Honeywell

35S Bi-Spectrum Cameras

Thermal

HC35TB5R1JT07 HC35TB5R4JT10 HC35TE5R3JT21 HC35TE5R4JT35

Configuration Guide

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Recommended

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Revision

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1 ABOUT THIS DOCUMENT

This document describes how to configure the Thermal function. Users can set the parameters about thermal, such as temperature parameters, ambient temperature, temperature alarm, schedule linkage, thermal mapping, defect pixel correction, led control, box display and so on.

How to Use This Document

Pictures in the manual are for reference only, please see the actual items for details.

When the products are updated, the information shall not be distributed. And please contact Honeywell Technical Support for latest document.

Please familiarize yourself with this manual before operation and retain it for future use.

The information in this publication is believed to be accurate in all respects. However, Honeywell cannot assume responsibility for any consequences resulting from the use thereof. If there is any uncertainty or controversy, please refer to the final explanation of Honeywell. Honeywell does not take any responsibility for any consequences caused by the misunderstanding of the manual or incorrect operation by the user.

Table 1 Human & Vehicle Detection Distance

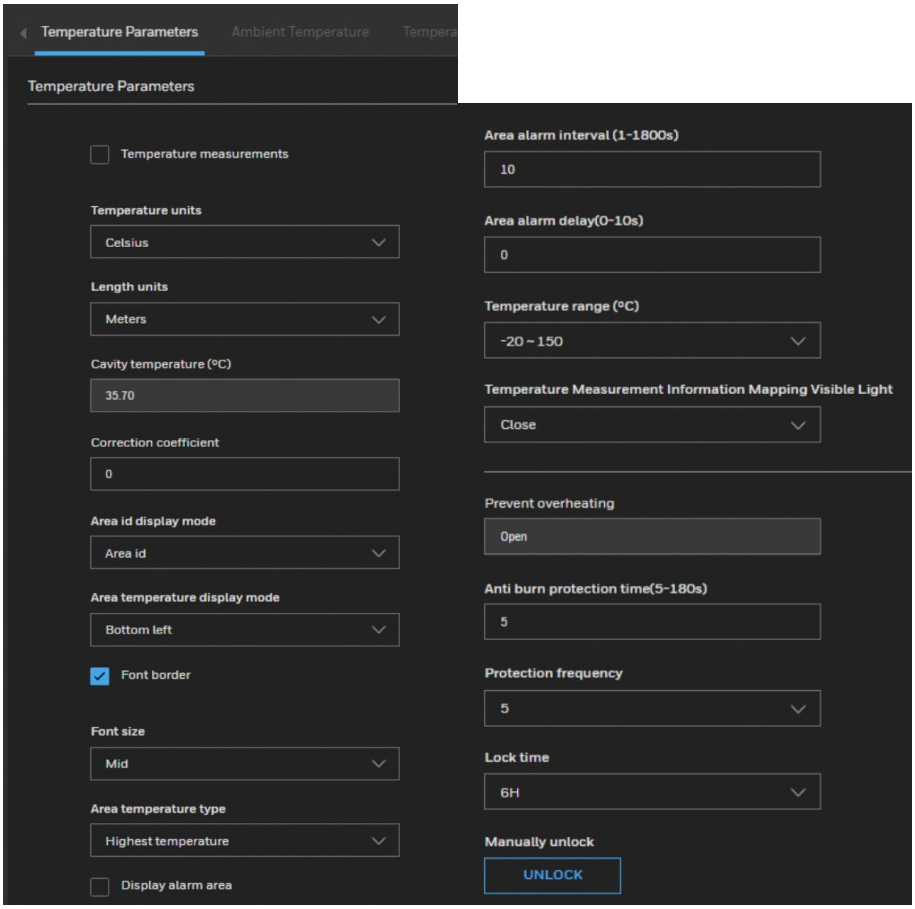
Model	Detection distance of optical channel	Detection distance of thermal channel
HC35TE5R3JT21	Face: 3~4 m Human: 3 ~27 m Vehicle: up to 90 m	Human: 2~16 m Vehicle: up to 42m Smoker: 2-10 m
HC35TE5R4JT35	Face: 3~4 m Human: 3 ~27 m Vehicle: up to 165 m	Human: 4~16m Vehicle: up to 90m Smoker: 3.5 ~12.5m
HC35TB5R1JT07	Face: 9~10 m Human: 9~38 m Vehicle: up to 195 m	Human: 10~32 m Vehicle: up to 140m Smoker: 8-15 m

Model	Detection distance of optical channel	Detection distance of thermal channel
HC35TB5R4JT10	Face: 9~10 m Human: 9~38 m Vehicle: up to 195 m	Human: 11~ 38 m Vehicle: up to 210m Smoker: 11-18 m

2 TEMPERATURE PARAMETERS

Go to **Setup > Thermal > Temperature Parameters**.

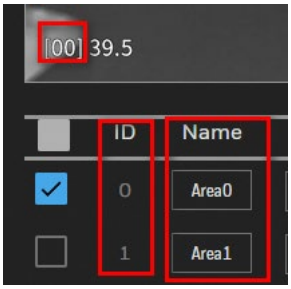
Figure 1 Temperature Parameters Settings

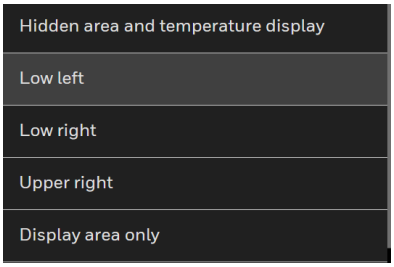


Set the parameters follows the table.

