

**Dual-spectrum  
Network Speed Dome  
User Manual V1.1.0**

## Statement

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The contents of this manual will be changed from time to time due to product version upgrades or other reasons, and subject to change without notice. We try our best to ensure that the content in this manual is accurate and reliable. This manual is only used as a guide. All statements, information and suggestions in this manual do not constitute any express or implied guarantee.

## Special Statement

Please strictly abide by the applicable laws and regulations for the use and maintenance of the monitoring interface. Using equipment for illegal purposes or snooping on the privacy of others are all illegal surveillance.

## Symbol Description

For the symbols that appear in the document, the description is as follows.



Cautions: general warning signs, reminding things that should be paid attention to during operation.



Instructions: instructions are an emphasis and supplement to the main text.

## Default Information:

The default super administrator account of the device: admin.

The default super administrator password of the device: admin.

The default IPv4 address of the device: 192.168.1.123.

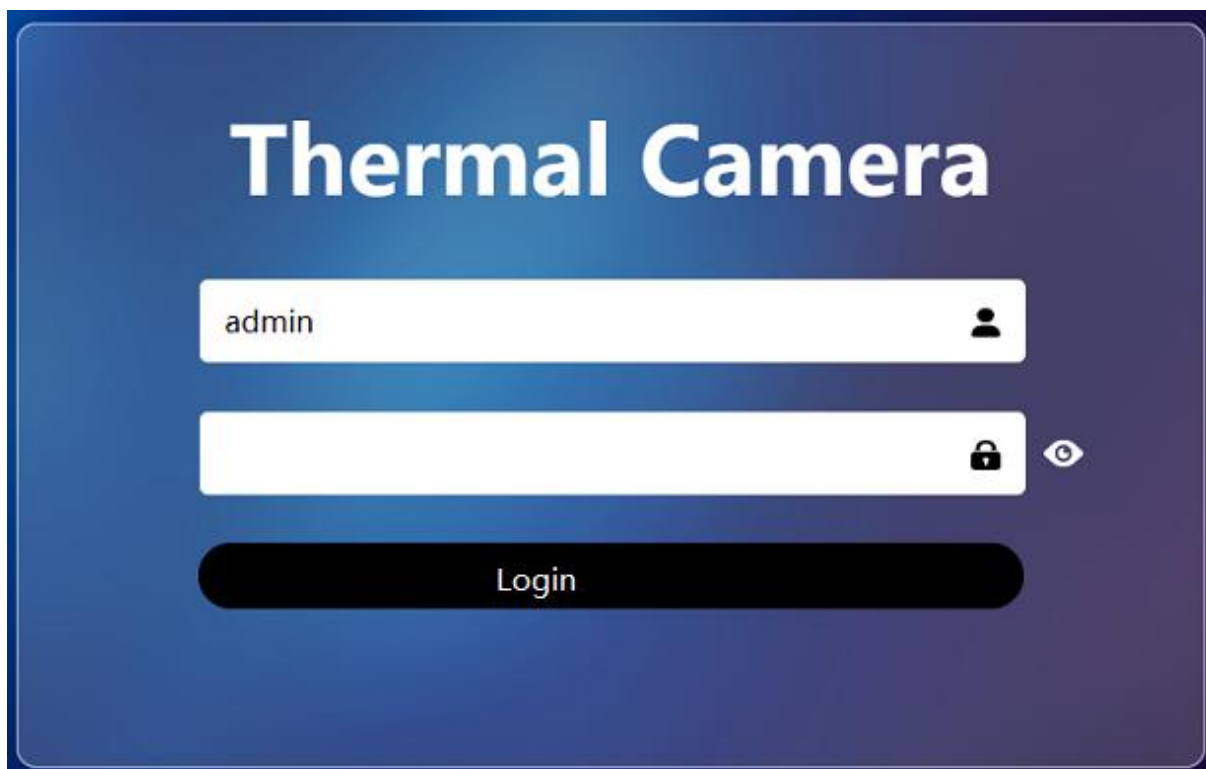
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## 1. Camera Login

After the camera is connected to the network, the user can enter the camera's IP address in the browser address bar to access the camera.



**Figure 1.1 Camera Login Interface**

The specific login steps are as follows:

1. Enable the browser. (Note: only Google, Edge and Firefox are supported.)
2. Enter the IP address of the camera in the browser address bar: `http://xx.xx.xx.xx`. For example, enter `http://192.168.1.123`. Enter the "Login" interface, as shown above.
3. Enter the correct user name and password (the default user name and password of the camera is admin/admin).
4. The password is forced to be changed during the first login and factory default restoring.
5. Enter the new password, Click the [Login] button to enter the home page of the camera, otherwise a related login error will be prompted.

## 2. Preview

The preview screen has two channels for simultaneous monitoring, one for visible light and the other for thermal imaging.



Figure 2.1 Preview Interface

**Full Screen:** 

Click the full video icon in the lower right corner, the preview image will be displayed on full screen. Quit the full screen mode by pressing ESC.


**Note:**

- 1) Double channel display uses substream, the single channel display uses mainstream by default.
- 2) The full-screen display will be achieved while the browser zoom is 100%, or else the image will be displayed in scale.


**Switch between mainstream and substream:**

The image preview uses double-channel substream by default, double click a channel to switch from substream to mainstream (single channel), restore by right single click.

**Visible Light Mapping:** 


Enable/disable. Enable  , the drawn temperature measurement rules and temperature info can be overlaid on the visible channel.

**Note:** this button will only be displayed if the after the superposition is chosen in Temperature Stack. Refer to descriptions of Basic Parameter in Chapter 3.1 for detailed information.



**Snap:** 

After selecting the visible channel or thermal channel with the mouse, click the snap icon in the lower right corner. The current screen of the selected channel is captured, and the pictures can be viewed through the downloaded folder of the browser by default.


**Video:** 

After selecting the visible channel or thermal imaging channel with the mouse, click the video icon in the lower right corner . Select the channel to start recording videos, and click the icon again to end the recording, the videos can be viewed through the downloaded folder of the browser by default.

**Full Video:** 

Click the full video icon in the lower right corner  , the video will be recorded in the two channels, click the icon  again to end recording, the videos can be viewed through the downloaded folder of the browser by default.

**Talk:** 

The external interface of the camera "line out" is connected to the speaker, "line in" is connected to the audio source (pickup or phone player) and the talk function is turned on by clicking the icon  in the lower right corner of the web preview interface. Use the headset to speak on the computer, and the sound can be heard from the speaker. The sound of the audio source through "line in" can be heard in the headset.



You need to set in "Settings-Camera Settings-Enable" before use the talk and voice function.


**Note:** before the talk function is enabled, enable the option Insecure origins treated as secure first, click the Relaunch button, the microphone can be used in the webpage by typing in http://xx.xx.xx.xx in the address bar after rebooting the browser.

The option can be enabled by typing in the following address in the browser.

Chrome: "chrome://flags/#unsafely-treat-insecure-origin-as-secure".

Edge: "edge://flags/#unsafely-treat-insecure-origin-as-secure".

**Voice:** 

The external interface of the camera "line in" is connected to the audio source (pickup or phone player), turn on the voice switch  in the lower right corner of the preview interface, and the sound can be heard on the computer web terminal.

**Play/Pause:** 

Click the play/pause button at the bottom of the video, and the two channels of visible light and thermal imaging will be frozen at the same time. Click the play/pause button again and the two channels will return to normal.

**Note:** the images in the two channels will be automatically displayed by default after the camera is turned on.

**PTZ:** 

Click the arrow on the right side of the preview interface to present or hide the PTZ control panel to achieve PTZ functions including PTZ control and PTZ function. See the following figure:





Figure 2.2 PTZ Control Panel

### PTZ Control

Set PT rotation and lens control, see the following figure:



Figure 2.3 PTZ Control Interface

**Direction button:** support 8 directions: up, down, left, right, up-left, up-right, down-left, down-right.

**Zoom:** select image in visible channel/thermal channel, adjust the lens focal length to zoom in or zoom out the image. Click *Zoom+* to zoom in the preview image, click *Zoom-* to zoom out the preview image.

**Note:** this function is only available for devices with motorized zoom lens.

**Focus:** select images in visible/thermal channel, adjust the focus to improve the image sharpness. Click *Focus+* or *Focus-* button to adjust the focus, you can see the sharpness adjustment process on the preview image.

Note: this function is only available for devices with motorized focus lens.

**Aperture:** set the luminous flux in the visible channel. Click *Aperture+* button to make the image brighter, click the *Aperture-* button to make the image dimmer.

**Note:** this function is only available for devices in manual exposure mode.

**PT Speed:** you can drag the adjustment bar or input the PT speed value (the value range is 1-8), the larger the value, the faster the speed.

#### **Auxiliary functions:**

Set according to the common peripherals and functions, see the following figure:



**Figure 2.4 Control Panel of the Auxiliary Functions**

- Fan: turn on/off the fan function.
- Fog through: turn on/off the fog penetration function, mainly used to adjust the image sharpness in foggy or haze environment.
- Wiper: turn on/off the wiper function.
- IR Illuminator: turn on/off the IR illuminator.
- Auto focus: select the image in visible/ thermal channel, click the auto focus button to find the clearest image.

**Note:** this function is only available for devices with motorized focus lens.

- Two-way Follow-up: Adjust the magnification to synchronize the FoV in visible channel and thermal channel.
- 3D Positioning: select visible/thermal channel, draw a box with mouse on the image, then the PT will rotate and perform fast zooming to locate the scene. Draw the box from upper-left to lower-right to zoom in, draw the box from lower-right to upper-left to zoom out.
- **PTZ Function**

In the PTZ function, you can set presets, pattern scan, auto scan, area scan, panorama scan, accurate positioning and auxiliary functions, see the following figure. Refer to 5.4 PTZ settings for detailed information.






Figure 2.5 PTZ Control Interface

**Preset:** it refers to that the camera will save the current pan, tilt and focal length info which can be used quickly and adjust the PT and camera to the desired position.

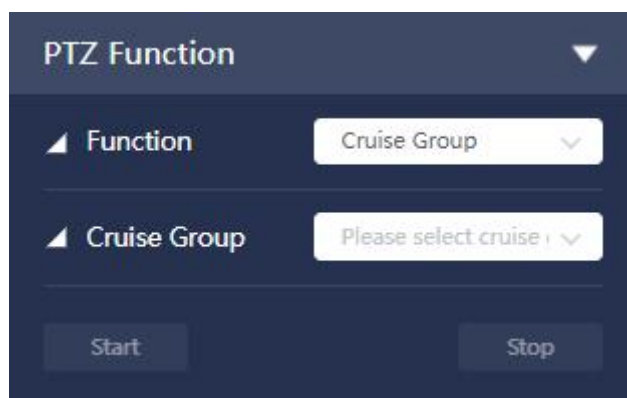


Figure 2.6 Preset Control Interface

Procedures:

- 1) Choose *preset* in function area;
- 2) Rotate the camera to the desired direction via the direction buttons;
- 3) Select preset N in the preset list, click the settings button  , then then a prompt indicating successful operation will display on the interface;
- 4) Click the calling button  of the preset N, the camera will turn to the corresponding preset position;
- 5) Click the delete button  of the preset N, the preset N will be deleted after successful operation prompt.

**Tour:** it refers to that the presets are arranged into the automatic tour according to the required sequence, so that the camera can automatically move round according to the preset route in a convenient and fast way.



**Figure 2.7 Tour Control Interface**

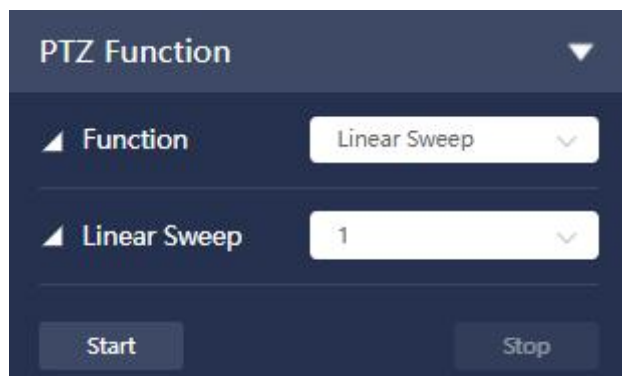
Procedures:

- 1) Select Setting-PTZ-PTZ function-Tour;
- 2) Select Tour in PTZ function;
- 3) Select Tour N;
- 4) Click *Start* to start the scanning tour, and click *Stop* to stop the scanning tour.

**Pan:** the camera moves horizontally at a certain speed between the configured left and right limits.

Procedures:

- 1) Select Setting-PTZ-PTZ function-Pan;
- 2) Select Pan in PTZ function;
- 3) Select Pan No.;
- 4) Click Start to start pan, and click Stop to stop pan.

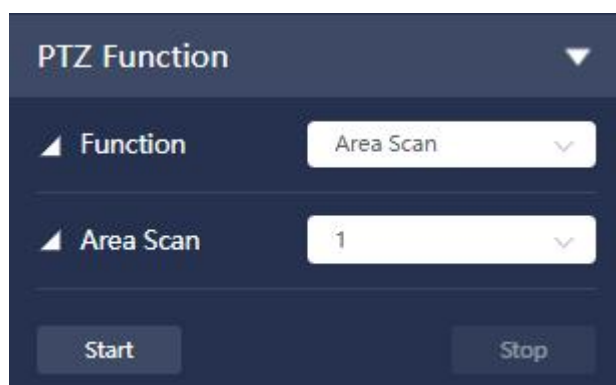


**Figure 2.8 Scan Control Interface**

Procedures:

- 1) Select Preview-PTZ-PTZ function-Scan-Scan N;
- 2) Select *Scan* in PTZ function area;
- 3) Select N for the Scan No.
- 4) Click *Start* to start scan and click *Stop* to stop scan.

**Scan:** You can configure an arc and horizontal area for your camera PTZ's rotation. Then by giving your PTZ a fixed rotation speed, you can get your camera scan from left to right (and from right to left) at a fixed speed.



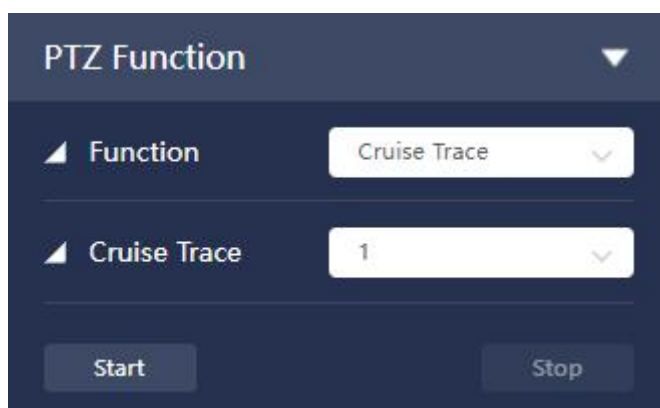
**Figure 2.9 Scan Control Interface**

Procedures:

- 1) Select Preview-PTZ-PTZ function- Scan-No.;

- 2) Select Scan in PTZ function area;
- 3) Select N for the Scan No.
- 4) Click *Start* to start scan and click *Stop* to stop scan.

**Pattern:** By configuring pattern, you can record continuously your operation to the PTZ and record the moving pattern of the camera's lens. The Device will make the location where the recording begins as the beginning point, and move back and forward automatically following the preset movement pattern.



Procedures:

- 1) Select Preview-PTZ-PTZ function-Pattern-N;
- 2) Select *Pattern* in PTZ function area;
- 3) Select N for the Pattern No.
- 4) Click *Start* to start pattern and click *Stop* to stop pattern.

**Accurate Positioning:** input the horizontal angel, vertical angle and zoom parameter, click the “accurate positioning” button to turn to the corresponding position, the image will be zoomed in or zoomed out according to the input zoom value in the visible/thermal channel.



Figure 2.11 Accurate Positioning Control Interface

**Auxiliary Function:** the reserved extension function.

## 3. Temperature Measurement

### 3.1 Basic Parameters

**Thermometry:** enable the thermometry or not. The point, line and area can be drawn only after the thermometry function is enabled.

**Thermographic Frame Rate:** setting range is 1-12.

**Temperature Unit:** Celsius, Fahrenheit, and Kelvin are interchangeable.

**Thermographic Mode:** high gain and low gain, high gain by default.

**Thermographic Overlay:** front-end overlay, back-end overlay or no overlay can be set.

■Front-end overlay: Temperature data is added to the stream and can be displayed during playback.

■Back-end overlay: temperature data is not added to the stream. In order to see the temperature data, the intelligent information overlay should be enabled when the video is played back.

■No overlay: the thermographic rules and the related data are not shown.

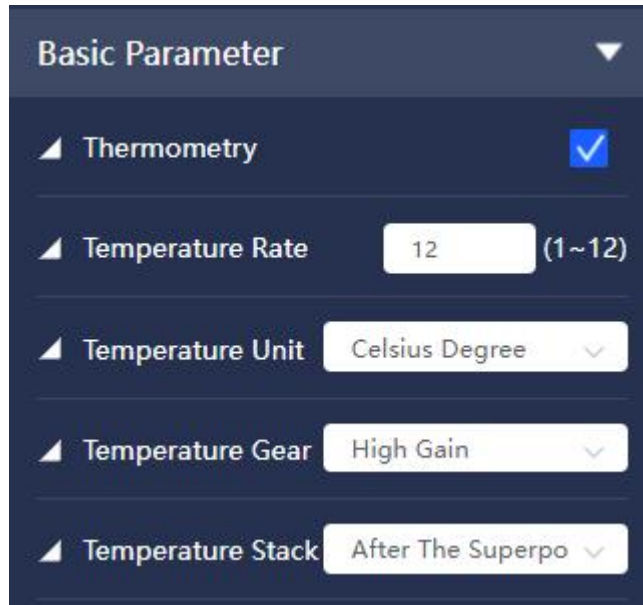


Figure 3.1 Temperature Measurement- Interface of Basic Parameter Settings

#### Environmental Parameters:

Set the environmental variables of the thermal imaging channel, including emissivity/reflected temperature/atmospheric temperature/atmospheric transmissivity/distance as shown in the below figure.

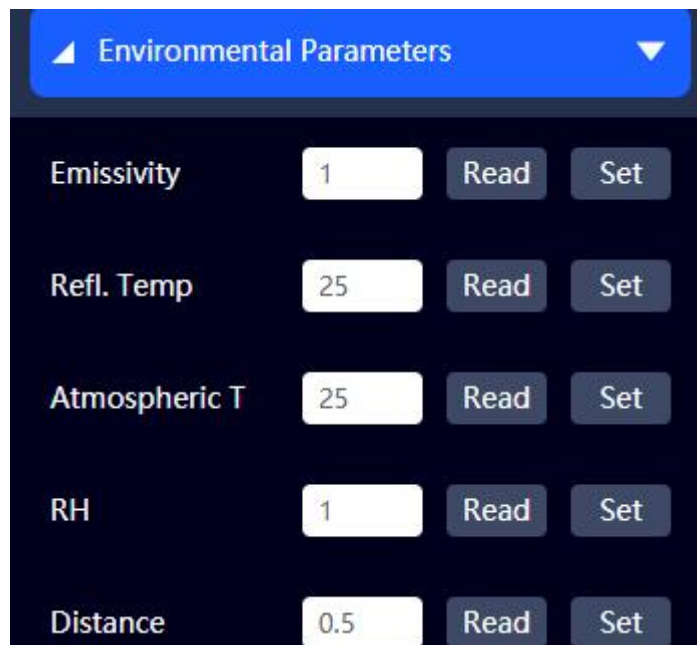


Figure 3.2 Temperature-Environmental Parameters Interface

**Note:** 1. Emissivity/Atmospheric Transmittance Range: 0.01~1, you can keep two decimal places.

Reflected Temperature/Atmospheric Temperature Range: -100°C~100°C;



2. All the environmental parameters are set according to these values by default, the info can also be set separately in alarm rules.

### 3.2 Cold/Hot Spot Tracing

After the above/below alarm is enabled, the highest/lowest of the whole frame reaches the set alarm threshold, the system will make alarm calls and alarm linkage actions.

Procedures: refer to Table 3-1 for detailed parameters.

- 1) Enable on the hot/cold spot trace interface.
- 2) Enable above/below alarm; Set the alarm temperature threshold.
- 3) Set the filtration time as M;
- 4) Set the temperature allowance as N;
- 5) Set the alarm linkage parameters: the corresponding event is linked when the alarm is triggered, for example, video recording (enable visible/thermal channel), image capture, Email linkage, flash alarm, voice alarm and alarm output, etc.
- 6) Defence time: set the triggering period of the above/below alarm (all time period by default);
- 7) Click “save” to finish. See the following figure:

**Cold Hot Tracking** ▾

Start Up

High Temp Alarm  °C

Low Temp Alarm  °C

Filtering Time  S

Tolerance Of Temperature  °C

---

**Linkage Way**

Video  01  02

Video Delay  S(10~300)

Alarm Output  01

Alarm Delay  S(10~300)

Take Pictures  01  02

Flash Alarm

Mode  ▾

Flicker Frequency  ▾

Residence Time  S(5~30)

Voice Alarm

File  ▾

Times Of Play  (1~15)

E-mail

Figure 3.3 Temperature-Cold/hot Spot Tracing Interface

Parameter	Descriptions
1 Enable	To make the alarm linkage rules take effect
2 High Temp Alarm	Above alarm threshold
3 Low Temp Alarm	Below alarm threshold

<p>4 Filtering Time</p>	<p>Alarm conditions: reach the temperature threshold and meet the time period requirement</p> <p>e.g. the filtering time is set as 3s, then while reaching the temperature threshold reaches and lasts for 3s, the alarm will be triggered.</p>
<p>5 Tolerance of Temperature</p>	<p>A tolerant alarm temperature range needs to be set in case of drifting temperature.</p> <p>e.g. the tolerance of temperature is set as 3°C, the alarm temperature is set as 45°C, then the alarm will be triggered when the detected temperature reaches 45°C, and the alarm will stop until the temperature is below 42°C.</p>
<p>6 Video</p>	<p>Video: select this option and set the video channel No.,the alarm will be automatically triggered in the selected channel.01 stands for the visible channel, 02 stands for the thermal channel.</p> <p>Video Delay: type in the delay time. After the alarm is finished, the alarm video would stop after a while.</p>
<p>7 Alarm Output</p>	<p>Alarm Output: the alarm output will be enabled after this option is selected.</p> <p>When the alarm is triggered, the system will link the alarm output and make alarms.</p> <p>Alarm Delay: type in delay time. After the alarm is finished, the alarm video would stop after a while.</p> <p>Before the function is enabled, please make sure that the alarm device is connected.(e.g. alarm light and alarm whistle)</p>
<p>8 Take Pictures</p>	<p>Select this option and set the channel No., the image will automatically captured in the selected channel when the alarm is triggered.</p> <p>01 stans for visible channel,02 stands for thermal channel.</p>
<p>9 Flash Alarm</p>	<p>The camera filling lamp will flash when the alarm is triggered after this option is selected.</p>

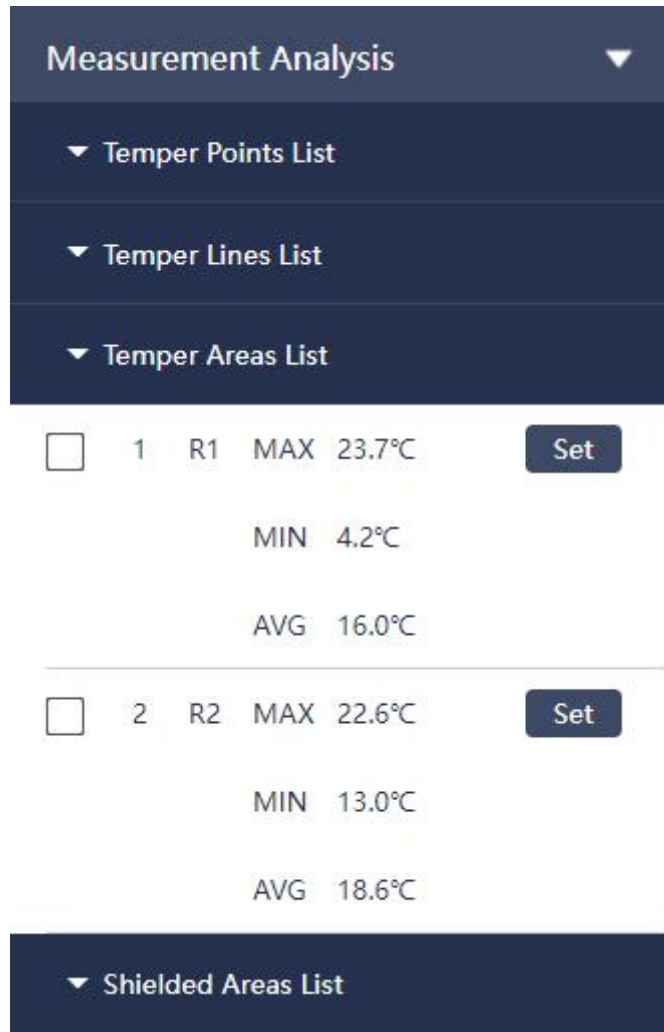
	<p>Mode: select the light flashing type during alarm. There are two options: Flashing and glowing continuously.</p> <p>Flicker Frequency: set the flashing speed. Three options can be chosen: high, medium and low.</p> <p>Residence Time: set the flashing time, 5s by default.</p>
10 Voice Alarm	<p>The system will link to broadcast audio files when the alarm is triggered after this option is selected.</p> <p>File: select the built-in audio alarm files.</p> <p>The audio files can be uploaded by the user, refer to chapter 5.1.3 for detailed operation.</p> <p>Times of Play: set the times of broadcasting.</p>
11 E-mail	<p>Select this option, the system will send Email to inform the user when the alarm is triggered.</p> <p>The Email address should be set before this function is enabled, refer to chapter 5.1.3 SMTP for detailed operation.</p>

**Table 3-1 Alarm Rules Descriptions**

### 3.3 Measurement Analysis

#### 3.3.1 Measurement List

The measurement data list can be displayed after *Thermometry* is enabled. See the following picture:

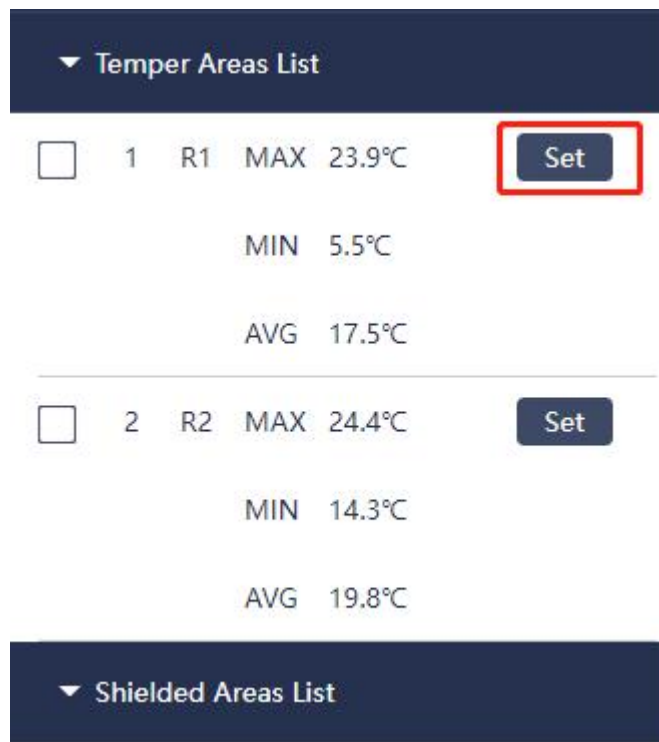


**Figure 3.4 Measurement Analysis-Data List Interface**

The measurement data is displayed in group: temp points list (P1~P12), temp lines list(L1~L12), temp areas list(R1~R12) and shielded areas list (SR1~SR12), maximum 12 articles of records for each group.

