# Thermographic Bullet Camera

User Manual (Without Blackbody)

V 1.0 01042020

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# 1. General parameters

Temperature Measurement Range: 30°C ~ 45°C

Temperature Measurement Accuracy: ±0.5°C

Camera Resolution and Focal Length:

| Model | Resolution | Thermal Lens (mm) |
|---|---|---|
| SF-IPTB105THA-3Y | 160x120 (Therm) / 2688x1520 (Opt) | 3 |
| SF-IPTB105THA-6Y | | 6 |
| SF-IPTB305THA-10Y | 384x288 (Therm) / 2688x1520 (Opt) | 10 |
| SF-IPTB305THA-15Y | | 15 |

AI Face Detection: Multiple targets of skin surface temperature detection at the same time (wearing masks or not, would not affect this detection).

Operating Environment: Indoor environment with calm air condition: 10°C ~ 35°C

# 2. Installation

## 2.1. Installation Cautions

The performance of this fever-screening scheme is greatly affected by environment. This scheme would apply only to those indoor environments, or the scenarios with calm air and consistent temperature. Besides, the relative installation location of devices and the ambient light (too bright or too dark) greatly affect the accuracy of face detection. In order to improve measurement accuracy and reach better performance of human face detection, the installation environment has to meet certain requirements:

- Select installation environments with one-direction path to ensure that cameras capture the full faces of all passing persons.
- Select installation environments with stable and sufficient lighting conditions. Supplementary light is required under backlight or insufficient lighting conditions to ensure the clear visibility of facial features.
- Select indoor environments with calm air and consistent temperature condition. Outdoor environments with rapid temperature changes are not recommended.
- 4. If this scheme is used in entrance scenes that connect indoors and outdoors environments, It is suggested that the installation location should be kept at a certain distance from the entrance (such as customs or security checkpoints). Persons coming in from outdoors should stay indoors for more than 5 min before the measurement. By these ways, the influence of outdoors temperature environment on measured body surface temperature could be reduced.
- 5. Avoid objects with high or low temperature placed in the scene.
- 6. The devices should be installed firmly, thereby avoiding face detection and temperature measurement errors caused by shaking.

## 2.2. Camera Installation

The camera should be set right in front of the one-direction path, capturing the full faces of passing persons. The installation height and the distance between the camera and measured objects is depended on the resolution and focal length of thermographic camera, as shown in the following table.

| Thermal Resolution | Lens (mm) | Recommended distance (between human & camera) | Installation Height | Elevation angle requirements | Installation Method |
|---|---|---|---|---|---|
| 160x120 | 3 | 0.8 – 1.5 m | 1.5 m | ≤15° | Tripo |
| | 6 | | | | |
| 384x288 | 10 | 1.5 – 3 m | 1.7 – 2.5 m | | Tripod, Wall Mount |
| | 15 | | | | |

Note: SAFIRE offers tripods, tripod adapters, wall or ceiling mount brackets, but these items require an additional purchase.

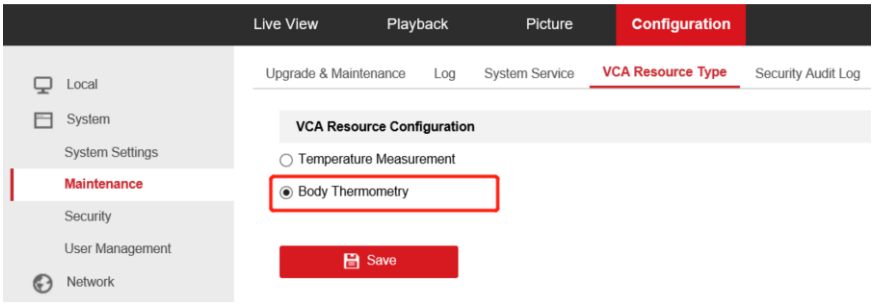
Note: We only recommend installing a device with a resolution of 384 * 288 on the wall.




