



**A M C R E S T**

Thermal Body Temperature Monitoring System  
Software Configuration Setup

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## Welcome

Thank you for purchasing an Amcrest Thermal Body Temperature Monitoring System.

This guide is intended to help you configure the software for your Amcrest Thermal Temperature Monitoring System as well as provide insight in how to debug and use your system.

## Overview

This system helps to provide a non-contact means of applying fast and effective temperature readings which help to lower the risk of illness or disease. It is designed for indoor temperature monitoring stations for areas such as, schools, factories, hospitals, subway stations, or other populated public areas.

The system includes the following items:

- An Amcrest AI NVR
- A Thermal Camera
- Blackbody (Calibration Device)
- 2 Tripods

It is recommended to use a thermal camera and blackbody at each entrance that is being monitored. The system should connect to an on-site local network or switch as represented in the diagram below. Many of the configuration options can be performed locally on the device however, it is highly recommended to apply the setup diagram provided below.



## Product Overview

The Amcrest thermal body temperature solution can accurately detect up to 12 distinct body temperature readings simultaneously by utilizing a hybrid thermal camera and blackbody calibrator. The solution is capable of highly accurate readings within  $\pm 0.54^{\circ}\text{F}$  and from 9.8ft away and within a span of 4.3ft across. It is ideal for warehouse & logistics operations, manufacturers, retailers, hospitals, public transit and other essential businesses and services. The solution comes equipped with a built-in siren alarm and strobe light that alerts when high temperatures are detected.

### BLACKBODY FEATURES

Detector Type: Vanadium Oxide Uncooled Focal Plane Detector.

Resolution: 400 x 300

Pixel Pitch: 17

Thermal Sensitivity (NETD):  $<40\text{mK}$

Spectral Range: 8-14

Temperature Measurement Range: 86°F-113°F.  
 Temperature Accuracy: Max +0.3°C with blackbody Max +1°C without blackbody.  
 Color Palettes: 18 color modes selectable including White hot/Black hot/Iron row/Ice fire.

**THERMAL CAMERA FEATURES**

1/2.8" CMOS image sensor.  
 1 Powerful IR LEDs for 114 feet Night Vision.  
 Min. Illumination Color: 0.002Lux; B/W: 0.0002Lux; 0Lux (IR on).  
 External 2-Way Audio  
 IP67 Indoor/Outdoor Weatherproof Cameras.  
 Dual H.265/H.264 HEVC Compression  
 8mm Lens with 40° Viewing Angle.  
 Operating Temperature: 50°F~95°F.  
 Dimensions: 8.9 x 4.0 x 3.7 inches.  
 Weight: 3 lbs.

**AI NVR FEATURES**

Main Processor: Quad-core embedded processor  
 Operating System: Embedded LINUX  
 2 SATA III Ports, Up to 10 TB capacity for each HDD  
 Preinstalled 4TB Hard drive  
 16 Channels PoE Ports  
 Decode Capability: 4-ch@8MP(30fps), 16-ch@1080P(30fps)  
 AI functionalities included Face Recognition  
 Dual H.265/H.264/MJPEG  
 Operating Temperature: +14°F ~ +131°F  
 Dimensions: 1U 14.8 x 11.1 x 2.2 inches  
 Weight: 6.0lbs

**Installation**

**Installation Precautions**

- Do not install the thermal camera or blackbody in areas of high temperature such as direct sunlight, near a heater, hot water point, microwave oven, high powered lamps, radiators, etc. Any excessive heat source could cause damage to the devices.
- Choose an installation area relatively isolated from outside environmental factors such as, high wind, strong electromagnetic interference, or vibration.

**Installation Areas to Avoid**

Insufficient light	Backlight (direct light)	A direction in which people are not moving towards the camera.

## NVR Installation

Place the NVR on a flat surface and connect an Ethernet cable from the Ethernet port on the back of the NVR to your local network. A HDMI or VGA monitor can be used to view the device, however, if you are accessing the system via a computer using a web browser a monitor is not needed. If using a monitor, plug the VGA cable or HDMI cable into their respective ports on the back of the NVR and power the device.

Insert the included power cable into the power port on the back of the NVR and plug the cord into a power strip, surge protector, or wall outlet. Ensure the power switch is flipped to the on position and allow the NVR to boot. Insert a USB mouse to a USB port on the front or back of the NVR to navigate the interface. If accessing the device locally, follow the on-screen initialization prompts on the monitor to complete the initialization of the device.

**Note:** The NVR does not include rack mount holes and must be placed on a flat surface while in use. Do not place the NVR in areas that can block any vents or fans on the device. Do not place objects on top of the NVR as it may cause damage to the unit.

## Thermal Camera and Blackbody Installation

Included with your system is a thermal camera as well as a blackbody and 2 tripods. The thermal camera works in conjunction with the blackbody and NVR to provide accurate temperature readings.

### What is a Blackbody?

The blackbody is a separate piece of equipment included with your device that is used as a temperature referencing source for the system. This is generally used for temperature correction and calibration for thermal imaging acquisition.

This blackbody must be powered on and installed in sight of the thermal camera to function. The blackbody is set to default at 95°F (35°C) to meet the thermal accuracy requirements of  $\pm 32.54^\circ\text{F}$  (0.3°C).

### Precautions

- Before use, the blackbody must be powered on and preheat for **20 minutes** or until its temperature reaches 95°F (35°C). This will be displayed on its screen.
- Do not touch the film on the front portion of the blackbody. This is a highly sensitive device; any impedance could cause damage to the unit or damage to the camera.
- To prevent overheating, keep objects at least 10cm (0.32 inches) away while in use.
- To ensure overall temperature measurement accuracy, it is recommended to calibrate the device at least once per year.

## Physical Installation

Use the included tripods to install the camera and blackbody.

### Installing the Camera

To begin installation, locate the camera, tripod, and included mounting adapter.



