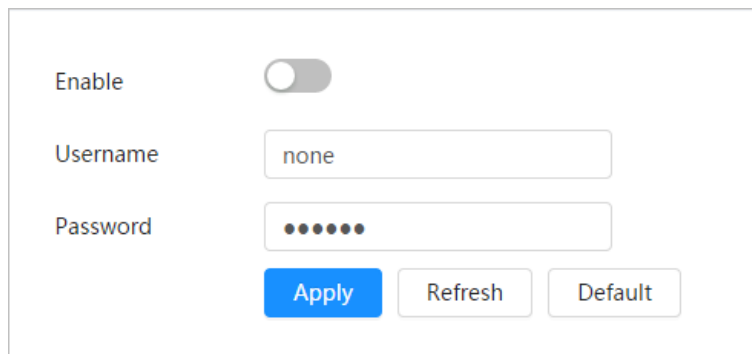
Step 1 Select  > **Network Settings** > **PPPoE**.

Step 2 Click , and then enter username and password.



- Disable UPnP while using PPPoE to avoid possible influence.
- After making PPPoE connection, the device IP address cannot be modified through web page

Figure 8-26 PPPoE



Step 3 Click **Apply**.

The success prompt box is displayed, and then the real-time WAN IP address is displayed. You can visit camera through the IP address.

8.3.4 DDNS

Properly configure DDNS, and then the domain name on the DNS server matches your IP address and the matching relation refreshes in real time. You can always visit the Camera with the same domain name no matter how the IP address changes.

Prerequisites

Check the type of DNS server supported by the Camera.

Procedure

Step 1 Select  > **Network Settings** > **DDNS**.



- Third party server might collect your device information after DDNS is enabled.
- Register and log in to the DDNS website, and then you can view the information of all the connected devices in your account.

Step 2 Click  to enable the function.

Step 3 Configure DDNS parameters.

Figure 8-27 DDNS

The screenshot shows a DDNS configuration window. The 'Type' is set to 'NO-IP DDNS' with a dropdown arrow and a toggle switch. The 'Server Address' is 'dynupdate.no-ip.com'. The 'Domain Name' is 'none' with a 'Test' button. The 'Username' is 'none'. The 'Password' is masked with dots, with a note 'Please enter a frequently-used email address.' The 'Interval' is '1440' with a range 'min.(1440-2880)'. At the bottom are 'Apply', 'Refresh', and 'Default' buttons.

Table 8-15 Description of DDNS parameters

Parameter	Description
Type	The name and web address of the DDNS service provider, see the matching relationship below: • CN99 DDNS web address: www.3322.org • NO-IP DDNS web address: dynupdate.no-ip.com • Dyndns DDNS web address: members.dyndns.org
Server Address	
Domain Name	
Test	Only when selecting NO-IP DDNS type, you can click Test to check whether the domain name registration is successful.
Username	Enter the username and password that you got from the DDNS server provider. You need to register an account (includes username and password) on the DDNS server provider's website.
Password	
Interval	The update cycle of the connection between the device and the server, and the time is 10 minutes by default.

Step 4 Click **Apply**.

Result

Open the browser on PC, enter the domain name at the address bar, and then press Enter, the login page is displayed.

8.3.5 Email

Configure email parameter and enable email linkage. The system sends email to the defined address when the corresponding alarm is triggered.

Step 1 Select  > **Network Settings** > **Email**.

Step 2 Click  to enable the function.

Step 3 Configure email parameters.

Figure 8-28 Email

Enable ☒

SMTP Server

Port

Anonymous ☐

Username

Password

Sender

Encryption Type

Subject + ☒ Attachment

Receiver

Health Mail ☐

Sending Interval min.(30-1440)

Table 8-16 Description of email parameters

Parameter	Description	
SMTP Server	SMTP server address	 For details, see Table 8-17.
Port	The port number of the SMTP server.	
Username	The account of SMTP server.	
Password	The password of SMTP server.	
Anonymous	Click  , and the sender's information is not displayed in the email.	
Sender	Sender's email address.	
Encryption Type	Select from None , SSL and TLS .  For details, see Table 8-17.	
Subject	Enter maximum 63 characters in Chinese, English, and Arabic numerals. Click  to select title type, including Device Name , Device ID , and Event Type , and you can set maximum 2 titles.	
Attachment	Select the check box to support attachment in the email.	
Receiver	- Receiver's email address. Supports 3 addresses at most. - After entering the receiver's email address, the Test button is display. Click Test to test whether the emails can be sent and received successfully.	
Health Mail	The system sends test mail to check if the connection is successfully configured. Click  and configure the Sending Interval , and then the system sends test mail as the set interval.	

For the configuration of major mailboxes, see Table 8-17.

Table 8-17 Description of major mailbox configuration

Mailbox	SMTP server	Authentication	Port	Description
gmail	smtp.gmail.com	SSL	465	You need to enable SMTP service in your mailbox.
		TLS	587	

Step 4 Click **Apply**.

8.3.6 UPnP

UPnP (Universal Plug and Play) is a protocol that establishes mapping relation between local area and wide area networks. This function enables you to visit local area device through wide area IP address.

Prerequisites

- Make sure the UPnP service is installed in the system.
- Log in the router, and configure WAN IP address to set up internet connection.
- Enable UPnP in the router.
- Connect your device to the LAN port of the router.
- Select  > **Network Settings** > **TCP/IP**, in **IP Address**, enter the local area IP address of the router or select **DHCP** and acquires IP address automatically.

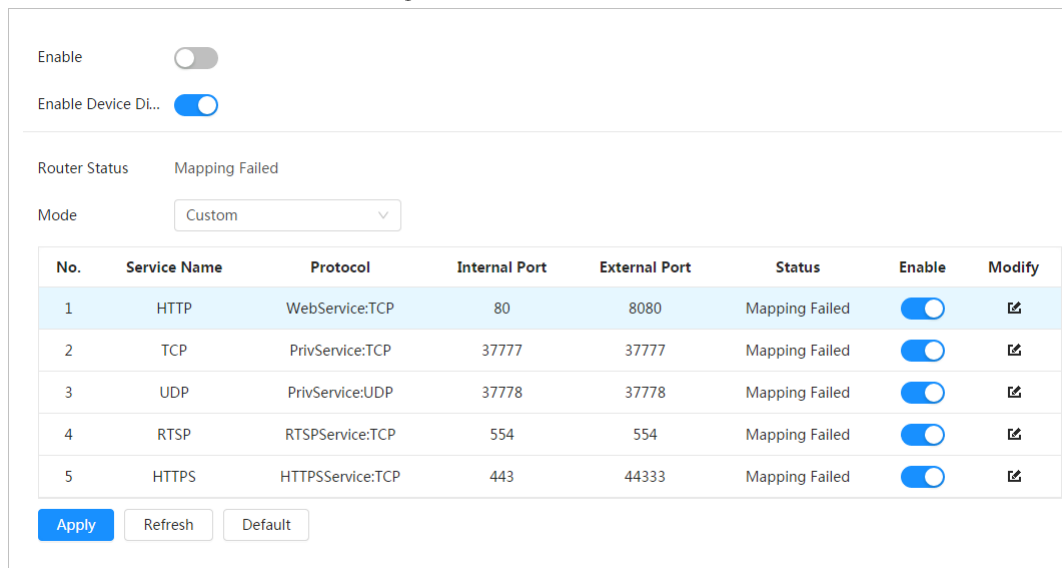
Procedure

Step 1 Select  > **Network** > **UPnP**.

Step 2 Click  next to **Enable**, and there are two mapping modes: **Custom** and **Default**.

- Select **Custom**, click  and then you can change external port as needed.
- Select **Default**, and then the system finishes mapping with unoccupied port automatically, and you cannot edit mapping relation.

Figure 8-29 UPnP



No.	Service Name	Protocol	Internal Port	External Port	Status	Enable	Modify
1	HTTP	WebService:TCP	80	8080	Mapping Failed		
2	TCP	PrivService:TCP	37777	37777	Mapping Failed		
3	UDP	PrivService:UDP	37778	37778	Mapping Failed		
4	RTSP	RTSPService:TCP	554	554	Mapping Failed		
5	HTTPS	HTTPSService:TCP	443	44333	Mapping Failed		

Step 3 Click **Apply**.

Open web browser on PC, enter http:// wide area IP address: external port number, and then you can visit the local area device with corresponding port.

8.3.7 SNMP

SNMP (Simple Network Management Protocol), which can be used to enable software such as MIB Builder and MG-SOFT MIB Browser to connect to the Camera and manage and monitor the Camera.

Prerequisites

- Install SNMP monitoring and managing tools such as MIB Builder and MG-SOFT MIB Browser.
- Get the MIB file of the matched version from technical support.

Procedure

Step 1 Select  > **Network Settings** > **SNMP**.

Step 2 Select SNMP version to enable SNMP.