### Alarm Rules Settings

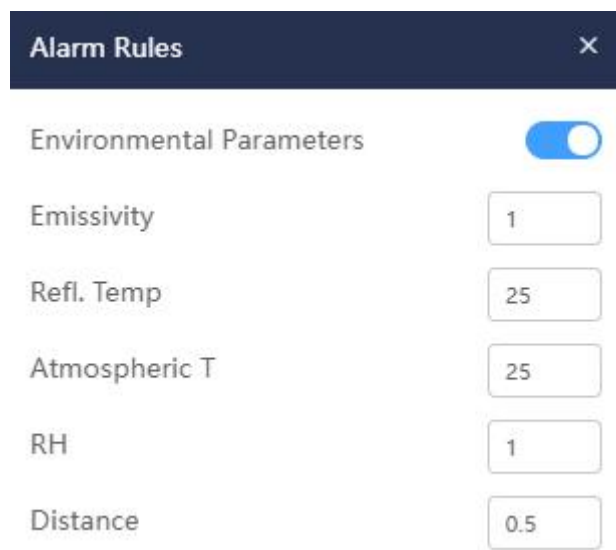
Select an article of data among temperature measurement list. See the following figure:




**Figure 3.5 Measurement Analysis-Alarm Rules Setting Interface**

1. Environmental Parameters Settings:

The environmental parameters and alarm rules can be set separately, see the following figure for environmental parameter settings:



**Figure3.6 Measurement Analysis-Environmental Parameters Settings Interface**

The environmental parameters can be set only after environmental parameters is enabled . If the environmental parameters function is enabled and set here, then the environmental parameters should be followed, or else the parameters in Basic Parameters should be followed. (Refer to the environmental parameters in chapter 3.1 for basic parameters settings.)


2. Refer to chapter 3.2 *Cold Hot Tracking* for settings of alarm rules and linkage way.

Figure 3.7 Measurement Analysis-Alarm Rules Interface

3. Temperature Rise Alarm




Figure 3.8 Measurement List-Temperature Rise Alarm Settings

After temperature rise alarm is enabled , if the Max. temperature rise value is equal to or more than Temp Rising of Temp during the Temp Rising Time, and when the total times are equal to or more than Temp Rising Time, then the alarm will be triggered.

**Confirm to delete:** 

The info of drawn points, lines, circles, polygons and shielded areas are displayed in the measurement lists, which can be ticked and deleted.

**Check all:** 

The drawn measurement info can be checked all or not checked.

3.3.2 Temperature Measurement Drawing

**Point/line/region Drawing:** 

Click the icon point/line/region to draw the corresponding temperature measurement graph in the video screen (drawing up to 12 points/line/area respectively, 36 in all, the region can be circle, rectangle or polygon), the temperature of the point will be displayed in real time, and the line/region will display 3 temperatures in real time (the highest /lowest temperature/average temperature).

**Shielding Area:** 

Click the shielding area icon to draw the shielded area on the video screen (up to 8 shielded areas), and the temperature data will not be displayed in the shielded area.

**Display Temperature Bar:** 



Click the icon to turn on/off temperature bar, when turned on, the temperature bar including the highest and lowest temperature value will be displayed on the right side of the temperature measurement interface. When turned off, the bar will be hidden.

**Color Palette:** 

20 palettes are supported as below.




Figure 3.9 Temperature-Palette

**Temperature difference:** 

Compare the drawn several regions (circle, rectangle or polygon), the comparison rules can be added, which can be regarded as the alarm trigger. Four articles of rules can be output at most.

Figure 3.10 Temperature measurement-temperature difference settings interface

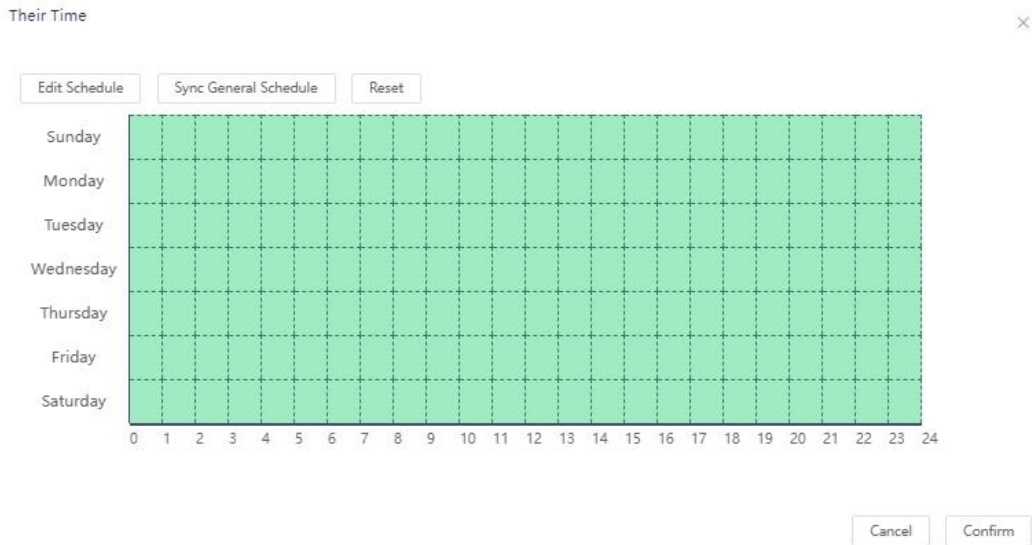
Delete: 

Click the delete icon  in the lower right corner of the temperature measurement interface, and click the point/line/circle/polygon/rectangle/ shielding area in the screen to delete it (the corresponding data in the temperature measurement list will also disappear after deletion).

**Note:** The seven functions of delete/point/line/circle/polygon/rectangle/ region/shielding area are mutually exclusive, and any two of them cannot be turned on at the same time.

### 3.4 Link Schedule

For the temperature measurement and analysis service, the schedule is arranged in time periods. If an alarm occurs within the configuring time period, the related alarm action will be linked. You can configure six time periods each day, accurate to second. You can also copy the same time period. By default, all time periods are enabled.





**Figure 3.11 Link Schedule Configuring Interface**

### 3.5 Temperature Measurement Scenarios

The temperature measurement analysis can be performed in global scenario or a single scenario for PTZ devices.

**Global scenario:** each scenario is scanned and measured by the global rules, the global configurations can be used in all scenarios, so presets are unnecessary to be related. The configuring temperature measurement rules in the global scenario, the name is started with 0- which will be displayed and enabled in all scenarios.

**Temperature measurement scenario:** the temperature measurement rules can be configured via preset for a certain scenario, the temperature measurement rule can be enabled when this configuration is called.

Click the arrow   on temperature measurement interface to display or hide the PTZ related functions, and turn to the corresponding preset 1-N via the preset menu bar, the name is started with N- which can be enabled only on preset N.

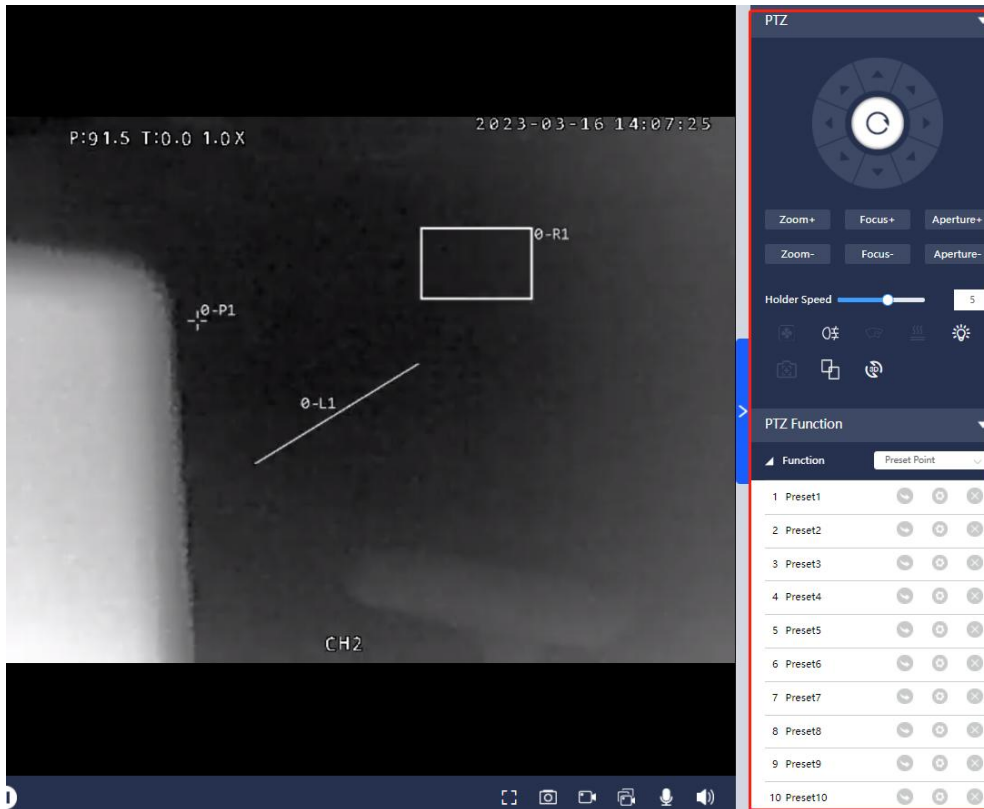


Figure 3.12 Temperature Measurement Configuring Interface

## 4. Smart Analysis

### 4.1 Scene Configuring

You can add the existed presets to the scene list on this interface, the preset alarm can be configured in tripwire intrusion, region intrusion and dynamic detecting.

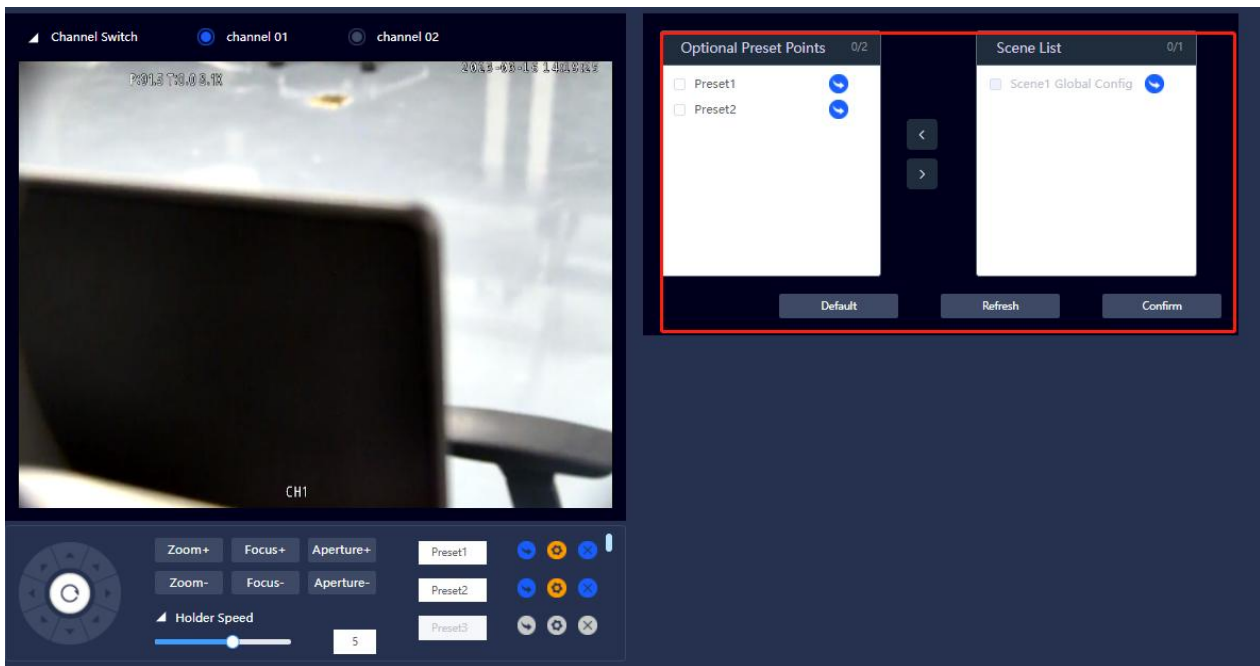


Figure 4.1 Scene Configuring Interface

## 4.2 General Behavior Analysis

### 4.2.1 Trip Wire Intrusion

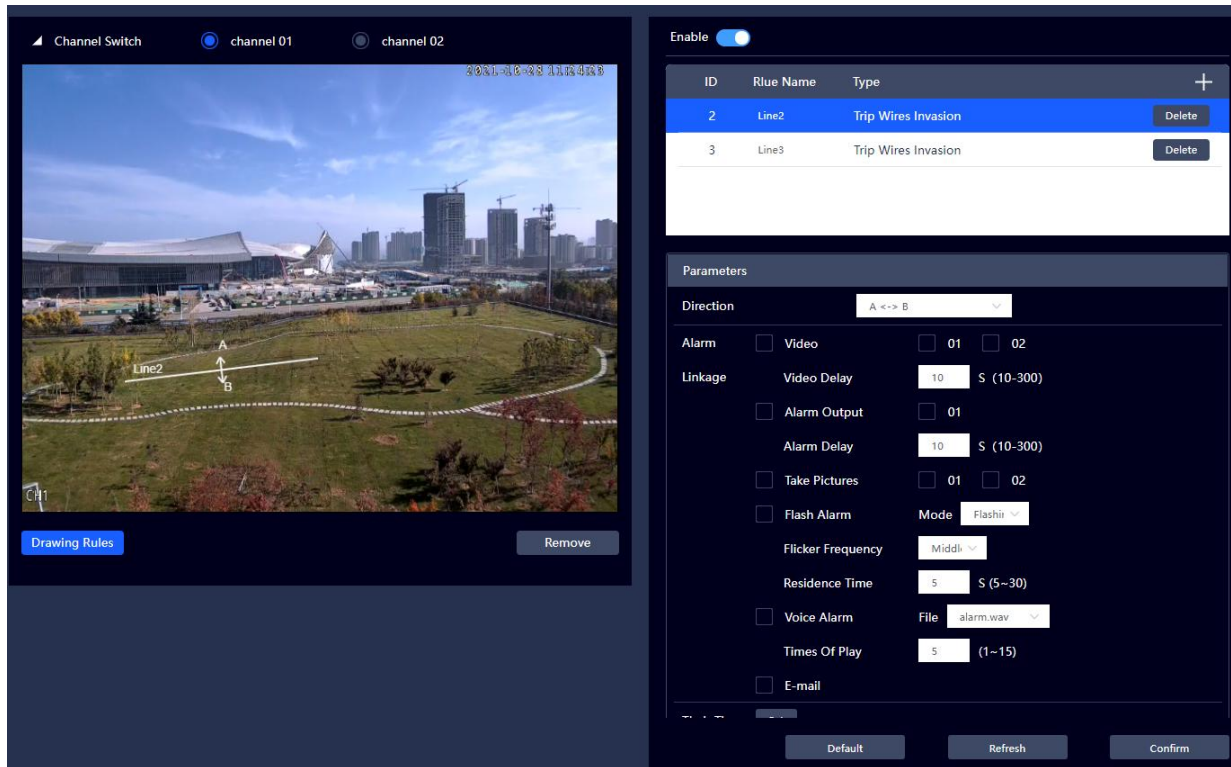
When the target moves across the cordon in the set direction, the system will generate an alarm and linkage setting action.

This function is supported both in visible channel and thermal channel.

Setting Steps:

1. Select channel: Smart-Trip Wire Invasion-Channel1/channel 2, the scene also needs configuring (global configure/preset);
2. Enable: enable/disable this function.
3. Click "+" in the upper right corner to add a new rule (up to 4 articles of rules can be added, and the parameter settings between different rules are completely independent), and set the rule name;
4. Click "Drawing Rules" to draw the rule on the monitoring screen, click "Clear" the current rule line is deleted, and click "Drawing Rules" again to draw the rule line again;
5. Direction: set the direction of tripwire intrusion, optional A->B, B->A, A<->B;

6. Set alarm linkage parameters: when an alarm is triggered, the corresponding actions will be linked;
7. Deploying time: set the time period for triggering the tripwire intrusion event;
8. Click "Confirm" to complete the setting. See below:



**Figure 4.2 Trip Wire Intrusion Setting Interface**

**Note:** The man-vehicle identify is added in channel 2(thermal) comparing to channel 1, other settings in the two channels are the same.

The man-vehicle identify is disabled by default. When All is selected, man and vehicle can both trigger trip wire invasion alarm.

When human is selected, only human can trigger trip wire invasion alarm.

When vehicle is selected, only the vehicle can trigger trip wire invasion alarm.

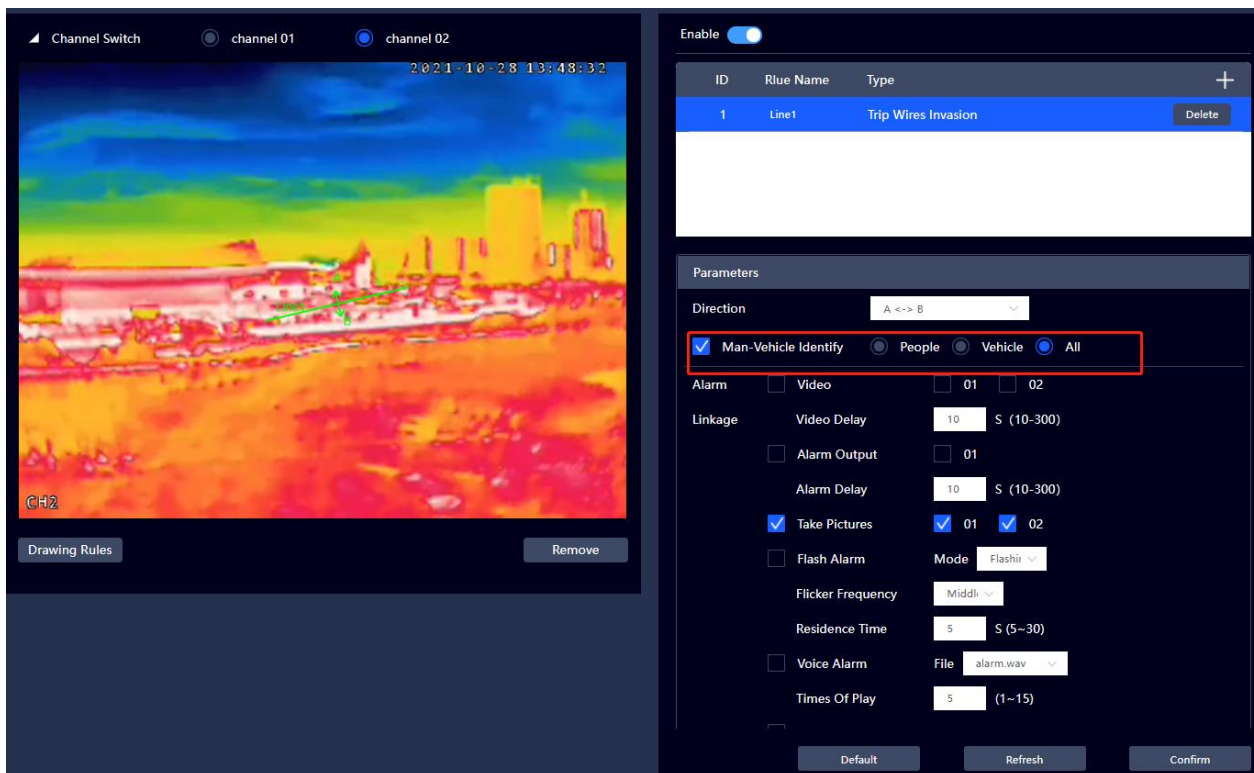


Figure 4.3 Tripwire Invasion Settings Interface (Thermal)

#### 4.2.2 Regional Intrusion

When the target crosses the region (Enter/Leave/Pass in and out), the system generates an alarm and linkage setting action.

This function is available in both visible channel and thermal channel.

Setting Steps:

1. Select channel: Smart-Regional Invasion-channel 1/channel 2, the scene also needs configuring (global configure/preset);
2. Enable: enable/disable the function;
3. Click "+" in the upper right corner to add a new rule (up to 4 rules can be added, and the parameter settings between different rules are completely independent), and set the rule name;
4. Click "Drawing Rules" to draw the rule on the monitoring screen, click "Clear" the current rule line is deleted, and click "Drawing Rules" again to draw the rule line again;
5. Direction: set the direction of regional intrusion, optional enter/leave/pass in and out;
  - When "Enter" is selected, an alarm will be triggered when the target enters the area;



- When "Leave" is selected, an alarm will be triggered when the target leaves the area;
  - When selecting "Pass in and out", an alarm will be triggered when the target enters or leaves the area;
6. Set alarm linkage parameters: when an alarm is triggered, the corresponding actions will be linked;
  7. Arming time: set the time period for triggering the tripwire intrusion event (default setting is full time);
  8. Click "Confirm" to complete the setting. See below:

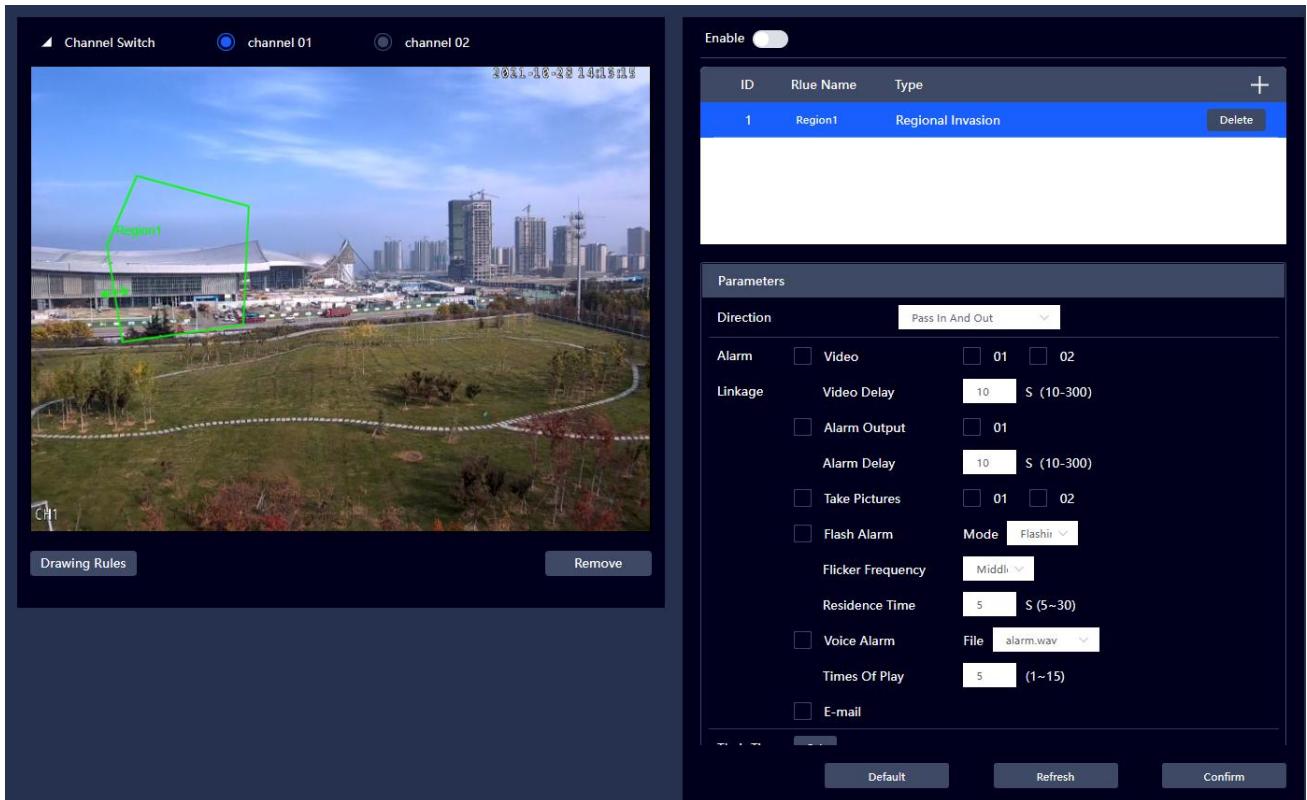


Figure 4.4 Regional Intrusion Setting Interface

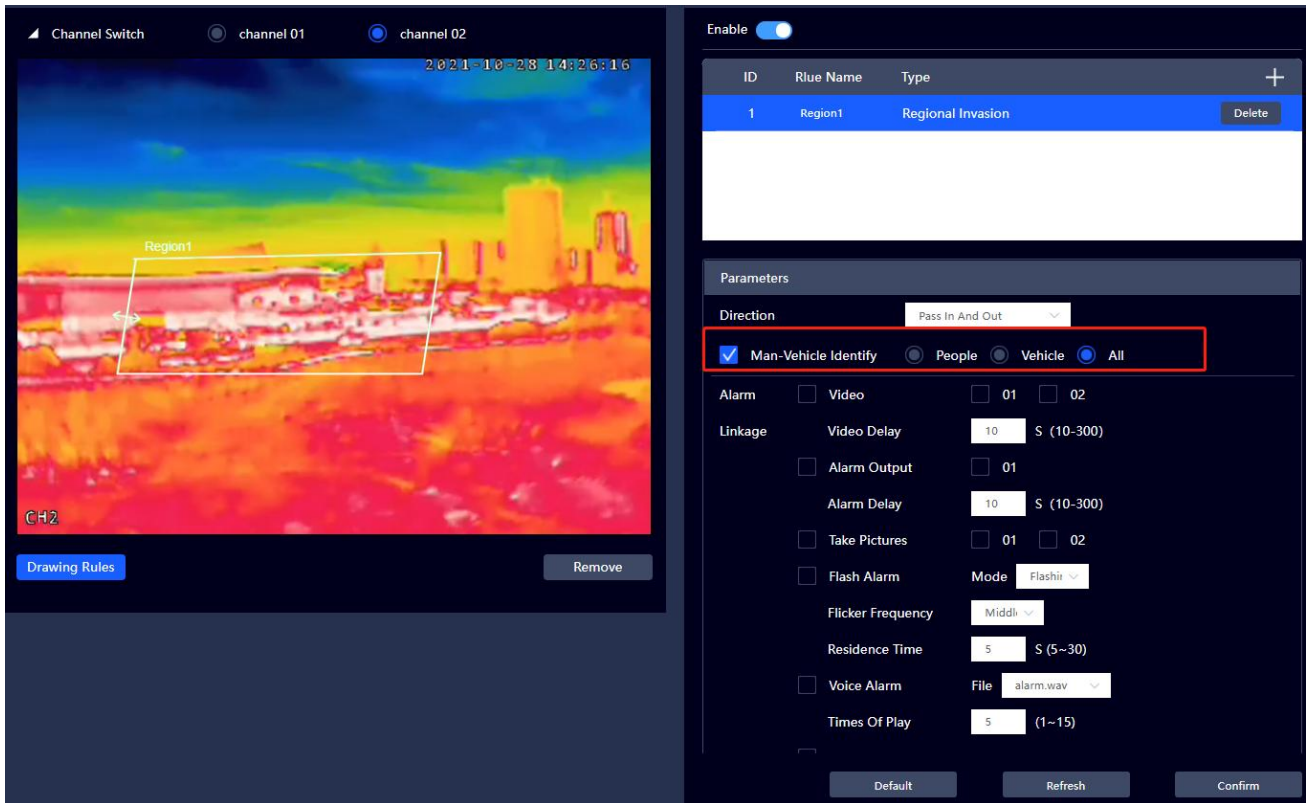
**Note:** The man-vehicle identify is added in channel 2(thermal) comparing to channel 1, other settings in the two channels are the same.