To install the camera, align the installation holes of the camera with the installation holes on the mounting plate. Insert the included screws into the camera and mounting plate to secure the camera.



Place the mounting plate on the installation screw of the tripod. Adjust the angle of the camera by loosening the unlock/lock screw. Once the angle of the camera is set, tighten the unlock/lock screw to secure the camera.



Once the camera is installed, raise the tripod at least 6.5ft (2m). Run an Ethernet cable from a PoE port on the back of the NVR to the Ethernet port on the dongle wire of the camera. The camera can also be powered using a PoE switch or injector (sold separately). Please make sure the camera and the NVR are on the same network during setup.

**Note:** Be sure not to run the cable in areas of high traffic or where they can be trampled on or damaged.

### Installing the Blackbody

The blackbody should be within visible distance of the camera lens while in use. To begin installation, locate the blackbody, tripod, and included mounting adapter.



To begin installing the blackbody, secure the mounting plate onto the tripod. Next, attach blackbody to the mounting plate aligning the installation hole of the mounting plate to the mounting hole located on the bottom of the blackbody. Secure the blackbody to the mounting plate by using the included mounting screw. Do not overtighten the screw as it could damage the unit.



Once the blackbody is installed, raise the tripod to 6ft (1.8m) and in sight of the camera's lens. Plug the blackbody into a power source such as a surge protector or wall outlet and ensure the power switch is turned to the on position. Allow the device to preheat for 20 minutes before use.

The default working temperature of the blackbody is 104°F(40°C) which needs to be manually adjusted to 95°F(35°C). To manually adjust the temperature on the unit, press and hold the “SEL” button, a red light will turn on, then press the increase/decrease keys to adjust the values.

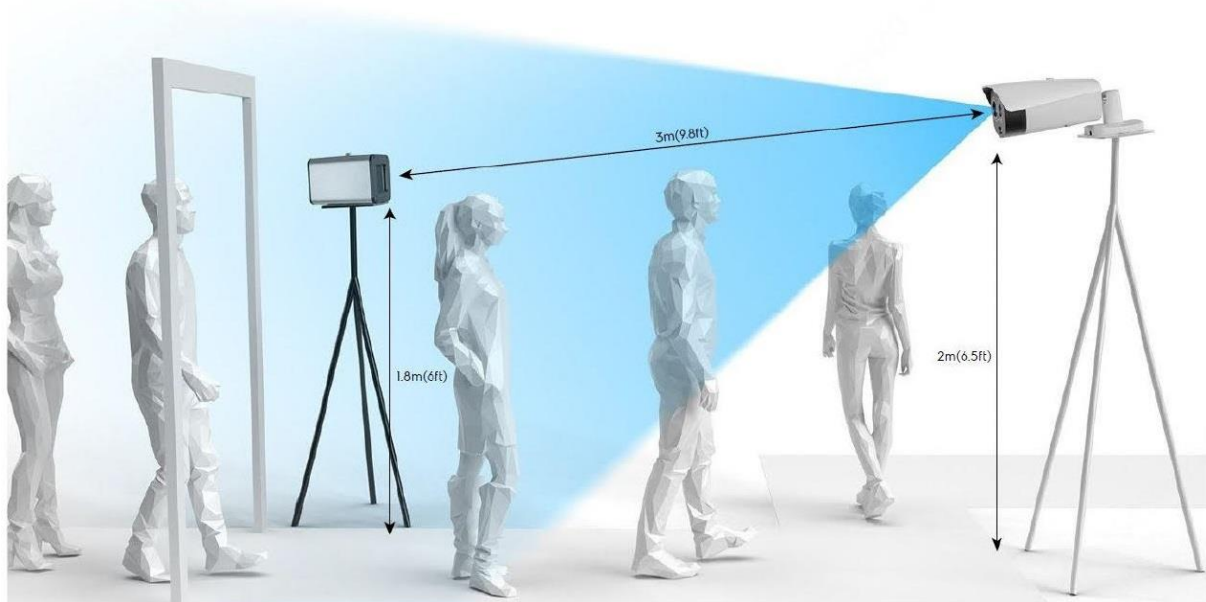
**Note:** If the display on the blackbody is an LCD screen, use the up and down arrows provided to adjust the temperature.



Be sure not to run the cable in areas of high traffic or where they can be trampled on or damaged.

The system is for indoor use only. Do not place the system against any doorways or in environments with obvious air convection, strong light radiation, strong electromagnetic interference, or vibration. For more information please refer to the chart below.

Focal Length	Distance between blackbody and camera	Distance between human forehead and camera	Width for best distance of temperature measurement.
13mm	3m (9.8ft)	3m(9.8ft)	1.5m (5ft)



## Configuration

The system can be configured using the built-in web user interface via a web browser. The system must be on the same network segment as your computer during the configuration process. It is highly recommended to use the Amcrest IP Config tool during this process. To download this free software, please visit <https://amcrest.com/downloads>