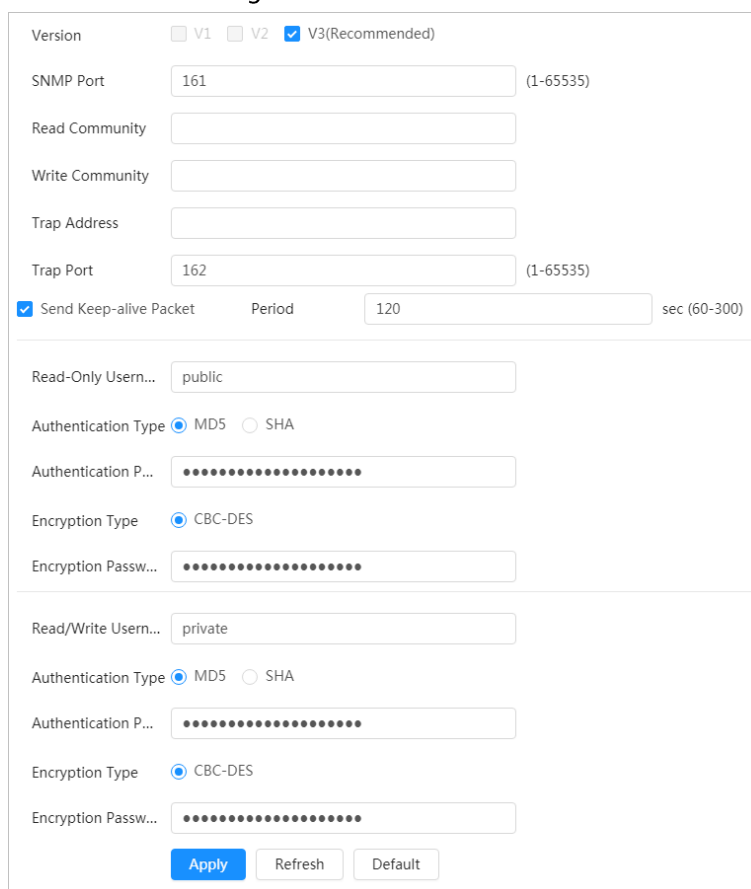
- Select **V1**, and the system can only process information of V1 version.
- Select **V2**, and the system can only process information of V2 version.
- Select **V3**, and then **V1** and **V2** become unavailable. You can configure username, password and authentication type. It requires corresponding username, password and authentication type to visit your device from the server.



Using **V1** and **V2** might cause data leakage, and **V3** is recommended.

Step 3 In **Trap Address**, enter the IP address of the PC that has MIB Builder and MG-SOFT MIB Browser installed, and leave other parameters to the default.

Figure 8-30 SNMP



The screenshot displays the SNMP configuration page. At the top, the 'Version' section has three radio buttons: 'V1', 'V2', and 'V3(Recommended)', with 'V3' selected. Below this, the 'SNMP Port' is set to '161' (range 1-65535). The 'Read Community' and 'Write Community' fields are empty. The 'Trap Address' field is empty. The 'Trap Port' is set to '162' (range 1-65535). A checkbox 'Send Keep-alive Packet' is checked, and the 'Period' is set to '120' seconds (range 60-300). The 'Read-Only User...' field contains 'public'. The 'Authentication Type' is set to 'MD5' (radio buttons for MD5 and SHA). The 'Authentication P...' field is masked with dots. The 'Encryption Type' is set to 'CBC-DES' (radio buttons for CBC-DES and another option). The 'Encryption Passw...' field is masked with dots. The 'Read/Write User...' field contains 'private'. The 'Authentication Type' is set to 'MD5'. The 'Authentication P...' field is masked with dots. The 'Encryption Type' is set to 'CBC-DES'. The 'Encryption Passw...' field is masked with dots. At the bottom, there are three buttons: 'Apply' (blue), 'Refresh', and 'Default'.

Table 8-18 Description of SNMP parameters

Parameter	Description
SNMP Port	The listening port of the software agent in the device.
Read Community, Write Community	The read and write community string that the software agent supports.  You can enter number, letter, underline and dash to form the name.
Trap Address	The target address of the Trap information sent by the software agent in the device.
Trap Port	The target port of the Trap information sent by the software agent in the device.
Send Keep-alive Packet	Select the checkbox, and then set the period. During the configured period, the system checks whether the Camera is online.
Read-only Username	Set the read-only username accessing device, and it is public by default.  You can enter number, letter, and underline to form the name.
Read/Write Username	Set the read/write username access device, and it is private by default.  You can enter number, letter, and underline to form the name.
Authentication Type	You can select from MD5 and SHA . The default type is MD5 .
Authentication Password	It should be no less than 8 digits.
Encryption Type	The default is CBC-DES.
Encryption Password	It should be no less than 8 digits.

Step 4 Click **Apply**.

Result

View device configuration through MIB Builder or MG-SOFT MIB Browser.

1. Run MIB Builder and MG-SOFT MIB Browser.
2. Compile the two MIB files with MIB Builder.
3. Load the generated modules with MG-SOFT MIB Browser.
4. Enter the IP address of the device you need to manage in the MG-SOFT MIB Browser, and then select version to search.
5. Unfold all the tree lists displayed in the MG-SOFT MIB Browser, and then you can view the configuration information, video channel amount, audio channel amount, and software version.



Use PC with Windows and disable SNMP Trap service. The MG-SOFT MIB Browser will display prompt when alarm is triggered.

8.3.8 Bonjour

Enable this function, and the OS and clients that support Bonjour would find the Camera automatically. You can have quick visit to the Camera with Safari browser.



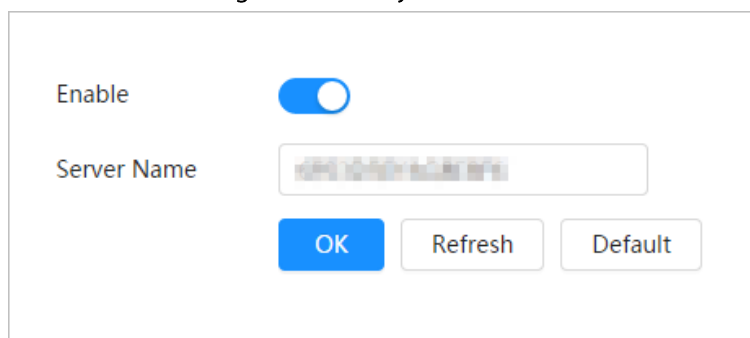
Bonjour is enabled by default.

Procedure

Step 1 Select  > **Network Settings** > **Bonjour**.

Step 2 Click , and then configure server name.

Figure 8-31 Bonjour



Step 3 Click **Apply**.

Result

In the OS and clients that support Bonjour, follow the steps below to visit the network camera with Safari browser.

1. Click **Show All Bookmarks** in Safari.
2. Enable **Bonjour**. The OS or client automatically detects the network cameras with Bonjour enabled in the LAN.
3. Click the Camera to visit the corresponding web page.

8.3.9 Multicast

When multiple users are viewing the device video image simultaneously through network, it might fail due to limited bandwidth. You can solve this problem by setting up a multicast IP (224.0.1.0–238.255.255.255) for the Camera and adopt the multicast protocol.

Procedure

Step 1 Select  > **Network Settings** > **Multicast**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.



The monocular camera does not support channel selection.

Step 3 Click , and enter IP address and port number.

Figure 8-32 Multicast

Table 8-19 Description of multicast parameters

Parameter	Description
Multicast Address	The multicast IP address of Main Stream/Sub Stream is 224.1.2.4 by default, and the range is 224.0.0.0–239.255.255.255.
Port	The multicast port of corresponding stream: Main Stream : 40000; Sub Stream1 : 40016; Sub Stream2 : 40032, and all the range is 1025–65500.

Step 4 Click **Apply**.

Result

On the **Live** page, select **RTSP** in **Multicast**, and then you can view the video image with multicast protocol.

8.3.10 Auto Registration

After you enable this function, when the Camera is connected to the Internet, it will report the current location to the specified server which acts as the transit to make it easier for the client software to access the Camera.

Step 1 Select > **Network Settings** > **Auto Registration**.

Step 2 Click , and then configure server name.

Figure 8-33 Auto Registration

Table 8-20 Description of register parameters

Parameter	Description
Server Address	The IP address or domain name of the server to be registered.
Port	The port for registration.
Sub-Device ID	The custom ID for the Camera.

Step 3 Click **Apply**.

8.3.11 QoS

You can solve problems such as network delay and congestion with this function. It helps to assure bandwidth, reduce transmission delay, packet loss rate, and delay jitter to improve experience. 0–63 means 64 degrees of priority; 0 for the lowest and 63 the highest.

Step 1 Select  > **Network Settings** > **QoS**.

Step 2 Configure QoS parameters.

Figure 8-34 QoS

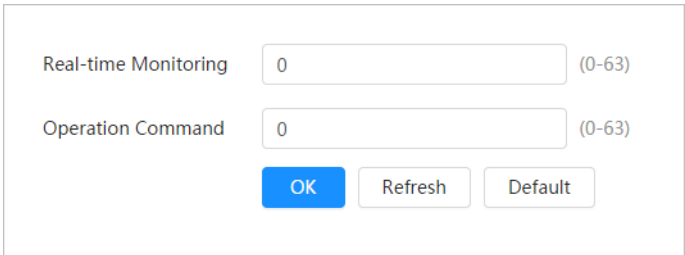


Table 8-21 Description of QoS parameters

Parameter	Description
Real-time Monitor	Configure the priority of the data packets that used for network surveillance. 0 for the lowest and 63 the highest.
Command	Configure the priority of the data packets that used for configure or checking.

Step 3 Click **Apply**.

8.3.12 Platform Access

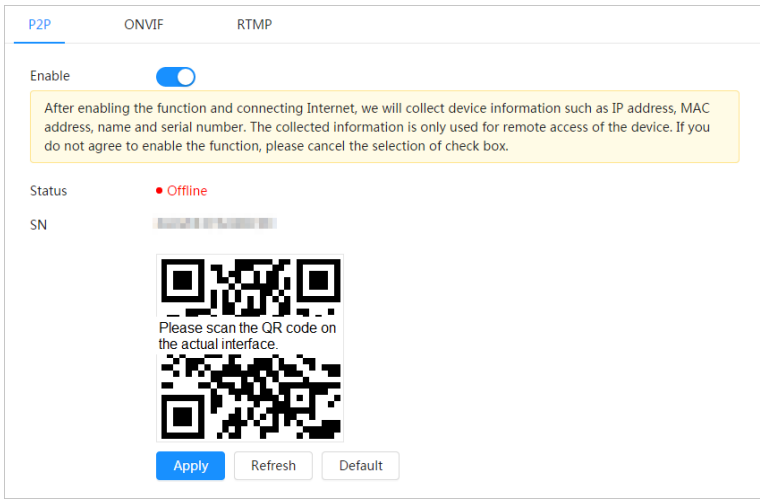
8.3.12.1 P2P

P2P (peer-to-peer) technology enables users to manage devices easily without requiring DDNS, port mapping or transit server.