The man-vehicle identify is disabled by default. When All is selected, man and vehicle can both trigger regional invasion alarm.

When people is selected, only human can trigger regional invasion alarm.

When vehicle is selected, only the vehicle can trigger regional invasion alarm.





**Figure 4.5 Regional Intrusion Setting Interface (Thermal)**

**Environment setup recommendations:** the recommended mounting height is 2.5-4.5m, the angle of pitch is between 30° and 75°. To ensure the detection accuracy, you can select cameras with different focal length according to actual application scenarios.

■ **The distance requirement between the target and the camera:**

The observing distance varies for cameras with different focal length and observing angle, the recommended distance is more than 2~3m.

■ **Target Size Requirement:**

Max.: the width should be shorter than 1/2 of the image width, the height should be shorter than the height of the image.

Min.: the width or height should be longer than the 1/16 of the image width or height.

The human covers 20\*15 pixels at least, the vehicle covers 40\*40 pixels at least.

### 4.2.3 Dynamic Detection

The system will make alarm and link the corresponding events when the moving target reaches the preset sensitivity.

This function is available in both visible channel and thermal channel.

Operation procedures:

- 1) Select the channel: Smart-Dynamic Testing-Channel 1/Channel 2.
- 2) Enable: enable/disable the function.
- 3) Set the sensitivity (height by default, the higher sensitivity will trigger the alarm more easily).
- 4) Area: at most four detecting areas can be set at the same time. The area color, area name, threshold and alarm rules can be set separately for each area.
- 5) Draw Area: click the icon of draw area, then you can draw the detecting areas. Different color indicates different detection area.
- 6) Remove: click remove button, the drawn area will be removed, click Draw Area again to draw other detection areas.
- 7) Threshold: detecting area value of dynamic valid area, the smaller the value is, the more easily the alarm will be triggered.
- 8) Set the alarm linkage parameters, the corresponding events will be linked when the alarm is triggered.
- 9) Set deploying time: the alarm events will be triggered only within the time range.
- 10) Click "OK" to finish the settings.

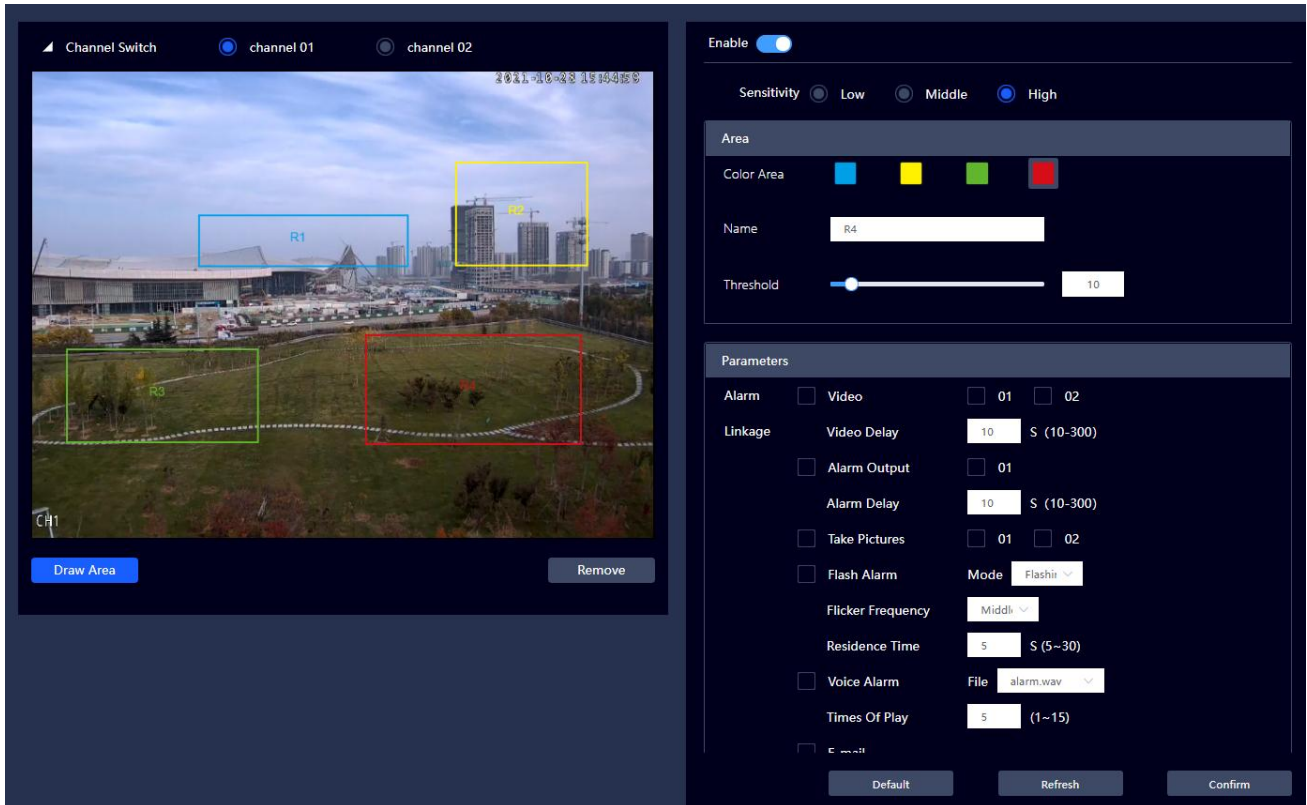


Figure 4.6 Set Dynamic Detection Interface

The setting of the dynamic detection for Channel 2(thermal) is the same with Channel 1, the settings on the two channels are independently, they can be set at the same time.

#### 4.2.4 Global Config

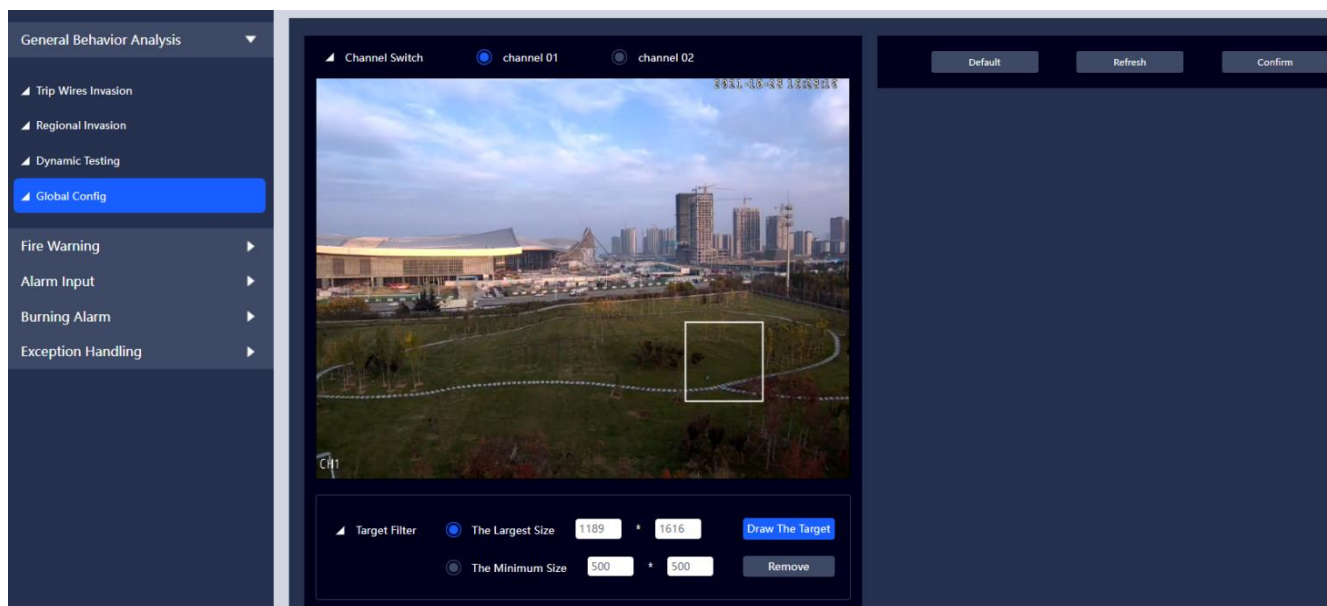
Set the maximum and minimum value of the target filtering size, the alarm will be triggered only when the target size is between the two filtering boxes.

Note: the maximum size by default is 8191\*8191, the minimum size is 500\*500, the size value uses the 8192 unified coordinate system within the internal program. For example, the resolution is **1920\*1080**, then the actual size of 500\*500 is **【500\*(1920/8192)】 \* 【500\*(1080/8192)】** )

##### Operation procedures:

- 1) Select channel: Smart-Global config-channel 1/channel 2;
- 2) Select the maximum and minimum size, click Draw the Target, you can draw a filtering box in the video image by dragging the mouse. (The alarm will be triggered only when the target size is between the two filtering boxes).

- 3) Select the maximum and minimum size, click remove to delete the corresponding filtering box (The default filtering box will be displayed after deletion) ;
- 4) Click Draw the Target again to draw another filtering box;
- 5) Click Confirm, as shown in the following figure:



**Figure 4.7 Global Config Setting Interface**

**Note:** The setting of the target filtering for Channel 2(thermal) is the same with Channel 1, the settings in the two channels are independent. The target filtering of the visible channel aims for the tripwire invasion and regional invasion events in the visible channel, the target filtering of the thermal channel aims for the tripwire invasion and regional invasion events in the thermal channel.

## 4.3 Fire Warning

### 4.3.1 Fire Alarm

Set fire alarm rules. When it is judged as a fire by the system, an alarm and linkage setting action will be generated.

This function is only available in thermal channel.

Setting Steps:

1. Enable: enable or disable fire alarm;
2. Select the fire alarm mode according to actual needs: anti-interference or high response modes. Anti-interference mode by default.
3. Sensitivity: the larger the value is, the more easily it is to detect the fire, the default value is 50;
4. Set privacy mask: click the "+" icon in the privacy mask rules list to add rules, click the *Drawing Rules* button to draw privacy mask.
5. Delete: click the *Delete* button to delete the corresponding privacy mask in the list.
- 6 Set the alarm linkage parameters and the corresponding actions will be linked when the alarm is triggered.
- 7 Link Schedule: events will be triggered only within the time range.
8. Click "Confirm" to complete the setting.

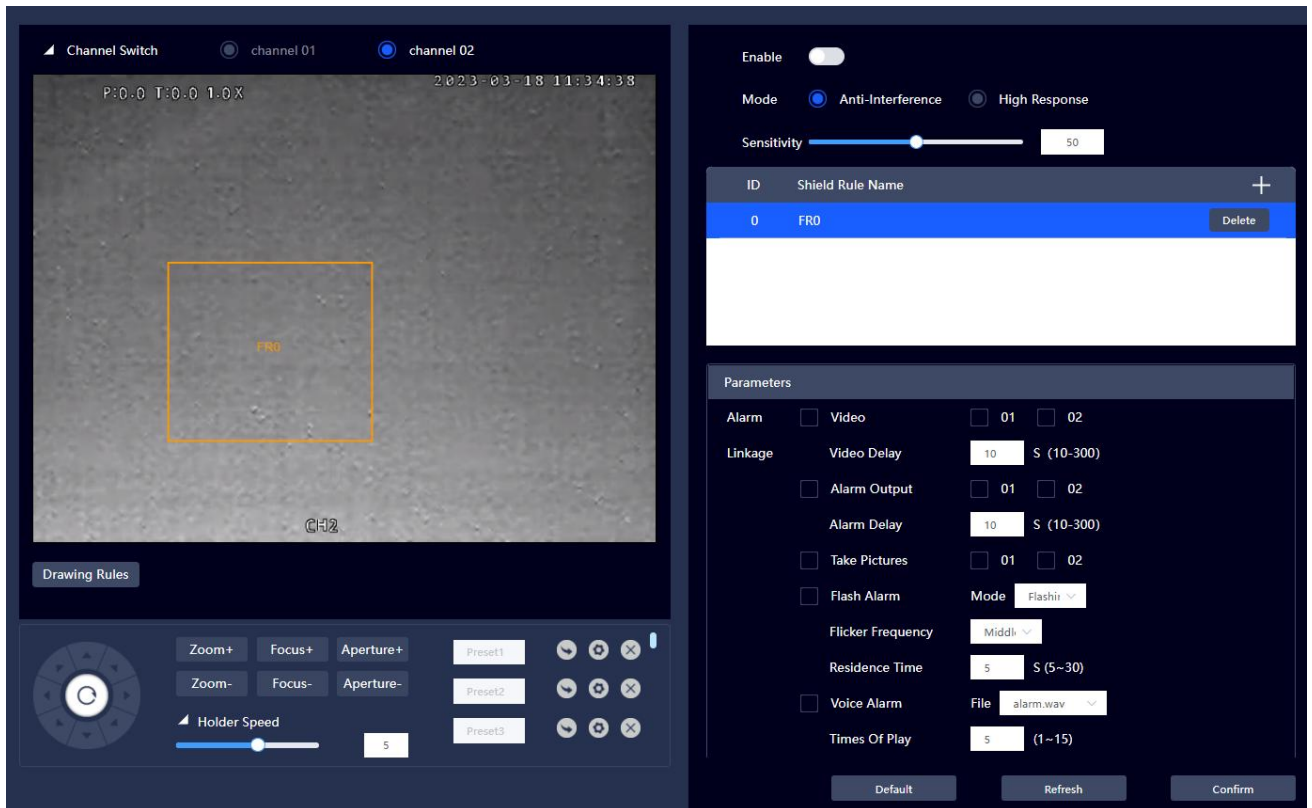


Figure 4.8 Fire Alarm Setting

**\*Note:** when the alarm is triggered, the fire linkage tracing is also supported besides the PTZ function linkage.

#### 4.4 Alarm Input

When an external alarm input generates an alarm, the system will generate an alarm and linkage setting action.

Setting Steps:

1. Enable: Enable or disable the alarm input;
2. Alarm input: the device supports separate channel alarm input, and 2 channels of alarm input parameter configurations are independent of each other.
3. Debouncing: setting range is 0-100s, and only one alarm event is recorded in the debouncing time period.
4. Sensor type: select "normally open" or "normally closed" according to the type of external alarm device sensor.
5. Alarm Linkage: set alarm linkage parameters and the corresponding actions will be linked when the alarm is triggered.
6. Link schedule: the alarm events will be triggered only within the set time range.
7. Click "Confirm" to complete the setting.

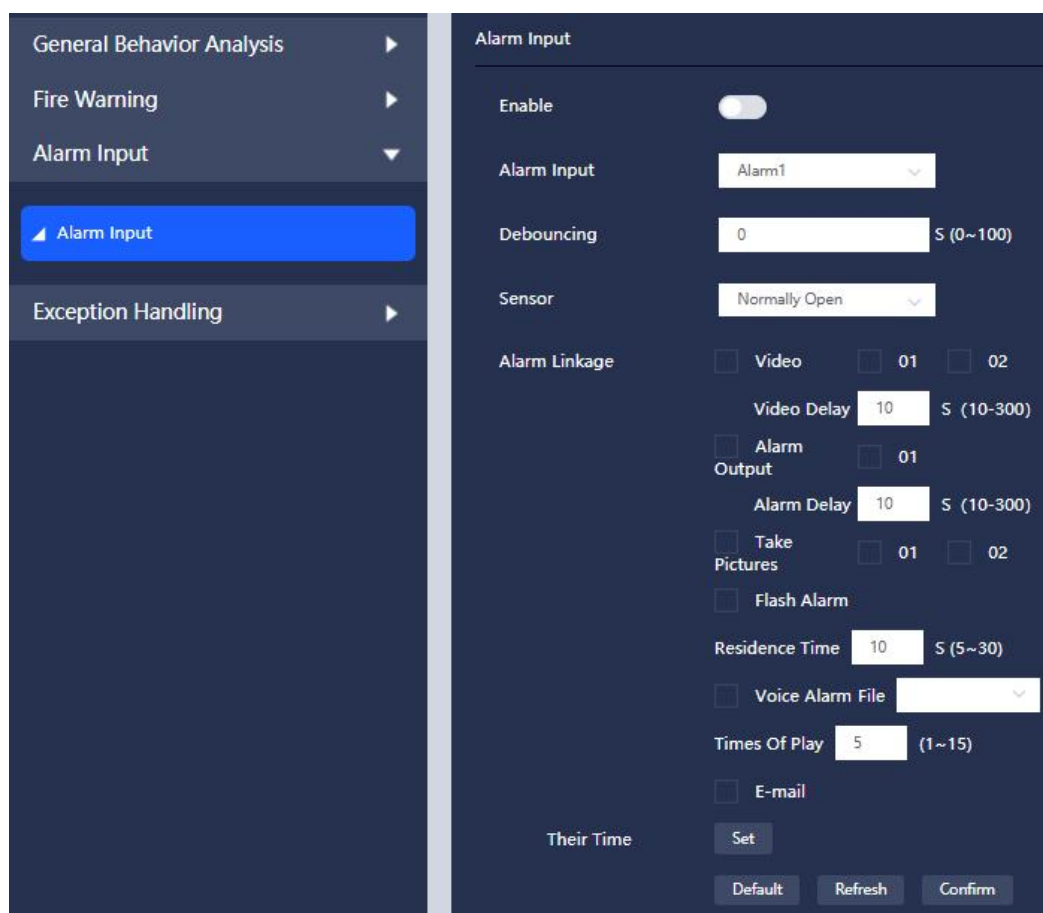


Figure 4.9 Alarm Input Setting

## 4.5 Burning Alarm

The strong light protection function will be enabled when the sun directly shines on the camera and the energy value reaches the threshold, the infrared lens shutter will be shut automatically and the linkage alarm will be triggered.

Note: the video stream on the thermal channel is frozen, the switch can be disabled manually to cancel the strong light protection, then the video stream will return to normal.

Operation procedures:

- 1) Enable the function.
- 2) Energy value: 0-100, the smaller energy value will trigger the alarm more easily.
- 3) Sensitivity: 0-100, the higher sensitivity will trigger the alarm more easily.
- 4) Alarm linkage: set the alarm linkage parameters, then the corresponding events will be linked when the alarm is triggered.

- 5) Link schedule: the alarm events will be triggered only within the time range.
- 6) Set "OK" to finish.

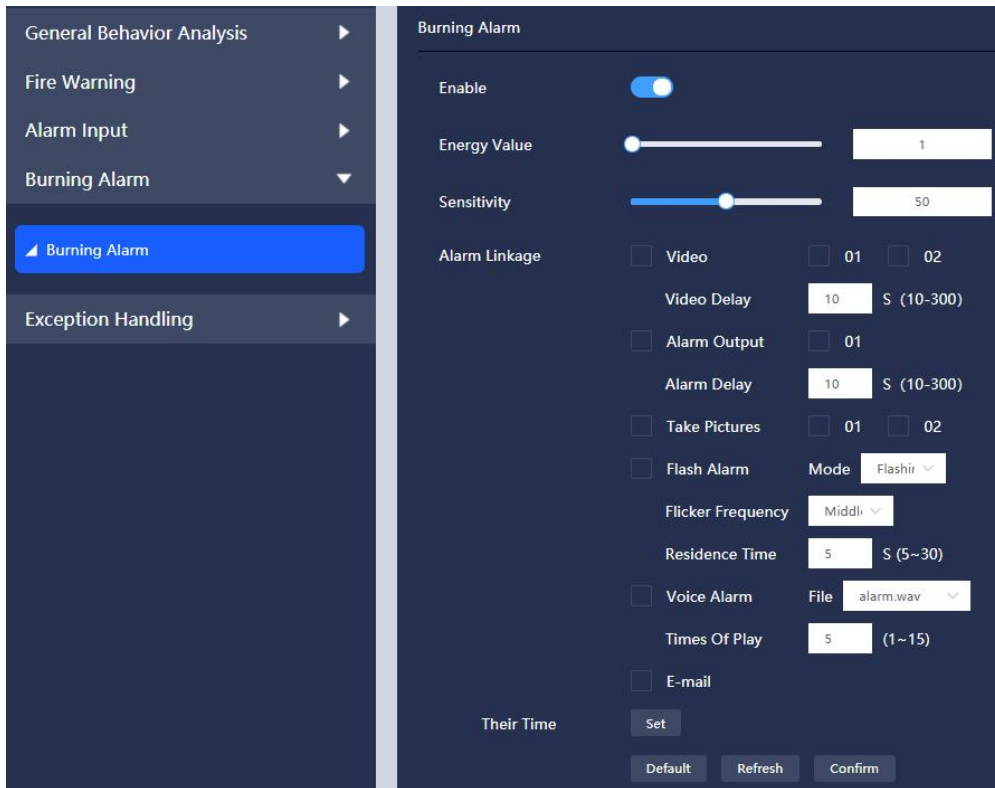


Figure4.10 Burning Alarm Setting Interface

## 4.6 Exception Handling

### 4.6.1 SD Card Exception

When there is some exception in SD card, the system will generate an alarm and linkage setting action. SD card abnormalities include not existing or SD card error.

### 4.6.2 Network Anomaly

When the network is abnormal, the system will generate an alarm and linkage setting action. Network abnormalities include network disconnection and IP conflicts.



### 4.6.3 Illegal Access

When the number of login password errors exceeds 5 times, the system will generate an alarm and linkage setting action.

## 5. Settings

### 5.1 Camera Setting

#### 5.1.1 Camera Parameters

Camera parameters can be set for both visible light and thermal imaging.

##### Channel 01--Visible Light

###### ■Image Parameters Setting

**Brightness:** adjust the overall brightness of the image by linear adjustment, keep the default value, the larger the value, the brighter the image, and vice versa.

**Contrast:** The larger the value, the greater the brightness and contrast of the image, and vice versa; when the value is set too large, the dark areas of the image are too dark, and the bright areas are easy to overexpose. If the setting is too small, the image will be blurred.

**Saturation:** the larger the value, the brighter the image color; the smaller the value, the lighter the image color.

**Acuity:** adjust the sharpness of the image edge; the larger the value, the more obvious the image edge; when the value is larger, the image is prone to noise.

**2D Noise Reduction:**adjust the spatial noise reduction degree, the larger the value is, the smaller the noise is, and vice versa.

**3D Noise Reduction:** adjust the temporal noise reduction degree, the larger the value is, the smaller the noise is, and vice versa.

**Gamma:**The brightness and contrast of the image are changed by nonlinear adjustment. The larger the value, the brighter the image, and vice versa.

**Style:** "Standard, Soft, Gorgeous" can be selected.

■Standard: the overall color of the image is neutral, not dark or light.

■Soft: the overall color of the image is soft and light.

■Gorgeous: the overall color of the image is brighter and darker.

**Flip:** there are four modes to be selected;

Up-down flip: the image will flip 180° up down.

Horizontal flip: the image will flip 180° from left to right.

180° flip: flip 180° both up down and left to right.

Normal: the image returns to normal state.

**Note:** the flip function in channel 1 and channel 2 is synchronized. That is, set the flip function in any one of the channels, the image in another channel will be flipped simultaneously.

**Defog:**When the device is in fog, haze and other environments, the image quality will degraded, and the clarity of the image will be adjusted through the defog function. After the defog function is enabled, the defog level can be set. The blurrier the image, the higher the recommended level value is.

**Heat Haze Reduction:**mitigate the image distortion due to heat wave in the air via image processing and optimize the image quality.

**EIS:** realize image stability via algorithm, resolve the image vibration during use to make the image clearer, the function is disabled by default. The EIS level can be configured after the function is enabled, the more severe the image vibration, the higher the recommended level is;



Figure 5.1 Channel01-Image

### ■ Exposure Parameters Setting

**FLK:** outdoor/50Hz/60Hz can be selected.

50Hz: auto/manual adjust exposure, and make sure there is no cross stripe on the image;

60Hz: auto/manual adjust exposure, and make sure there is no cross stripe on the image;

**Outdoor:** manual switch exposure mode to achieve the corresponding effect.

**Mode:** configure the exposure mode, adjust the image display brightness;

- Auto:adjust the image display brightness automatically based on the environment.
- Manual:adjust the image display brightness by manually configuring the aperture, shutter and gain.
- Aperture Priority:the aperture can be adjusted based on the actual scenario, the shutter and gain is auto adjusted.
- Shutter Priority:The shutter can be adjusted based on the actual scenario the aperture and gain is auto adjusted.

**Gain Limit:**Configure gain limit value.

**Backlight Mode:** None/Strong light suppression/ Backlight compensation.

- None: inactivate backlight mode;
- Strong light suppression: restrain the image in strong light, brighten the image in dark light to balance the whole image, the higher the suppression level, the more obvious the light suppression is;
- Backlight Compensation: compensate the object darkness in backlight conditions, the area to be compensated can be chosen.

See the following picture:



Figure 5.2 Channel01-Exposure

## White-Balance Settings

The object color will change due to refracted ray, you can mitigate the color deviation by selecting the appropriate white balance mode according to the use condition. Auto, Indoor, Outdoor and Manual are optional for white balance mode.



Figure 5.3 Channel01-White Balance

## Day and Night Conversion

**Day Night Mode:** Automatic/Color/Black and White/Time Period can be selected.

- Automatic: switch the day/night mode automatically;the sensitivity can be changed in auto mode, the larger the value is, the more easily it is to trigger day/night switch; the delay setting is also available in auto mode, the smaller the value, the higher the speed is to switch between color and B/W;
- Color: the system will be forced to switch to day mode;
- Black and White: the system will be forced to switch to night mode;
- Time Period: you can customize the time period during day or night, and switch the corresponding day and night mode.



Figure 5.4 Channel01-Day and Night Conversion

## Focus&Zoom Settings

**Digital Zoom:**Configure the biggest magnification of digital zoom, when the optical zoom reaches its highest limit, you can perform digital zoom. If Off is chosen, then the digital zoom is unavailable.

**Focus Mode:**

- **Auto:**when there is moving object or the target is changing in the scenario and the image is blurry, then the camera will perform auto focus.