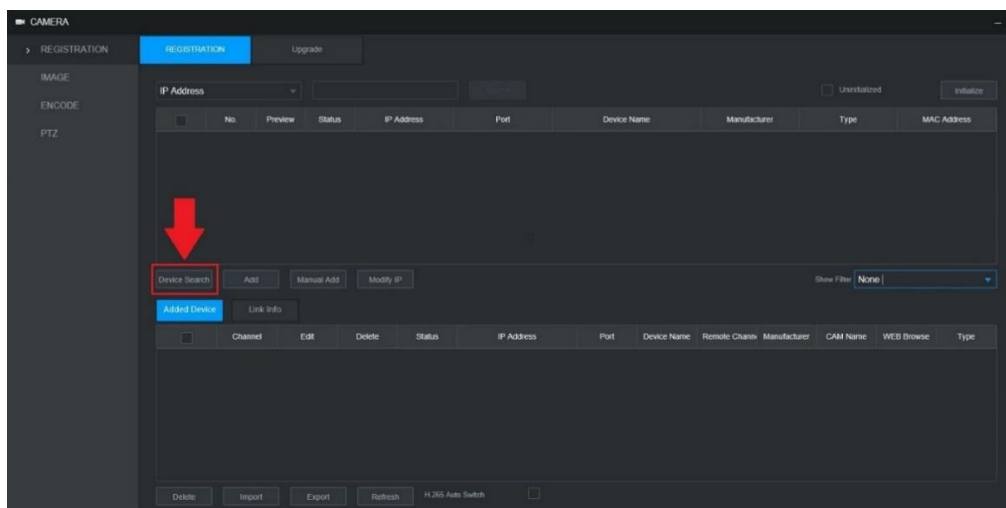


The IP config tool will locate the system's IP address on your network. Locate your NVR and click on the "e" symbol in its field to load the web user interface. The IP address can also be entered manually into a web browser if needed. The system can be accessed using most mainstream web browsers including Google Chrome, Firefox, or Safari.

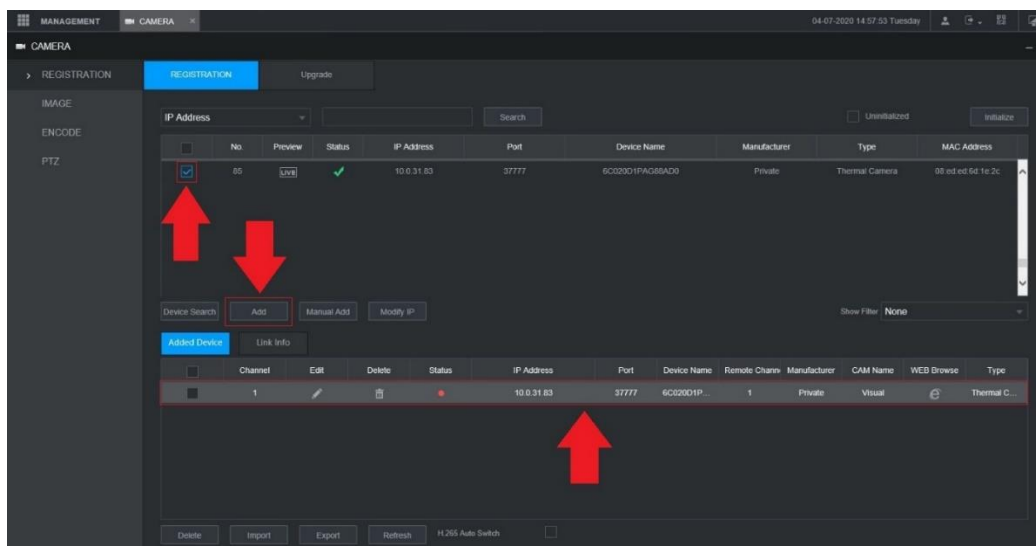
## Registering a Camera

The camera must be registered in the NVR to function. The camera registration screen allows you to add the thermal camera into the NVR. To access the camera registration screen, navigate to **Management>>Camera>>Registration**. If the cameras are not directly connected to the back of the NVR, please make sure they are active and on the same network as the NVR before proceeding.

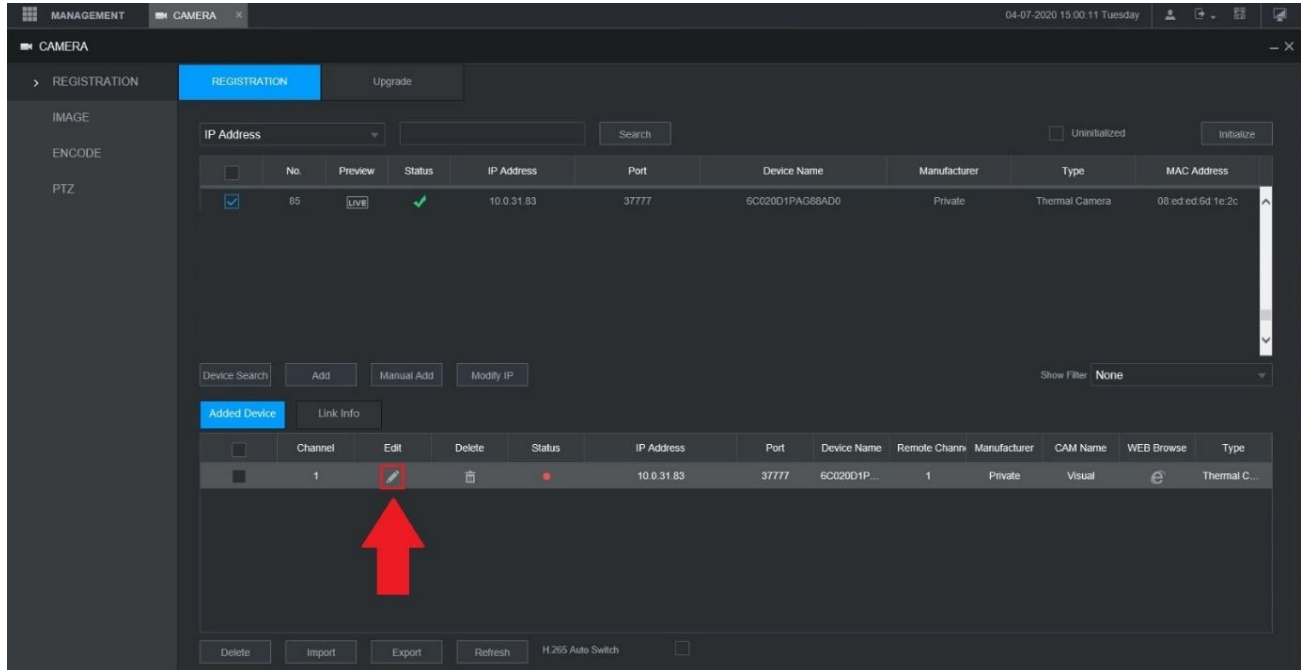
To begin adding a device, click on **Device Search** to allow the NVR to scan for connected devices on your network.