Table 2 Temperature parameters

Parameter	Description	Setting
Temperature measurements	It is ticked by default to enable measuring the temperature. If it is unticked, the device is invalid temperature measurement.	[Default value] **Tick**

Parameter	Description	Setting
Temperature Unit	Celsius and Fahrenheit temperature units are available.	[Setting method] Select a value from the drop-down list box. [Default value] **Celsius**
Length units	Meters and feet length units are available.	[Setting method] Select a value from the drop-down list box. [Default value] Meters
Cavity Temperature	The cavity temperature of camera refers to the internal temperature of the camera body	No need to configure.
Correction Coefficient	Correction coefficient is referring to the deviation of measured object temperature and actual temperature, is offset value. For example: 1. The measured object temperature is 20, and actual temperature is 20.5, so the correction coefficient should be 0.5. 2. The measured object temperature is 20, and actual temperature is 19.5, so the correction coefficient should be -0.5.	[Setting method] Enter a value manually. It ranges from -100 to 100 [Default value] **0.00**
Area ID display mode	There are two modes to display, area ID and area name. 	[Setting method] Select a value from the drop-down list box. [Default value] **Area ID**
Temperature Consume Mode	Transmission of temperature values or picture to third party platforms via Modbus protocol. It can be supported via Ethernet. There three modes can be chosen, close/ jpeg +temperature/ temperature.	[Setting method] Select a value from the drop-down list box. [Default value] **Close**

Parameter	Description	Setting
Area Temperature Display Mode	The display position of temperature information on the live-video image. 	[Setting method] Select a value from the drop-down list box. [Default value] **Low left**
Font Border	Enable to bold the font	[Setting method] Enable or disable [Default value] **Disable**
Font size	There are three font size can be chosen, small/mid/big	[Setting method] Enable or disable [Default value] **Mid**
Area Temperature Type	There are three types of area temperature: Highest temperature, Highest temperature &Lowest temperature, Highest temperature&Lowest temperature&Average temperature	[Setting method] Select a value from the drop-down list box. [Default value] **Highest Temperature**
Display Alarm Area	Check to display the setting alarm area on live video. When alarm is triggered in the area, the alarm detection area of the object will be drawing the frame to reminder. The corresponding information is only displayed in the thermal main stream.	[Setting method] Enable or disable [Default value] **Untick**
Area Alarm Interval (1-1800s)	During the interval, the same alarm will only be sent once.	[Setting method] Enter a value manually ranges from 1 to 1800. [Default value] **10**
Area Alarm delay (0-10S)	The area alarm information will delay for setting time.	[Setting method] Enter a value manually ranges from 1 to 10. [Default value] **0**
Temperature range	-20°C to 150°C (-4°F to 302°F)	[Setting method] Select a value from the drop-down list.

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Parameter	Description	Setting
Prevent Overheating	Open, if temperature of the testing area is too high, the camera will be automatic triggered prevent over heat function. The shutter will be closed to keep the detector safe. The live video will show tip “The current temperature has exceeded the maximum temperature! Please wait...”	[Setting method] Open
Anti burn protection time(5-60 S)	When the prevent overheating takes effect, the shutter will close for the setting time.	[Setting method] Enter a value manually ranging from 5 to 60.
Protection frequency	When the overheating time is over this setting value, the shutter will be lock for the setting lock time. The Never means the shutter cannot be locked. The next trigger time is over 20s, the frequency will be cleared, and recount.	[Setting method] Select a value from the drop-down list.
Lock time	The shutter will be locked during the time, or users can click the button to unlock manually. The live video will show tip “The shutter is closed. Please wait for time or manual unlock”	[Setting method] Select a value from the drop-down list.
Temperature Measurement Information Mapping Visible Light	If it is open, the live video of thermal channel will be mapping with optical channel. The effect will show on optical channel. It is only applicable for optical main stream.	[Setting method] Select a value from the drop-down list box.

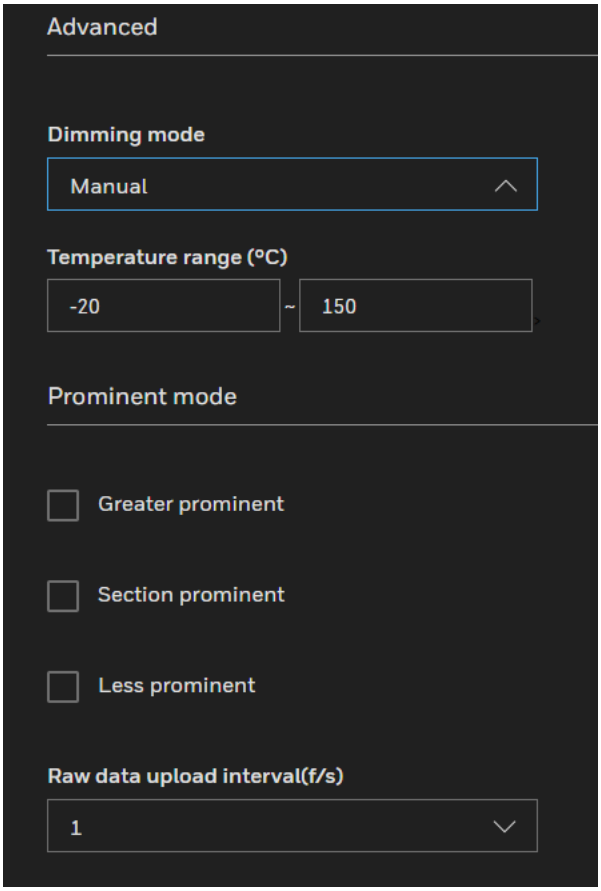
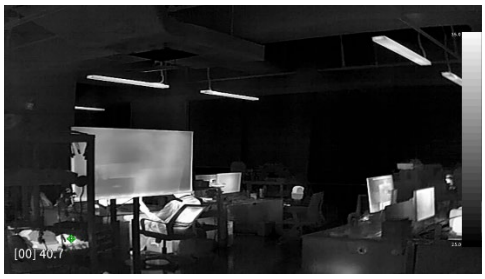