Scan the QR code with your smart phone, and then you can add and manage more devices on the mobile phone client.

Step 1 Select  > **Network Settings** > **Platform Access** > **P2P**.

Figure 8-35 P2P



- When P2P is enabled, remote management on device is supported.
- When P2P is enabled and the device accesses to the network, the status shows online. The information of the IP address, MAC address, device name, and device SN will be collected. The collected information is for remote access only. You can cancel **Enable** selection to reject the collection.

Step 2 Log in to mobile phone client and tap **Device management**.

Step 3 Tap **+** at the upper-right corner.

Step 4 Scan the QR code on the **P2P** page.

Step 5 Follow the instructions to finish the settings.

8.3.12.2 ONVIF

The ONVIF verification is enabled by default, which allows the network video products (including video recording device and other recording devices) from other manufacturers to connect to your device.

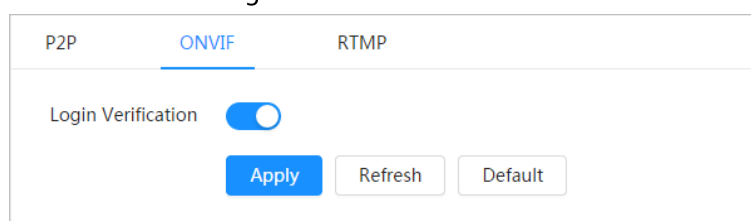


ONVIF is enabled by default.

Step 1 Select  > **Network Settings** > **Platform Access** > **ONVIF**.

Step 2 Click  next to **ONVIF Verification**.

Figure 8-36 ONVIF



Step 3 Click **Apply**.

8.3.12.3 RTMP

Through RTMP, you can access a third-party platform (such as Ali and YouTube) to realize video live view.



- RTMP can be configured by admin only.
- RTMP supports the H.264, H.264 B and H.264H video formats, and the AAC audio format only.

Step 1 Select  > **Network Settings** > **Platform Access** > **RTMP**.

Step 2 Click .



Make sure that the IP address is trustable when enabling RTMP.

Step 3 Configure RTMP parameters.

Figure 8-37 RTMP

Table 8-22 Description of RTMP parameters

Parameter	Description
Stream Type	The stream for live view. Make sure that the video format is H.264, H.264 B and H.264H, and the audio format is AAC.
Address Type	• Non-custom: Enter the server IP and domain name. • Custom: Enter the path allocated by the server.
IP Address	When selecting Non-custom , you need to enter server IP address and port. • IP address: Support IPv4 or domain name. • Port: Keep the default value.
Port	
Custom Address	When selecting Custom , you need to enter the path allocated by the server.

Step 4 Click **Apply**.

8.3.13 Basic Services

Configure the IP hosts (devices with IP address) that are allowed to visit the device. Only the hosts in the trusted sites list can log in to the web page. This is to enhance network and data security.

Step 1 Select  > **Network Settings** > **Basic Services**.

Step 2 Enable the basic service according to the actual needs.

Figure 8-38 Basic services

SSH	☐
Multicast/Broadcast Search	☒
CGI	☒
ONVIF	☒
Genetec	☒
Mobile Push Notification	☒
Private Protocol	☒
Private Protocol Authentication Mode	Security Mode (Recommended) ▼
RTSP Login Mode	Digest ▼
LLDP	☐
TLSv1.1	☐

Table 8-23 Description of basic service parameters

Function	Description
SSH	You can enable SSH authentication to perform safety management.
Multicast/Broadcast Search	Enable this function, and then when multiple users are viewing the device video image simultaneously through network, they can find your device with multicast/broadcast protocol.
CGI	Enable the function, and then other devices can access through this service. The function is enabled by default.
ONVIF	
Genetec	
Mobile Push Notification	Enable this function, and then the system will send the snapshot that was taken when alarm is triggered to your phone, this is enabled by default.
Private Protocol Authentication Mode	Select the authentication mode from Security Mode and Compatible Mode . Security mode is recommended.
RTSP Login Mode	Real Time Streaming Protocol, is to secure transmission of streaming media.
LLDP	After enabling LLDP (Link Layer Discovery Protocol), in cloud O&M system, the Camera sends the IP addresses to the App for operation and maintenance management and fault diagnosis.  We recommend you disable the LLDP service; otherwise, there might be security risks to the device.

Function	Description
TLSv1.1	After enabling TLSv1.1, you can access the Camera through TLSv1.1.

Step 3 Click **Apply**.

8.4 Storage

Displays the information of the local SD card. You can set it as read only or read & write; you can also hot swap and format SD card.



Functions might vary with different models.

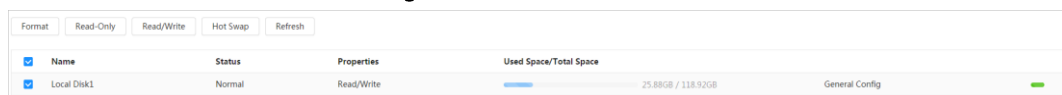
Select  > **Storage**.

- Click **Read-Only**, and then the SD card is set to read only.
- Click **Read & Write**, and then the SD card is set to read & write.
- Click **Hot Swap**, and then you can pull out the SD card.
- Click **Format**, and you can format the SD card.



When reading SD card on PC, if the SD card capacity is much less than the nominal capacity, you need to format the SD card. Then the data in SD card will be cleared, and the SD card is formatted to be private file system. The private file system can greatly improve SD card multimedia file read/write performance. Download Diskmanager from Toolbox to read the SD card. For details, contact after-sales technicians.

Figure 8-39 Local



8.5 System Management

8.5.1 General

8.5.1.1 Basic

You can configure device name, language and video standard.

Step 1 Select  > **System** > **General** > **Basic**.

Step 2 Configure general parameters.

Figure 8-40 Basic

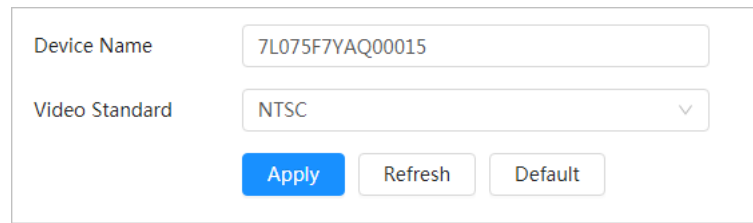


Table 8-24 Description of general parameters

Parameter	Description
Name	Enter the device name.
Video Standard	Select video standard from PAL and NTSC .

Step 3 Click **Apply**.

8.5.1.2 Date & Time

You can configure date and time format, time zone, current time, DST (Daylight Saving Time) or NTP server.

Step 1 Select  > **System** > **General** > **Date & Time**.

Step 2 Configure date and time parameters.

Figure 8-41 Date and time

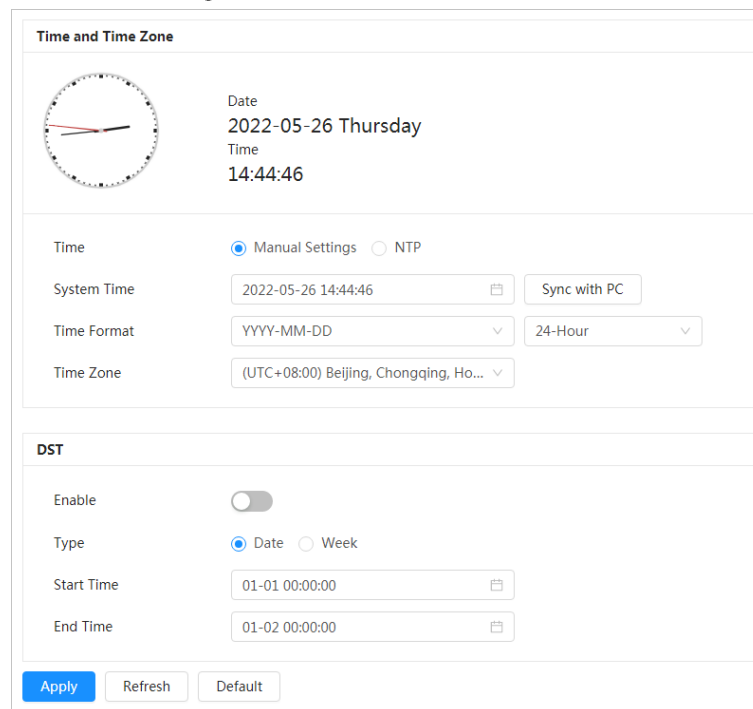


Table 8-25 Description of date and time parameters

Parameter	Description
Date Format	Configure the date format.

Parameter	Description
Time	• Manually Setting: Configure the parameters manually. • NTP: When selecting NTP, the system then syncs time with the internet server in real time. You can also enter the IP address, time zone, port, and interval of a PC which installed NTP server to use NTP.
Time Format	Configure the display format of date and time. You can select from 12-Hour or 24-Hour .
Time Zone	Configure the time zone that the Camera is at.
Current Time	Configure system time. Click Sync PC , and the system time changes to the PC time.
DST	Enable DST as needed. Click ☐ , and configure start time and end time of DST with Date or Week .

Step 3 Click **Apply**.

8.5.1.3 Positioning System

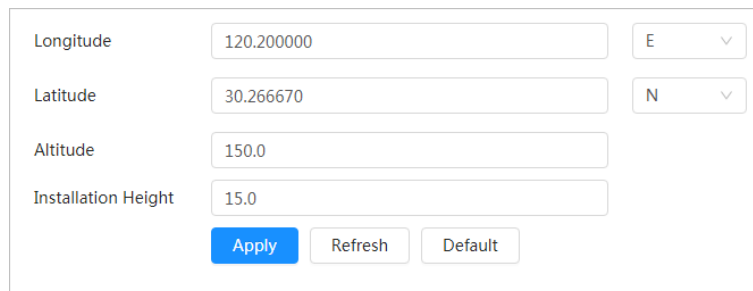
Enter the Camera's location information (longitude, latitude, altitude, and installation height) to remind you where your camera locates.