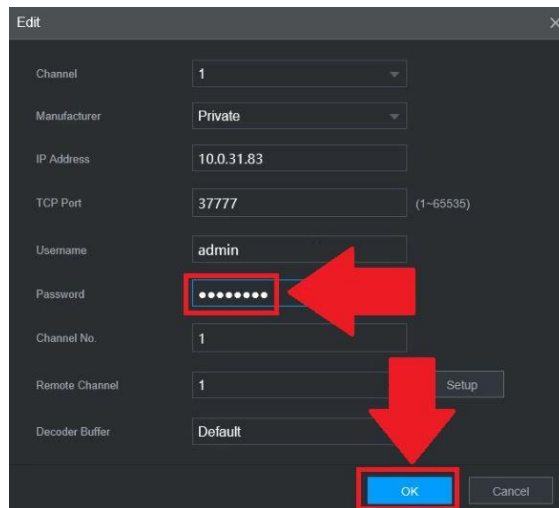
A list of applicable connected devices will show on the screen. Select your devices by click on the checkbox next to the device and click **Add** to add the device into the **Added Devices** menu.



If the status of your camera is red it indicates the camera is not properly connected to the NVR. This could be because the password for the camera is not entered properly in the system. To modify the password for your camera, click on the edit icon (pencil) located in the **Edit** column in the **Added Device** menu.



Select the **Password** field and use the onscreen keyboard to enter the password for your camera. Once the password has been entered, click **OK** to continue.



**Note:** If this is a new device and a password has not been added the password will be **admin**.

Once the password has been properly set you will notice 2 separate channels: one for visual and one for thermal. The **Status** indicator will turn green on both channels indicating the camera has been properly added to the NVR.

<input type="checkbox"/>	Channel	Edit	Delete	Status	IP Address	Port	Device Name	Remote Chann	Manufacturer	CAM Name	WEB Browse	Type
<input type="checkbox"/>	1			●	10.0.31.83	37777	6C020D1P...	1	Private	Visual		Thermal C...
<input type="checkbox"/>	2			●	10.0.31.83	37777	6C020D1P...	2	Private	Thermal		Thermal C...

## Configuring the Camera and Blackbody

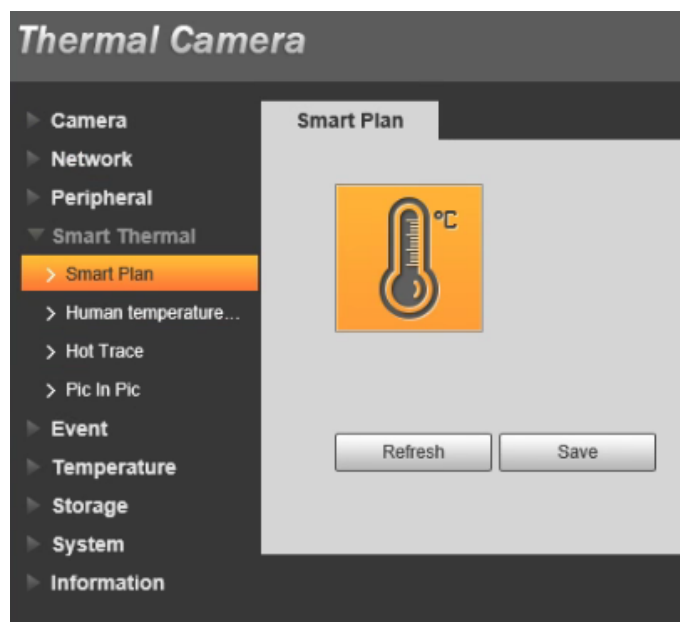
The blackbody must be configured to the camera after the camera has been added to the NVR. For more information on how to configure the camera and blackbody, please refer to the information provided below.

**Note:** Before configuring the camera and blackbody please ensure there is adequate lighting in the area. Any inadequate light source may cause inaccuracy with thermal readings. Please refer to the information provided in the *“Installation Precautions”* section of this document.

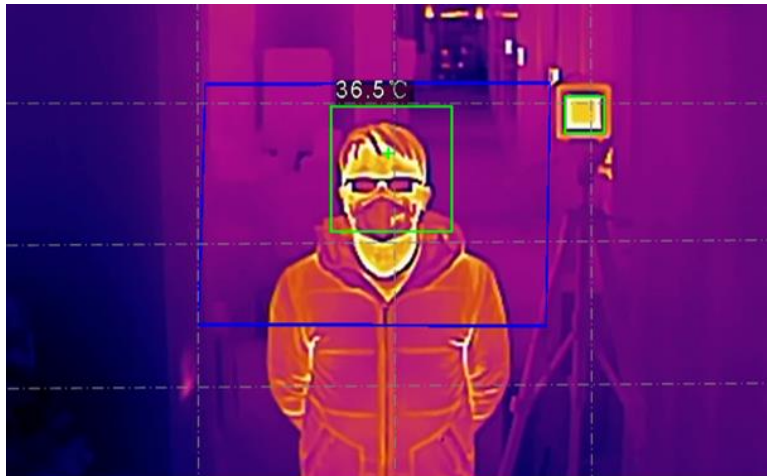
**Step 1:** In the **Registration** menu, click on the “e” symbol in the interface to load the camera’s web UI in a web browser. Log into the web UI for your camera using the camera’s login credentials. If this is your first time logging into the web UI, the default username and password will be **admin**.