When the zoom is performed on the lens, the camera will perform auto focus, recalling presets, accurate positioning and rotating the pan-tilt will also trigger auto focus.

- **Manual:**perform manual focus via focus+/-.

**Sensitivity:**configure sensitivity to trigger focus, the bigger the value, the more easily to trigger focus.

**Focus Limit:**set the minimum focus distance to avoid too short focus distance on dome cover, change the focus speed by changing the focus distance.

**Lens Initialization:**calibrate the lens focus and zoom parameters, the actual camera functions should prevail.

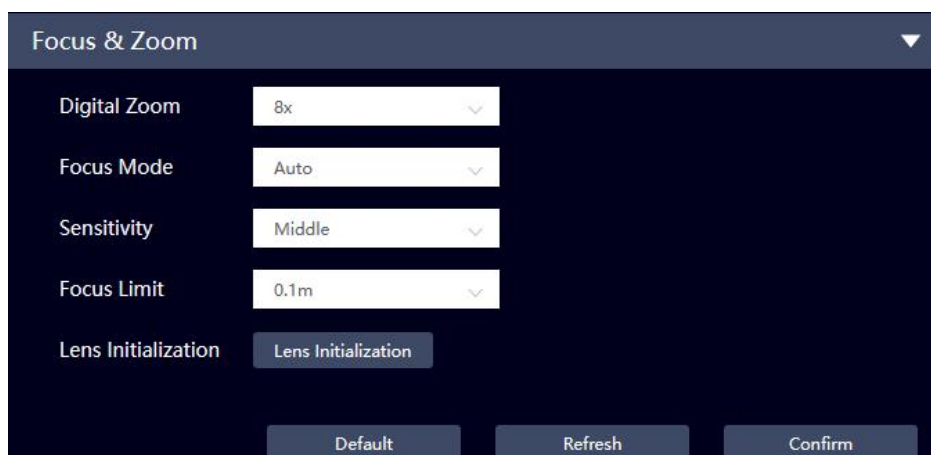


Figure 5.5 Channel01-Focus/Zoom

### Thermal Imaging Channel

- **Image**

**Brightness :** refer to the descriptions of visible channel for detailed information.

**Contrast:** refer to the descriptions of visible channel for detailed information.

**Background correction:** the image is optimized according to the current scene background;

**Shutter correction:** the image is optimized through shutter adjustment;

**2D NR:** refer to the descriptions of visible channel for detailed information;

**3D NR:** refer to the descriptions of visible channel for detailed information;

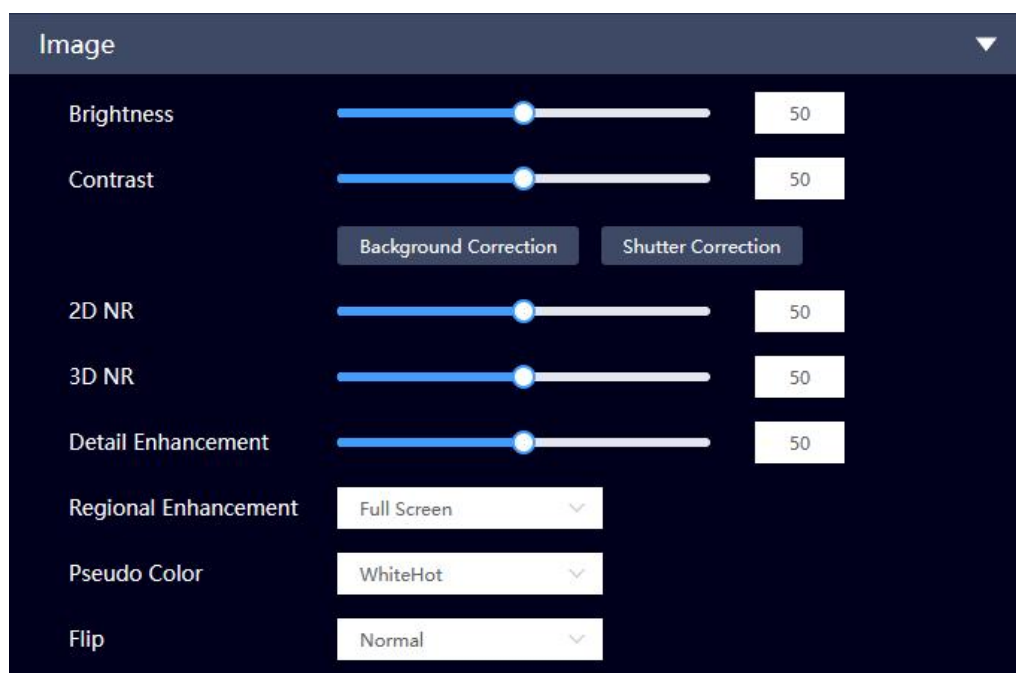
**DDE:** enhance the image detail manually, the higher the level, the better the detail, but the bigger the noise;

**Regional video enhancement:** select the ROI or important parts of the image, set the video quality enhancement area, the image of the selected area is more bright and clearer. You can choose 25% center point, 50% center point, 75% center point, full screen, bottom, middle, top and custom, corresponding to different positions and ranges in the screen.

Select "Custom", click "Draw", and then hold the left button on the screen and drag to add the video quality enhancement box. After selecting the corresponding region option, an orange box marks the selected region in the left preview screen.

**Color palettes:** there are 20 types: white hot, black hot, rainbow, HC rainbow, Iron, Lava, Sky, MidGrey, RdGy, PuOr, Special, Red, IceFire, GreenRed, Special 2, RedHot, Greenhot, Bluehot, Green, Blue.

**Image flip:** refer to the settings of visible channel for detailed info.



**Figure 5.6 Channel02-Image**

**Fusion:** overlay the visible channel data with the thermal channel data, retain the gray information of visible image and mark different temperatures with different color palettes to make the video image of thermal channel clearer.

**\*Note:** for cameras with zoom function, the fusion function will compulsively enable the two-way follow up function.

After *Fusion* is selected, refer to the following figure for the image fusion parameters.

Image Fusion Ratio: 0 stands for visual image, 100 stands for thermal image, 50 stands for the default dual-spectrum overlay effect;

Edge Fusion Ratio: 0 stands for no edge fusion, 100 stands for highlighted edge fusion, 50 stands for the default dual-spectrum edge fusion;

Horizontal: change the horizontal parameters, align the visual image with the thermal image in horizontal;

Vertical: change the vertical parameters, align the visual image with the thermal image in vertical.

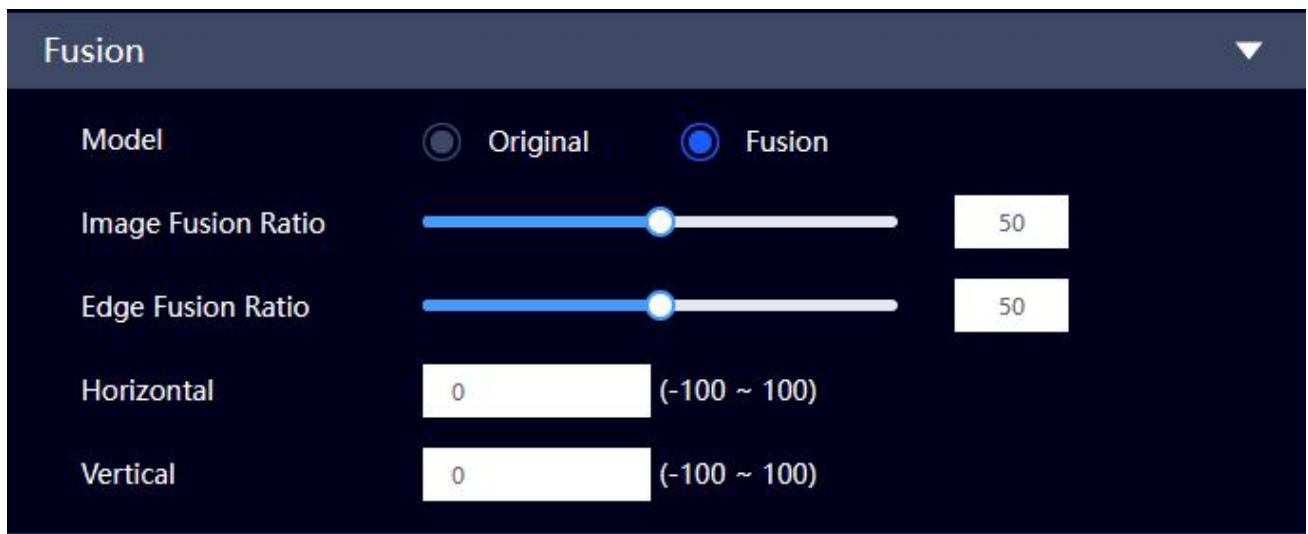


Figure 5.4 Channel02-Fusion

### Focus&Zoom

**Digital Zoom:**refer to the descriptions of visible channel for detailed information.

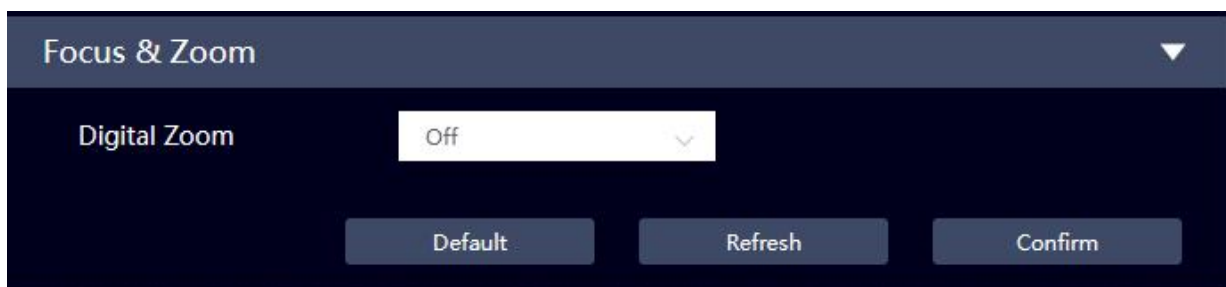


Figure5.8 Channel02-Focus&Zoom

## 5.1.2 Video

### 5.1.2.1 Video Stream

#### Visible Light

## Main Stream

### ■Encoding Scheme:

H.264: main Profile encoding.

H.265: High Efficiency Video Coding. Higher-quality network videos can be transmitted under limited bandwidth, and videos of the same quality can be played with only half of the original bandwidth.

■Resolution: there are four types for video resolution: 1920\*1080 (1080P) /1280\*720 (720P) /704\*576 (D1) /352\*288 (CIF) .

■Video Frame Rate: the number of frames a video contains per second; the higher the frame rate, the more realistic and smooth the image.

Note: P system supports up to 25 frames, N system supports up to 30 frames.

■Stream Control: CBR is a fixed stream, and VBR is a variable stream. The image quality can only be set in the variable stream mode, not in the fixed stream mode.

■Picture Quality: the picture quality can be set only in VBR mode, and six levels of 1-6 can be set, the higher the level, the better the picture effect, the larger the code stream, but it will not exceed the stream limit.

■Stream Limit: in variable stream mode, this value is the upper limit of code stream; while in fixed stream mode, this is a fixed value.

■Frame Spacing: the number of P frames between two I frames ranges from the size of the set frame rate to the maximum value of 150. It is recommended to set it to 2 times the frame rate.

## Sub Stream

### ■Encoding Scheme:

H.264: Main Profile encoding scheme.

H.265: High Efficiency Video Coding. Higher-quality network videos can be transmitted under limited bandwidth, and videos of the same quality can be played with only half of the original bandwidth.

■Resolution: there are four types for the resolution of the video 1920\*1080 (1080P) /1280\*720 (720P) /704\*576 (D1) /352\*288 (CIF) .

■Video Frame Rate: the number of frames a video contains per second; the higher the frame rate, the more realistic and smooth the image.



Note: P system supports up to 25 frames, N system supports up to 30 frames.

■Stream Control: CBR is a fixed stream, and VBR is a variable stream. The image quality can only be set in the variable stream mode, not in the fixed stream mode.

■Picture Quality: the picture quality can be set only in VBR mode, and six levels of 1-6 can be set , the higher the level, the better the picture effect, the larger the code stream, but it will not exceed the stream limit.

■Stream Limit: in variable stream mode, this value is the upper limit of code stream. While in fixed stream mode, this value is a fixed value.

■Frame Spacing: the number of P frames between two I frames, ranges from the size of the set frame rate to the maximum value of 150. It is recommended to set it to 2 times the frame rate.

**Note:** the parameter settings of main stream and auxiliary stream for thermal imaging is basically the same with visible light, except the resolution supported and the reference stream code value.

The screenshot shows the 'Video Stream' configuration page. At the top, there are tabs for 'Video Stream', 'Image Stream', 'Video Overlap', and 'Area-Of-Interest'. Below these is a 'Channel Switch' section with radio buttons for 'channel 01' (selected) and 'channel 02'. The main area is split into two columns: 'Main Stream' and 'Auxiliary Stream'. Each column contains several settings with dropdown menus or input fields. At the bottom, there are three buttons: 'Default', 'Refresh', and 'Confirm'.

Parameter	Main Stream Value	Auxiliary Stream Value
Encoding Scheme	H264	H264
Resolution	1280*720(720P)	704*576(D1)
Video Frame Rate	25	25
Stream Control	VBR	CBR
Picture Quality	4	-
Reference Stream	1280~5120Kb/S	640~2560Kb/S
Stream Limit	1280	-
Stream	-	640
Frame Spacing	50 (25~150)	50 (25~150)

Figure 5.9 Video Stream Settings of Visible Channel

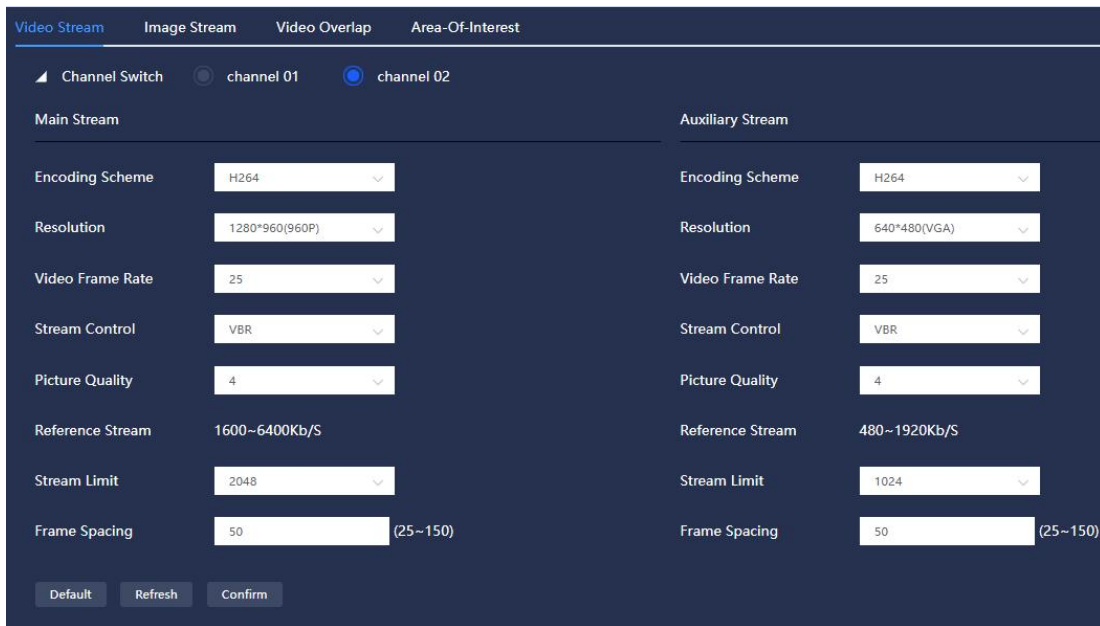


Figure 5.10 Video Stream Settings of Thermal Channel

### 5.1.2.2 Image Stream

#### Visible Channel

- **Image Size:** The size of the captured image is consistent with the set resolution.
- **Image Quality:** You can choose the 6 levels of image quality as best (6), better (5), good (4), poor (3), worse (2), and worst (1).
- **Capture Interval:** the rate of capture.

**Note:** The image stream setting of thermal imaging channel(channel 02) is similar to that of the visible channel.

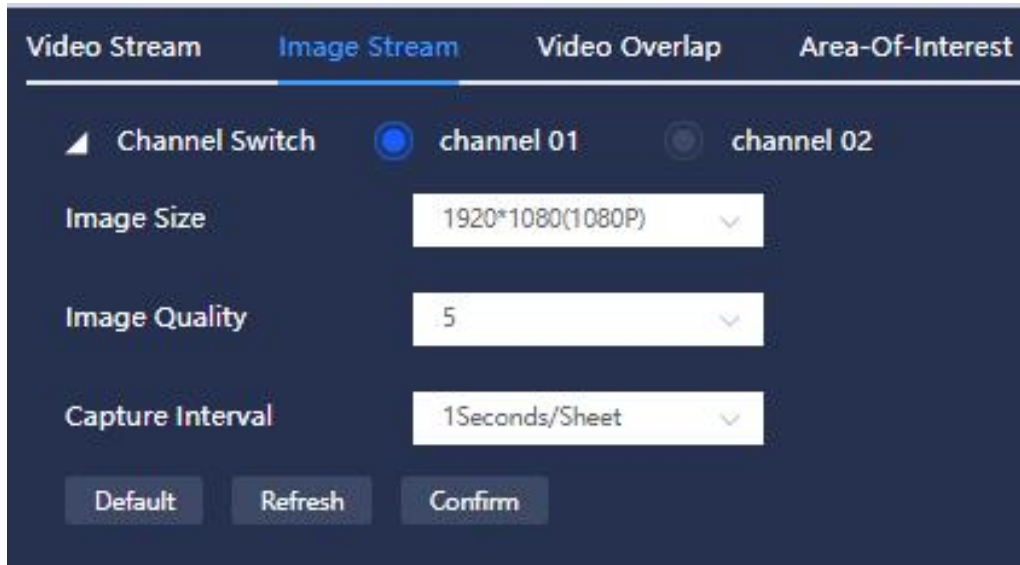


Figure 5.11 Image Stream Settings of Visible Channel

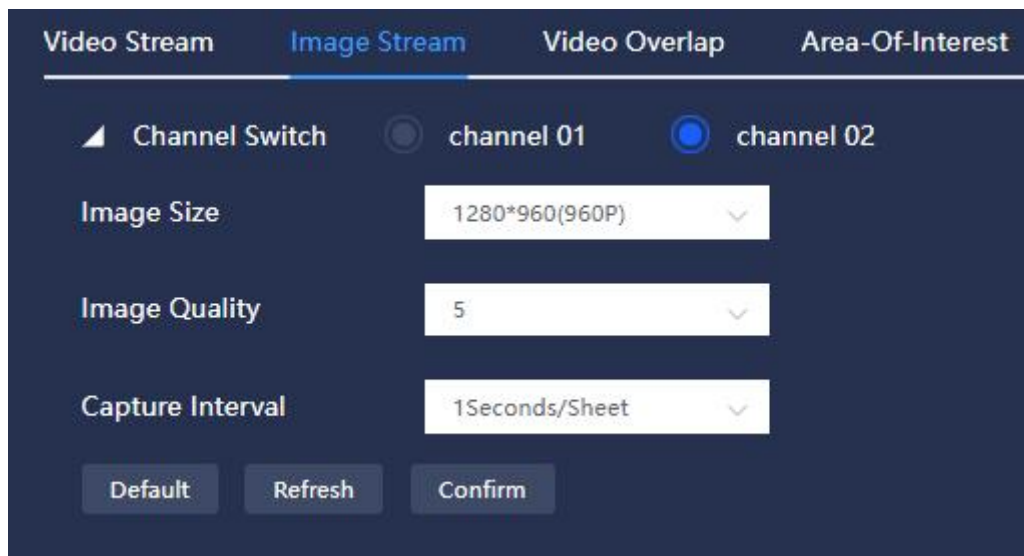


Figure 5.12 Image Stream Settings of Thermal Channel

### 5.1.2.3 Video Overlap

#### Visible Channel

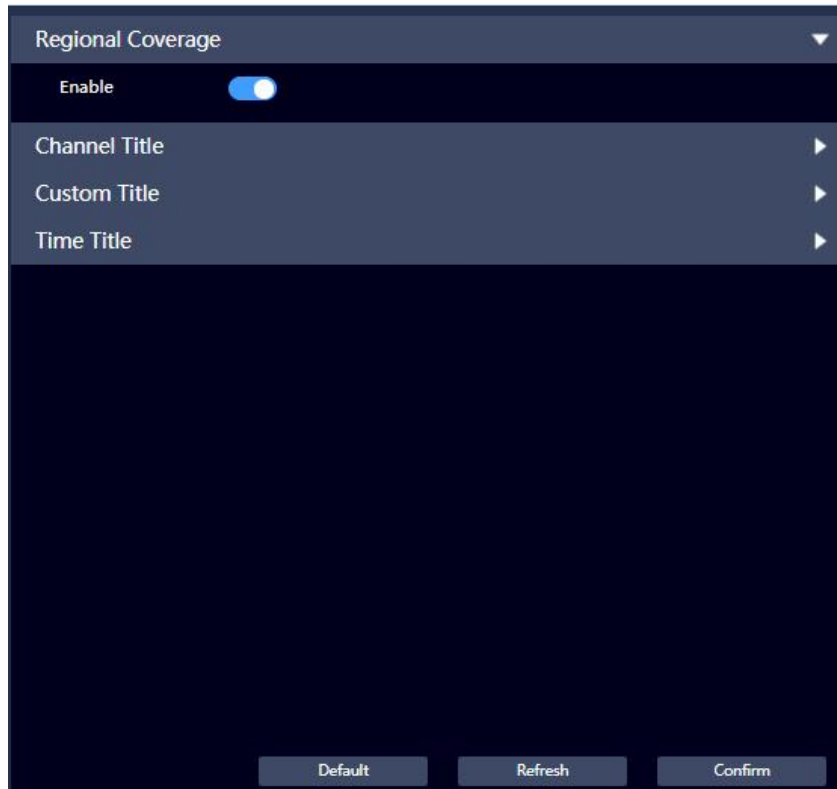
■ **Regional Coverage:** When you need to protect the privacy of certain areas on the video screen, you can set regional coverage.

Steps:

1. Enable: enable or disable the regional coverage;
2. Click "Draw Area" to draw a rectangular frame at the privacy position that needs to be blocked in the video screen (supporting up to 4 privacy blocking areas); Click "Delete", and select the area frame to delete the corresponding area frame; Click "Draw Area" can draw the privacy blocking area again.

3. Click "Confirm" to complete the setting.

**The regional coverage setting for thermal imaging channel is similar to that of visible light channel.**



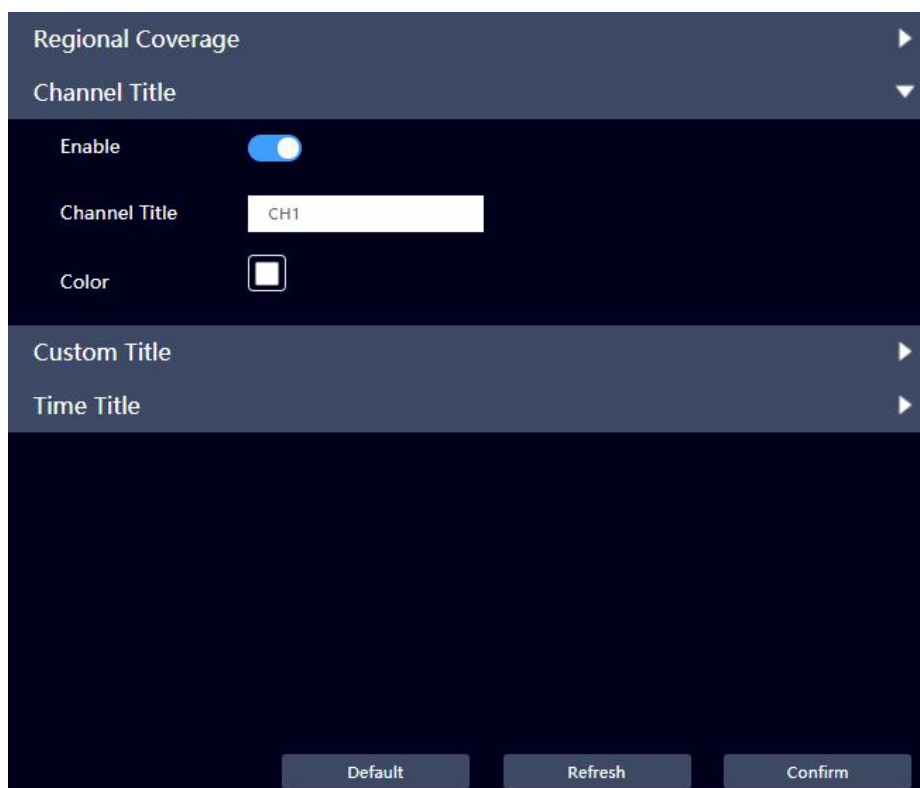
**Figure 5.13 Regional Coverage Settings**

■ **Channel Title:** you can set the channel title when you need to display the channel title in the video screen.

Steps:

1. Enable: enable or disable the channel title;
2. Enter the channel title to be set in the channel title input box;
3. Drag the channel title frame with the mouse to adjust the position of the channel title in the video screen;
4. Set the font color.
5. Click "Confirm" to complete the setting.

The channel title setting of the thermal imaging channel is similar to that of the visible light channel.



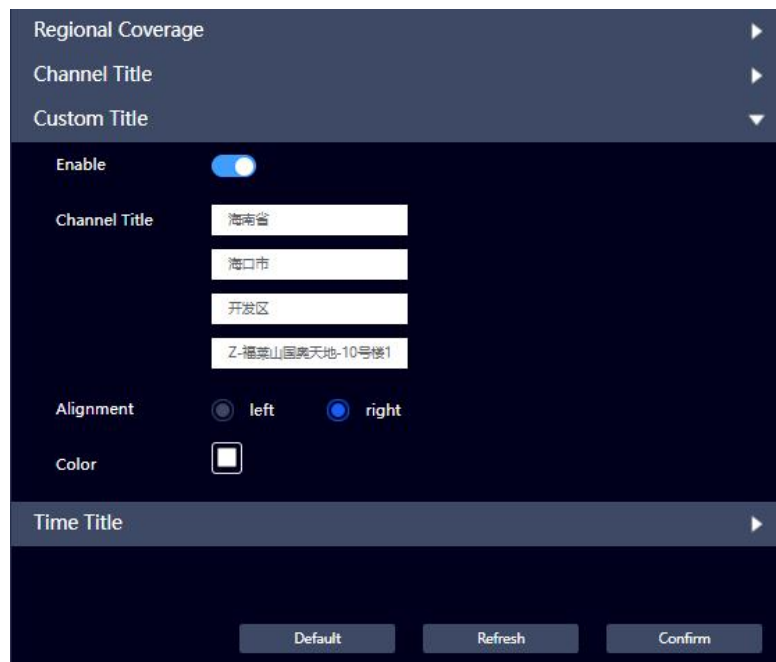
**Figure 5.14 Regional Coverage—Channel Title Settings**

■ **Custom Title:** you can set the custom title when you need to display multiple lines of custom titles in the video screen.