Advanced
Dimming mode
Manual
Temperature range (°C)
-20
~
150
Prominent mode
Greater prominent
Section prominent
Less prominent
Raw data upload interval(f/s)
1

Table 3 Advanced Parameters

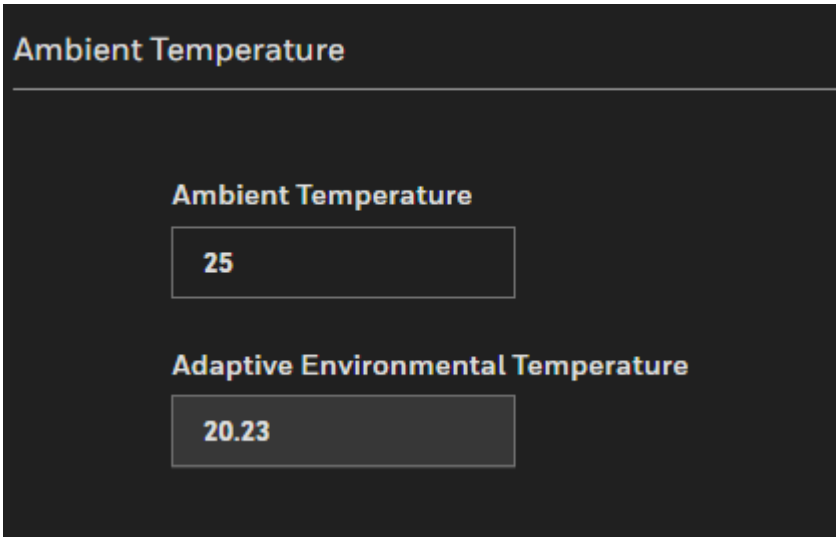
Parameter	Description	Setting
Dimming Mode	The temperature range is divided into 256 colors, the larger the temperature range the less obvious the color contrast, the smaller the temperature range the more obvious the color contrast. There are auto and manual modes. **Auto**: The device automatically adjusts the brightness and contrast of the image based on the highest and lowest temperature of the current scene. **Manual**: The device adjusts according to the manually configured temperature range to achieve the expected image brightness and contrast. 	[Setting method] Select a value from the drop-down list box. [Default value] **Auto**
Greater Prominent	Enable that, the image will show the setting color if the temperature is higher than set value.	[Setting method] Enter a value manually. Choose one color to show.
Section Prominent	Enable that, the image will show the setting color if the temperature is between minimum and maximum temperature.	[Setting method] Enter a value manually. Choose one color to show.
Less Prominent	Enable that, the image will show the setting color if the temperature is lower than set value.	[Setting method] Enter a value manually. Choose one color to show.

Click **SAVE**.

3 AMBIENT TEMPERATURE

Go to **Setup > Thermal > Ambient Temperature**.

Figure 2 Ambient Temperature Settings



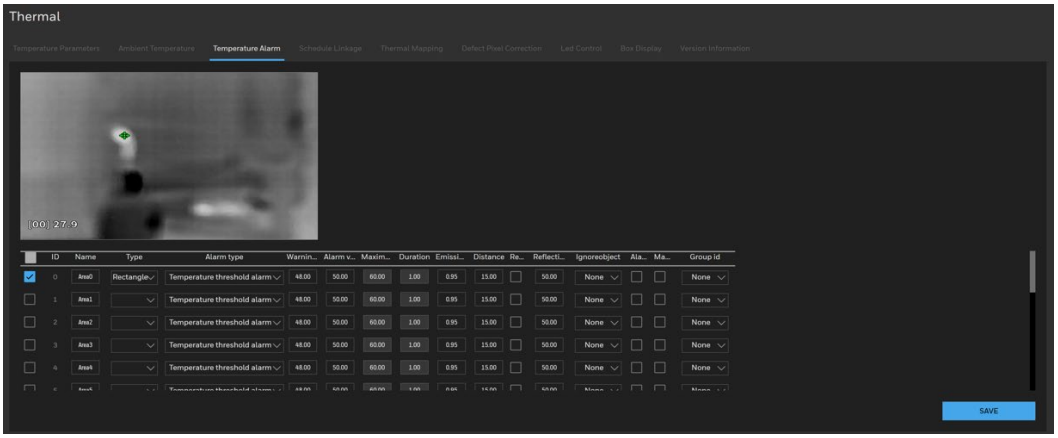
Ambient Temperature:
Usually, no customer configuration is required. The current ambient temperature needs to be configured only when the device has just been powered on but the user needs to measure the temperature immediately.
Adaptive Environmental Temperature: the camera will get the value automatically.