# 3. Configuration

## 3.1. Select VCA Resource Type

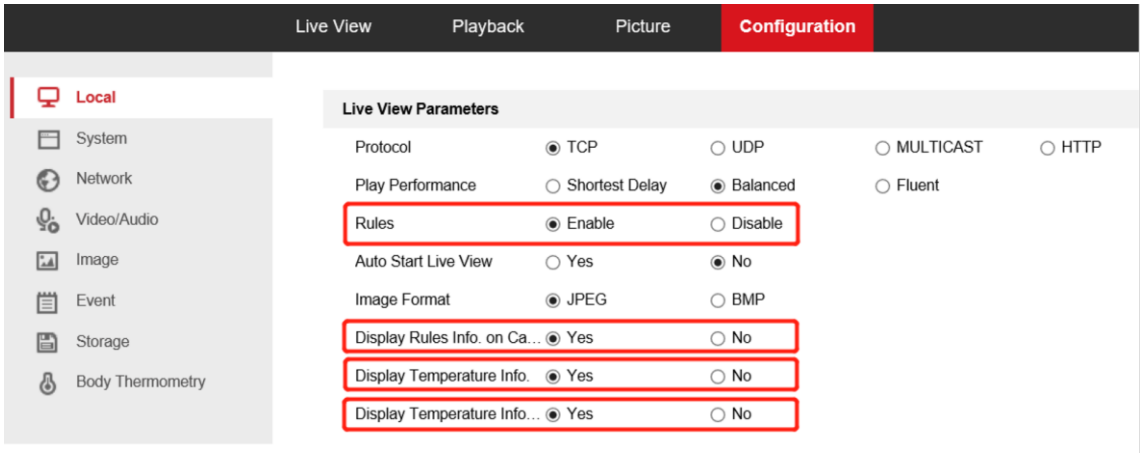
1. Enter VCA Resource Type interface: Configuration > System > Maintenance > VCA Resource Type.




2. Select Body Thermography as VCA Resource Type.
3. Click Save and wait for device restart.

## 3.2. Set Local Configuration

1. Go to the Local Configuration interface: Configuration > Local




2. Click to enable the following settings:

Rules: It refers to the rules on your local browser; select Enable to display the colored marks and temperature information when the face target is detected.

Display Rules Info. on Capture: Select Yes Display rules information on the capture.

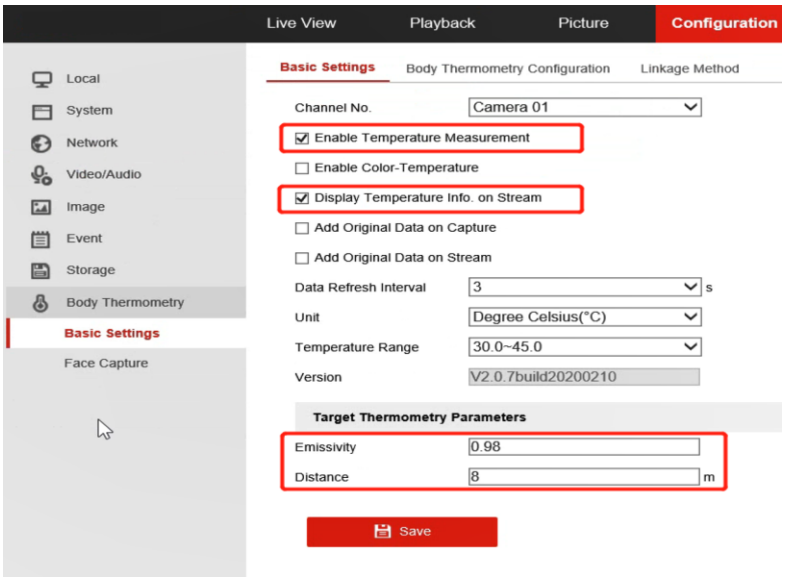
Display Temperature Info.: Select Yes to display temperature information with temperature measurement rule configured.

Display Temperature Info. on Capture: Select Yes to display temperature information on the capture.

3. Click “SAVE”

## 3.3. Settings of Body Thermography

1. Go to the Body Thermography Settings interface: Body Thermography > Basic Settings.




2. Click to enable the following settings:

Enable Temperature Measurement: Check this box to enable temperature measurement.

Display Temperature Info. on Stream: Check this box to display temperature information on stream.