Also, automatically sent to the management platform, the location information can be viewed on the platform to help the platform operator track your camera.

Step 1 Select  > **System** > **General** > **Positioning System**.

Step 2 Enter the longitude, latitude, altitude, and installation height of the Camera.

Figure 8-42 Positioning System



The image shows a web-based configuration form for the Positioning System. It contains four input fields: Longitude (120.200000), Latitude (30.266670), Altitude (150.0), and Installation Height (15.0). To the right of the Latitude field are two dropdown menus, one showing 'E' and the other 'N'. At the bottom of the form are three buttons: 'Apply' (highlighted in blue), 'Refresh', and 'Default'.

Step 3 Click **Apply**.

8.5.2 Account

You can manage users, such as add, delete, or edit them. Users include admin, added users and ONVIF users.

Managing users and groups are only available for administrator users.

- The max length of the user or group name is 31 characters which consists of number, letter, underline, dash, dot and @.
- The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).
- You can have 18 users and 8 groups at most.

- You can manage users through single user or group, and duplicate usernames or group names are not allowed. A user can only be in one group at a time, and the group users can own authorities within group authority range.
- Online users cannot edit their own authority.
- There is one admin by default which has highest authority.
- Select **Anonymous Login**, and then log in with only IP address instead of username and password. Anonymous users only have preview authorities. During anonymous login, click **Logout**, and then you can log in with other username.

8.5.2.1 User

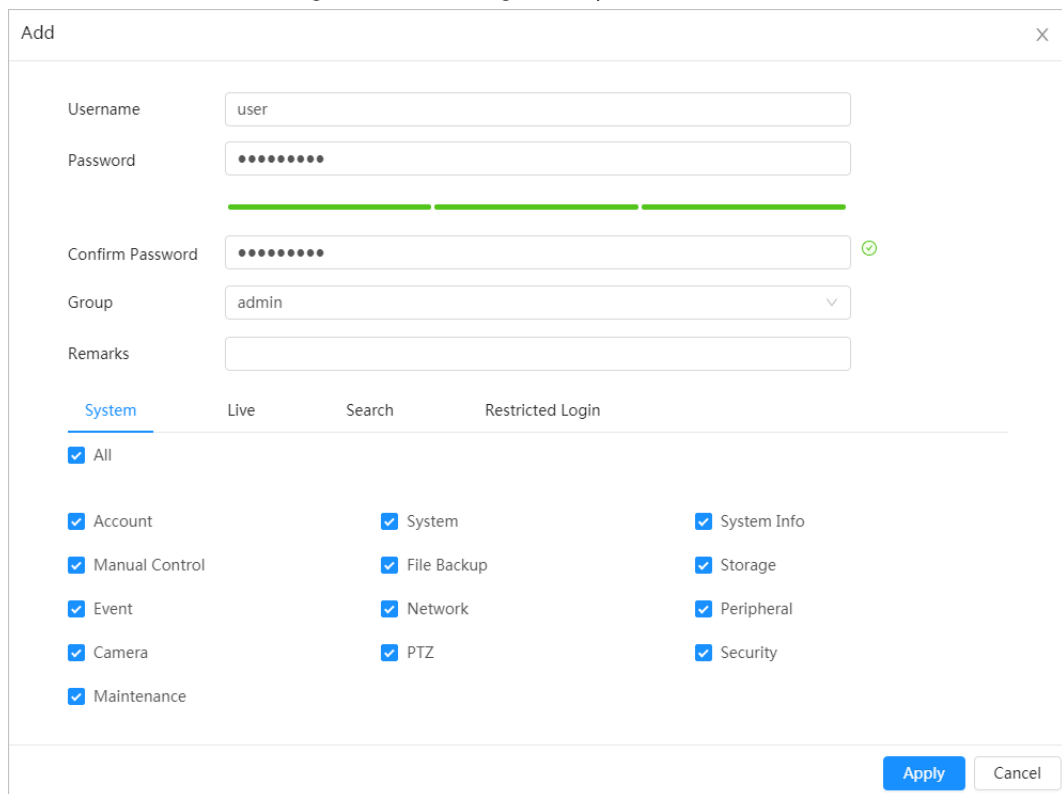
8.5.2.1.1 Adding User

You are admin user by default. You can add users, and configure different authorities.

Procedure

- Step 1 Select  > **System** > **Account** > **User**.
- Step 2 Click **Add**.

Figure 8-43 Adding user (system)



Add

Username: user

Password: [masked]

Confirm Password: [masked] ✓

Group: admin

Remarks:

System | Live | Search | Restricted Login

☒ All

☒ Account	☒ System	☒ System Info
☒ Manual Control	☒ File Backup	☒ Storage
☒ Event	☒ Network	☒ Peripheral
☒ Camera	☒ PTZ	☒ Security
☒ Maintenance		

Apply Cancel

Figure 8-44 Adding user (Restricted Login)

Add
×

Username

Password

Confirm Password
✓

Group

Remarks

System
Live
Search
Restricted Login

IP Address
☒

IPv4
IP Address
1 . 0 . 0 . 1

Validity Period
☒

2022-05-26 08:00:00
2022-05-27 08:00:00

Period
☒

Time Plan

Apply
Cancel

Step 3 Configure user parameters.

Table 8-26 Description of user parameters (1)

Parameter	Description
Username	User's unique identification. You cannot use existed user name.
Password	Enter password and confirm it again.
Confirm Password	The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).
Group	The group that users belong to. Each group has different authorities.
Remark	Describes the user.
System	Select permissions as needed.  It is recommended to give fewer permissions to normal users than premium users.
Live	Select the live view permission to be enabled.
Search	Select the playback and snapshot permissions to be enabled.

Parameter	Description
Restricted Login	Set the PC address that allows the defined user to log in to the Camera and the validity period and time range. You can log in to web with the defined IP in the defined time range of validity period. • IP address: You can log in to web through the PC with the set IP. • Validity period: You can log in to web in the set validity period. • Time Range: You can log in to web in the set time range. Set as following: 1. Enable IP Address, and then select IP type and set the IP address. • IP Address: Enter the IP address of the host to be added. • IP segment: Enter the start address and end address of the host to be added. 2. Enable Validity Period, and then set the start time and end time. 3. Enable Period, and then click Time to set the period that allows login. For details, see Step4 in "5.1.1.2.1 Adding Schedule".

[Step 4](#) Click **Apply**.

The newly added user is displayed in the user name list.

Related Operations

- Edit user information
Click  to edit password, group, memo or permissions.



For admin user, you can only change the password.

- Click  to delete the added users. Admin user cannot be deleted.



Admin user cannot be deleted.

8.5.2.1.2 Resetting Password

Enable the function, and you can reset password by clicking **Forget password?** on the login page. For details, see "3.4 Resetting Password".

[Step 1](#) Select  > **System** > **Account** > **User**

[Step 2](#) Click  next to **Enable** in **Password Reset**.

If the function is not enabled, you can only reset the password by resetting the Camera.

[Step 3](#) Enter the associated email address.

Figure 8-45 User

Step 4 Click **Apply**.

8.5.2.2 Adding User Group

You have two groups named admin and user by default, and you can add new group, delete added group or edit group authority and memo.

Procedure

Step 1 Select > **System** > **Account** > **Group**.

Step 2 Click **Add**.

Step 3 Enter the group name and memo, and then select group permissions.

Figure 8-46 Adding group

Step 4 Click **Apply**.

The newly added group displays in the group name list.

Related Operations

- click to edit password, group, memo or authorities.
- Click to delete the added users. Admin user cannot be deleted.



The admin group and user group cannot be deleted.

8.5.2.3 ONVIF User

You can add, delete ONVIF user, and change their passwords.

Procedure

- Step 1** Select  > **System** > **Account** > **ONVIF User**.
- Step 2** Click **Add**.
- Step 3** Configure user parameters.

Figure 8-47 Adding ONVIF user

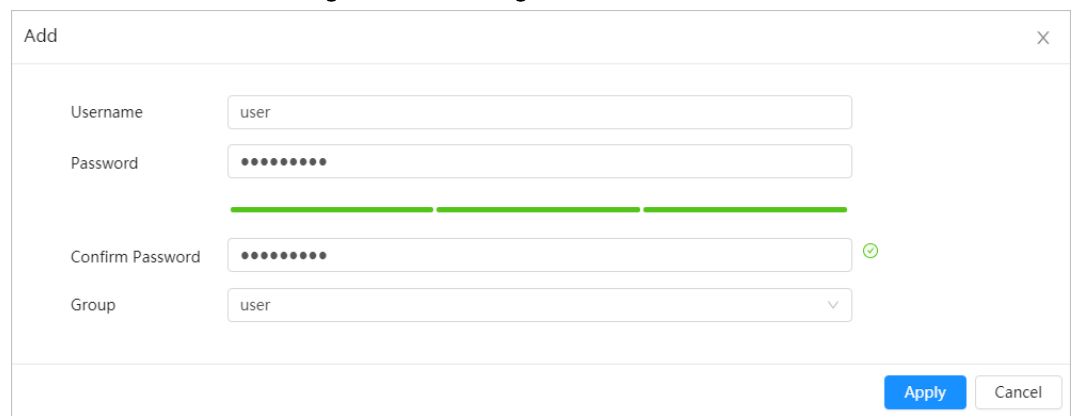


Table 8-27 Description of ONVIF user parameters

Parameter	Description
Username	User's unique identification. You cannot use existed username.
Password	Enter password and confirm it again. The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).
Confirm Password	
Group Name	The group that users belong to. Each group has different authorities.

- Step 4** Click **OK**.
- The newly added user displays in the username list.

Related Operations

- click  to edit password, group, memo or authorities.

For admin account, you can only change the password.
- Click  to delete the added users. Admin user cannot be deleted.