Steps:

1. Enable: enable or disable the custom title;
2. Enter the content of multiple lines of custom title in the custom title input box (up to 4 lines of input are supported);
3. Drag the custom title area frame with the mouse to adjust the position of the custom title in the video screen;
4. Set alignment, support left-justified and right-justified, left-justified by default;
5. Set the font color.
6. Click "Confirm" to complete the setting.

The custom title setting of the thermal imaging channel is similar to that of the visible light channel.



**Figure 5.15 Video Overlay—Custom Title Settings**

■ **Time Title:** you can set the time title when you need to display time title in the video screen.

Steps:

1. Enable: enable or disable the time title;
2. Drag the time title area frame with the mouse to adjust the position of the time title in the video screen;
3. Set week display, the current date and time is displayed by default: YY-MM-DD+Hour-Min-Sec; If *Display Week* is enabled, then the Date+ Day of the Week+ Time is displayed. The day of the week is displayed between date and time.
4. Set the font color.
5. Click *Confirm* to complete the setting.

**The time title setting of the thermal imaging channel is similar to that of the visible light channel.**

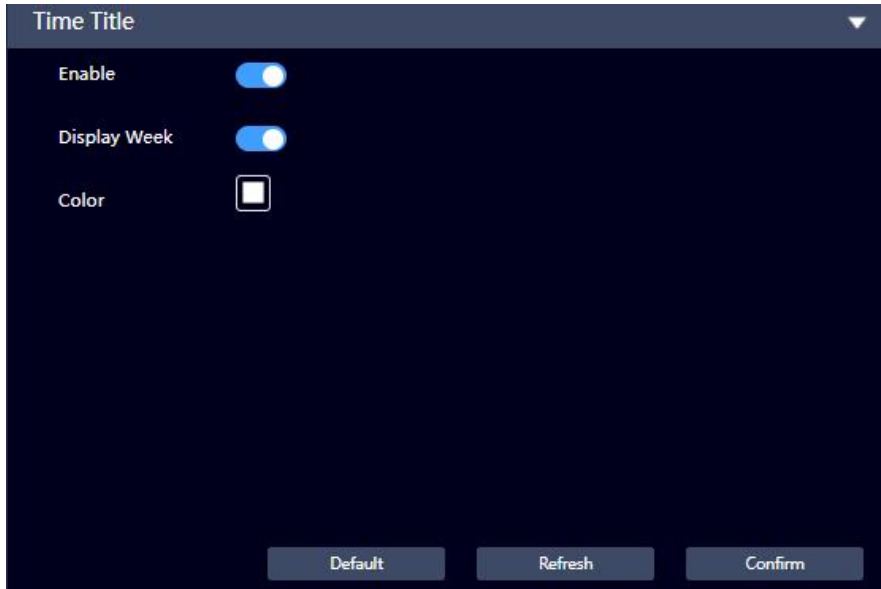


Figure 5.16 Video Overlay—Time Title Settings



Figure 5.17 Video Overlay-Time Title-Display Week

**PTZ coordinate:** the PTZ coordinates can be chosen when the PTZ coordinates need to be displayed on the video.

Procedures:

- 1)Enable: enable/disable the function.
- 2)Drag the PTZ coordinate box to change the PTZ coordinate position on the image;
- 3)Configure the font color;
- 4)Click *Confirm* to complete the settings.

**The PTZ coordinate setting in the thermal channel and visible channel is the same.**



Figure 5.18 Video Overlay-PTZ Coordinate Settings Interface

#### 5.1.2.4 Privacy Mask

The privacy mask can be configured to protect some certain areas on the image.

Procedures:

- 1) Enable: turn on/off the function;
- 2) Click *Draw Area* to draw the rectangular box on the area where the privacy is needed( 4 areas at most); Click *Delete* and choose the corresponding box to delete; *Click Draw Area* to draw privacy mask again.
- 3) Click *Confirm* to complete the settings.

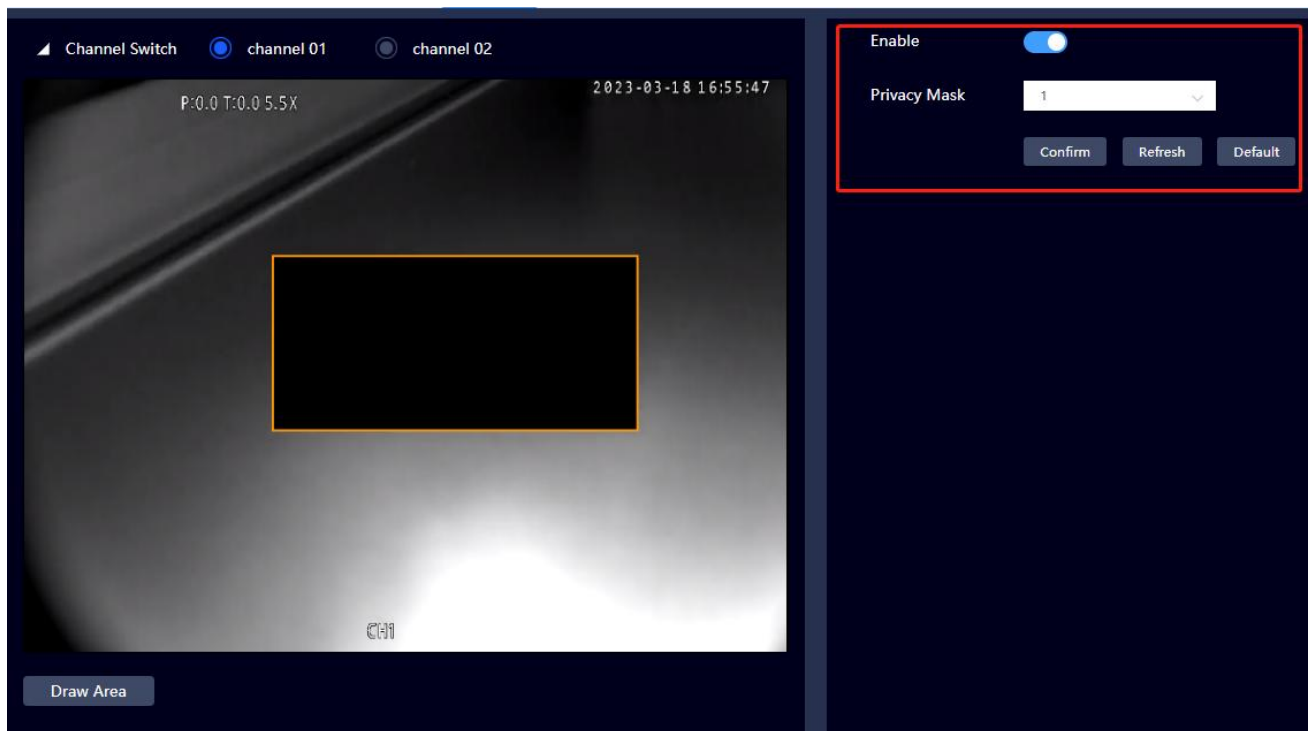


Figure 5.19 Privacy Mask Setting Interface

#### 5.1.2.5 Region of Interest

Set the region of interest in the screen, and the area of interest will be displayed according to the set image quality.



Steps:

1. Enable: enable or disable the area of interest;
2. Click "Draw Area" to draw the area of interest on the video screen (up to 8 areas can be set), and set the image quality of the corresponding area of interest; Click "Delete" to delete the selected area frame; Click "Draw Area" to draw the area of interest again.
3. Click "Confirm" to complete the setting.

The area of interest setting of thermal imaging channel is similar to that of visible light channel.

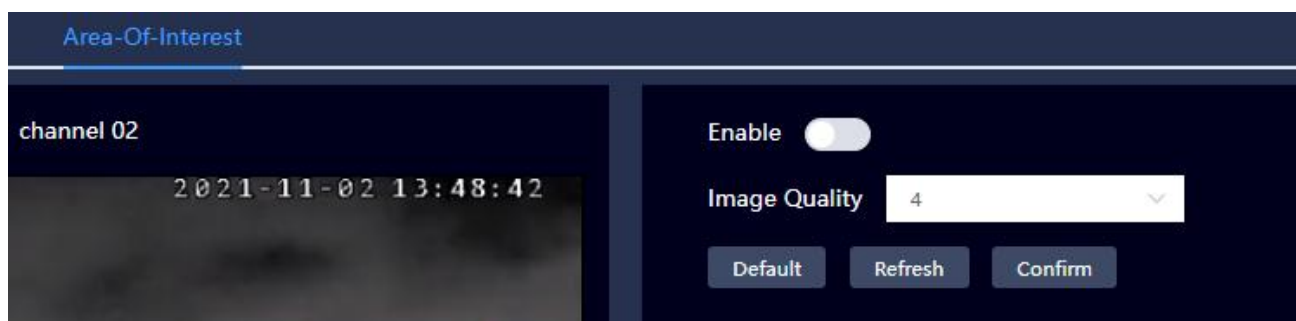


Figure 5.20 Region of Interest Setting

## 5.1.3 Audio

### 5.1.3.1 Audio Settings

#### Coding

**Enable:** enable or disable this function, the audio can be enabled only when the video is enabled;

**Encoding Scheme:** the encoding scheme of the audio, which contains PCM, G.711A, G.711U and AAC, the set audio encoding scheme will make audio and voice intercom take effect at the same time.

**Sampling Rate:** the audio sampling frequency;

#### Attribute

**Audio Input Type:** support LineIn only, the device needs being connected with external audio input source.

**Mic Volume:** adjust the mic volume.

**Speaker Volume:** adjust the speaker volume.

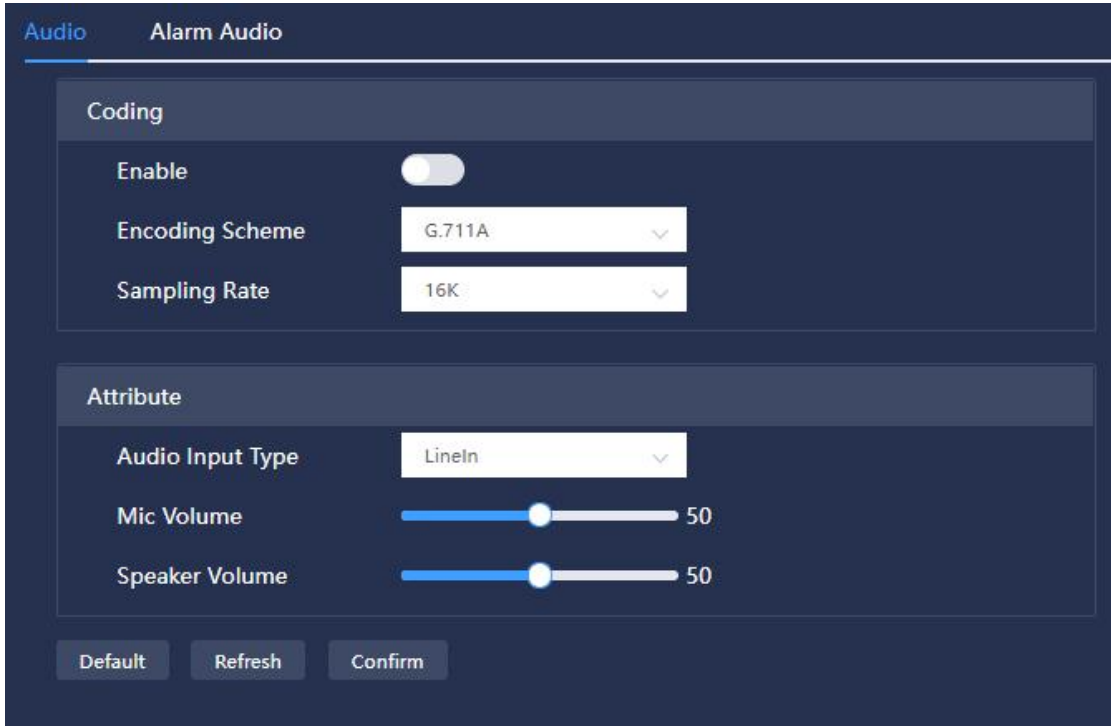


Figure 5.21 Audio Settings Interface

### 5.1.3.2 Alarm Audio

there is a default alarm audio(alarm.wav) on the interface, and the user can upload the alarm audio, which needs to meet the audio file requirements: sampling rate 16k, sampling accuracy 16bit, encoding type (PCM/G711A/G711U) , the files can be downloaded, deleted and the file name can be revised.

See the following figure:

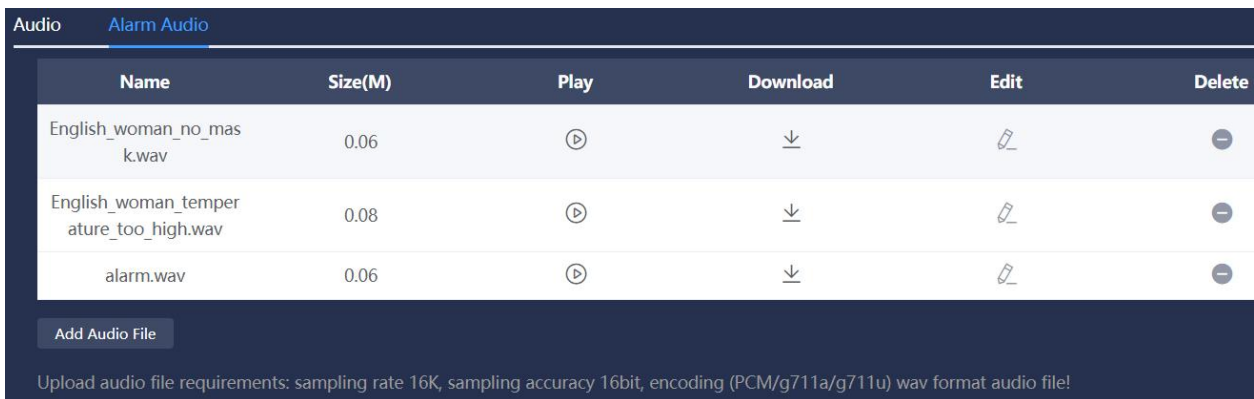


Figure 5.22 Alarm Audio Setting Interface

## 5.2 Network Settings

### 5.2.1 TCP/IP

Set the IP address and DNS server of the camera to ensure that it can communicate with other devices in the network. See below:

TCP/IP	
Host Name	eth0
DHCP	<input type="checkbox"/>
* Physical Address	98:6c:5c:04:00:ac
* IP Address	10.10.18.171
* Subnet Mask	255.255.255.0
* Default Gateway	10.10.18.1
* Preferred DNS	114.114.114.114
* Alternative DNS	8.8.8.8
<input type="button" value="Default"/> <input type="button" value="Refresh"/> <input type="button" value="Confirm"/>	

Figure 5.23 Network Settings—TCP/IP Setting

Other parameters:

■DHCP: 1. when not enabled, it is in static mode. You can manually set the IP address, subnet mask, and gateway.

2. When enabled, the device will automatically obtain an IP address (there is a router with DHCP enabled in the network connected to the device); at this time, the "IP address", "subnet mask" and "default gateway" cannot be set.

■MAC address: display the MAC address of the host, which cannot be changed.

■IP address/subnet mask/default gateway: input the correct "IP address", "subnet mask" and "default gateway" according to the actual situation; the IP address and default gateway must be in the same network segment and matched with the subnet code.

- Preferred DNS server: DNS server IP address.
- Alternative DNS server: IP address of alternative DNS servers.

## 5.2.2 DDNS

By setting the DDNS parameters, the system can dynamically update the relationship between the domain name and IP address on the DNS server when the device's IP address frequently changes, and you can directly use the domain name to remotely access the device without recording the constantly changing IP address.

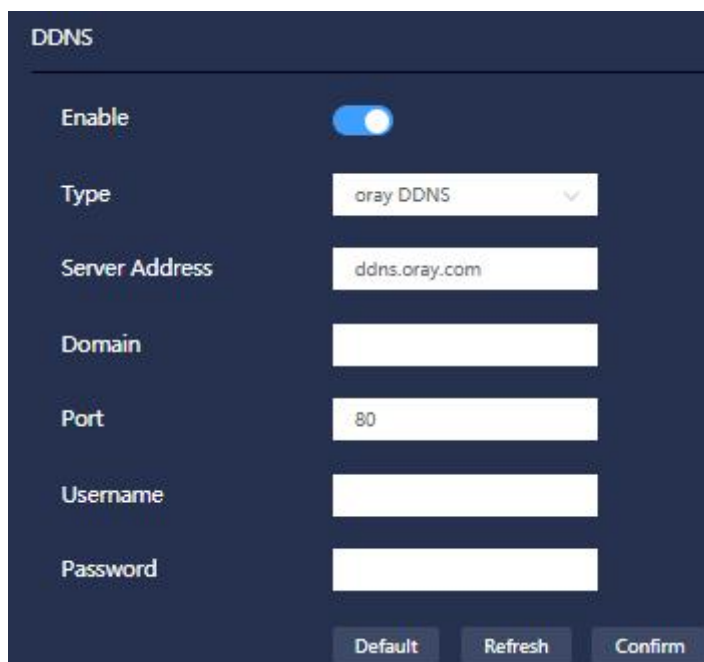
Server Type: supports 4 types (oray DDNS, NO-IP DDNS, Dynans DDNS, pubyun DDNS).

Server Address: each server type has a corresponding address.

Domain: the domain name registered by the user on the website of the DDNS server provider.

Port: the port can be customized.

Username/Password: enter the username and password obtained from the DDNS service provider; users need to register an account (including username and password) on the DDNS server provider website.



The screenshot shows a dark-themed settings window titled "DDNS". It contains the following fields and controls:

- Enable:** A toggle switch that is currently turned on (blue).
- Type:** A dropdown menu with "oray DDNS" selected.
- Server Address:** A text input field containing "ddns.oray.com".
- Domain:** An empty text input field.
- Port:** A text input field containing "80".
- Username:** An empty text input field.
- Password:** An empty text input field.
- Buttons:** Three buttons at the bottom: "Default", "Refresh", and "Confirm".

Figure 5.24 Network Settings-DDNS Setting

### 5.2.3 SMTP

Set the mailbox information. After enabling the "mail" function of the alarm linkage, the system will send an alarm email to the designated recipient when an alarm is triggered.

SMTP Server: different mailbox types have different server addresses; for example: (163 mailbox server address: smtp.163.com/Sina mailbox server address: smtp.sina.com, etc.).

Port: the port is related to the encryption method (the port for SSL encryption is generally 465, and the port for TLS or non-encryption is generally 25).

Username/Password/Sender: fill in the sender's mailbox information according to the actual situation.

Encryption: three options of None/SSL/TLS are optional.

Theme: email subject information.

Recipient: recipient's email address.

The image shows a dark-themed web interface for SMTP settings. At the top, the title "SMTP" is displayed. Below it, there are several configuration fields:

- SMTP Server:** A text input field containing "none".
- Port:** A text input field containing "25".
- Username:** A text input field containing "anonymity".
- Password:** A password input field with four asterisks and a toggle icon.
- Sender:** A text input field containing "none".
- Encryption:** A dropdown menu currently set to "None".
- Theme:** A text input field containing "Message".
- Recipient:** A text input field with a "+" button to the right and a "-" button below it.

At the bottom of the form, there are four buttons: "Test", "Default", "Refresh", and "Confirm".

Figure 5.25 Network Settings-SMTP Setting

## 5.2.4 UPnP

Establish a mapping relationship between the private network and the external network through the UPnP protocol, and users of the external network can access the internal network device by accessing the external network IP address.

Prerequisites:

1. Make sure that the PC has installed the UPnP network service;
2. Log in to the router and set the router's WAN port IP address to access the external network;
3. The router enables the UPnP function;
4. Connect the device to the router's LAN port and access the private network;
5. Set the "IP address" of the device to the private network IP of the router, or select "DHCP" to obtain an IP address automatically.

Steps:

1. Enable the UPnP interface;
2. Select the port mapping method and the corresponding service name.
3. UPnP is divided into two mapping modes: custom and default.
  - "Custom" mode: users can modify the external port.
  - "Default" mode: users do not need to change the mapping and port.
4. Click "Confirm" to complete the setting.

**Enter "http://external network IP: external port number" in the browser to access the private network device with the corresponding port number in the router.**

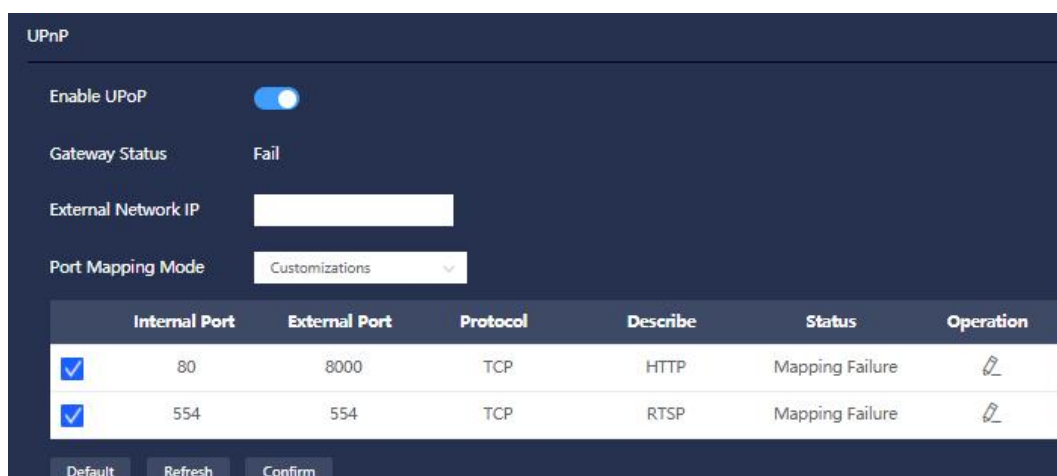
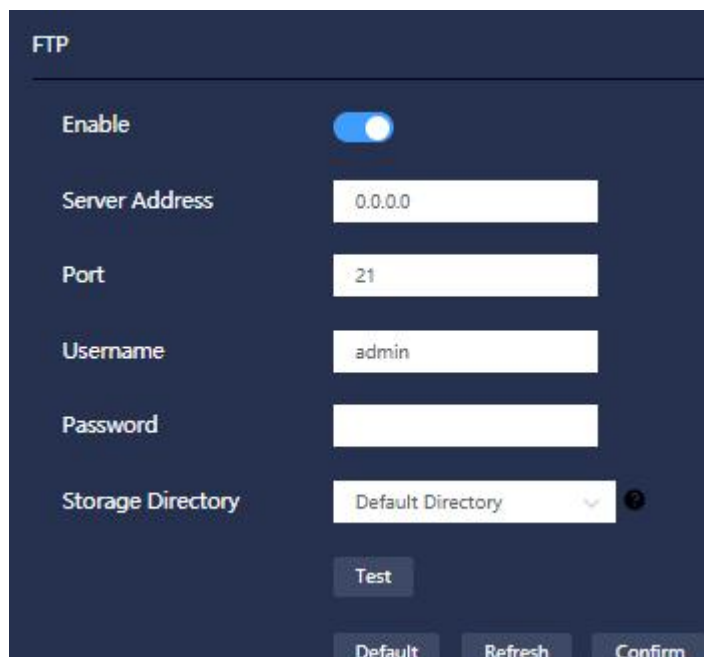


Figure 5.26 Network Settings-UpnP Setting

## 5.2.5 FTP



**Figure 5.27 Network Settings-FTP Setting**

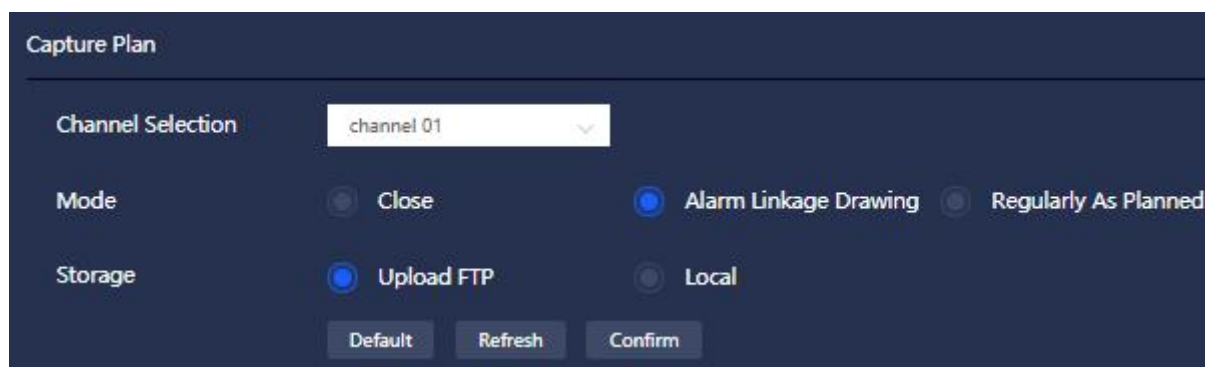
1. FTP is enabled;
2. Set the FTP address (e.g. 10.10.18.160), port number (e.g. 21), user name, password, etc., and perform network tests on the FTP;
3. Storage Directory: the location of the server where the snapshots are stored.

Default directory: the default directory when configuring the server;

Custom directory: set a custom remote server storage directory.

4. Click "Confirm" to complete the setting.
5. This setting can be used to save the captured pictures in the corresponding FTP designated directory in the "Capture Plan".

Go to "Settings" → "Storage Management" → "Capture Plan" → "Storage" → Select "Upload FTP" and click "Confirm", as shown in the figure below:



**Figure 5.28 Capture Plan-Upload FTP Setting**

### 5.2.6 Platform Access

The device supports access to other devices or servers that comply with the national standard 28181 protocol, and realizes some related real-time monitoring, alarm control and other functions.

Steps:

1. Enable the platform access;
2. Set the parameters of the national standard 28181; Generally only the two parameters of SIP server IP and device number need to be set, and the other parameters are consistent with the docking device or server.

Note: Please set the parameters in accordance with the information provided by the platform during actual use. All parameters must be set correctly, otherwise there may be exceptions such as device registration failure and no response of functions.

3. Click "Confirm" to complete the setting.



GB28181

Enable

SIP Server Number  SIP Domain

SIP Server IP  SIP Server Port

Equipment Number  Login Password

Local SIP Port  Validity Of Registration

The Heartbeat Cycle  Expired Times

Area Number  Access Module Code

Channel Information

Channel Number  Alarm Level

Alarm Related

Information

Channel Number  Alarm Level

Figure 5.29 Network Settings-Platform Access Setting

## 5.3 Peripherals Settings

### 5.3.1 Filling Light

The fill light has two modes: automatic and manual.

**Automatic Mode:** adjust the illuminance of filling lamp according to the visual scenes.

When the illuminance of visible light channel is lower than a certain value, the screen will automatically switch to black and white. The infrared light is on, the darker the picture, the brighter the infrared light; When the illuminance of visible light channel is higher than a certain value, the screen will automatically switch to color and the infrared light will go out.