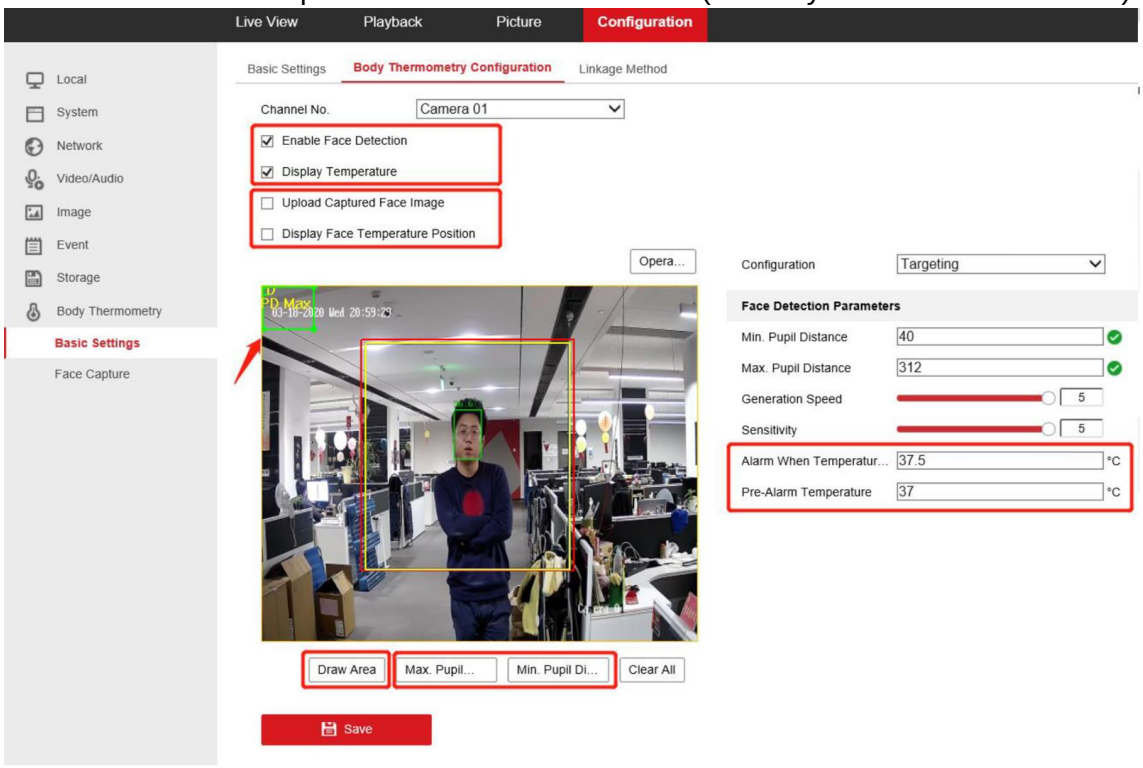
 Emissivity: The relative ability of material surface to emit energy by radiation. For human skin, this value is normally set as 0.98.

Distance: The actual distance between the camera and measured object.