The admin account cannot be deleted.

8.5.3 Peripheral Management

- Step 1** Select  > **System** > **Peripheral** > **Heater**.
- Step 2** Select the heater type to be **Mainboard Heater**.



This is supported by some selected models.

Step 3

Set the heating mode.

- **Auto:** Set the start temperature and stop temperature as the temperature range for heater to start, and then click **Apply**. When the sensor temperature is in the range, the heater works automatically.
- **Manual:** When it's cold enough and the Camera needs to work in a warm condition, select **Manual** as the mode, click ☐, and then click **Apply**.
- **Test:** When you want to test the heating speed, select **Test** as the mode, click ☐, and then click **Apply**.



The temperature of the Camera varies based on real-time environmental and operational conditions.

Figure 8-48 Heater

Heater Type	Mainboard Heater	
Mode	Auto	
Start Temperature	3	(1-11)
Stop Temperature	12	(12-30)
Apply Refresh Default		

Step 4

Click **Apply**.

8.5.4 Maintenance Management

8.5.4.1 Requirements

To make sure the system runs normally, maintain it as the following requirements:

- Check surveillance images regularly.
- Clear regularly user and user group information that are not frequently used.
- Change the password every three months. For details, see "8.5.2 Account".
- View system logs and analyze them, and process the abnormality in time.
- Back up the system configuration regularly.
- Restart the device and delete the old files regularly.
- Upgrade firmware in time.

8.5.4.2 Maintenance

You can restart the system manually, and set the time of auto reboot and auto deleting old files. This function is disabled by default.

Step 1 Select  > **System** > **Maintenance Management** > **Maintenance**.

Step 2 Configure auto maintain parameters.

- Restart system:
Click ☐ next to **Auto Restart** in **Restart System**, and set the restart time, the system automatically restarts as the set time every week.
- Delete old files
Click ☐ next to **Auto Delete** in **Delete Old Files**, and set the time, the system automatically deletes old files as the set time. The time range is 1 to 31 days.



When you enable and confirm the **Auto Delete** function, the deleted files cannot be restored. Operate it carefully.

- Emergency maintenance
Enable AOL, and the system can be recovered with troubleshooting tools.

Figure 8-49 Maintenance

The screenshot shows a web interface for system maintenance. It is divided into three main sections:

- Restart System:** Contains a toggle for 'Auto Restart' which is currently turned on (blue). Below it, 'Restart Time' is set to 'Tue' with a dropdown arrow and '02:00' with a clock icon.
- Delete Old Files:** Contains a toggle for 'Auto Delete' which is currently turned off (grey). Below it, there is a text input field for 'Delete File' followed by 'day(s) ago'.
- Emergency Maintenance:** Contains a toggle for 'Enable' which is currently turned off (grey). Below the toggle is a light blue informational box with text: 'For easy access to our after-sales service, enable this function. If the device has any trouble performing functions, such as updating, the system will automatically enable this function.'

At the bottom of the interface are three buttons: 'Apply' (blue), 'Refresh' (grey), and 'Default' (grey).

Step 3 Click **Apply**.

8.5.4.3 Import/Export

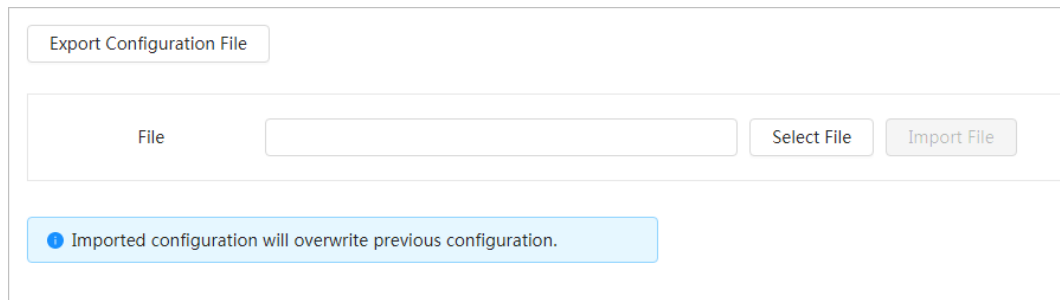
- Export the system configuration file to back up the system configuration.
- Import system configuration file to make quick configuration or recover system configuration.

Step 1 Select  > **System** > **Maintenance Management** > **Import/Export**.

Step 2 Import and export.

- Import: Select local configuration file, and click **Import File** to import the local system configuration file to the system.
- Export: Click **Export Configuration file** to export the system configuration file to local storage.

Figure 8-50 Import/Export



8.5.4.4 Default

Restore the device to default configuration or factory settings.

This function will restore the device to default configuration or factory setting.

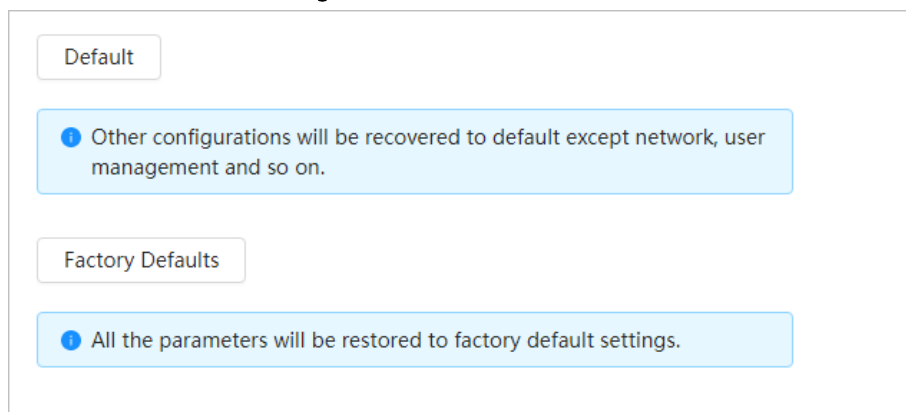


Be careful when doing operations such as “default” and “factory default”. The operations will result in data loss.

Select  > **System** > **Maintenance Management** > **Default**.

- Click **Default**, and then all the configurations except IP address and account are reset to default.
- Click **Factory Default**, and all the configurations are reset to factory settings.

Figure 8-51 Default



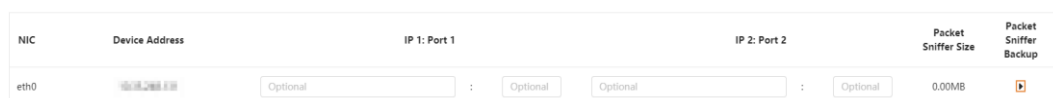
8.5.5 Packet Capture

The network packet capture function facilitates users to capture packets from devices to obtain the status of specified networks, reducing operation and maintenance costs

Step 1 Select  > **System** > **Packet Capture**.

Step 2 Click  to start capturing packet.

Figure 8-52 Starting capturing packet



Step 3 Click  to stop capturing packet.



After stopping capturing packet, the Camera will automatically download the pcap file.

Figure 8-53 Stopping capturing packet

NIC	Device Address	IP 1: Port 1		IP 2: Port 2		Packet Sniffer Size	Packet Sniffer Backup
eth0		Optional	:	Optional	Optional	0.00MB	

8.5.6 Updating

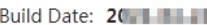
Upgrading to the latest system can refine camera functions and improve stability.

If wrong upgrade file has been used, restart the device; otherwise some functions might not work properly.

Step 1 Select  > **System** > **Update**.

Figure 8-54 Update

Upgrade

System Version: 2.  Build Date: 20 

Online Update

Auto Check for Updates: ☐

Manual Check

File Update

Path

Step 2 Select an upgrading method you need and upgrade the system.

- File Upgrade
 1. Click **Browse**, and upload upgrade file.
The upgrade file should be a .bin file.
 2. Click **Update** to start the process.
- Online upgrade



Only when this thermal camera and your computer are both connected to network, can online upgrading be implemented.

Detect your system version.

- ◇ Auto detection: Click ☐ to enable **Auto Check for Updates**. The version is detected automatically.
- ◇ Manual detection: Click **Manual Check**, and the system begins to check the version information.

8.6 Viewing System Information

You can view the information, including version, log and online user, and back up or clear log.

8.6.1 Version

Select  > **System Info** > **Version** to view device information such as hardware, system version, and web version.

8.6.2 Online User

Select  > **System Info** > **Online User** to view all the current users logging in to web page; select  > **System Info** > **Platform User** to view all the platform users accessing the web page.

8.6.3 Legal Information

Select  > **System Info** > **Legal Info** to view legal information such as Software License Agreement, Privacy Policy, and Open Source Software Notice.

8.7 Viewing Log

8.7.1 Log

You can view and back up logs.

Step 1 Select  > **Log** > **Log**.

Step 2 Configure the start time and end time, and then select the log type.

The start time should be later than January 1st, 2000, and the end time should be earlier than December 31, 2037.

The log type includes All, System, Setting, Data, Event, Record, Account, and Safety.

- **System:** Includes program start, abnormal close, close, program reboot, device closedown, device reboot, system reboot, and system upgrade.
- **Setting:** Includes saving configuration and deleting configuration file.
- **Data:** Includes configuring disk type, clearing data, hot swap, FTP state, and record mode.
- **Event** (records events such as video detection, smart plan, alarm and abnormality): includes event start and event end.
- **Record:** Includes file access, file access error, and file search.
- **Account:** Includes login, logout, adding user, deleting user, editing user, adding group, deleting group, and editing group.
- **Security:** Includes password resetting and IP filter.

Step 3 Click **Search**.

- Click  or click a certain log, and then you can view the detailed information in **Details** area.
- Click **Backup**, and then you can back up all found logs to local computer.

