How To Configure Highly Accurate

DS-2TDxxxxB-x/Px Thermographic Bullet and Turret Cameras

1. General Parameters

- **Temperature Measurement Range**
  86°–113° F (30.0°–45.0° C)

- **Temperature Measurement Accuracy**
  $\pm$0.9° F (±0.5° C)

- **Camera Resolution and Focal Length**

  - **DS-2TD1217B-3/PA:** Thermal: 160 × 120, Optical: 2688 × 1520, 3 mm

  - **DS-2TD2617B-6/PA:** Thermal: 160 × 120, Optical: 2688 × 1520, 6 mm

  - **DS-2TD2636B-13/P:** Thermal: 384 × 288, Optical: 2688 × 1520, 13 mm

- **AI Face Detection**

  Multiple targets (up to 30) skin-surface temperature detection at the same time (wearing masks does not affect this detection)

  NOTE: The Face Detection feature does not identify individuals, but is used only to target the facial area of human subjects for temperature readings.

- **Operating Environment**

  A stable indoor environment without wind or direct sunlight

  Working temperature: 50°–95° F (10°–35° C)

2. Installation

- **Installation Cautions**

  The performance of this temperature-screening scheme is greatly affected by the environment. This scheme applies only to indoor environments or 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 face detection accuracy. In order to improve measurement accuracy and reach better performance detecting human faces, 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.

- If this scheme is used in entrance scenes that connect indoor and outdoor environments, it is suggested that the installation location should be kept at a certain distance from the entrance (such as at customs or security checkpoints). Persons coming in from outdoors should stay indoors for more than five minutes before the measurement. In these ways, the influence of the outdoor temperature environment on measured body surface temperature could be reduced.

- Avoid objects with high or low temperature placed in the scene.

- The devices should be installed firmly, thereby avoiding face detection and temperature measurement errors caused by shaking.

- **Camera Installation**

  - The camera should be set directly 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 dependent on the resolution and focal length of thermographic camera, as shown in the following table.

Thermal Resolution	Thermal Focal Length	Recommended Distance (between human and camera)	Installation Height	Elevation Angle Requirements	Installation Method	
160 * 120	3 mm	0.8 m–1.5 m	1.5 m	≤20°		Tripod
	6 mm	1.5 m–3 m				
384 * 288	13 mm	2.5 m–7 m	1.7 m–2.5 m			Wall Mount

- There are tripods, tripod adapters, and wall mounts offered by Hikvision for flexible or fixed placement, but these items require additional purchase. Only devices with resolution of 384*288 is recommended to be installed on the wall.

Figure 1, Accessories

3. Configuration

- **Select VCA Resource Type**

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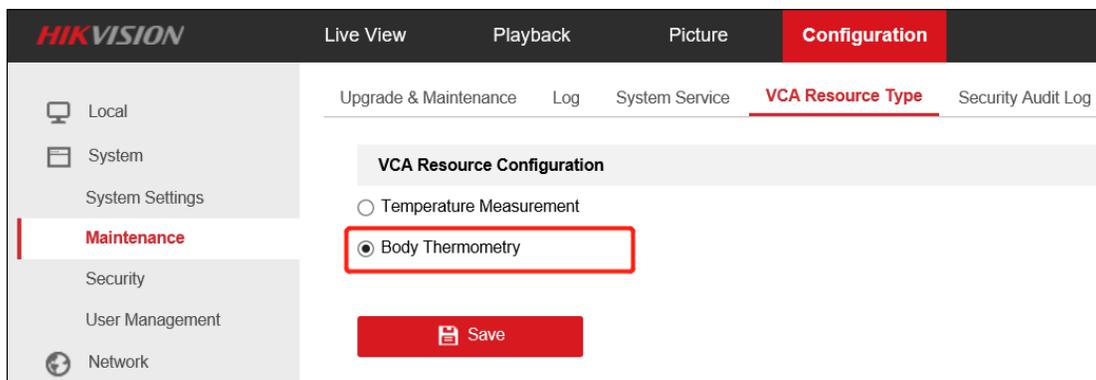