3. Click “SAVE”.

4. Go to the Body Thermography Settings interface: Body Thermography > Body Thermography Configuration

5. Select the optical camera channel (normally as Camera 01).




6. Configure the following settings:

**Enable Face Detection:** Check this box to enable face detection function.

**Display Temperature:** Check this box to display measured temperature.

**Upload Captured Face Image:** Check this box to upload captured face image.

**Display Face Temperature Position:** Check this box to display the point with highest temperature in target frame.

**Configuration:** Select as **Targeting**.

**Face Detection Parameters:**

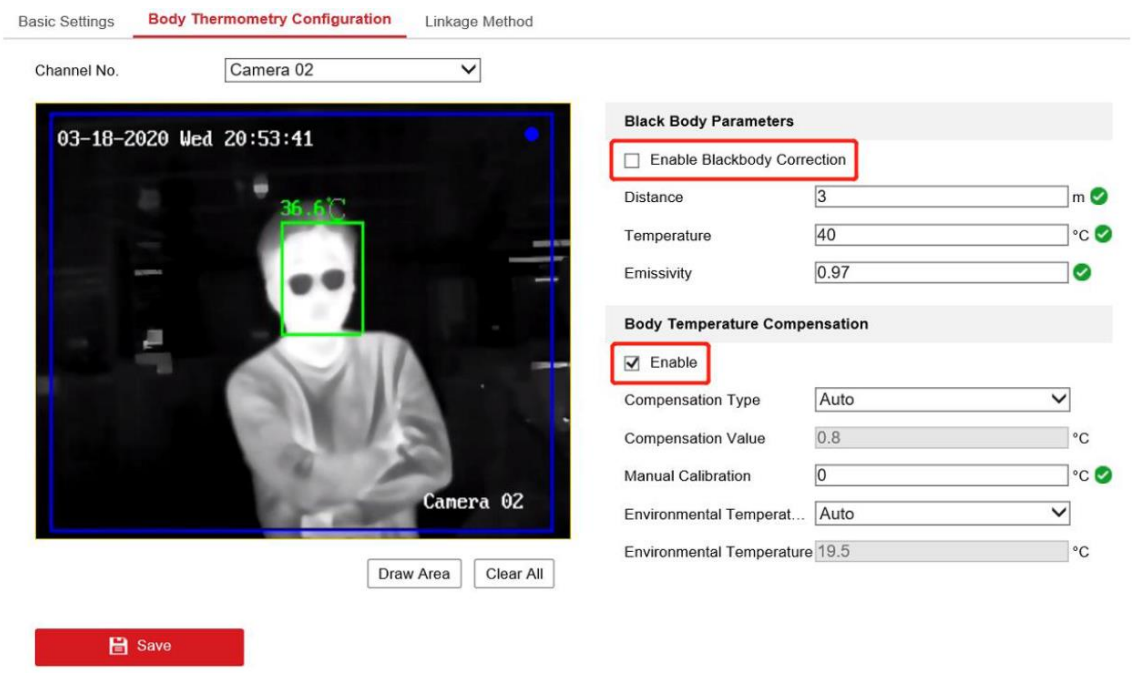
- Set **Generation Speed** and **Sensitivity** both as **5** for best detection performance.
- It is suggested to set **Alarm When Temperature is above** as 37.5 degrees Celsius and **Pre-Alarm Temperature** as 37 degrees Celsius, or it could be adjusted to meet other requirements.

**Draw Area:** Draw a rectangular area; only objects in this area would be detected as targets for temperature measurement.

Press **Max. Pupil Distance** and **Min. Pupil Distance** to draw width filter frame, thereby preventing false alarm caused by people's being too close or too far. This pupil filter is actually based on the **pixel width of target frame.**

7. Click "SAVE".

8. Select the thermal camera channel (normally as **Camera 02**).




9. Configure the following settings:

**Black Body Parameters:** If no blackbody is used in this scheme, uncheck this box.

**Body Temperature Compensation:** Compensate the measured value according to the real-time environment temperature.

**Enable:** Check this box to enable body temperature compensation

**Compensation Type:** Setting as **Auto** is suggested; in this way, auto compensation and manual calibration value would both added to the measured value.

**Manual Calibration:** The set value would be added to the measured value. (If this value is set as 2 degrees Celsius and the measured value is 35 degrees Celsius, the displayed value would be 37 degrees Celsius). See ***Manual Calibration*** part in below for details.

**Environment Temperature:** Setting as **Auto** is suggested; in this way, the environment temperature would be automatically measured.

10. Click "SAVE".

### 3.4. Manual Calibration

***Purpose:***

The performance of this body thermography scheme offered by HIKVISION would be affected by different actual working environments, and the affect factors in most stable environments could be regarded as a kind of system error. If needed, it is suggested to make a compensation through the manual calibration, the steps are as following.

1. Device start-up; wait a period of time (more than 30 minutes) for preheating.

2. For 5 to 10 individuals, complete the following 3 steps one by one:

- Use the ear thermometer or other specialized thermometer to get the real body temperature, and record.

- Use the thermographic camera to get the body temperature of the same individual, and record.

- Subtract these two numbers, and record the difference value.

3. Set Manual Calibration with the average value of these difference values in Body Temperature Compensation.

For example:

If data recorded during the calibration process are as the following table:

| Real Temperature / °C | Measured Temperature / °C | Difference Temperature / °C | Average Value (Manual Calibration) / °C |
|---|---|---|---|
| 36.8 | 36.3 | 0.8 | 0.5 |
| 37.0 | 36.5 | 0.5 | |
| 36.8 | 36.2 | 0.6 | |
| 36.9 | 36.4 | 0.5 | |
| 37.2 | 36.8 | 0.4 | |

thereby setting the Manual Calibration as 0.5°C.

## 4. Others Notes for Use

Before the device is used in actual body temperature measurement, it should run for more than 30 minutes for preheating.

This product is used for preliminary screening of people with fever. After alarm happens, specialized medical thermometer should be used in further body temperature check.