Figure 8-55 Log

Start Time2022-05-25 16:08:25 ~ 2022-05-26 16:08:25TypeAllSearch

Backup☐ Encrypt Log Backup

No.	Time	Username	Type	Details
1	2022-05-26 13:39:35	admin	Login	
2	2022-05-26 12:07:11	admin	Logout	
3	2022-05-26 11:31:00	System	End Event	
4	2022-05-26 11:30:59	System	Start Event	
5	2022-05-26 11:30:56	System	End Event	
6	2022-05-26 11:30:56	System	Start Event	
7	2022-05-26 11:30:38	System	End Event	
8	2022-05-26 11:30:37	System	Start Event	
9	2022-05-26 11:29:50	System	End Event	
10	2022-05-26 11:29:50	System	Start Event	
11	2022-05-26 11:29:48	System	End Event	
12	2022-05-26 11:29:47	System	Start Event	
13	2022-05-26 11:29:36	System	End Event	
14	2022-05-26 11:29:35	System	Start Event	
15	2022-05-26 11:29:20	System	End Event	

119 record(s)12Go to

8.7.2 Remote Log

Configure remote log, and you can get the related log by accessing the set address.

- Step 1Select  > **Log > Remote Log.**
- Step 2Click  to enable remote log function.
- Step 3Set address, port and device number.
- Step 4Click **Apply.**

Figure 8-56 Remote log

Enable☒

Server Address

Port(1-65534)

Device No.(0-23)

EnableTLS☐

RTSP stream is encrypted by using TLS tunnel before transmission.

ApplyRefreshDefault

9 Security

9.1 Security Status

Background Information

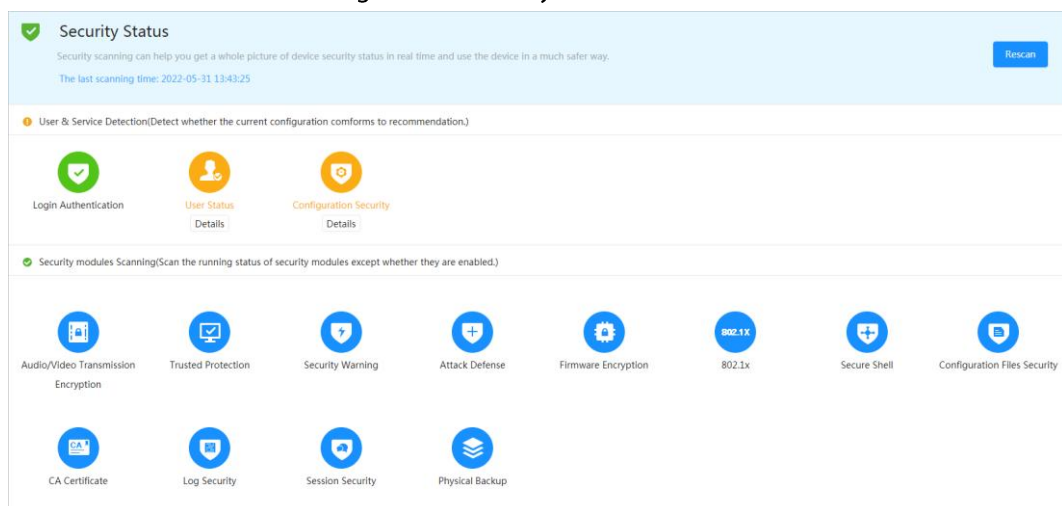
Detect the user and service, and scan the security modules to check the security status of the Camera, so that when abnormality appears, you can process it timely.

- User and service detection: Detect login authentication, user status, and configuration security to check whether the current configuration conforms to recommendation.
- Security modules scanning: Scan the running status of security modules, such as audio/video transmission, trusted protection, securing warning and attack defense, not detect whether they are enabled.

Procedure

- Step 1 On the main page, select **Security** > **Security Status**.
- Step 2 Click **Rescan** to scan the security status of the Camera.

Figure 9-1 Security status



Related Operations

After scanning, different results will be displayed with different color. Yellow indicates that the security modules are abnormal, and Green indicates that the security modules are normal.

1. Click **Details** to view the details of the scanning result.
2. Click **Ignore** to ignore the exception, and it will not be scanned in next scanning.
Click **Joint Detection**, and the exception will be scanned in next scanning.
3. Click **Optimize**, and the corresponding page is displayed, and you can edit the configuration to clear the exception.

Figure 9-2 Security status

Details
X

Total 2 XX items must be optimized. You are recommended to optimize now.
Ignore

Device Account Status
1.A strong password is not used.
Optimize

ONVIF Account Status
1.A strong password is not used.
Optimize

9.2 System Service

9.2.1 802.1x

Cameras can connect to LAN after passing 802.1x authentication.

Step 1 On the main page, select **Security** > **System Service** > **802.1x**.

Step 2 Select the NIC name as needed, and click ☐ to enable it.

Step 3 Select the authentication mode, and then configure parameters.

- PEAP: Protected EAP protocol.
 1. Select PEAP as the authentication mode.
 2. Enter the username and password that has been authenticated on the server.
 3. Click ☐ next to CA certificate, and select the trusted CA certificate in list.



If there is no certificate in the list, click **Certificate Management** at the left navigation bar. For details, see "9.4.2 Installing Trusted CA Certificate".

Figure 9-3 802.1x (PEAP)

802.1x
HTTPS

802.1x is a network access control protocol which can effectively prevent access from unauthorized hosts.

NIC Name: NIC1

Enable: ☐

Authentication Mode: PEAP

Username: none

Password: ****

CA Certificate: ☒

Use a trusted CA certificate to verify the validity of peer authentication server (switch or Radius server).

Device Certificate: Trusted CA Certificates

Certificate List
Certificate Management

No.	Custom Name	Certificate Serial Number	Validity Period	User	Issued by	Used by
☐ 1		456 (3456) 12 345 678	2059-05-23 11:05:14	Device Root CA	Device Root CA	
☐ 2		456 (345) 12 345 678	2049-05-30 13:58:24	Device IPC CA	Device Root CA	

Apply Refresh Default

- TLS: Transport Layer Security. It is applied in two communication application programs to guarantee the security and integrity of the data.
 1. Select TLS as the authentication mode.
 2. Enter the username.
 3. Click ☐ next to CA certificate, and select the trusted CA certificate in list.



If there is no certificate in the list, click **Certificate Management** at the left navigation bar. For details, see "9.4.2 Installing Trusted CA Certificate".

Figure 9-4 802.1x (TLS)

No.	Custom Name	Certificate Serial Number	Validity Period	User	Issued by	Used by
1			2027-03-02 16:52:07	TPC-CA	TPC-CA	
2			2027-03-02 16:53:25	test	test	

Step 4 Click **Apply**.

9.2.2 HTTPS

Create a certificate or upload an authenticated certificate, and then you can log in through HTTPS with your PC. The HTTPS can protect page authenticity on all types of websites, secure accounts, and keep user communications, identity, and web browsing private.

Step 1 On the main page, select **Security > System Service > HTTPS**.

Step 2 Click ☐ to enable it.

Step 3 Select the certificate.



If there is no certificate in the list, click **Certificate Management** at the left navigation bar. For details, see "9.4.1 Installing Device Certificate".

Figure 9-5 HTTPS

No.	Custom Name	Certificate Serial Number	Validity Period	User	Issued by	Used by
1			2056-01-28 16:37:59	BLOE93DYCU35C94	Dahua Device TPC CA	HTTPS, RTSP over TLS
2			2056-01-19 20:23:42	BLOE93DYCU35C94	General Device TPC CA	

Step 4 Click **Apply**.

9.3 Attack Defense

9.3.1 Firewall

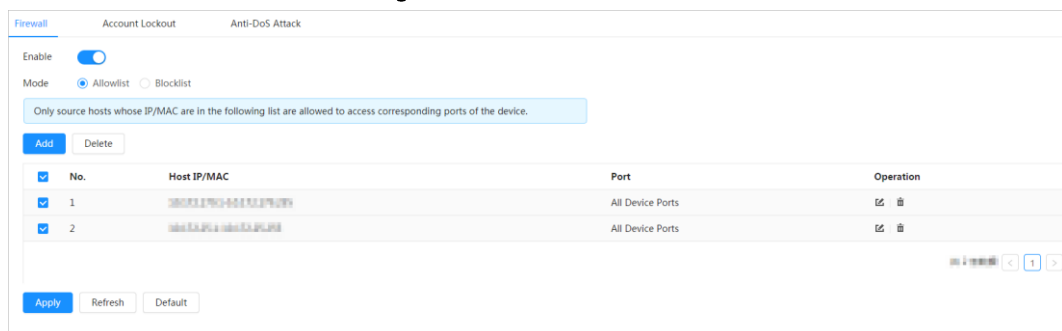
Configure firewall to limit access to the Camera.

Procedure

Step 1 On the main page, select **Security > Attack Defense > Firewall**.

Step 2 Click  to enable the firewall function.

Figure 9-6 Firewall

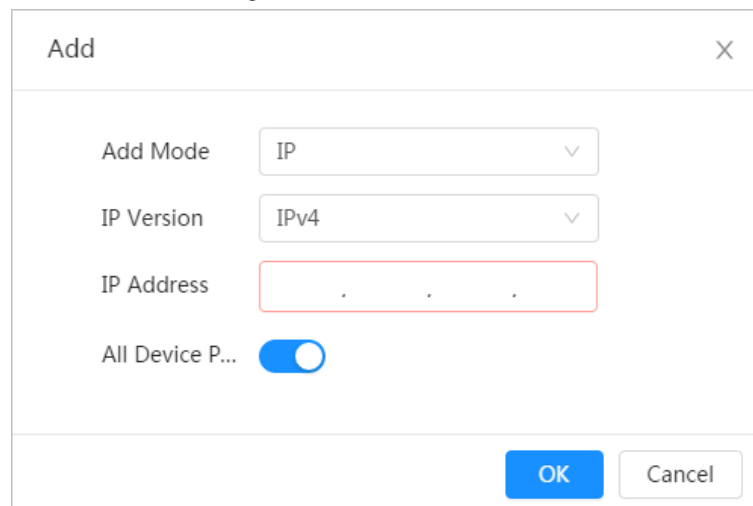


Step 3 Select the mode: **Allowlist** and **Blocklist**.