**Manual Mode:** The size of the infrared light can be manually adjusted, ranging from 0-100.

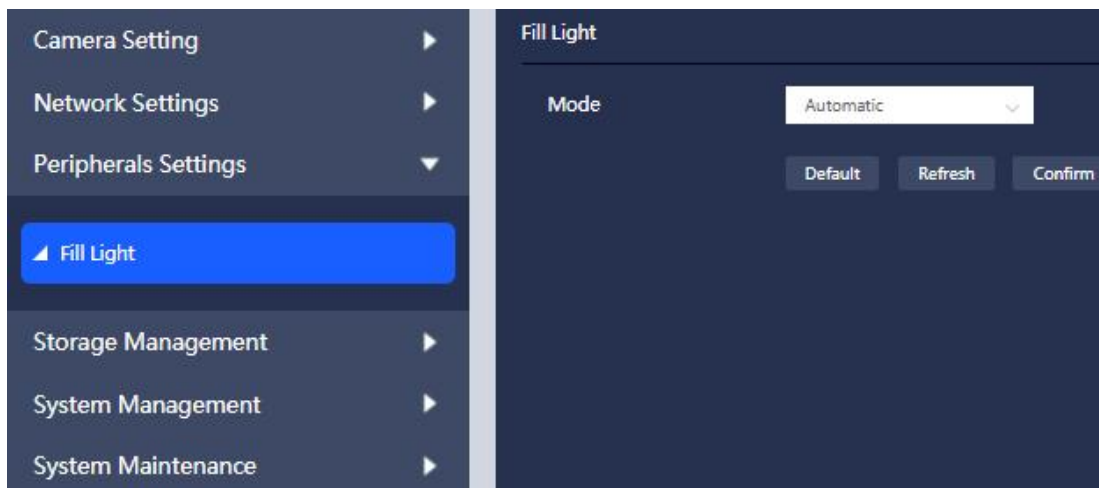


Figure 5.30 Peripherals Settings-Fill Light Setting

## 5.4 PTZ Settings

### 5.4.1 Preset

The preset refers to that the camera will save the current pan, tilt and focal length info which can be used quickly and adjust the PT and camera to the desired position.

The preset operations are the same with *Preview-PTZ function-preset* which will not be described in detail.

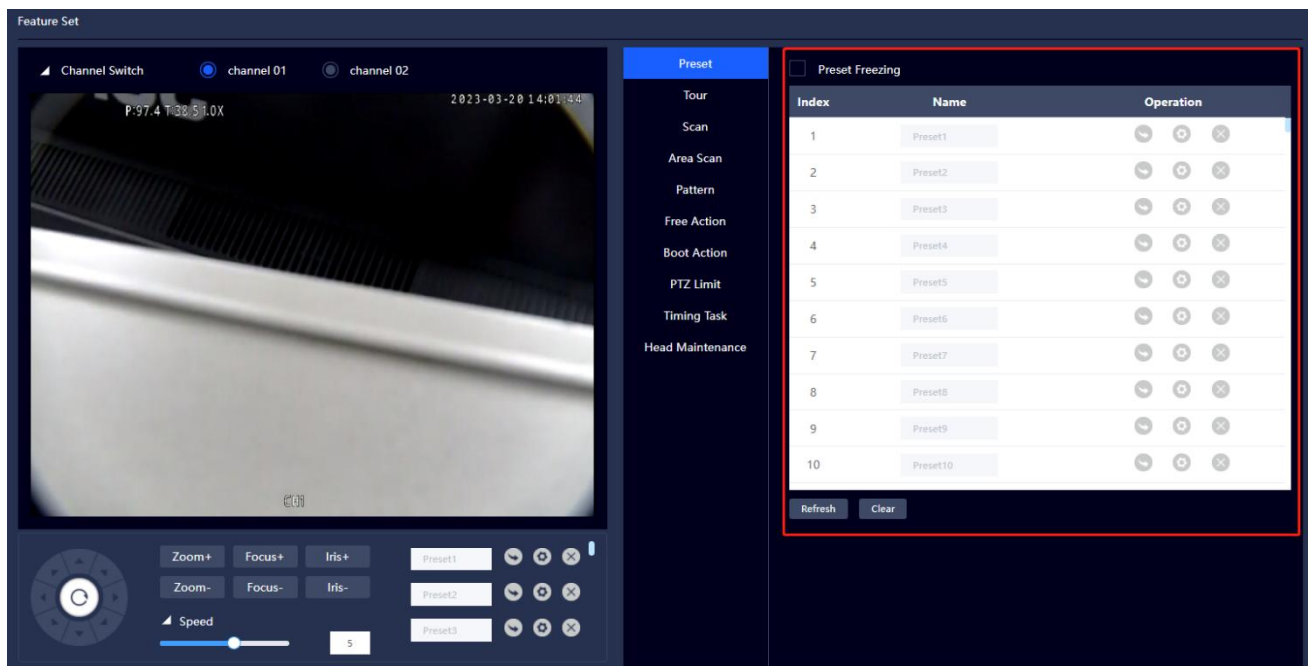


Figure 5.31 PTZ Settings-Preset Settings Interface

### 5.4.2 Tour

Tour refers to that the presets are arranged into the automatic tour according to the required sequence, so that the camera can automatically move round according to the preset route in a convenient and fast way.

Procedures:

- 1) For presets already existed, click *Add* to add *tour 1* by default;
- 2) Click *Add* below and configure the tour sequence among the presets and duration;
- 3) Click *Save*, the prompt *Operate successfully* will display;
- 4) Click the *Start* button to start the tour, and click *Stop* to stop the tour.

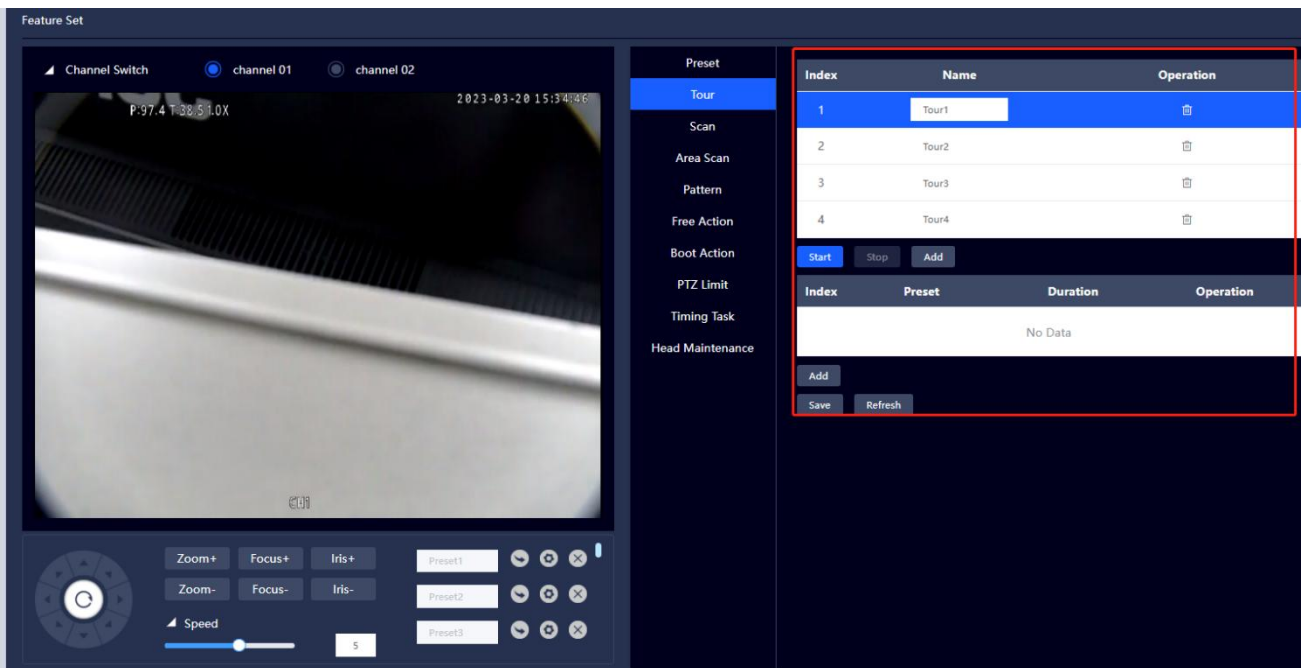


Figure 5.32 PTZ Settings-Tour Settings Interface

### 5.4.3 Pan

The camera moves horizontally at a certain speed between the configured left and right limits.

- 1) Select the Pan No.

- 2) Configure the pan speed, the range is 1-5;
- 3) Configure the left boundary duration and right boundary duration respectively;
- 4) Move the PTZ to the desired left boundary via the direction button, click *Set Left Boundary*;
- 5) Move the PTZ to the desired right boundary via the direction button, click *Set Right Boundary*;
- 6) Click *Save*, the prompt *Operate successfully* will display;
- 7) Click the *Start* button to start pan, click *Stop* to stop pan;

**Note:** if the PTZ boundary has not been configured (-1 by default), the PTZ camera will rotate 360° continuously.

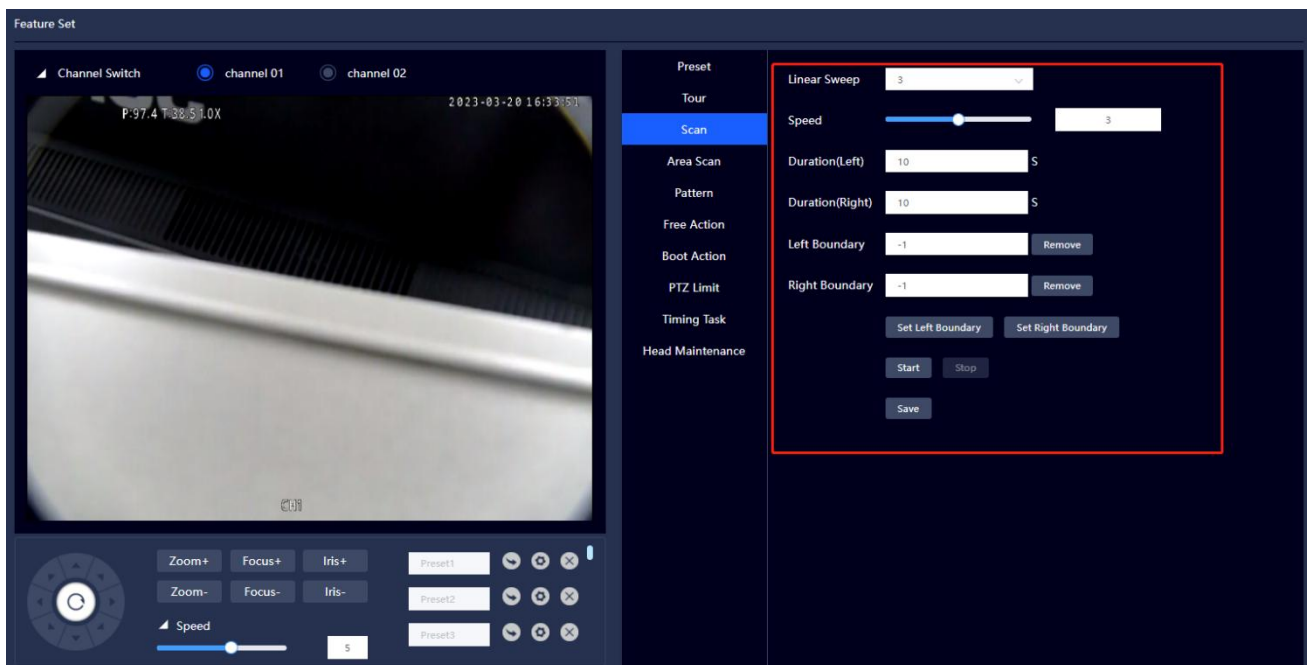


Figure 5.33 PTZ Settings-Scan Settings Interface

#### 5.4.4 Scan

You can configure an arc and horizontal area for your camera PTZ's rotation. Then by giving your PTZ a fixed rotation speed, you can get your camera scan from left to right (and from right to left) at a fixed speed.

Procedures:

- 1) Select area scan number;
- 2) Configure area scan speed and gradient value;

- 3) Configure the scan direction as clockwise or anticlockwise;
- 4) Configure the upper left margin: move the camera to the upper left margin via the direction button and click *setting*;
- 5) Configure the lower left margin: move the camera to the lower left margin via the direction button and click *setting*;
- 6) Click the *Start* button to start area scan and click *Stop* to stop area scan.

**Note:** if the PTZ margin has not been configured( the default value is “-1”), the camera can rotate 360° in horizontal.

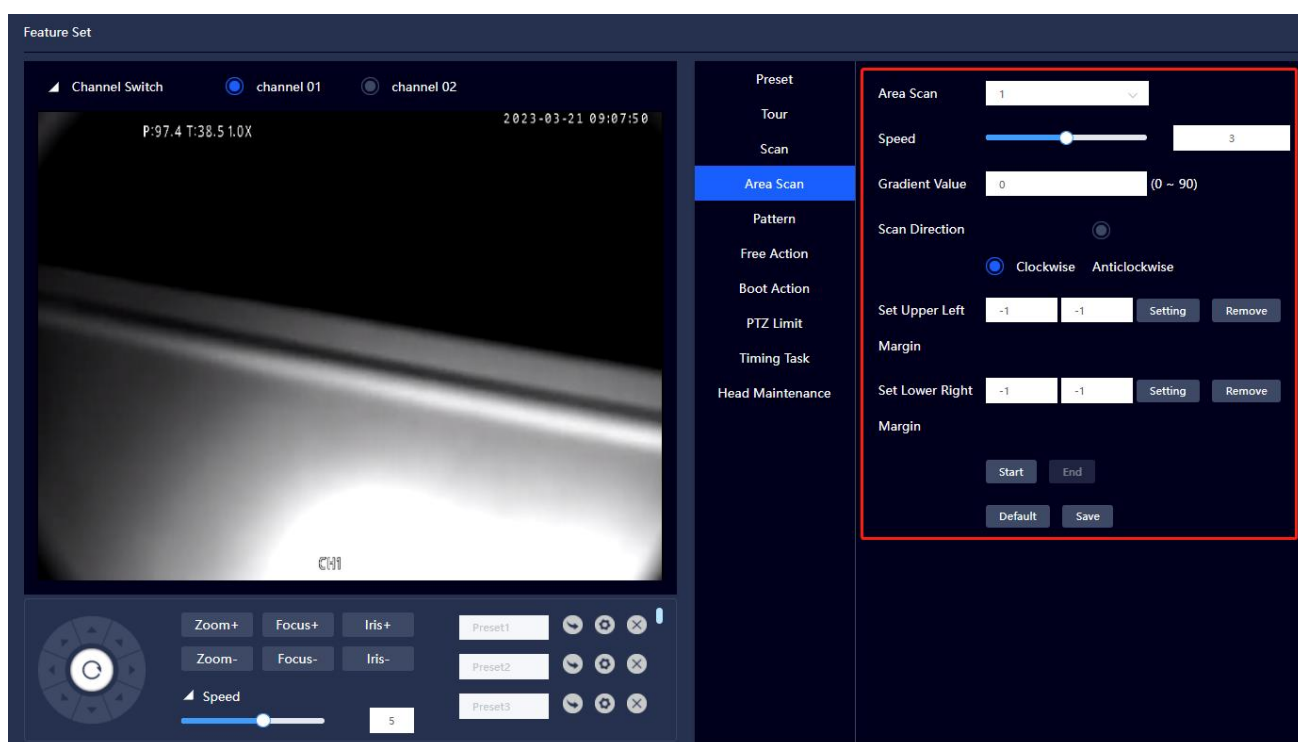


Figure 5.34 PTZ Setting-Area Scan Settings Interface

### 5.4.5 Pattern

By configuring pattern, you can record continuously your operation to the PTZ and record the moving pattern of the camera’s lens. The Device will make the location where the recording begins as the beginning point, and move back and forward automatically following the preset movement pattern.

Procedure:

- 1) Select pattern scan No.;

- 2) Click *Start Recording*;
- 3) Click the PTZ direction button or the *Zoom*, *Focus* button to adjust the lens focal length;
- 4) Click *Stop Recording*;
- 5) Click the *Start* button to start the pattern scan, click *Stop* to stop pattern scan.

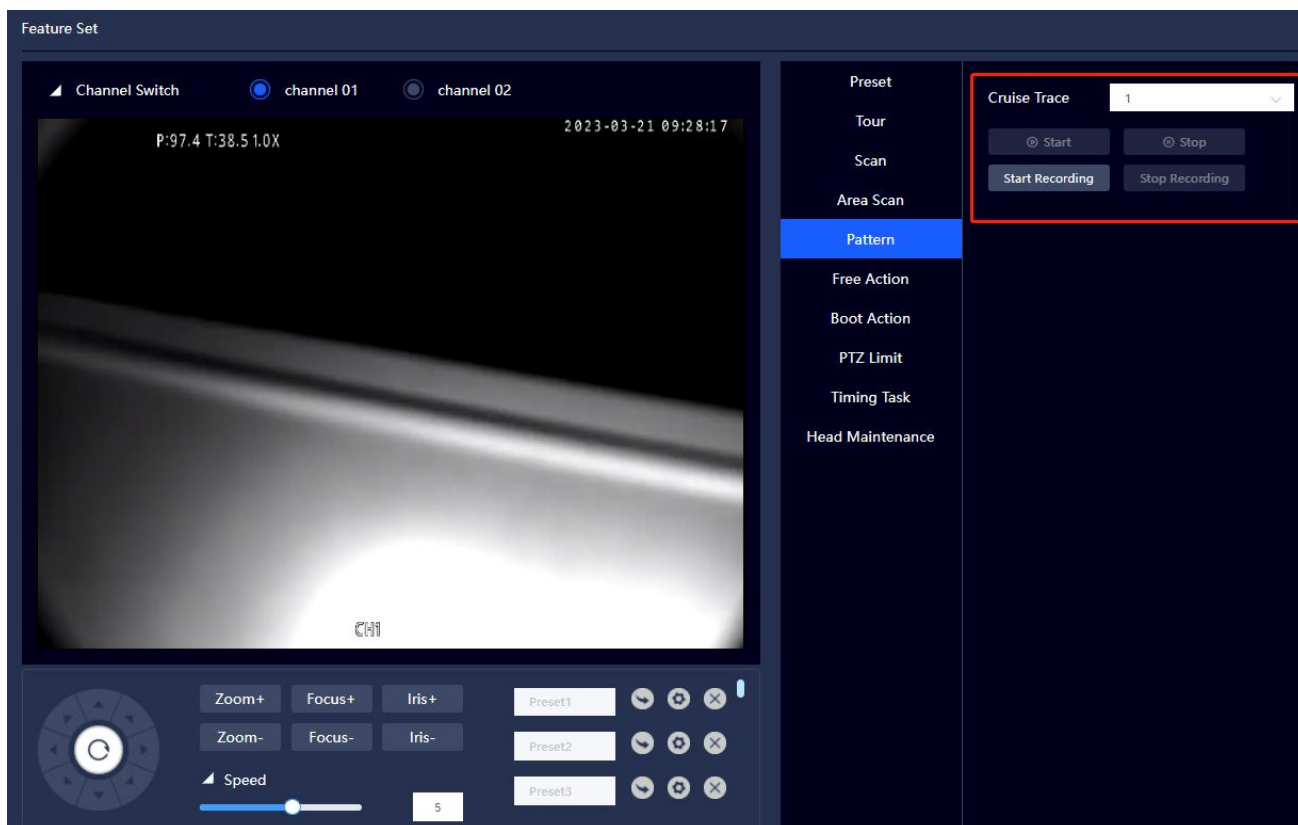


Figure 5.35 PTZ Setting-Pattern Scan Setting Interface

### 5.4.6 Idle Motion

Enable this function. And when there is a time period when PTZ does not receive any instructions, motions you have already set will be implemented. Please confirm that the already configured motion has been completed before idle motion configuring.

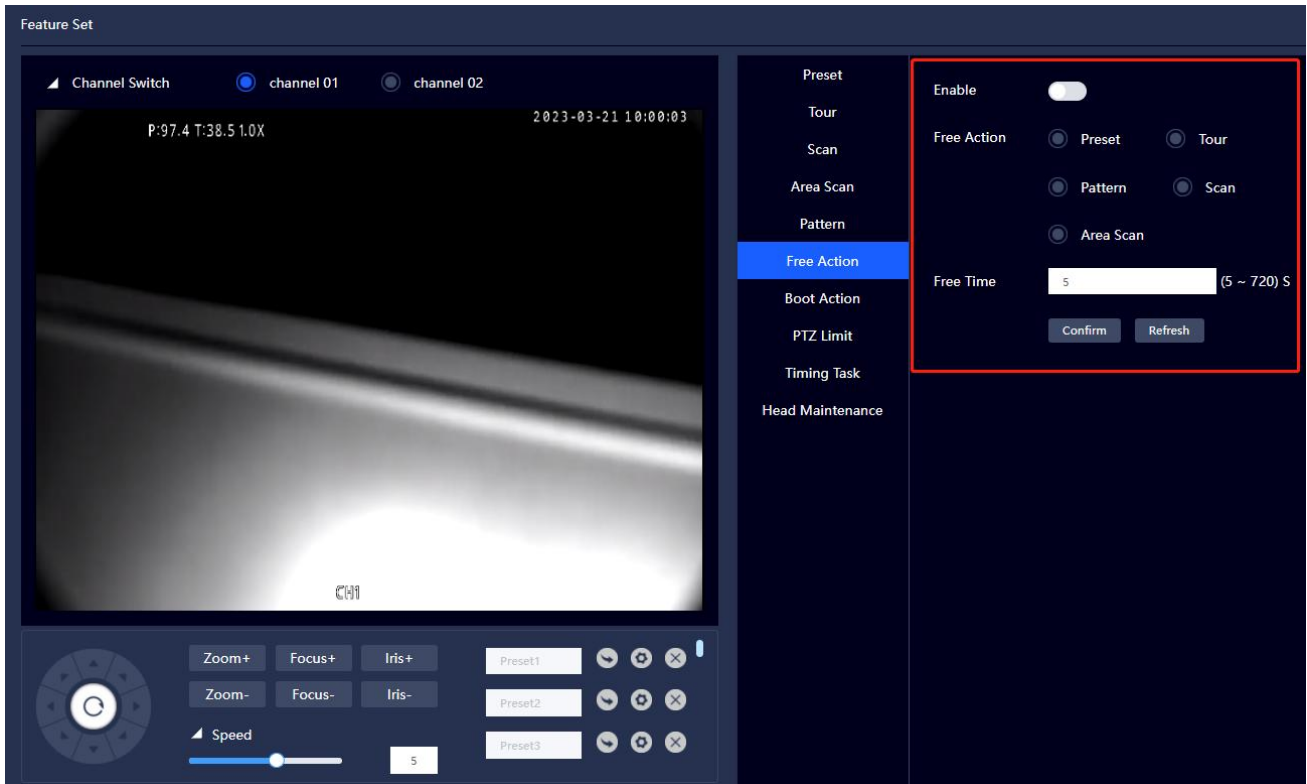


Figure 5.36 PTZ Setting-Idle Motion Setting Interface

### 5.4.7 Power Up

If you want the PTZ to implement certain actions after the camera is powered, configure this function. When *Auto* is selected, the system will perform the last motion before power off.

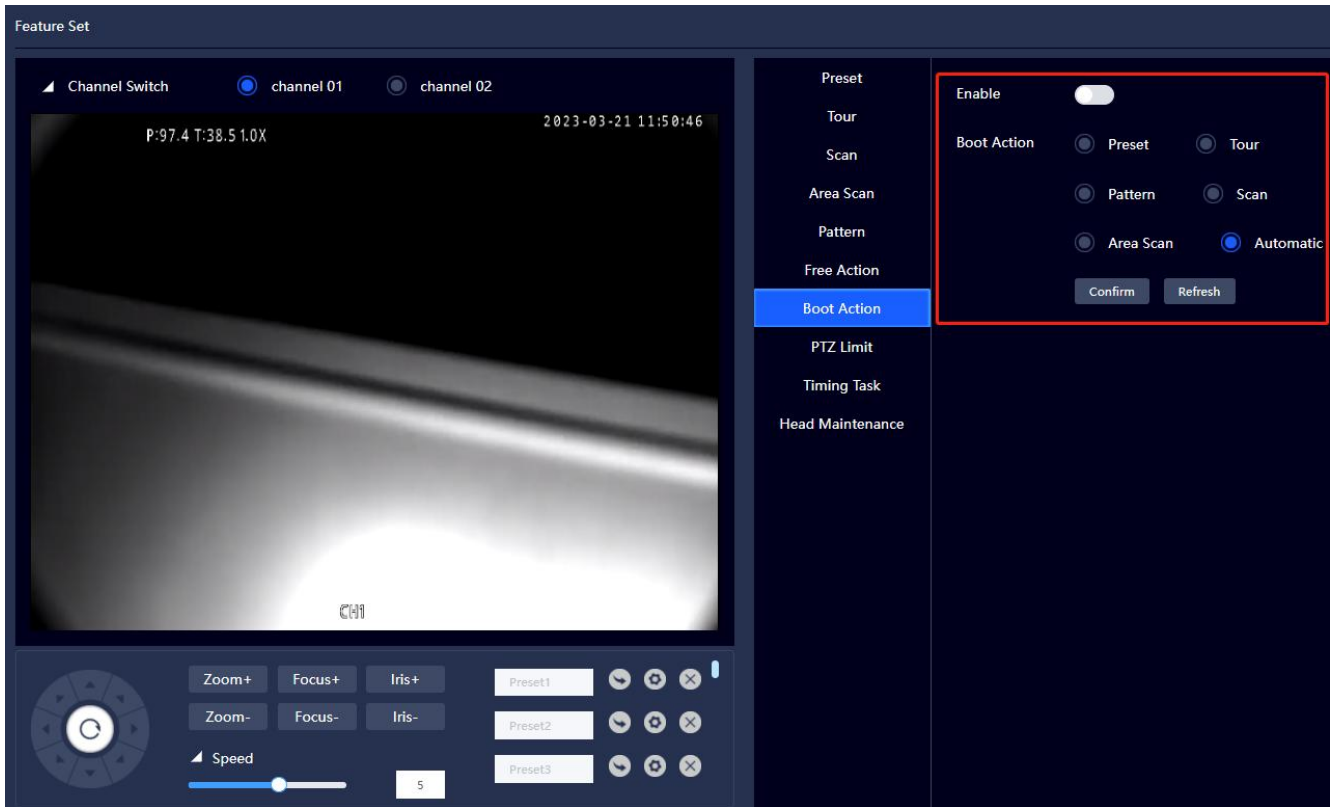


Figure 5.37 PTZ Setting-Power Up Setting Interface

### 5.4.8 PTZ Limit

The PTZ limit refers to setting the motion area of the PTZ so that the camera can only move within the configured area. Limits include vertical limits (setting upper and lower boundaries), horizontal limits (setting left and right boundaries), X-axis origin settings, and origin automatic calibration (off by default).



