How to Configure Temperature-Screening Thermal Cameras

1. General Parameters

➢ **Temperature Measurement Range**
  30.0-45.0 degrees Celsius
➢ **Temperature Measurement Accuracy**
  ± 0.5 degrees Celsius
➢ **Camera Resolution and Focal Length**
  DS-2TD1217B-3/PA: Thermal: 160 × 120, Optical: 2688 × 1520, 3mm
  DS-2TD1217B-6/PA: Thermal: 160 × 120, Optical: 2688 × 1520, 6mm
  DS-2TD2617B-6/PA: Thermal: 160 × 120, Optical: 2688 × 1520, 6mm
  DS-2TD2637B-10/P: Thermal: 384 × 288, Optical: 2688 × 1520, 10mm
  DS-2TD2636B-15/P: Thermal: 384 × 288, Optical: 2688 × 1520, 15mm
➢ **AI Face Detection**
  Detects the skin-surface temperature of multiple targets (up to 30) simultaneously. The wearing of face masks does not affect detection.
➢ **Operating Environment**
  Indoor environment with a calm air condition; 10-35 degrees Celsius

2. Installation

1) Installation Cautions

The performance of these temperature-screening solutions is greatly affected by their environment. These cameras are only suitable for indoor environments or scenarios with calm air and consistent temperature. The relative installation location of the cameras and the ambient light also affects the accuracy of face detection. In order to improve measurement and face detection accuracy, the installation environment has to meet certain criteria:

1. Select installation environments with a single-direction path to ensure that the camera captures the faces of all passing persons in full.
2. Select installation environments with stable and sufficient lighting conditions. Supplementary lighting is required when there is insufficient light to ensure clear visibility of facial features.

3. Select indoor environments with calm air and consistent temperature. These cameras are not recommended for use outdoors or in areas with rapid temperature changes.
4. If these solutions are used in entrances that connect indoor and outdoor environments (such as customs and security check points), it is recommended that the cameras are installed at a significant distance from the entrance.
5. Avoid placing objects with high or low temperatures within the camera's view.
6. The cameras must be installed securely to prevent face detection and temperature measurement errors caused by shaking.

2) Camera Installation

➢ The camera should be set up directly in front of the single-direction path to ensure that the faces of passing persons are captured in full. The installation height and the distance between the camera and the target is dependent on the resolution and focal length of the thermal camera; please see the following table for further details.

Thermal resolution	Thermal focal length	Recommended distance (between human & camera)	Installation height	Elevation angle requirements	Installation method		Black body distance (between camera & black body)
160*120	3mm	0.8-1.5m	1.5m	≤15°		Tripod	≤1.0m
	6mm	1.5-3m					≤2.0m
384*288	10mm	2-7m	1.7-2.5m			Wall Mount	≤3.0m
	15mm	2.5-9m					≤5.0m

➢ HIKVISION offers a selection of tripods, tripod adapters and wall mounts to enable flexible or fixed camera installation. These items are sold separately. Please note that only cameras with an IR resolution of 384*288 are recommended for wall installation.
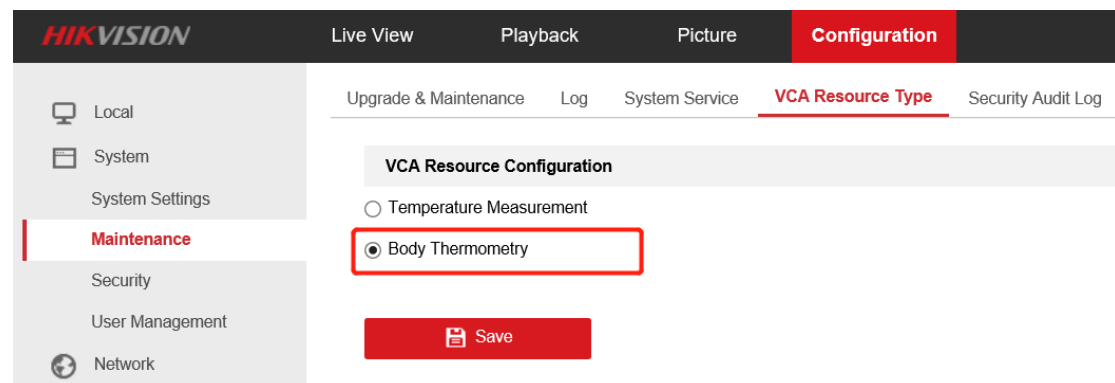
3. Configuration