<input type="checkbox"/>	Channel	Edit	Delete	Status	IP Address	Port	Device Name	Remote Chann	Manufacturer	CAM Name	WEB Browse	Type
<input type="checkbox"/>	1			●	10.0.31.83	37777	6C020D1P...	1	Private	Visual		Thermal C...
<input type="checkbox"/>	2			●	10.0.31.83	37777	6C020D1P...	2	Private	Thermal		Thermal C...

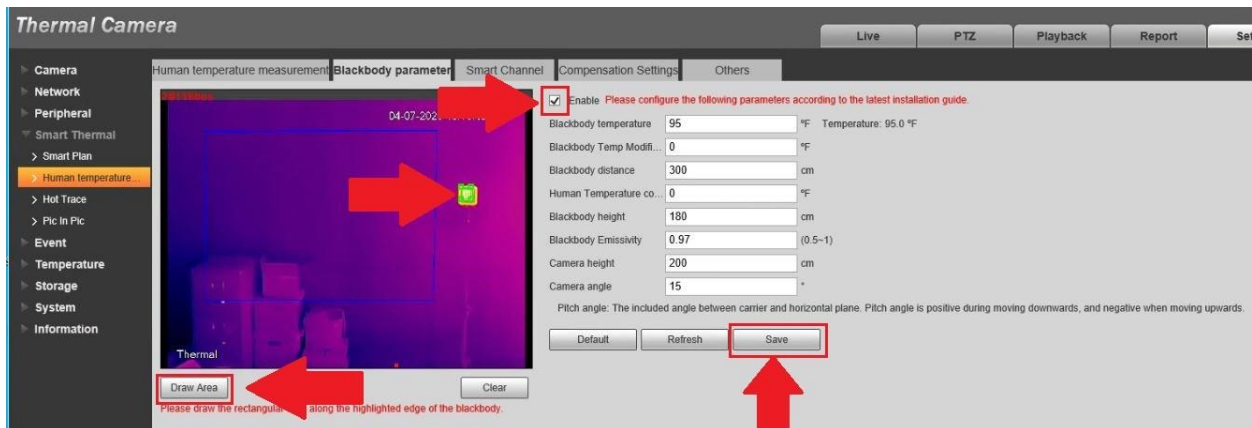
**Step 2: Set a Smart Plan:** In the camera’s interface, navigate to **Setting>>Smart Thermal>>Smart Plan** and ensure the thermometer icon is enabled. The icon will be yellow once it is enabled. Click on **Save**.



**Note:** Ensure the blackbody is positioned on the right or left side of the image and is not being blocked. It is recommended to position the blackbody towards the top right of the screen as demonstrated in the image below.



**Step 3: Set Blackbody Parameters:** Click on the **Blackbody Parameter** tab then click the **Enable** checkbox. The blackbody temperature is 95°F(35°C) (the default value). Confirm that the maximum temperature, the minimum temperature and the average temperature are all within 35°F ± 0.2°C. Click on **Draw Area** and set a calibration area around the highlighted edge of the blackbody. The rule will be displayed as a green box.

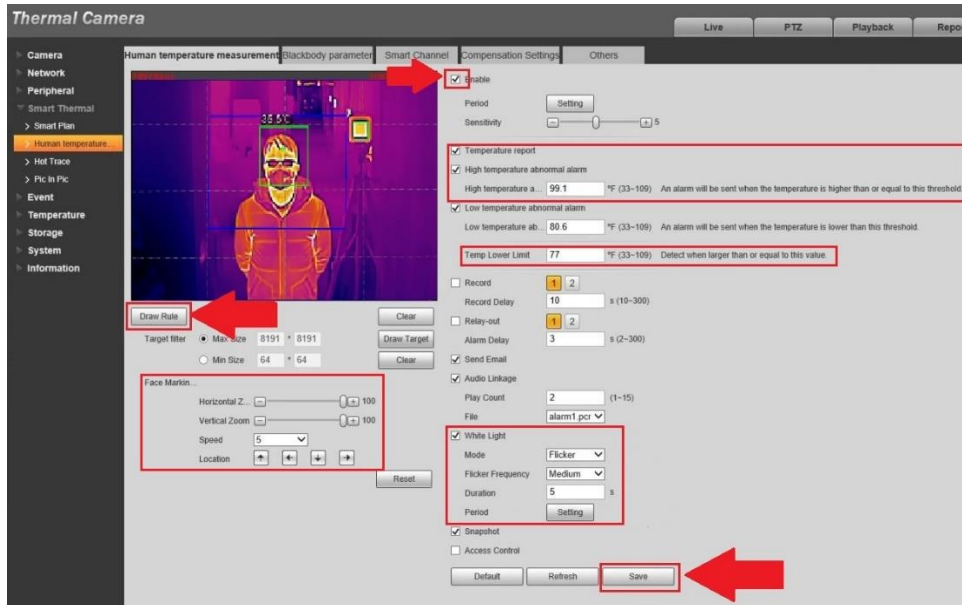


Due to environmental differences, the temperatures read by the system may experience errors. For instance, if more than 5 people in the image are at optimal distance and the measured temperature is too high or too low, compensation can be established using temperature correction. For example, if the temperature is 0.5°C too low, fill in 0.5°C as a temperature correction. If the temperature being read is too high, fill in -0.5°C as a temperature correction. Click **Save** once all settings have been made.

**Step 4: Set the Body Temperature Monitoring Rule:** Click on **Human Temperature Measurement** and click on the **Enable** checkbox.

**Note:** A human must stand on the edge of the blackbody, roughly 10 ft from the camera, facing the camera while configuring this rule.