- **Allowlist:** Only when the IP/MAC of your PC in the allow list, can you access the Camera. Ports are the same.
- **Blocklist:** When the IP/MAC of your PC is in the block list, you cannot access the Camera. Ports are the same.

Step 4 Click **Add** to add the host IP/MAC address to **Allowlist** or **Blocklist**, and then click **OK**.

Figure 9-7 Firewall



Step 5 Click **Apply**.

Related Operations

- Click  to edit the host information.
- Click  to delete the host information.

9.3.2 Account Lockout

If you consecutively enter a wrong password more than the configured value, the account will be locked.

Step 1 On the main page, select **Security > Attack Defense > Account Lockout**.

Step 2 Configure the login attempt and lock time for device account and ONVIF user.

- Login attempt: Upper limit of login attempts. If you consecutively enter a wrong password more than the configured value, the account will be locked.
- Lock time: The period during which you cannot login after the login attempts reaches upper limit.

Figure 9-8 Account lockout

Firewall	Account Lockout	Anti-DoS Attack
Device Account		
Login Attempt	5time(s)	
Lock Time	5	min
ONVIF User		
Login Attempt	30time(s)	
Lock Time	5	min
SNMP User		
Enable	☐	
Login Attempt	30time(s)	
Lock Time	5	min
<button>Apply</button> <button>Refresh</button> <button>Default</button>		

Step 3 Click **Apply**.

9.3.3 Anti-DoS Attack

You can enable **SYN Flood Attack Defense** and **ICMP Flood Attack Defense** to defend the device against Dos attack.

Step 1 On the main page, select **Security > Attack Defense > Anti-DoS Attack**.

Step 2 Select **SYN Flood Attack Defense** or **ICMP Flood Attack Defense** to defend the device against Dos attack.

Figure 9-9 Anti-DoS attack

Firewall Account Lockout **Anti-DoS Attack**

SYN Flood Attack Defense ☐

An attacker might send out repeated SYN messages to the device, leaving many half-open TCP connections on the device, which will make the device crash. When hit by an SYN flood attack, the device will defend itself by discarding the first message.

ICMP Flood Attack Defense ☐

An attacker might send out an abnormally large number of ICMP packets to the device, which will use up all computing resources and thus make the device crash. When hit by an ICMP flood attack, the device will defend itself by using the ICMP message filtering tactic.

Apply Refresh Default

9.4 CA Certificate

9.4.1 Installing Device Certificate

Create a certificate or upload an authenticated certificate, and then you can log in through HTTPS with your PC.

9.4.1.1 Creating Certificate

Creating certificate in the device.

Procedure

- Step 1 On the main page, select **Security** > **CA Certificate** > **Device Certificate**.
- Step 2 Click **Install Device Certificate**.
- Step 3 Select **Create Certificate**, and click **Next**.
- Step 4 Enter the certificate information.

Figure 9-10 Certificate information (1)

Step 2: Fill in certificate information. X

Custom Name test1

* IP/Domain Name [masked]

Organization Unit TEST

Organization COMPANY

* Validity Period 200 Days (1~5000)

* Region [masked]

Province

City Name

Back **Create and install certificate** Cancel

Step 5 Click **Create and install certificate**.

After the certificate is created successfully, you can view the created certificate on the **Device Certificate** page.

Related Operations

- Click **Enter Edit Mode**, you can edit the custom name of the certificate.
- Click  to download the certificate.
- Click  to delete the certificate.

9.4.1.2 Applying for and Importing CA Certificate

Import the third-party CA certificate to the Camera.

Procedure

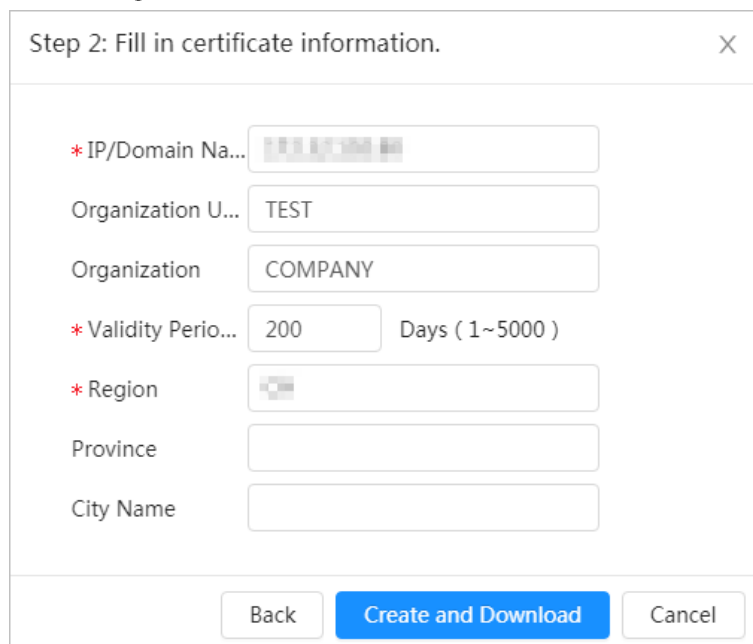
Step 1 On the main page, select **Security > CA Certificate > Device Certificate**.

Step 2 Click **Install Device Certificate**.

Step 3 Select **Apply for CA Certificate and Import (Recommended)**, and click **Next**.

Step 4 Enter the certificate information.

Figure 9-11 Certificate information (2)



Step 5 Click **Create and Download**.

Save the request file to your PC.

Step 6 Apply the CA certificate from the third-party certificate authority.

Step 7 Import the signed CA certificate.

- 1) Save the CA certificate to the PC.
- 2) Do Step1 to Step3, and click **Browse** to select the signed CE certificate.
- 3) Click **Install and Import**.

After the certificate is created successfully, you can view the created certificate on the **Device Certificate** page.

- Click **Recreate** to create the request file again.
- Click **Import Later** to import the certificate next time.

Related Operations

- Click **Enter Edit Mode**, you can edit the custom name of the certificate.
- Click  to download the certificate.
- Click  to delete the certificate.

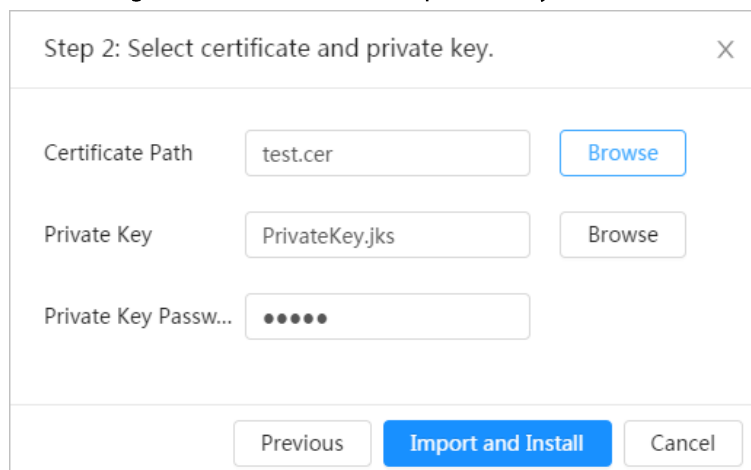
9.4.1.3 Installing Existing Certificate

Import the existing third-party certificate to the Camera. When apply for the third-party certificate, you also need to apply for the private key file and private key password.

Procedure

- Step 1 On the main page, select **Security** > **CA Certificate** > **Device Certificate**.
- Step 2 Click **Install Device Certificate**.
- Step 3 Select **Install Existing Certificate**, and click **Next**.
- Step 4 Click **Browse** to select the certificate and private key file, and enter the private key password.

Figure 9-12 Certificate and private key



Step 2: Select certificate and private key. X

Certificate Path test.cer Browse

Private Key PrivateKey.jks Browse

Private Key Passw... ..

Previous Import and Install Cancel

- Step 5 Click **Import and Install**.
- After the certificate is created successfully, you can view the created certificate on the **Device Certificate** page.

Related Operations

- Click **Enter Edit Mode**, you can edit the custom name of the certificate.
- Click  to download the certificate.
- Click  to delete the certificate.

9.4.2 Installing Trusted CA Certificate

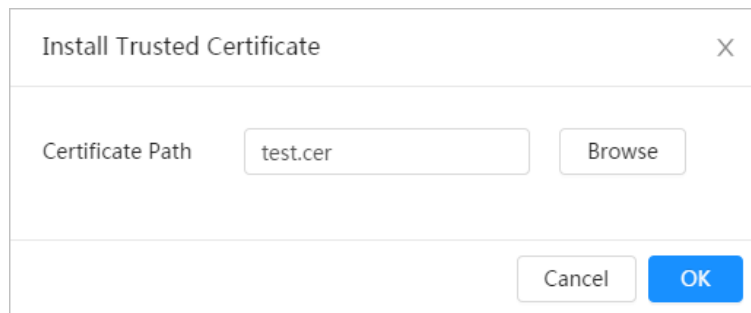
CA certificate is a digital certificate for the legal identity of the Camera. For example, when the Camera accesses the LAN through 802.1x, the CA certificate is required.

Procedure

- Step 1 On the main page, select **Security** > **CA Certificate** > **Trusted CA Certificates**.
- Step 2 Click **Install Trusted Certificate**.

Step 3 Click **Browse** to select the certificate.

Figure 9-13 Installing trusted certificate



The dialog box titled "Install Trusted Certificate" has a close button (X) in the top right corner. It contains a "Certificate Path" label followed by a text input field containing "test.cer" and a "Browse" button. At the bottom right, there are "Cancel" and "OK" buttons.

Step 4 Click **OK**.

After the certificate is created successfully, you can view the created certificate on the **Trusted CA Certificate** page.