Click **SAVE**.

4 TEMPERATURE ALARM

1. Go to **Setup > Thermal > Temperature Alarm.**

Figure 3 Temperature Alarm



2. Set the temperature alarm parameters following the table.

Table 4 Advanced Parameters

Parameter	Description	Setting
Enable	Tick the check box of ID to enable the area measuring.	[Setting method] Tick
Name	Area name of temperature area.	[Setting method] Enter a value manually.
Type	Type of temperature area. ID 0 is default rectangle area, which is full screen. It cannot be modified. Other IDs can be set as point, line, or polygon.	[Setting method] Select a value from the drop-down list box. [Default value] **Rectangle/Point**

Parameter	Description	Setting
Alarm Type	**Temperature difference alarm:** when the area's temperature difference (Highest temperature minus Average temperature) is over the setting value (Warning temperature or Alarm temperature), it will generate the alarm. **Temperature rise alarm:** In the duration time. If the rising temperature value is more than the set value (Warning temperature or Alarm temperature), it will generate the alarm. **Temperature threshold alarm:** when the temperature is higher than threshold, the alarm will be triggered. **Section Alarm:** if the temperature value is among the set temperature range, it will generate the alarm.	[Setting method] Select a value from the drop-down list box. [Default value] **Threshold alarm**
Warning Value	Camera will trigger warning alarm when the object temperature reaches the warning value. The value can be set when selecting Section alarm.	[Setting method] Enter a value manually. [Default value] **48**
Alarm Value	Camera will alarm when the object temperature reaches the alarm value.	[Setting method] Enter a value manually. [Default value] **50**
Maximum Alarm Value	At section alarm type, the device would not alarm when the temperature is higher than maximum alarm value.	[Setting method] Enter a value manually. [Default value] **60.00**
Duration (1-10S)	If the highest temperature rises by the set value within the set duration time range, a temperature rise alarm will be triggered For example: The maximum temperature in the target area is 30 ℃. if we set the alarm threshold to 50 ℃, and set the duration to 10 seconds, when the highest temperature in the temperature measurement area rises by 50 ℃ (i.e. the temperature in the target area is higher than 80 ℃) within 10 seconds, a temperature alarm will be triggered.	[Setting method] Enter a value manually. [Default value] **1.00**

Parameter	Description	Setting
Emission Rate	The emission rate is the capability of an object to emit or absorb energy. The emission rate should be set only when the target is special material. The detail please refer to ***Table 5 Common Emission Rate*** .	[Setting method] Enter a value manually. [Default value] **0.95**
Distance(M)	The distance between camera and target.	[Setting method] Enter a value manually. [Default value] **15** **NOTE** Enter actual distance when the distance between camera and target is less than 15m.Enter 15 when the distance between camera and target is great than or equal to 15m.
Reflection temperature on	When there are some high temperature objects on scene, and the temperature reflect to the other object, you can enable this function to calibrate the temperature.	[Setting method] Tick to enable
Reflect Temperature	The temperature of high temperature object.	[Setting method] Enter a value manually. [Default value] **50.00**
Ignore Object	Enable to shield the temperature of area capturing AI object. Users can choose None/ human/ vehicle/ all type (Human + Vehicle).	[Setting method] Select a value from the drop-down list box.
Alarm	Enable or disable the alarm output and linkage of area.	[Setting method] Tick to enable alarm.
Masking	Enable, the device will shield this area's temperature.	[Setting method] Tick to shield.

Parameter	Description	Setting
Group ID	Different areas can be divided into the same group. The same group's areas will be merger calculated temperature difference alarm. The ID can be chosen into one of six groups, or no group. The group will be alarm following as the next rules: A=The highest temperature of groups (the highest temperature of N regions is the largest) B=Average temperature of groups (average temperature of N regions) WA=Warning value AA=Alarm value a. If A-B >= WA, a temperature difference warning signal is generated ---> (the one with the largest difference between the N areas and the average temperature is the alarm area flashing) b. If A-B >= AA, a temperature difference alarm signal is generated ---> (the one with the largest difference between the N areas and the average temperature is the alarm area flashing) c. If the warning and alarm conditions are met at the same time, the alarm signal will be generated first.	[Setting method] Select a value from the drop-down list box.

Note: *The temperature OSD will be shown as the Group ID' sequence if the group ID is not None.*

Table 5 Common Emission Rate

Materials	Temperature (℃/℉)	Emissivity
Gold (High-purity)	227/440	0.02
Aluminum foil	27/81	0.04
Aluminum sheet	27/81	0.18
Aluminum used for families (flat)	23/73	0.01
Aluminum plate (98.3% purity)	227/440	0.04
	577/1070	0.06
Aluminum plate (rough)	26/78	0.06
Aluminum (oxidized @ 599℃)	199/390	0.11
	599/1110	0.19
Polished aluminum	38/100	0.22