Click on **Draw Area** and use your mouse to draw a thermal detection area on the screen between the shoulders and above the forehead of the tester. **The detection area should not contain the blackbody in the rule.**



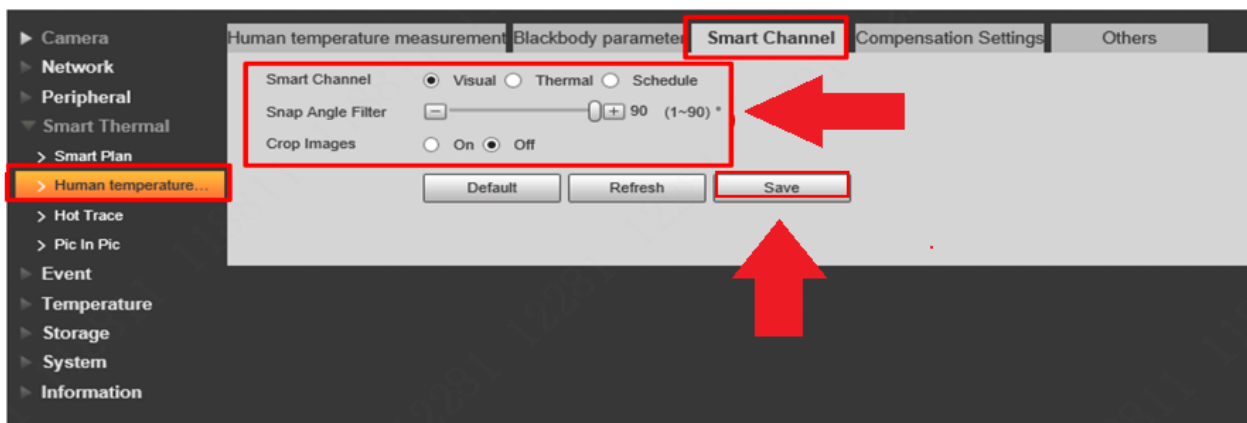
Enable the “**Temperature report**” and “**High temperature abnormal alarm**” options. Set the “High temperature abnormal alarm to 99.1°F(37.3°C). This will alert the system when a temperature reading is above the specified threshold.

Set the “**Temperature Lower Limit**” to 77°F(25°C). This will alert the system when a temperature reading is below the specified threshold.

Enable “**Audio Linkage**” and “**White Light**” and use your mouse to increase the size of the face identification frame in the Face Marking menu. Click **Save**.

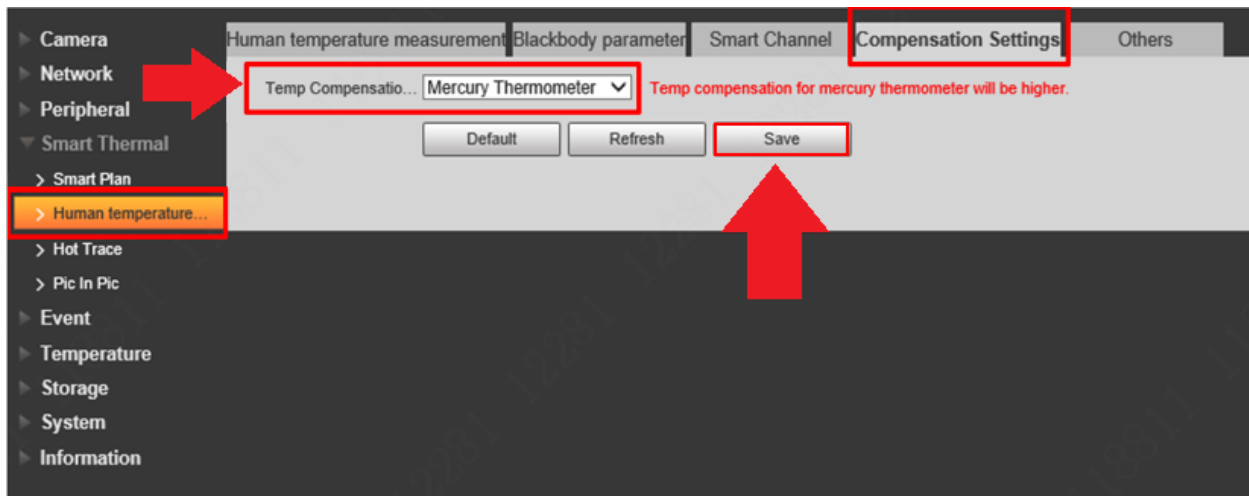
**Note:** The default temp is not the standard for some hospital, clinic, enterprise or other industries, even in different states, they use different body temp standard to identify if a person has fever. If this is the case, you can change the High/Low temp thresholds according to your standards.

**Step 5: Smart Channel Setting:** Click on the **Smart Channel** tab in the Human Temperature Monitoring menu.

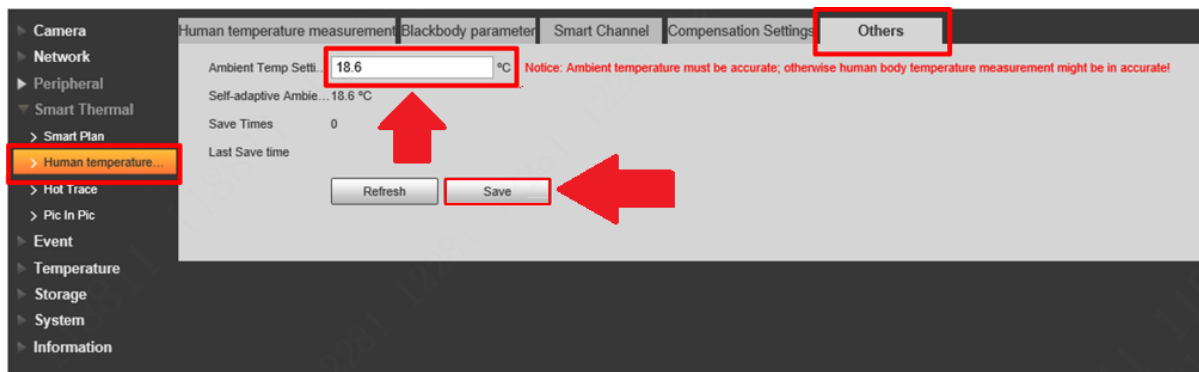


The visible light and thermal options in this field are optional. Visible light is used to detect faces by default. If the effect of visible light is not visible, such as backlight, or insufficient light, etc., thermal imaging detection can be used, such as the Snap Angle Filter. Please note, the higher the value of the snap angle filter the easier it is to capture a side of a face. For example, if the value in the slider is set to “1”, it will only detect the front of the face. Click **Save**.