Related Operations

- Click **Enter Edit Mode**, you can edit the custom name of the certificate.
- Click  to download the certificate.
- Click  to delete the certificate.

9.5 A/V Encryption

The device supports audio and video encryption during data transmission.

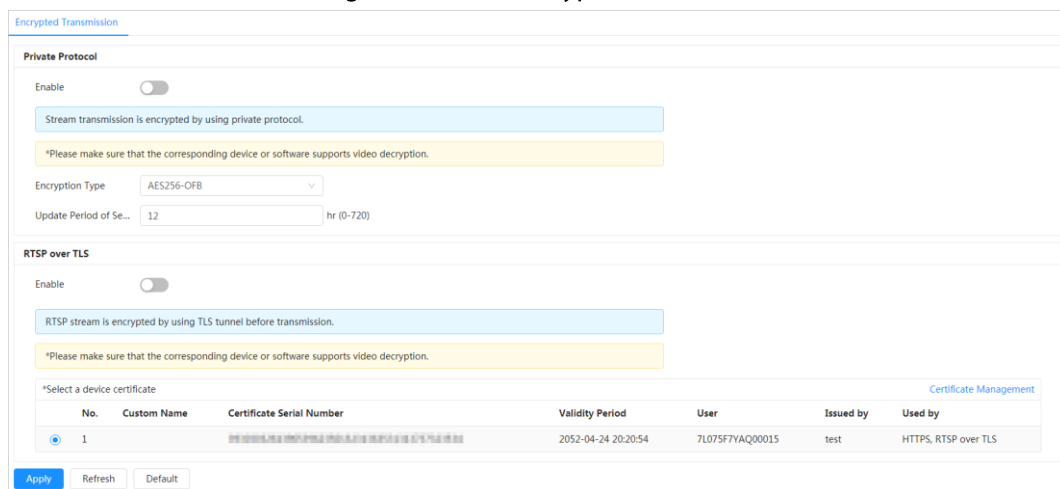


You are recommended to enable A/V Encryption function. There might be safety risk if this function is disabled.

Step 1 On the main page, select **Security > A/V Encryption**.

Step 2 Configure the parameters.

Figure 9-14 A/V encryption



The "Encrypted Transmission" configuration page is divided into two sections: "Private Protocol" and "RTSP over TLS".

Private Protocol

- Enable:** A toggle switch is currently turned off.
- Stream transmission is encrypted by using private protocol.** (Informational message)
- *Please make sure that the corresponding device or software supports video decryption.** (Warning message)
- Encryption Type:** A dropdown menu showing "AES256-OFB".
- Update Period of Se...:** A text input field showing "12" with a unit of "hr (0-720)".

RTSP over TLS

- Enable:** A toggle switch is currently turned off.
- RTSP stream is encrypted by using TLS tunnel before transmission.** (Informational message)
- *Please make sure that the corresponding device or software supports video decryption.** (Warning message)
- *Select a device certificate:** A section containing a table of certificates and a "Certificate Management" link.

No.	Custom Name	Certificate Serial Number	Validity Period	User	Issued by	Used by
1			2052-04-24 20:20:54	7L075F7YAQ00015	test	HTTPS, RTSP over TLS

At the bottom of the page are three buttons: "Apply", "Refresh", and "Default".

Table 9-1 A/V encryption parameter

Area	Parameter	Description
Private Protocol	Enable	Enables stream frame encryption by using private protocol.  There might be safety risk if this service is disabled.
	Encryption Type	Use the default setting.
	Update Period of Secret Key	Secret key update period. Value range: 0–720 hours. 0 means never update the secret key. Default value: 12.
RTSP over TLS	Enable	Enables RTSP stream encryption by using TLS.  There might be safety risk if this service is disabled.
	Select a device certificate	Select a device certificate for RTSP over TLS.
	Certificate Management	For details about certificate management, see "9.4.1 Installing Device Certificate".

Step 3 Click **Apply**.

9.6 Security Warning

When security exception event is detected, the Camera sends a warning to remind you to process it timely, to avoid security risk.

Step 1 On the main page, select **Security** > **Security Warning**.

Step 2 Click  next to **Enable** to enable security warning.

Step 3 Configure the parameters.

Figure 9-15 Security warning

Enable
☐

Event Monitoring

☒ Invalid executable programs attempting to run
☒ Session ID bruteforcing

☒ Web directory bruteforcing
☒ Login not in the specified time range.

☒ Number of session connections exceeds limit
☒ Brute force attack of the account.

Security warning can detect device security status in real time, and keep you informed of the security exception events immediately, so that you can deal with them timely and avoid security risks.

+Event Linkage

Alarm-out Port | Enabled

Alarm Channel

1 2

Post-alarm

10 sec (3-300)

Apply Refresh Default

- Step 4 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".
- Step 5 Click **Apply**.

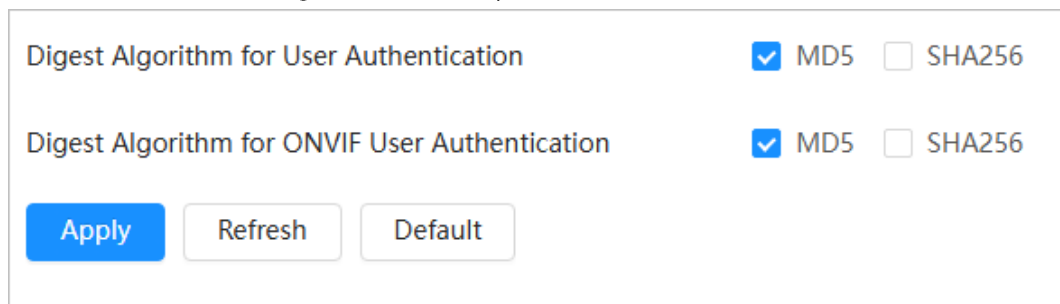
9.7 Security Authentication

Set the encryption algorithm used for device login.

Step 1 On the main page, select **Security** > **Security Authentication**.

Step 2 Select the digest algorithm as needed.

Figure 9-16 Security authentication



Digest Algorithm for User Authentication ☒ MD5 ☐ SHA256

Digest Algorithm for ONVIF User Authentication ☒ MD5 ☐ SHA256

Apply Refresh Default

Step 3 Click **Apply**.

Appendix 1 Security Recommendation

1. Account Management

1.1 Use complex passwords

Please refer to the following suggestions to set passwords:

- The length should not be less than 8 characters;
- Include at least two types of characters: upper and lower case letters, numbers and symbols;
- Do not contain the account name or the account name in reverse order;
- Do not use continuous characters, such as 123, abc, etc.;
- Do not use repeating characters, such as 111, aaa, etc.

1.2 Change passwords periodically

It is recommended to periodically change the device password to reduce the risk of being guessed or cracked.

1.3 Allocate accounts and permissions appropriately

Appropriately add users based on service and management requirements and assign minimum permission sets to users.

1.4 Enable account lockout function

The account lockout function is enabled by default. You are advised to keep it enabled to protect account security. After multiple failed password attempts, the corresponding account and source IP address will be locked.

1.5 Set and update password reset information in a timely manner

Our device supports password reset function. To reduce the risk of this function being used by threat actors, if there is any change in the information, please modify it in time. When setting security questions, it is recommended not to use easily guessed answers.

2. Service Configuration

2.1. Enable HTTPS

It is recommended that you enable HTTPS to access Web services through secure channels.

2.2 Encrypted transmission of audio and video

If your audio and video data contents are very important or sensitive, we recommend you to use encrypted transmission function in order to reduce the risk of your audio and video data being eavesdropped during transmission.

2.3 Turn off non-essential services and use safe mode

If not needed, it is recommended to turn off some services such as SSH, SNMP, SMTP, UPnP, AP hotspot etc., to reduce the attack surfaces.

If necessary, it is highly recommended to choose safe modes, including but not limited to the following services:

- SNMP: Choose SNMP v3, and set up strong encryption and authentication passwords.
- SMTP: Choose TLS to access mailbox server.
- FTP: Choose SFTP, and set up complex passwords.
- AP hotspot: Choose WPA2-PSK encryption mode, and set up complex passwords.

2.4 Change HTTP and other default service ports

It is recommended that you change the default port of HTTP and other services to any port between 1024 and 65535 to reduce the risk of being guessed by threat actors.

3. Network Configuration

3.1 Enable Allow list

It is recommended that you turn on the allow list function, and only allow IP in the allow list to access the device. Therefore, please be sure to add your computer IP address and supporting device IP address to the allow list.

3.2 MAC address binding

It is recommended that you bind the IP address of the gateway to the MAC address on the device to reduce the risk of ARP spoofing.

3.3. Build a secure network environment

In order to better ensure the security of devices and reduce potential cyber risks, the following are recommended:

- Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.
- According to the actual network needs, partition the network: if there is no communication demand between the two subnets, it is recommended to use VLAN, gateway and other methods to partition the network to achieve network isolation.
- Establish 802.1x access authentication system to reduce the risk of illegal terminal access to the private network.

4. Security Auditing

4.1 Check online users

It is recommended to check online users regularly to identify illegal users.

4.2 Check device log

By viewing logs, you can learn about the IP addresses that attempt to log in to the device and key operations of the logged users.

4.3 Configure network log

Due to the limited storage capacity of devices, the stored log is limited. If you need to save the log for a long time, it is recommended to enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

5. Software Security

5.1 Update firmware in time

According to the industry standard operating specifications, the firmware of devices needs to be updated to the latest version in time in order to ensure that the device has the latest functions and security. If the device is connected to the public network, it is recommended to enable the online upgrade automatic detection function, so as to obtain the firmware update information released by the manufacturer in a timely manner.

5.2 Update client software in time

It is recommended to download and use the latest client software.

6. Physical Protection

It is recommended that you carry out physical protection for devices (especially storage devices), such as placing the device in a dedicated machine room and cabinet, and having access control and key management in place to prevent unauthorized personnel from damaging hardware and other peripheral equipment (e.g. USB flash disk, serial port).