Materials	Temperature (℃/℉)	Emissivity
Tin (light tinned Iron sheet)	25/77	0.04
Nickel wire	187/368	0.1
Lead (99.9% purity, No oxidized)	127/260	0.06
Copper	199/390	0.18
Cobalt	599/1110	0.19
Steel	199/390	0.52
	599/1110	0.57
Tinned iron sheet (Light)	28/82	0.23
Brass (High-polish)	247/476	0.03
Brass (Tough rolled, polished metal wire)	21/70	0.04
Tinned Iron (Light)	-	0.13
Iron plate (Rust eaten)	20/68	0.69
Rolled steel sheet	21/71	0.66
Ferric oxide	100/212	0.74
Wrought-iron	21/70	0.94
Fused iron	1299-1399/3270-2550	0.29
Copper (Polished)	21-117/70-242	0.02
Copper(Polished, not reflected)	22/72	0.07
Copper (Heavy oxide Board)	25/77	0.78
Enamel (Fuse on iron)	19/66	0.9
Formica Plate	27/81	0.94
Frozen soil	-	0.93
Brick (Red, rough)	21/70	0.93
Brick (Unglazed, rough)	1000/1832	0.8
Carbon (T - carbon 0.9% ash)	127/260	0.81
Concrete	-	0.94
Glass (Glossy)	22/72	0.94
Granite (Surfaced)	21/70	0.85
Ice	0/32	0.97
Marble (I Polished, grey)	22/72	0.93
Asbestos board	23/74	0.96
Asbestos paper	38/100	0.93
	371/700	0.95
Asphalt (Paving the road)	4/39	0.97
Paper (Black tar)	-	0.93
Paper (White)	-	0.95
Plastic (White)	-	0.91

3. Set **temperature area**.

a. Tick the name checkbox, then set the name.

b. Choose the type (point, line, polygon)

c. Press and hold the left mouse button, and drag in the video area to draw a temperature area. Right-click to finish the area selected.

4. Click **SAVE**.

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

: the lowest temperature of the full screen.

: the highest temperature of the full screen.

: the lowest temperature of the area.

: the highest temperature of the area.

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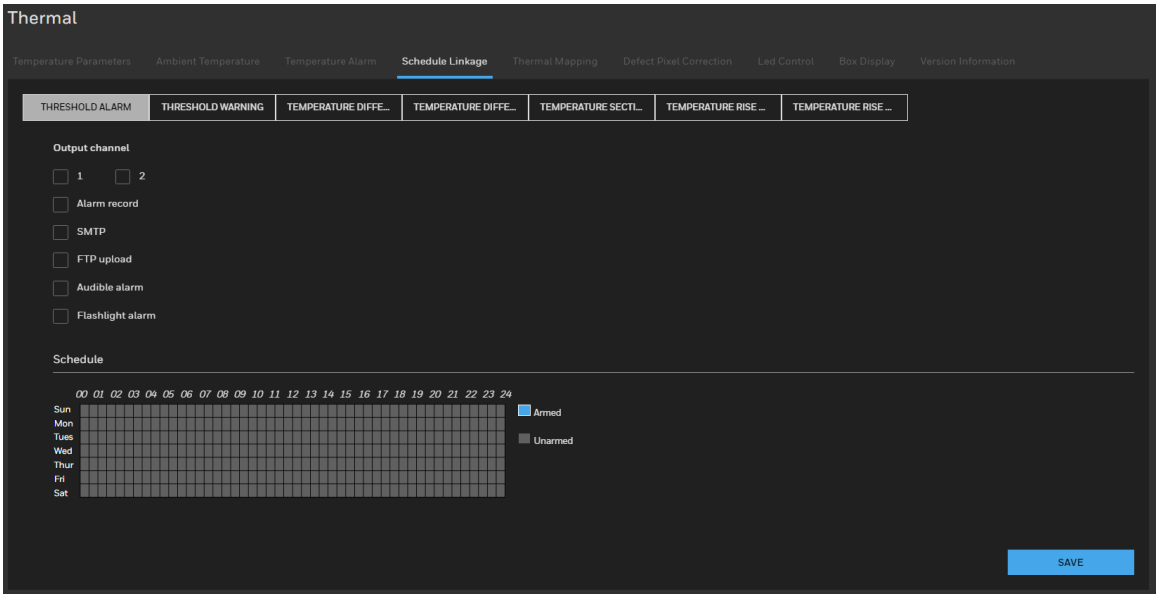
5 SCHEDULE LINKAGE

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

There are seven type alarm linkage, threshold alarm, threshold warning, temperature difference alarm, temperature difference warning, temperature section alarm, temperature rise alarm, temperature rise warning.

The signal of alarm is set at **Temperature Alarm** page.

Figure 4 Schedule Linkage



Check the checkbox to enable linkage action.

Output channel: If the alarm out cable is connected to the external device such as alarm light or speaker, when scene change is triggered, the output channel will send alarm to remind user.

Alarm record: Check the checkbox to enable the linkage action for sending alarm record to SD card so that the user can check alarm through recording video.

SMTP: Check the checkbox to enable the linkage action for sending snapshot and alarm notice information to email address which can be set in **Network Setup > SMTP**, so the user can receive the alarm timely.

FTP upload: It will send 8 alarm pictures to FTP server when alarm happened if you selected the FTP upload box.

Audible alarm: It will play the audio file to alarm when alarm happened if you selected the Audio alarm box.

White light alarm: it will flash the white light to alarm when alarm happened if you selected the white light alarm.

Schedule: Use the mouse to drag the time or click the time grid to choose time one hour by hour. The blue means armed and the gray means unarmed.

Click **SAVE**.