**Step 6: Compensation Settings:** Click on the **Compensation Settings** tab located in the Human Temperature Monitoring menu. Use the dropdown menu in the Temperature compensation field to select between; a mercury meter compensation (default), or a forehead temperature meter compensation. These modes should be selected on a case by case basis, otherwise it should be left as default. Click **Save**.



**Step 7: Ambient Temperature Setting:** Click on the Others tab located in the Human Temperature Monitoring menu. Confirm whether the “adaptive ambient temperature” is consistent with the actual ambient temperature on site. If not, input the accurate ambient temperature on site in the Ambient Temp Settings field. The temperature should be entered based on the scale of measurement (°F or °C) indicated in the field. Click **Save**.



**Step 8: Binocular Target Setting:** This function allows you to provide fine adjustments to your thermal settings. Navigate to the live view screen of your camera and click on the adjustment icon located in the bottom left portion of the interface. Use the up, down, left, and right arrows to adjust the detection area (face box) on the screen.



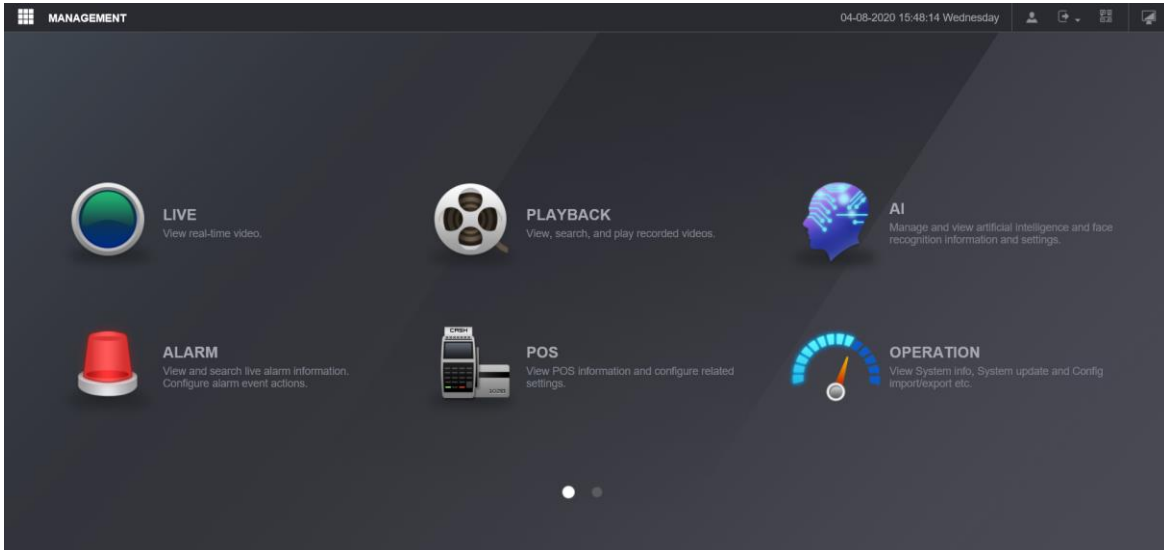
**Note:** If the Visible light option is enabled in the Smart Channel tab, the visible light in the detection box will be prevalent. The frame should only be adjusted on a case by case basis and must be accurate based on the thermal imaging face frame.

**Step 9: Test:** Once all settings are confirmed it is highly recommended to test for accuracy. Return to the live view screen and make sure accurate temperatures are being recorded under normal conditions. To test high temperature alarms, place an object with a higher temperature to the forehead and remove. The temperature alarm will sound once the temperature threshold is met.

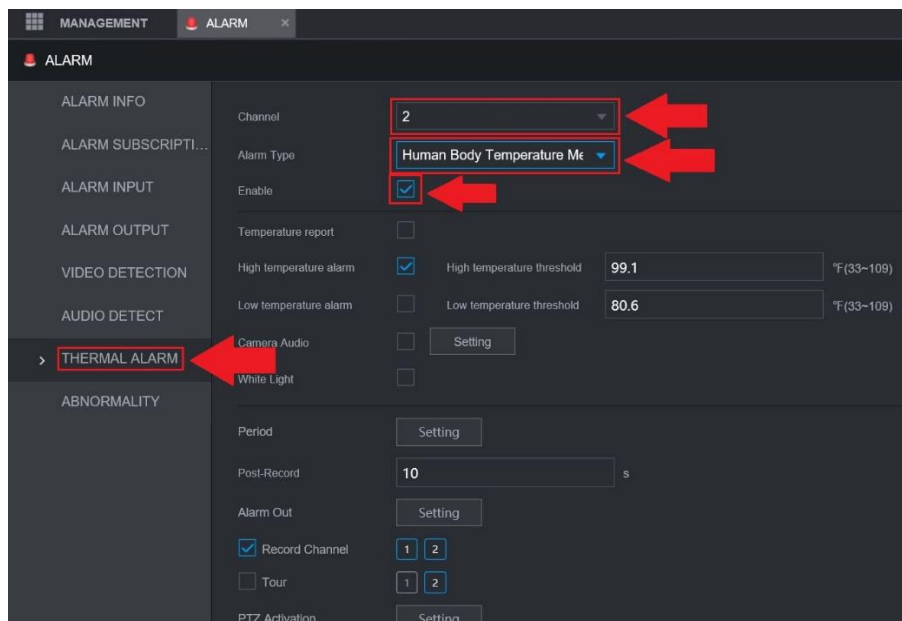


# Configuring Human Body Temperature Alarms (NVR)

Human body temperature alarms are configured using the NVR. Please ensure the camera is properly registered to your NVR as highlighted in section, "Registering a Camera". Navigate to the Main Menu of the NVR to begin the process.