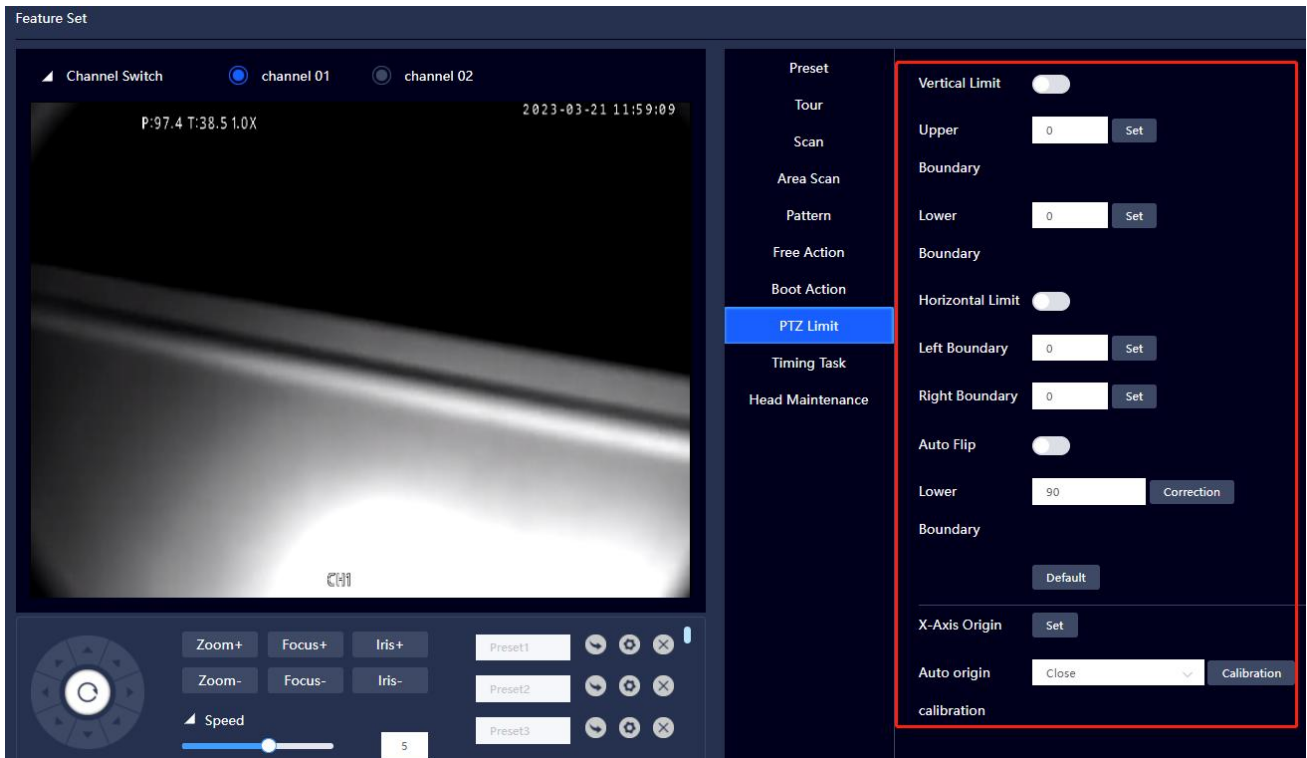


Figure 5.38 PTZ Setting-PTZ limit Setting Interface

### 5.4.9 Auto Flip

When the camera tilts to the bottom, it will auto pan 180° and tilt upwards.

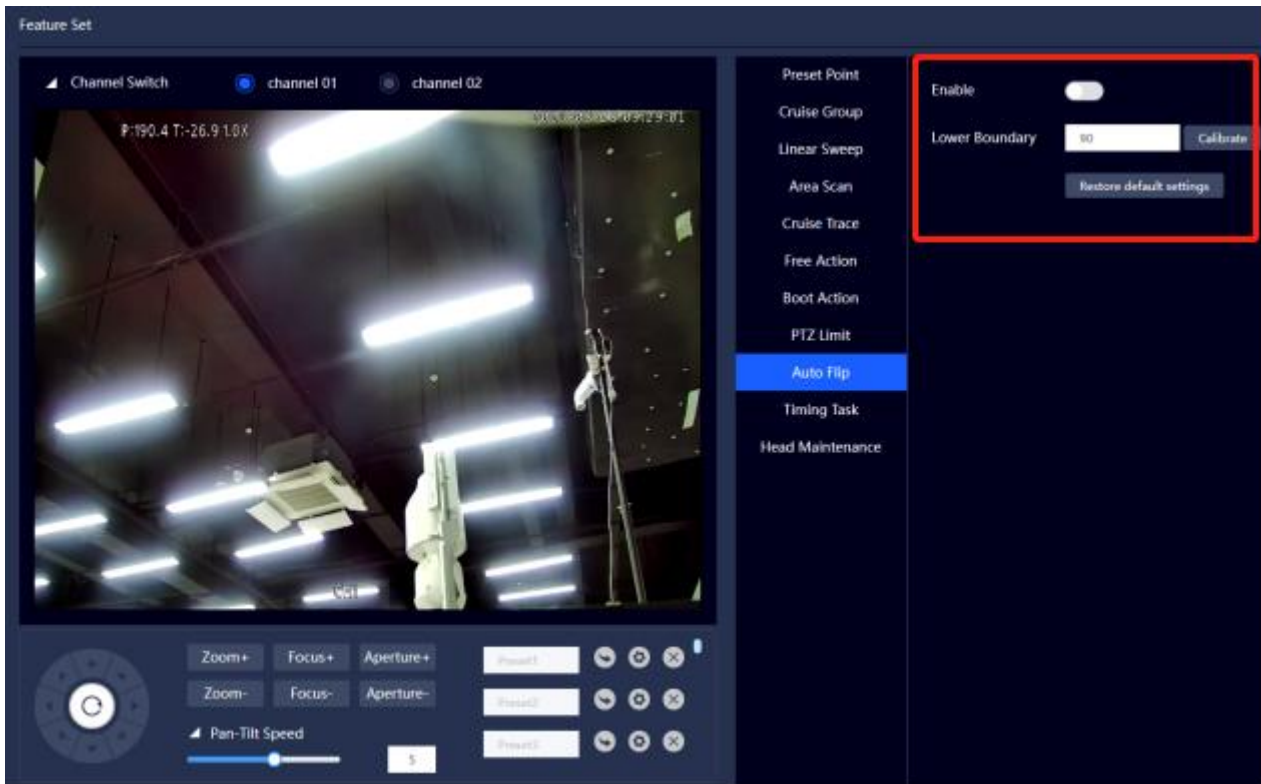


Figure 5.39 PTZ Setting-Auto Flip

#### 5.4.10 Time Task

You can configure a time task and let camera implement certain actions within the period you have set. When the implemented task is interrupted(for example: operate PTZ rotation manually), the device will perform the scheduled task again after N secs within the configured time period. Click the *Copy* button to copy the current task content into a certain task.

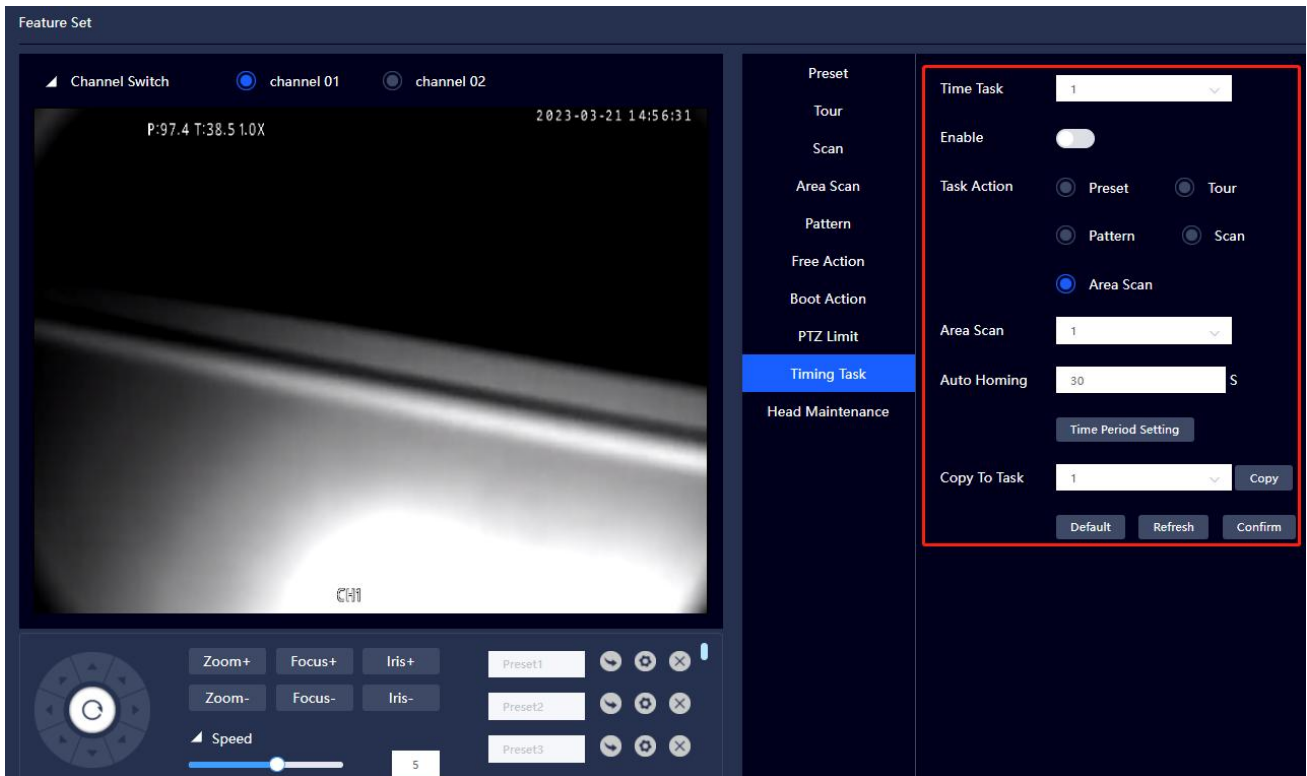


Figure 5.40 PTZ Setting-Time Task Setting Interface

### 5.4.11 PTZ Maintenance

- Power Off Memory: if this function is enabled, the PTZ will return to the last position before power off.
- Default: all the configuring will be deleted by this function, please operate with caution.
- PTZ Restart: restart the PTZ manually.

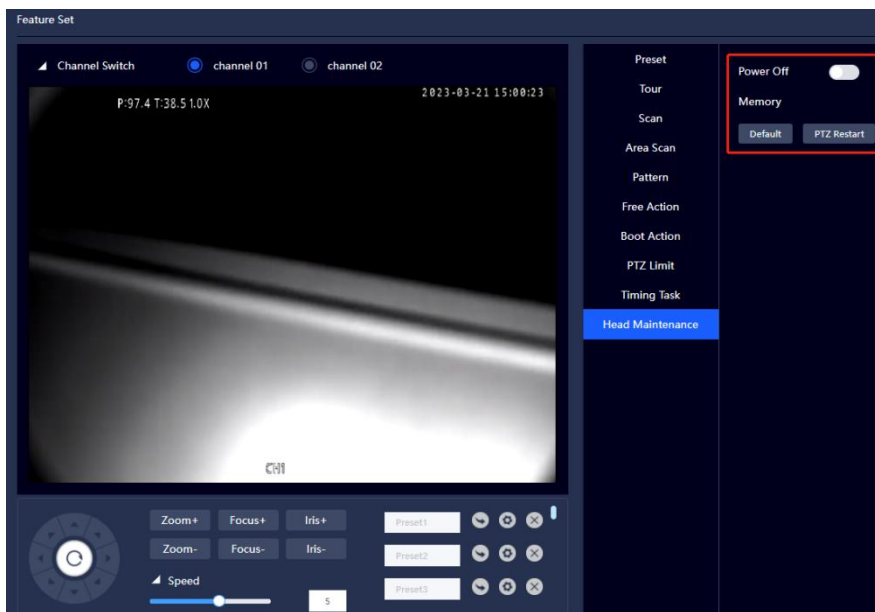
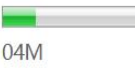


Figure 5.41 PTZ Setting-PTZ Maintenance Setting Interface

## 5.5 Storage Management

### 5.5.1 Storage Device

Display the relevant information of the local SD card, for example, device name, status and used space etc. The SD card can also be formatted.

Device Name	Device Number	Status	Used Space/Total Size	Operation
SD	1	Normal	 04M / 7223M/295	Formatting

Refresh

Figure 5.42 Storage Management-Storage Device

### 5.5.2 Video Control

Video Duration: the duration of each video file.

Pre-recording Time: when an alarm is triggered, the time of recording is advanced. For example, when 5 is input, the system saves the recording 5 seconds before the alarm occurs to the recording file.

Video Stream: including the main stream and the sub stream.

**Video Control**

Video Duration:  Minutes

Pre-Recording Time:  S

Video Stream:

Default Refresh Confirm

Figure 5.43 Storage Management-Video Control

### 5.5.3 Video Plan

Channel Selection: configure video recording plan for 2 channels of visible light and thermal imaging, and the 2 channel configuration are independent of each other.

Mode: supports three modes, selecting from close the video, alarm recording (default), and scheduled recording.

■Close the Video: select to close the recording, the channel recording will no longer be recorded in the SD card;

■Alarm Recording: select alarm recording, check linkage recording in the alarm setting interface, and there will be alarm recording of this channel in the SD card.

■Scheduled Recording: choose to record by time period according to plan, and ordinary video will be recorded according to the set time period.

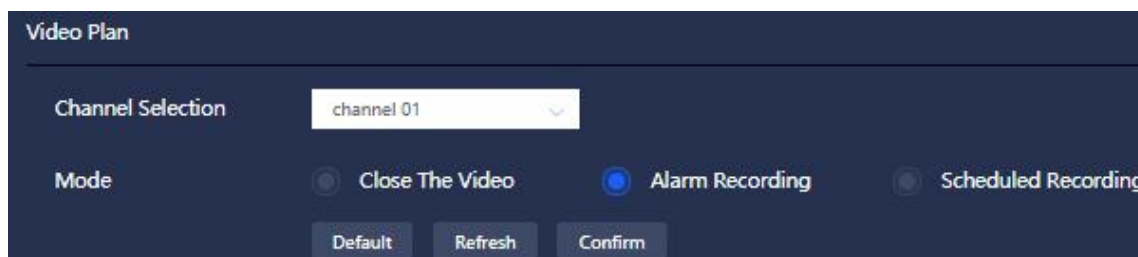


Figure 5.44 Storage Management-Video Plan

### 5.5.4 Capture Plan

Channel Selection: configure video recording plan for 2 channels of visible light and thermal imaging, and the 2 channel configuration items are independent of each other.

Mode: supports three modes to choose to close, alarm linkage drawing, and regularly as planned.

Storage Method: upload FTP and local storage device (SD card storage) are optional. You can choose one at will or two at the same time.

■Close: choose to close the capture, and all the capture functions stored in the SD card or FTP will be closed;

■Alarm linkage drawing: select the alarm linkage capture, check the linkage to take pictures in the alarm setting interface, and there will be alarm pictures of this channel in the SD card or FTP storage directory.

■Regularly as Planned: capture ordinary pictures according to the set time period to SD card or FTP storage directory.

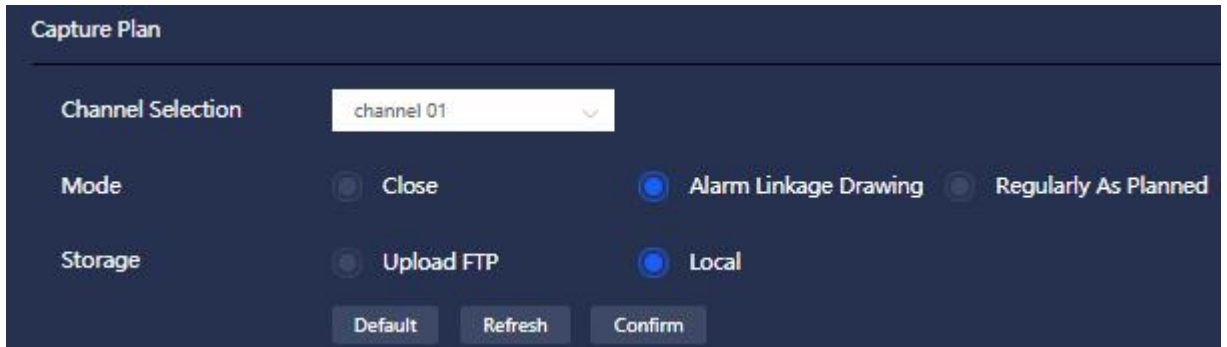


Figure 5.45 Storage Management-Capture Plan

## 5.6 System Management

### 5.6.1 Local Setting

It includes local setting and setting for date and time and general schedule.

#### 5.6.1.1 Local Setting

The local setting interface sets device name, system language and video format, as shown in the figure below:



Figure 5.46 System Management-Local Setting

Parameters	Descriptions
1 Device Name	the device name can be set
2 Language	the system language, including Chinese and English
3 Video Formats	display the video formats, including 50Hz and 60Hz

Table 5-1 The parameter description of local setting

### 5.6.1.2 Date and Time

The date and time setting interface sets date&time format, time zone, system time and NTP, as shown in the figure below:

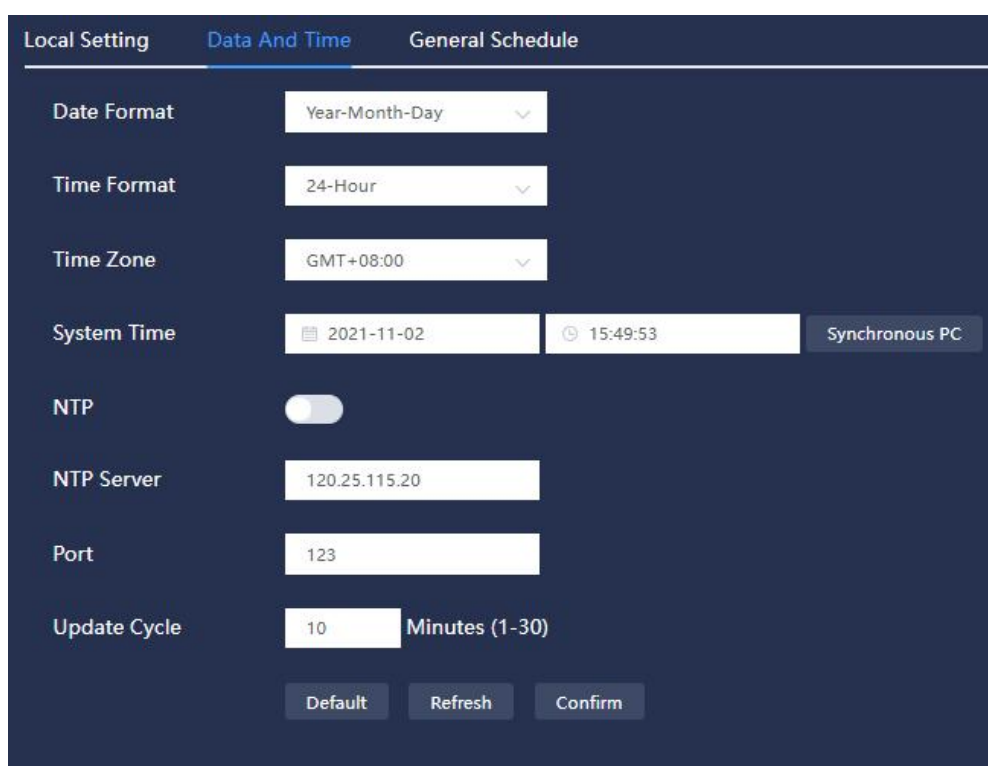


Figure 5.47 System Management-Date and Time Setting

Parameters	Descriptions
1 Date Format	date format in system display
2 Time Format	time format in system display, including 24-hour format and 12-hour format
3 Time Zone	The time zone where the device is located
4 System Time	The present system time Click Synchronous PC, then the time is adjusted based on the PC time.

5 NTP	To synchronize time with the NTP server, enable the NTP function. Choose this option to enable NTP function.
6 NTP Server	The IP address of NTP server
7 Port	Port of NTP server
8 Update Cycle	Interval at which the device synchronizes time with the NTP server

Table 5-2 The parameter description of date &amp; time

### 5.6.1.3 General Schedule

The general schedule is used to synchronize the time set in the general schedule with one click when setting the defense time and video/capture plan. The general schedule can be edited (dragging or clicking is supported) and reset with one click.

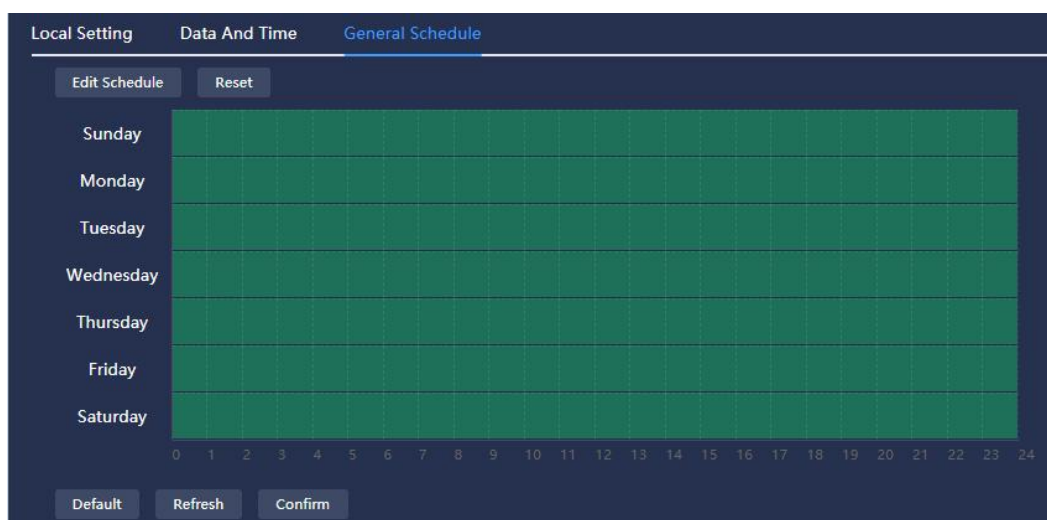


Figure 5.48 System Management-General Schedule Set Interface

## 5.6.2 User Management

### 5.6.2.1 User Management

User management can only be performed when the user has user management authority.

#### User:

1. The system has a default user admin, admin belongs to the highest authority user by default (admin users cannot be deleted); the admin can add ordinary user or operator, but can not add administrator.



2. The admin user change his/her own password and delete or modify non-admin users; the operator can change his/her own password or change/delete the ordinary users; the ordinary user does not have user management rights, the ordinary user can only change his/her own password.

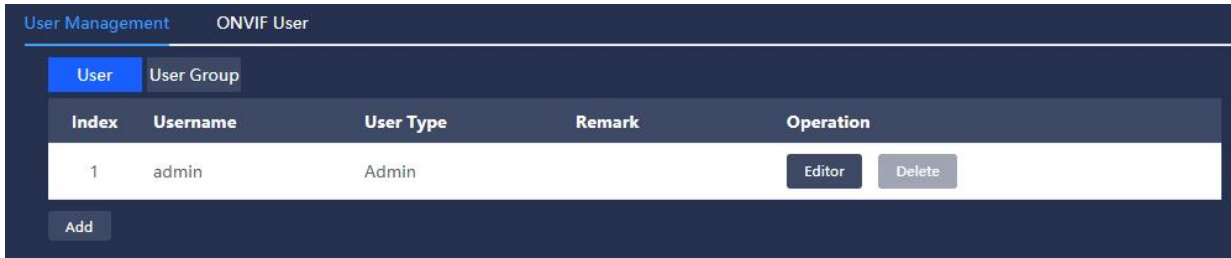


Figure 5.49 User Management-User Interface

**User group:**

1. There are three levels of user group: administrator, operator or ordinary user. Adding, changing or deleting new user group is not supported.
2. Only the admin can view or change the authority of user group, different user groups have different operation authorities. The authority of admin can not be changed, but can reassign the authorities to users of other levels.

As shown in the figure below.

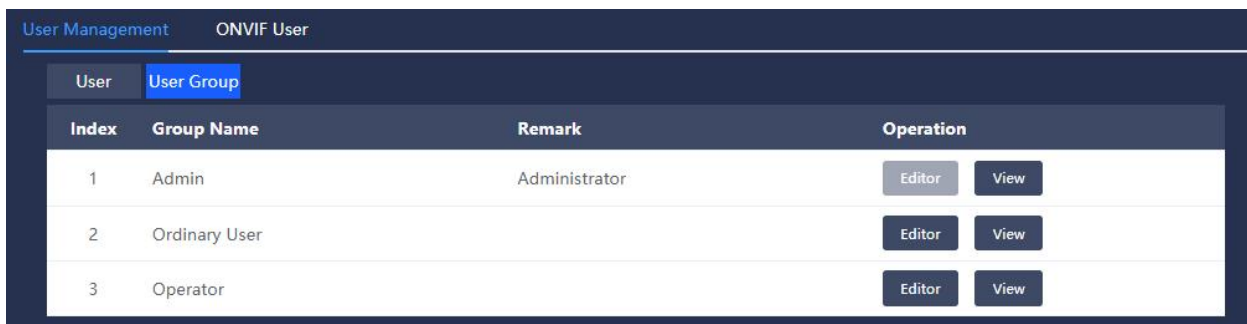


Figure 5.50 User Management-User Group Interface (Admin)

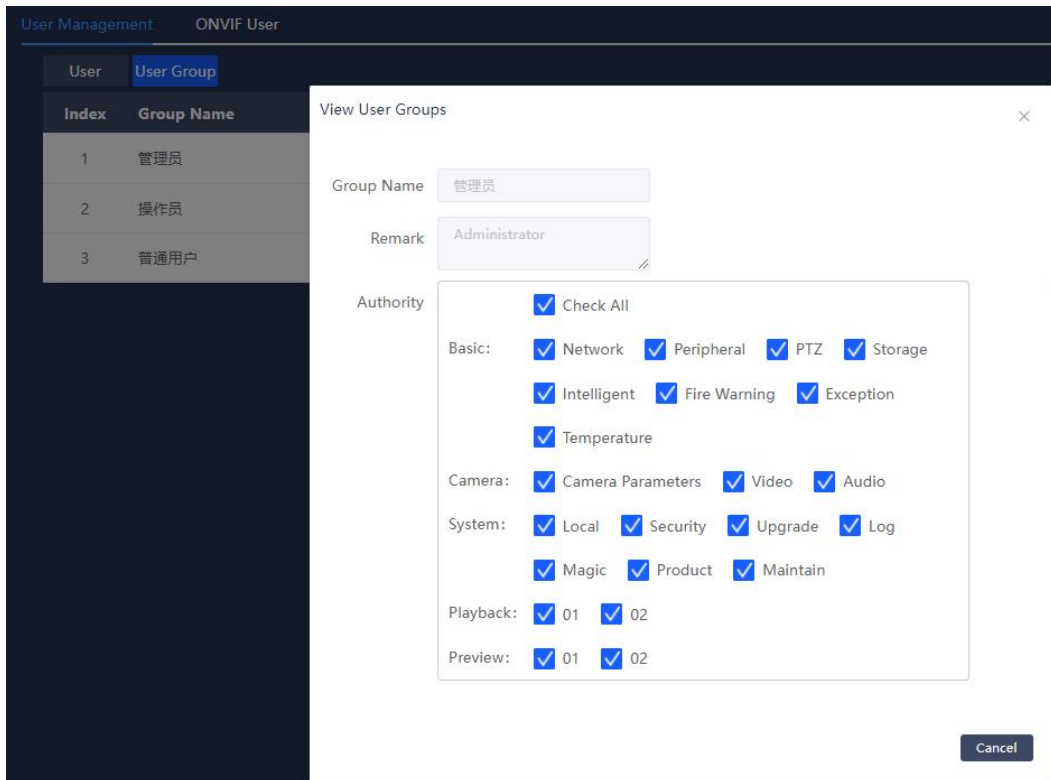


Figure 5.51 User Management-Authority Assignment (Admin)

**Note:** User management adopts two levels of user group and user. User names cannot be repeated. A user can only belong to one group, and the user's authority is consistent with that of the user group it belongs to.