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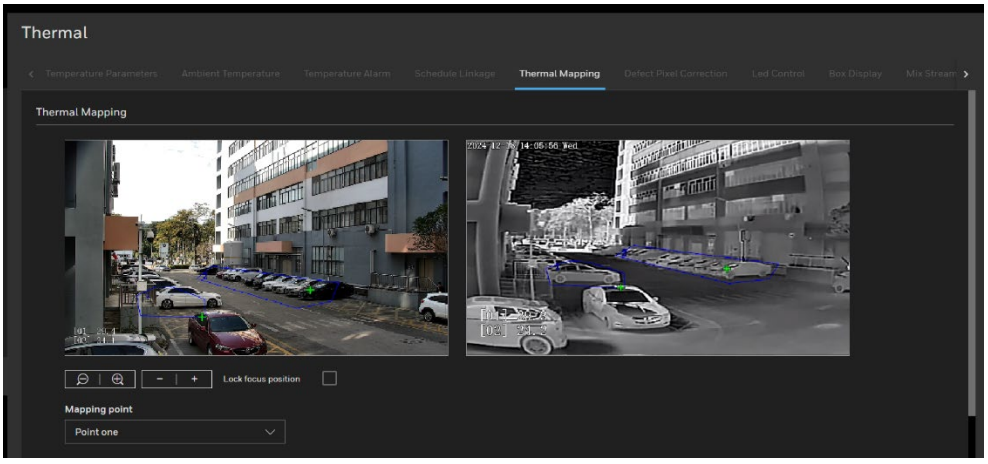
6 THERMAL MAPPING

When the temperature measurement areas of the optical channel and thermal channel don't match, user can use this function to adjust.

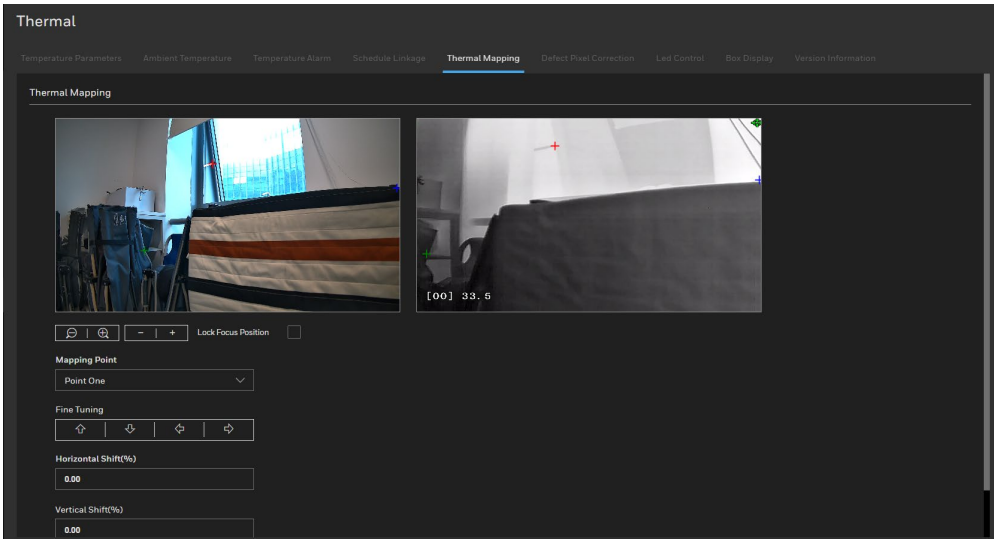
If Temperature Measurement Information Mapping Visible Light is enabled and the temperature measurement area seen in optical channel does not match the temperature measurement area in thermal channel, the Thermal Mapping needs to be adjusted.



Firstly, user can use the **Mapping points** to adjust. If there are still minor inconsistencies for the temperature measurement areas, user can use **Fine turning**, **Horizontal shift(%)** and **Vertical shift(%)** to adjust in detail.

1. Go to **Setup > Thermal > Thermal Mapping**

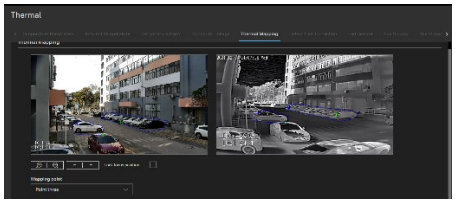
Figure 5 Thermal Mapping



2. Set the parameters of thermal mapping following the table.

Table 6 Thermal Mapping Parameters

Parameter	Description	Setting
	Zoom out / zoom in	[Setting method] Click
	Far focus / Near focus	[Setting method] Click
Lock focus position	Users adjust the position for mapping to lock this position. Zoom and Focus can't be operated when enabling this function	[Setting method] Enable

Parameter	Description	Setting
Mapping point	You need to map three points for two channels. Points are corresponding of each other. Point one + (green cross) Point two: + (red cross). Point three: + (blue cross) blue cross. Steps: a. Choose mapping point one, the green cross shows on two channel images, and choose the same position on two channels as for point one. b. Choose mapping point two and point three in a time, follow the previous step. c. Click APPLY and check if the temperature measurement area of optical is consistent with that of thermal channel.  **Note:** It is best to cover the temperature measurement area with three mapping points and form a triangular pattern. The three mapping points should not be too close.	[Setting method] Select from drop list.
Fine turning	Click the icon to adjust the position trifle. When measure area on optical channel is deviate the thermal channel's, you can adjust it. The temperature area of optical channel will be moved.	[Setting method] Click
Horizontal shift(%)	Adjust horizontal position of area which is on visual image. The effect is same as the fine tuning, it is another method to adjust.	[Setting method] Input value
Vertical shift(%)	Adjust vertical position of area which is on visual image. The effect is same as the fine tuning, it is another method to adjust.	[Setting method] Input value

3. Zoom and focus the optical channel, so that the two channels are at the same field view. Then lock focus position.
4. Choose the point in turn to set the three mapping points, the detail information please see the previous table.