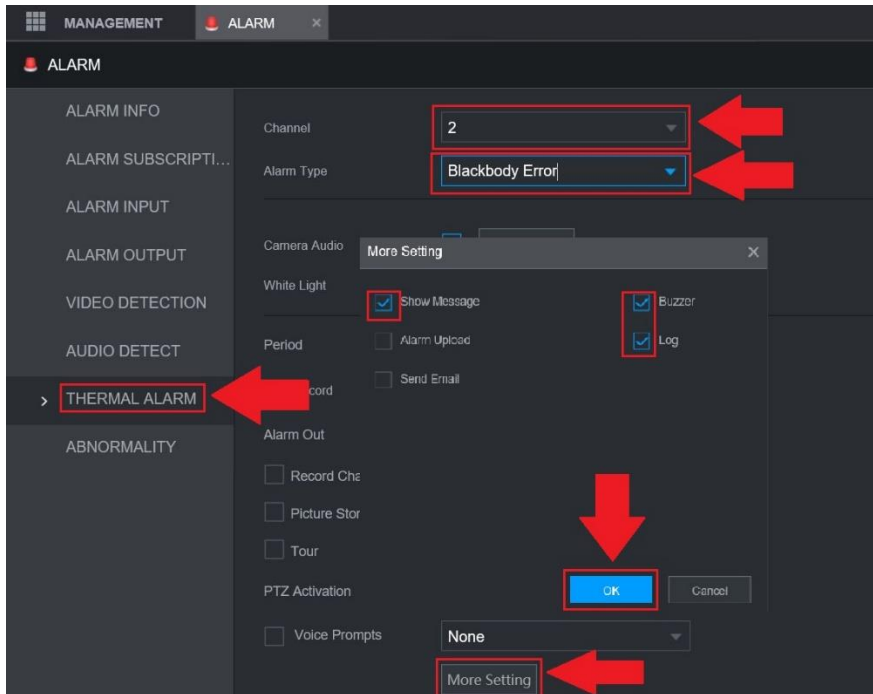


**Step 1: Configuring Human Body Temperature:** Click on the **Alarm** menu located in the Main Menu and select **Thermal Alarm**. In the Thermal Alarm menu, select Channel 2, which should be the **Thermal Channel** of the camera. Select Human Body Temperature Monitoring from the Alarm Type dropdown menu. Click **OK**.



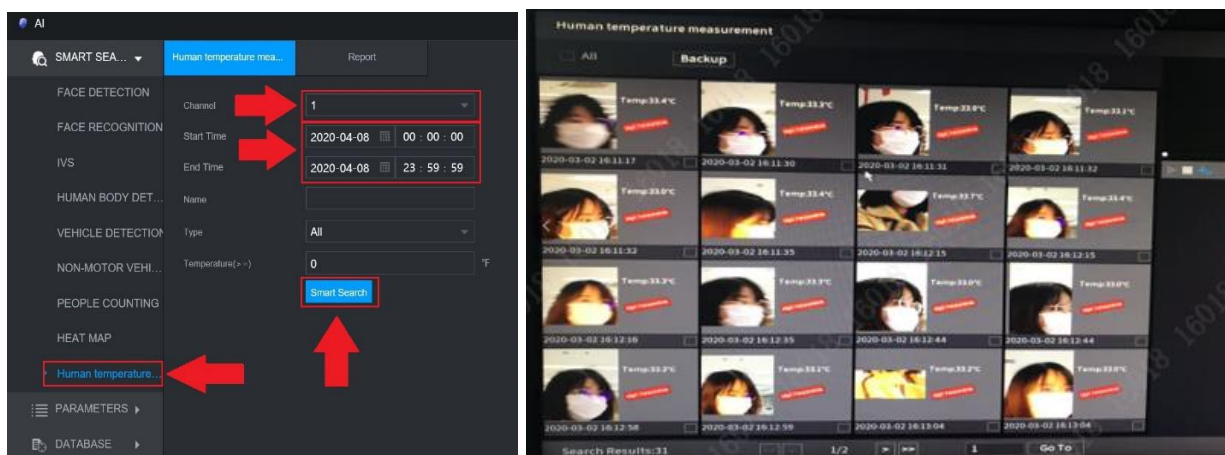
**Step 2: Configuring Blackbody Abnormal Event:** In the **Thermal Alarm** menu, select Channel 2, which should be the **Thermal Channel** of the camera. In the **Alarm Type** drop down menu, select **Blackbody Error**. Click **OK**.





Click on the **More Setting** option to display additional alarm options. Click on the **Show Message** checkbox to allow the device to notify you when an abnormality occurs. A buzzer as well as a log of the abnormality can be selected as well in the interface. Click **OK**. Click **OK** again in the interface to complete the process.

**Step 3: Test:** To test this configuration, navigate back to the live view screen and access the AI menu. In the AI menu, click on **Smart Search** and then click on the Human temperature measurement tab. Choose channel 1 (Visual Channel) and enter a start and end time of the abnormality and click **Smart Search**. A display of all Human temperature abnormalities snapshots will be displayed in the interface which can be verified for the specified start and end time.



The abnormality can also be tested by accessing the **Alarm** section in the main menu and accessing the **Alarm Info** tab. Enter a start and end time of the event in the interface and click **Search**. A list of events will appear. Click on the **Details** icon "I" to check the details of the alarm.