**ONVIF User:**

- 1) The default onvif user is admin, who can change admin's password, (password is admin by default), but can not delete admin users.
- 2) The admin can add other onvif users.
- 3) Turn off onvif authentication, when the camera is connected with NVR via onvif, user name and password check is not needed; Turn on onvif authentication, the user name and password is needed when connected.

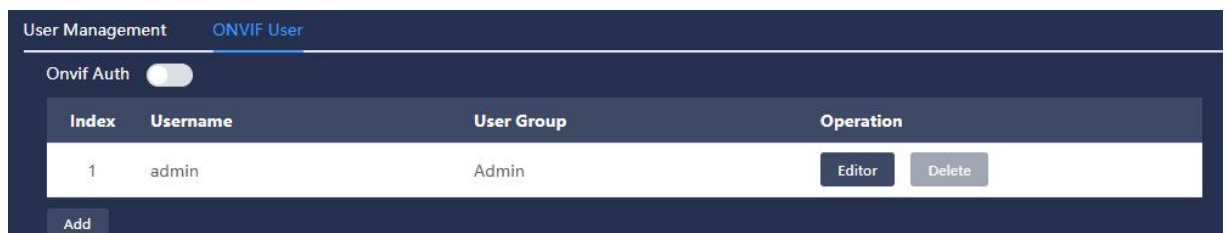


Figure 5.52 User Management-ONVIF User Interface

## 5.6.3 Safety Management

### 5.6.3.1 IP Permissions

In order to strengthen the network security of the device and protect the device data, the user who is allowed to access the device through the IP authority can be set.

Whitelist: the device can only be accessed using the IP host in the whitelist, otherwise it can not be accessed. (Edit and delete the added IP address)

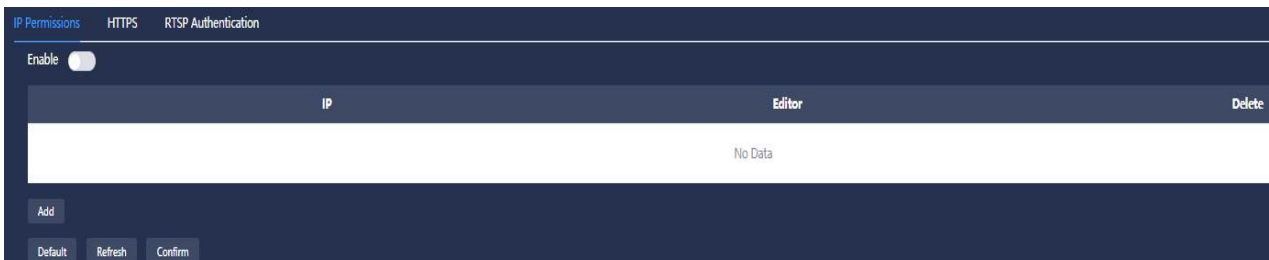


Figure 5.53 Safety Management-IP Permission Interface

### 5.6.3.2 HTTPS

The signed certificate can be uploaded and installed through HTTPS, so that the PC can log in to the device normally through HTTPS to ensure the security of communication data.

Steps:

1. Enable HTTPS;
2. Import the certificate and certificate key;
3. Click "Confirm", and the setting for the device will take effect after restarting.

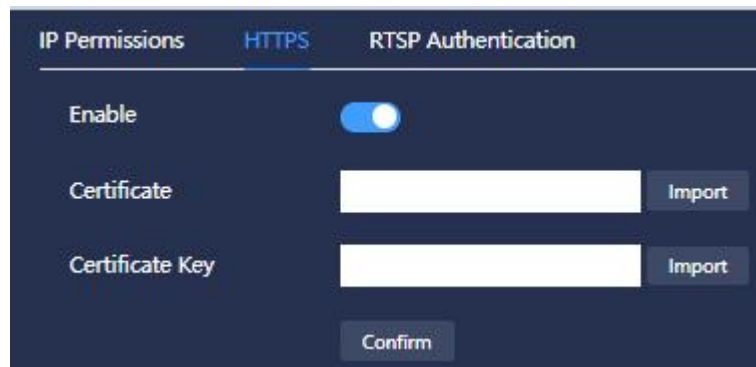


Figure 5.54 Safety Management-HTTPS Interface

### 5.6.3.3 RTSP Authentication

The authentication method for the media stream can be set to ensure the security of the data in the process of streaming media transmission.

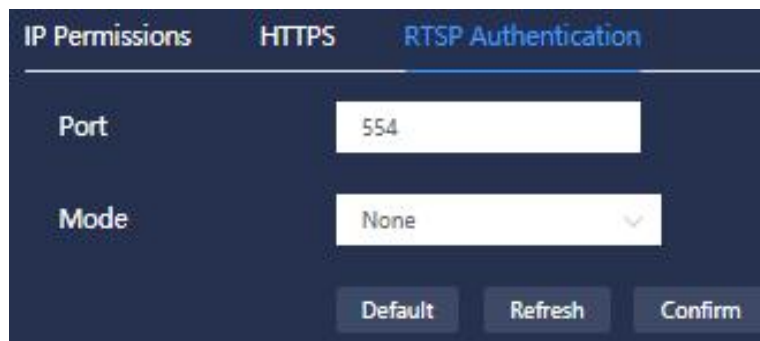


Figure 5.55 Safety Management-RTSP Authentication

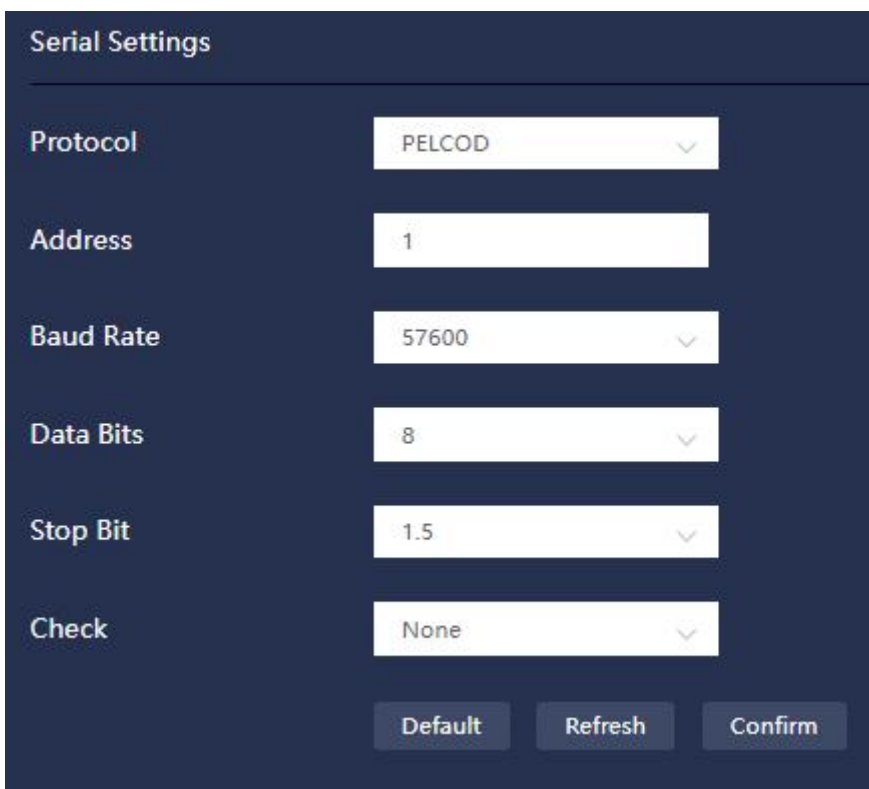
Parameters	Descriptions
1 Port	RTSP Port No. is 554 by default, revisable.
2 Mode	The device supports three kinds of authentication mode:  None: no authentication; Digest: digest authentication; Basic: basic authentication.
3 RTSP Stream	<p>URL format can be used when the user plays real-time videos with VLC, when requesting real-time RTSP media streaming service, the requested channel Number, streaming type should be indicated in URL. If authentication information is required, you also need to provide a user name and password.</p> <p>Stream get format: <code>rtsp://username:password@ip:port/live?channel=0&amp;subtype=0</code></p> <p>In which:</p> <p>Username: for example admin; password: for example admin.</p> <p>IP: device IP, such as 192.168.1.123.</p> <p>port: port number, 554 by default, which can be ignored in default state, or else the changed port number should be filled in.</p>

	<p>channel: the channel number is 0 and 1. 0 stands for visible channel (channel 1) , 1 stands for thermal channel (channel 2).</p> <p>subtype: streaming type, 0 stands for main stream (that is subtype=0) , 1 stands for sub stream (that is subtype=1)</p> <p>For example, request the sub stream in channel 2, URL is as follows:</p> <pre>rtsp://admin:admin@192.168.1.123:554/ live?channel=1&amp;subtype=1</pre> <p>If the authentication is not required, then the user name and password do not to be specified, use the following format:</p> <pre>rtsp://ip:port/ live?channel=1&amp;subtype=1</pre>
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**Table 5-3 Descriptions on RTSP Authentication Parameters**

#### **5.6.4 Serial Port Settings**

Configure the external serial port communication.



The image shows a 'Serial Settings' configuration window with a dark blue background. It contains six rows of settings, each with a label on the left and a white input field on the right. The settings are: Protocol (PELCOD), Address (1), Baud Rate (57600), Data Bits (8), Stop Bit (1.5), and Check (None). Each input field has a small downward arrow on its right side. At the bottom of the window, there are three buttons: 'Default', 'Refresh', and 'Confirm'.

Setting	Value
Protocol	PELCOD
Address	1
Baud Rate	57600
Data Bits	8
Stop Bit	1.5
Check	None

Figure 5.56 Serial Port Setting Interface

## 5.7 System Maintenance

### 5.7.1 Auto Maintenance

■ Automatic maintenance can set the automatic restart time, the system will restart according to the set time period.

1. Turn on the enable;
2. Select the day of the week and the time;
3. Click OK to save the settings.

#### Manual Reboot:

■ Click "Restart" to manually restart the device.

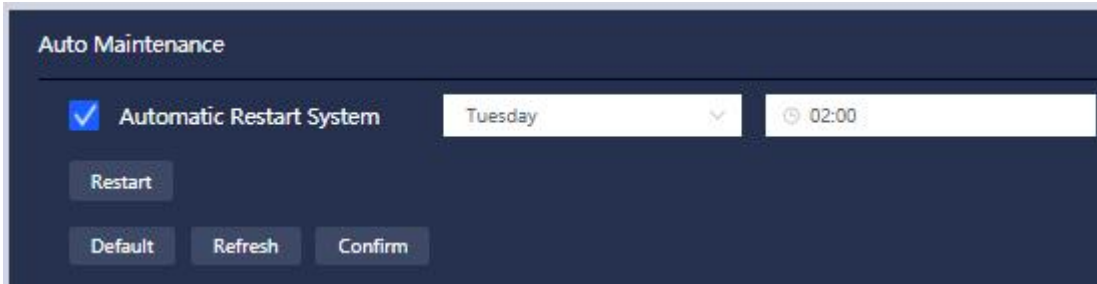


Figure 5.57 System Maintenance-Auto Maintenance

## 5.7.2 Backup and Restore

The "Restore Default Configuration" and "Factory Data Reset" operations involve restoring the configuration to the default and factory settings. Please operate with caution.

- Clicking "Restore Default Configuration", all other configurations will be restored to their default values except for the network IP address and user management information.
- Click "Factory Data Reset" to completely restore the device parameters to the factory state.

Import and Export:

- Import: click "selecting files" to select a config file, click "import" and the function will take effect after camera restart.
- Export: click "export" to export the current configuration to the specified path.
- Default Export Config: click "default export config" to export to the specified default path.

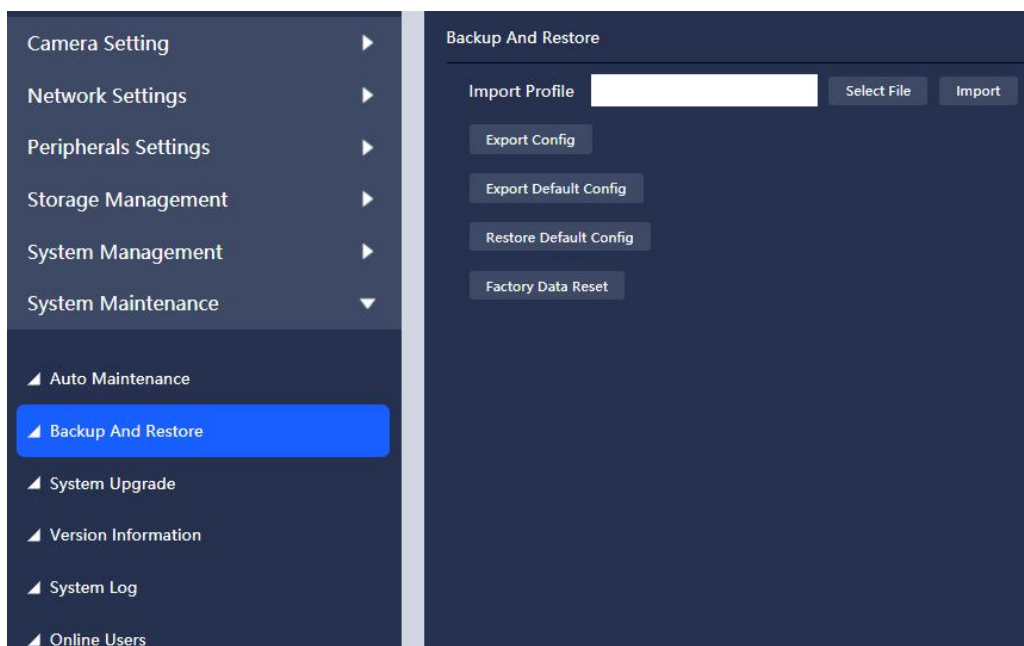


Figure 5.58 System Maintenance-Backup and Restore

### 5.7.3 System Upgrade

System upgrade steps:

1. Click *Import*, select the upgrade file of \*.zip type, and click *Upgrade*.
2. Please **do not power off, disconnect the network, restart or turn off the camera** during the upgrade process.
3. Auto go to login page after update is completed.

**\*Note:** the updating file type for the camera system is \*.zip, the updating file type for the PTZ is \*.bin, the updating file type of the thermal imaging module is \*.jic.

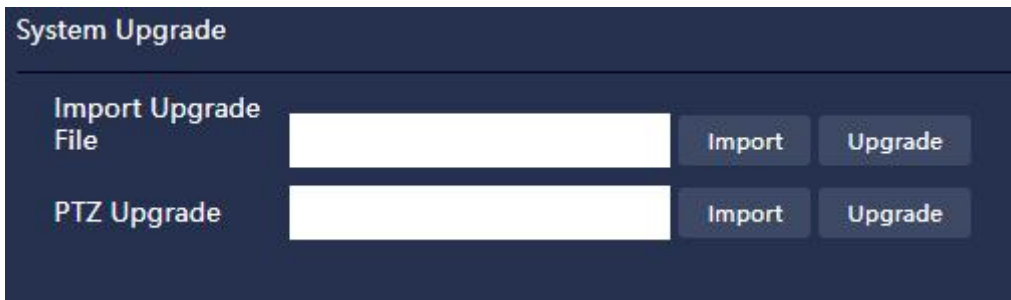


Figure 5.59 System Maintenance-System Update Interface

### 5.7.4 Version Information

Display device model, SN, PN, software version and release date. Please refer to the actual product.



Version Information	
Device Type	XX-TPC-B2-V100
The PN No	IRS-FB225-T3D2B
Device Number	B1150084
Movement Version	0.0.2.16.20210930
Software Version	1.2.6.12, 2021-10-21
Web Version	V1.9.5

Figure 5.60 System Maintenance-Version Information

### 5.7.5 System Log

View system operation, configuration operation, alarm event, temperature alarm, video operation, user management, network event, clearing log, storage management and other log information; See the following figure:

Index	User	Type	Time
1	system	Video Operation	2021-03-02 10:04:01
2	system	Video Operation	2021-03-02 10:04:00
3	system	Alarm Event	2021-03-02 10:03:50
4	system	Video Operation	2021-03-02 10:03:50
5	system	Video Operation	2021-03-02 10:03:50
6	system	Alarm Event	2021-03-02 10:03:40
7	system	Video Operation	2021-03-02 10:03:40
8	system	Video Operation	2021-03-02 10:03:40

Figure 5.61 System Maintenance-System Log Interface

### 5.7.6 Online Users

View the user information of web login, as shown in the figure below.

Online Users			
Serial Number	Username	IP Address	User Operation Time
1	admin	10.10.34.0	2021-03-02 10:06:11
2	admin	10.10.20.190	2021-03-02 10:06:25

**Figure 5.62 System Maintenance-Online User**

## 6. Playback

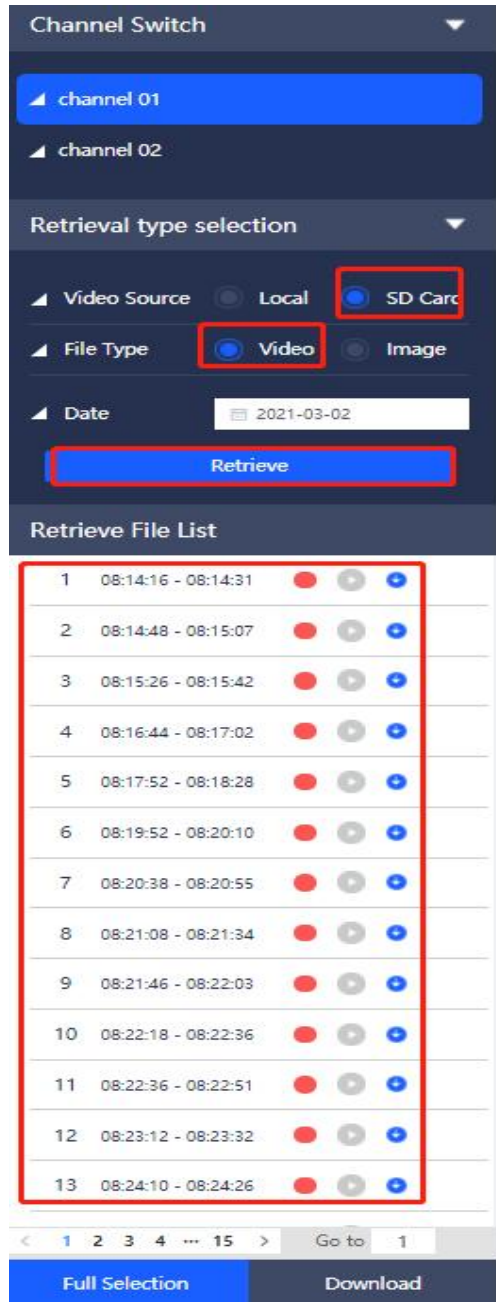
### 6.1 Play SD Card Videos/Images

**Channel Switch:** select channel 1 (visible light) or channel 2 (thermal imaging) video/picture for playback.

#### 6.1.1 SD card video playback:

Steps:

1. Select SD card as video source, video as file type, the date with recording as the date (the current day is displayed by default), and click Retrieve. All the video of this day will be displayed in the retrieved file list, as shown in the figure below:



**Figure 6.1 Playback-Play SD Card Videos**

2. Select a video and click the play icon (there are two play icons here, one is behind the video file list



and the other is below the video timeline



). The video starts to play; click to select a video file

and play on the video broadcasting area.



: Play the next video.





: Play the last video.




: Click a certain time point on the video time axis, and the video will jump to the corresponding time point for playback.

**Recording type:** there are two types of recordings: general and alarm. The recording file search will display these two types of recordings by default, and you can check one of the recording types separately for search. (The green circle displayed after the video file indicates general video, and the red circle indicates alarm video)

**Video Download:** video files like PAV and mp4 is supported. Click the download icon   behind the video list to download the current video files. The download video files will be stored in the browser's default download files, you can select the corresponding player to play. Single or multiple video download is supported. (Tick several video files or select "all", click "download" to select the format).

**Display IVS:** after enabling, the smart information overlay will be displayed in the playback video.

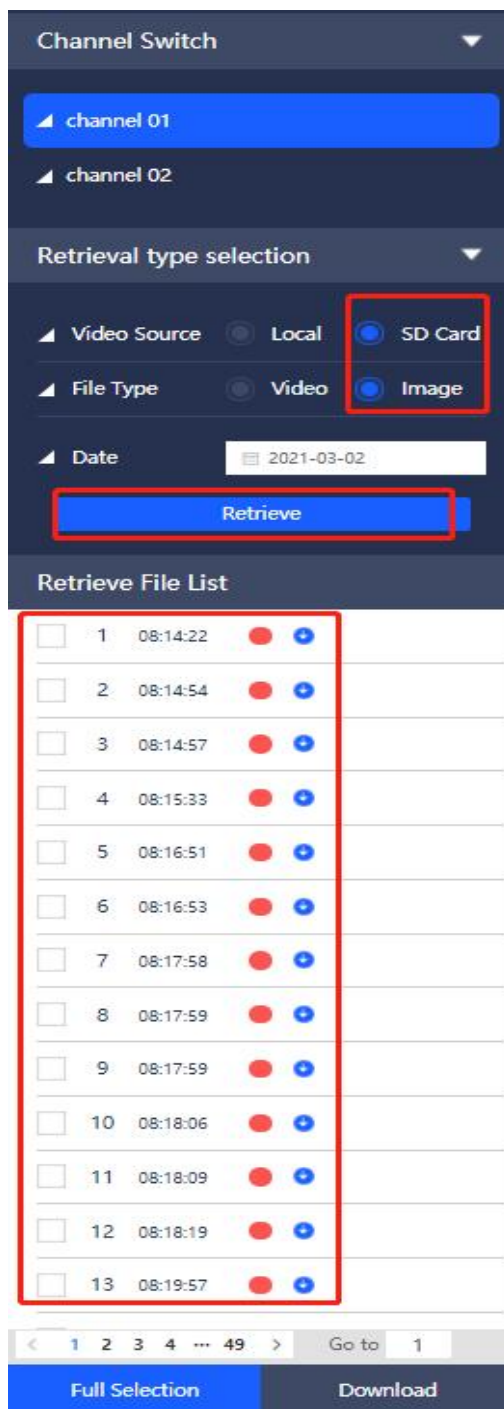
**Playback video sound switch** 

: after enabled, the sound can be heard when the video is played.


### 6.1.2 SD card image playback:

Steps:

1. Select SD card as video source, image as file type, date with image (the day is displayed by default), and click "retrieve". All image files for this day will be displayed in the search file list, as shown in the figure below:



**Figure 6.2 Playback-Play SD Card Images**

2. Click an image in the file list to play the image. Click the icon  at the bottom right to play images one by one in order from the current position.



: Play the next image.



: Play the last image.

**Capture Type:** it includes two types of images: general and alarm. The image file search displays these two types of images by default. You can check one of the image types separately for retrieval. (The green circle displayed after the picture file indicates the general capture, and the red circle indicates the alarm capture).

**Picture Download:** you can select one or several images to download. Select all to download all images of a certain column; the downloaded images will be stored in the browser's default download files, and you can view them with image viewer supporting .jpg format.

## 6.2 Play Local Videos/Images

Steps:

Select local as video source, video/image for file type, and click "Select Local Files" button. Select a video/image file on the computer, and click the play icon, as shown in the figure below:



Figure 6.3 Playback-Play Local Videos

The image files can be displayed after being selected, see the following figure:

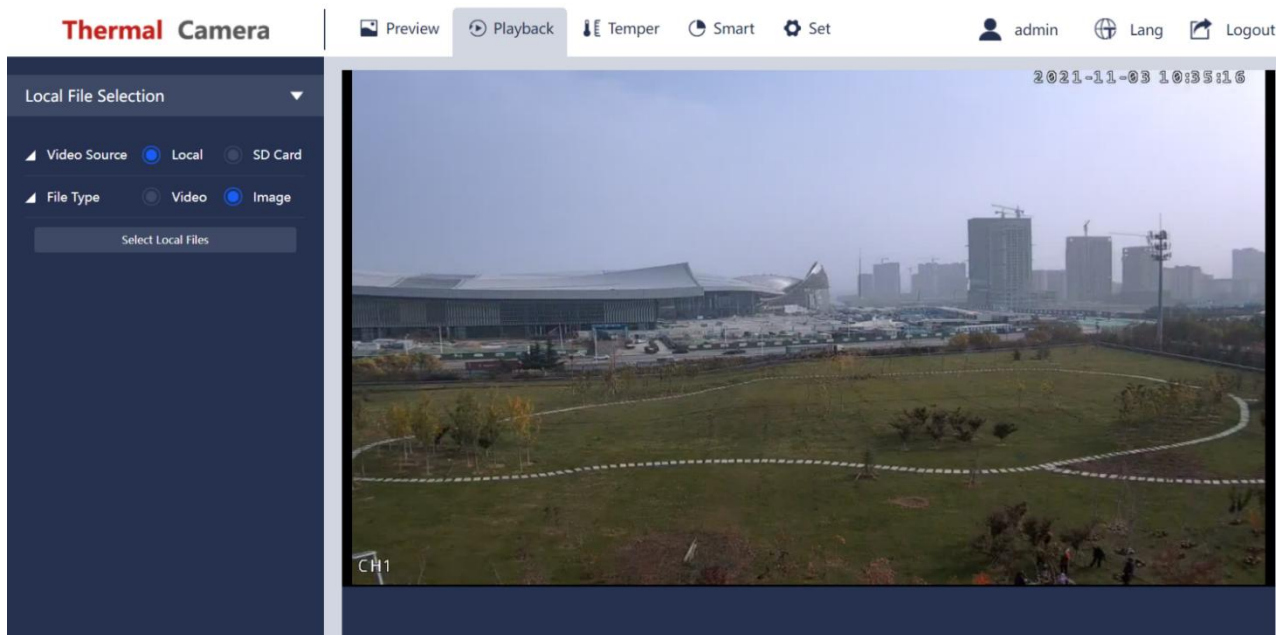


Figure 6.4 Playback-Play Local Image