5. The point is not match up perfectly, adjust trimming by click the arrows of fine turning.
6. Click **SAVE**.

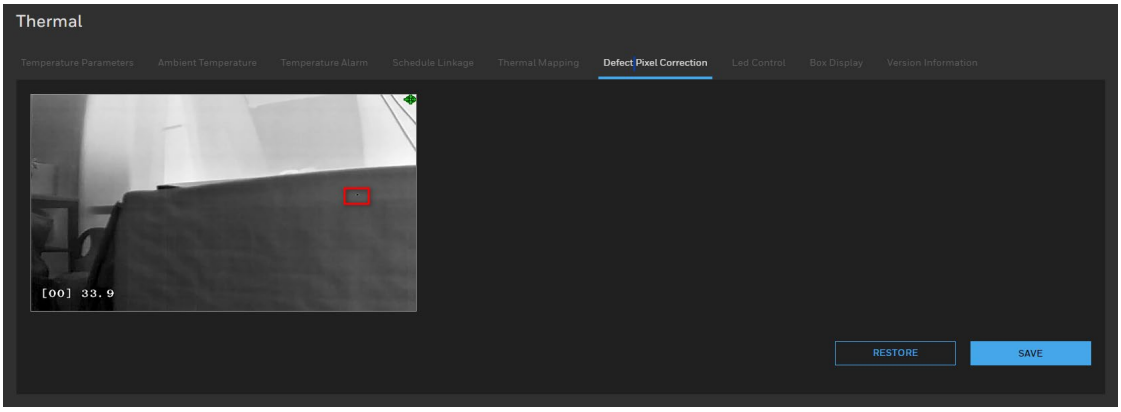
7 DEFECT PIXEL CORRECTION

Go to **Setup > Thermal > Defect Pixel Correction.**

If the image has a white or special dot as shown in Figure 6, users can use the function to recover the defect pixel.

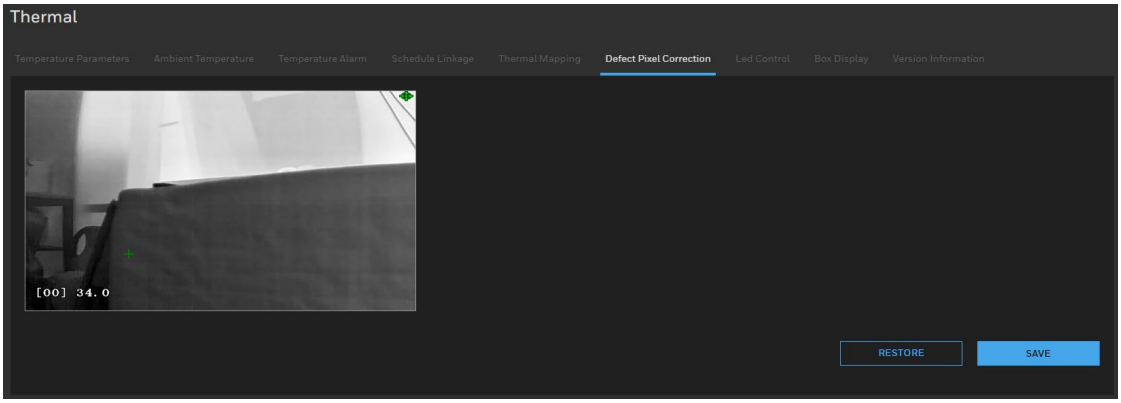
Note: *Users should connect the technical support at this condition to make sure to apply.*

Figure 6 Defect Pixel Correction



Click the white point at image, click **RESTORE** to recover the defect pixel, as shown in Figure 7 .

Figure 7 Recover Defect Pixel

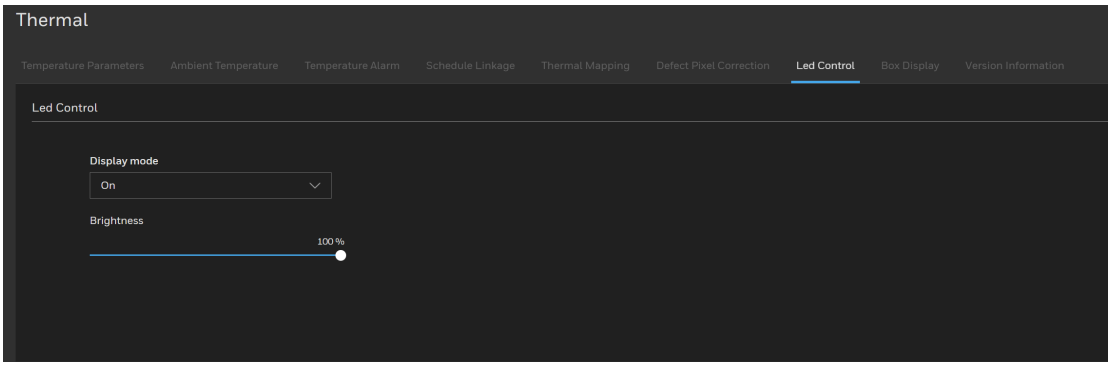


Click **SAVE**.