1) Select VCA Resource Type

Steps:

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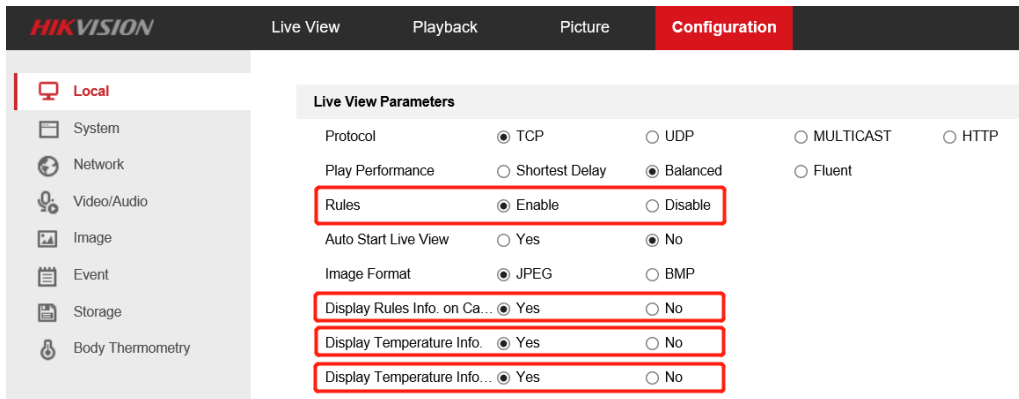

2. Select **Body Thermography** as VCA Resource Type.
3. Click **Save** and wait for the device restart.

2) Set Local Configuration

Steps:

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

2. Click to enable the following settings:
➢ **Rules:** refers to the rules on your local browser; select **Enable** to display coloured marks and temperature information when face targets are detected.
➢ **Display Rules Info. on Capture:** select **Yes** to display rules information upon capture.
➢ **Display Temperature Info.:** select **Yes** to display temperature information with the temperature measurement rule configuration.
➢ **Display Temperature Info. on Capture:** select **Yes** to display temperature information upon capture.
3. Click **Save**.

3) Settings of Body Thermography

Steps:
1. Go to the Body Thermography Settings interface: **Body Thermography** > **Basic Settings.**
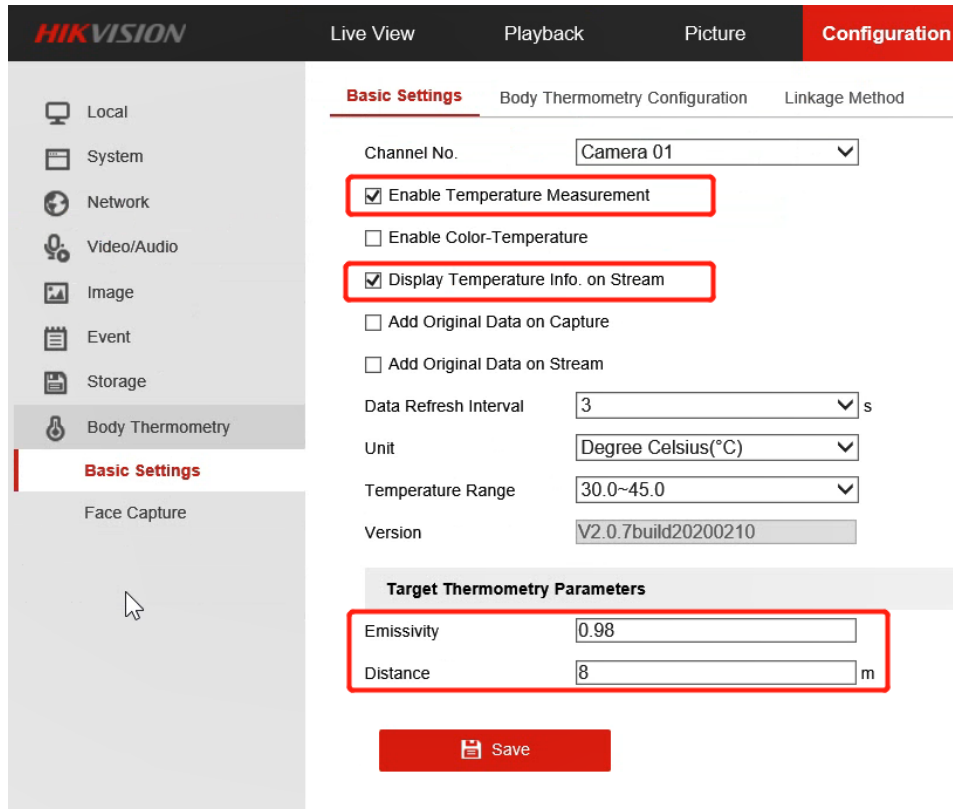
2. Configure the following settings:

➢ **Enable Temperature Measurement:** check this box to enable temperature measurement.

➢ **Display Temperature Info. on Stream:** check this box to display temperature information in the stream.

➢ **Emissivity:** for human skin, this value is normally set at 0.98.

➢ **Distance:** enter 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 **Camera 01**).

6. Configure the following settings:

➢ **Enable Face Detection:** check this box to enable face detection.

➢ **Display Temperature:** check this box to display the measured temperature.

➢ **Upload Captured Face Image:** check this box to upload the captured face image.

➢ **Display Face Temperature Position:** check this box to display the point with highest temperature within the target frame.

➢ **Configuration:** select **Targeting**.

➢ **Face Detection Parameters:**
   ● Set both the **Generation Speed** and **Sensitivity** to **5** for the best detection performance.
   ● It is recommended that the **Alarm When Temperature is above** is set to 37.5 degrees Celsius and the **Pre-Alarm Temperature** is set to 37 degrees Celsius.
     These parameters can be adjusted to meet other requirements.

➢ **Draw Area:** draw a rectangular area; only objects in this area will be treated as targets for temperature measurement.

➢ Press **Max. Pupil Distance** and **Min. Pupil Distance** to draw a width filter frame. This prevents false alarms caused by people being too close or too far apart. The pupil filter is based on the **pixel width of the target frame.**

7. Click **Save**.

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

9. Configure the following settings:

➢ **Black Body Parameters:** uncheck this box if a black body is not being used.

➢ **Body Temperature Compensation:** compensates the measured value according to the real-time environmental temperature.
   - **Enable:** check this box to enable body temperature compensation
   - **Compensation Type:** the **Auto** setting is recommended as the auto compensation and manual calibration values will both be added to the measured value.
   - **Manual Calibration:** the set value is added to the measured value. For instance, if the set value is 2 degrees Celsius and the measured value is 35 degrees Celsius, the displayed value will be 37 degrees Celsius. See the *Manual Calibration* section below for further details.
   - **Environment Temperature:** the **Auto** setting is recommended as the environment's temperature will be automatically measured.

10. Click **Save**.

4) Manual Calibration

Purpose:

The performance of HIKVISION's body-temperature screening thermal cameras is affected by different environmental conditions. The effect of certain conditions in most stable environments can be regarded as a kind of system error. If needed, manual calibration can be used to compensate for these factors. The steps are as follows:

Steps:

1. Device start-up: wait for the camera to preheat; typically this takes 60+ minutes.
2. For 5 to 10 individuals, complete the following 3 steps one by one:
    - ➤ Use an ear thermometer or other specialised thermometer to measure the individual's real body temperature, and record this value.
    - ➤ Use the thermal camera to measure the body temperature of the same individual, and record this value.
    - ➤ Subtract these two numbers, and record the difference.
3. In **Body Temperature Compensation**, set the **Manual Calibration** using the average difference value.

For example:

If the data recorded during the calibration process is as follows:

Real Body Temperature/℃	Measured Temperature/℃	Difference Value/℃	**Average Value (Manual Calibration)/℃**
36.8	36.3	0.5	
37.0	36.5	0.5	
36.8	36.2	0.6	0.5
36.9	36.4	0.5	
37.2	36.8	0.4	

The value used to set the **Manual Calibration** would be 0.5 degrees Celsius.

4. Other Notes for Use

- ➤ Before the thermal camera is used for body-temperature measurement, it should be run for more than 60 minutes to preheat.

- ➤ This product is designed for preliminary body-temperature screening. If an alarm is triggered, a specialised medical thermometer should be used to verify the temperature and to conduct any further body-temperature measurements.

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