8 LED CONTROL

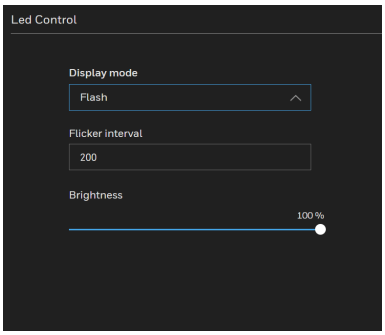
Set the display mode and brightness of LED, as shown in Figure 8. It is the white light alarm settings.

Figure 8 Led Control



Display Mode: There are five modes can be chosen.

- **On:** the LED is always lighting.
- **Off:** the LED is closed.
- **Flash:** set the flicker interval, the LED will flicker as the set.



- **Timing on:** the LED will be lighting at the set time.

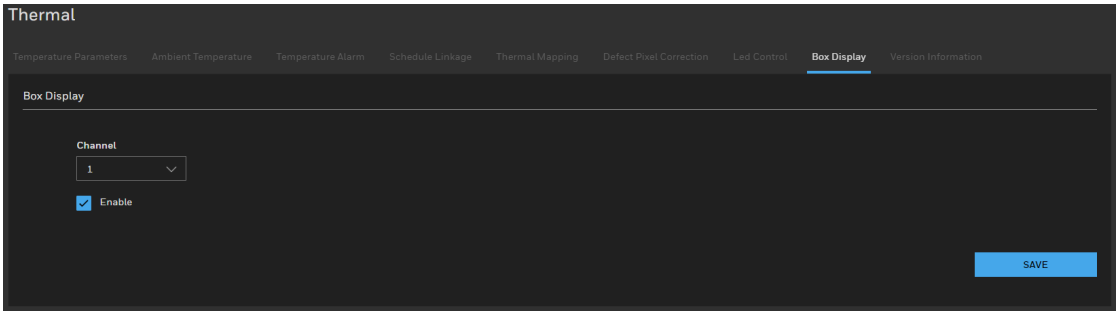
- **Alarm on:** the LED will be lighting at the alarm time.

Brightness: the LDE's brightness. 100% is the brightest.

9 BOX DISPLAY

The blue box shows on web when the human body is detected. This is embedded bounding Box in streaming. The box will show blue when human body or vehicle is detected. Box will show red when VA alarm happened.

Figure 9 Box Display

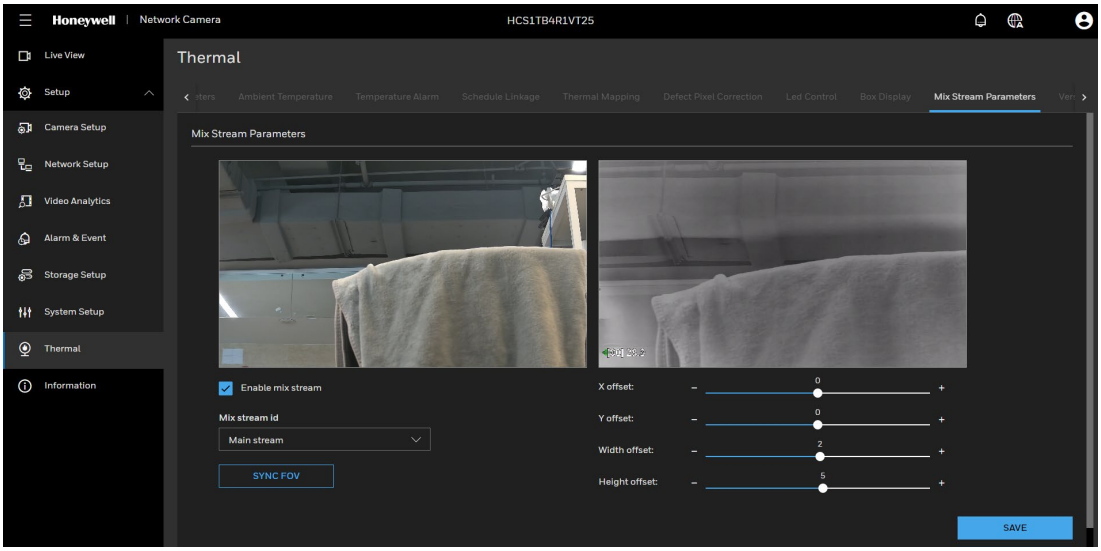


Choose the channel to enable. The default is enabling for two channels.

10 MIX STREAM PARAMETERS

The mix stream is that the optical channel's image is mixed to thermal channel, the thermal channel's image has both channels information.

Figure 10 Mix Stream Parameters



Stream ID: the mix stream image shows on which stream of thermal channel, all / stream 1 /stream 2.

SYNC FOV: Click the button, the field view of optical channel will be sync with thermal channel's.

X Offset and **Y Offset**: The mix stream mode is open. The thermal image and optical-light image are mixed, if the positions of two channel isn't mapping, you can set the offset to move optical channel image. X offset is adjusting left and right direction. Y offset is adjusting up and down direction.

Width Offset and **Height Offset:** Adjust the aspect ratio.

11 VERSION INFORMATION

The version information about the device, so that we can track products

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