Figure 2, Body Thermometry

  2. Select **Body Thermometry** as VCA Resource Type.

  3. Click **Save** and wait for device restart.

- **Set Local Configuration**

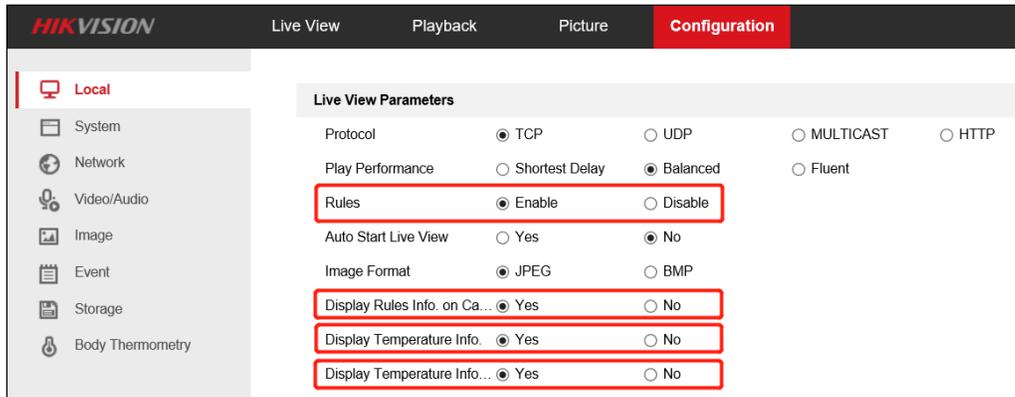 1. Go to the Local Configuration interface: **Configuration** > **Local**.

Figure 3, **Configuration > Local**

2. Click to enable the following settings:

- **Rules:** 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** to 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**.

- **Body Thermometry Settings**

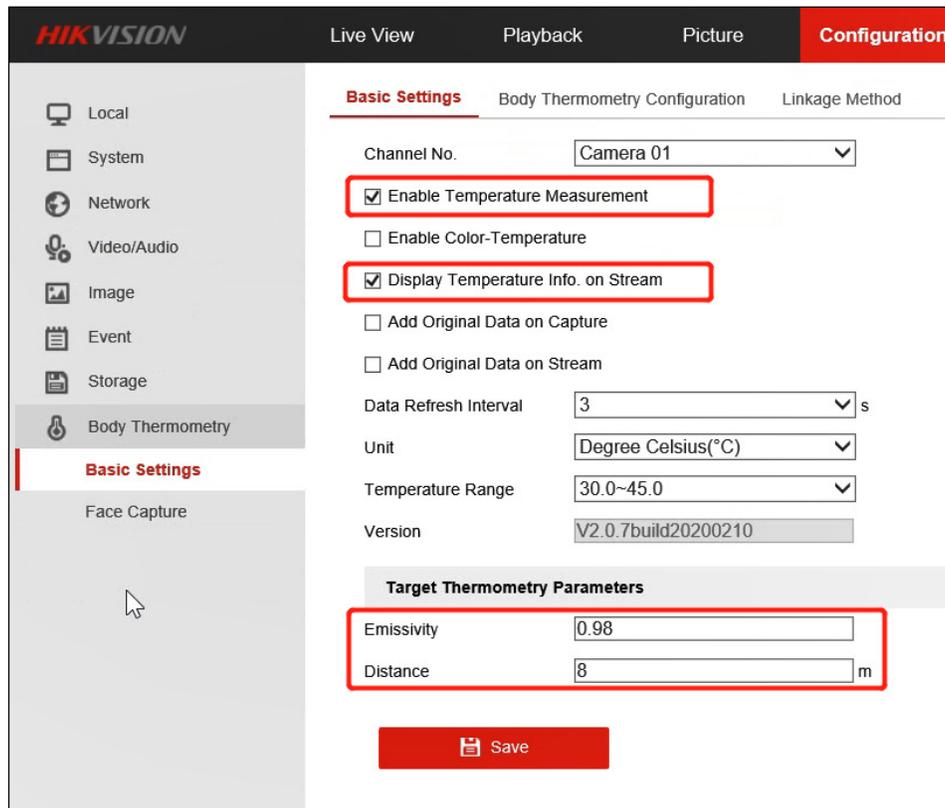1. Go to the Body Thermography Settings interface: **Body Thermometry** > **Basic Settings.**

Figure 4, 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 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 Thermometry** > **Body Thermometry Configuration**

5. Select the optical camera channel (normally as **Camera 01**).
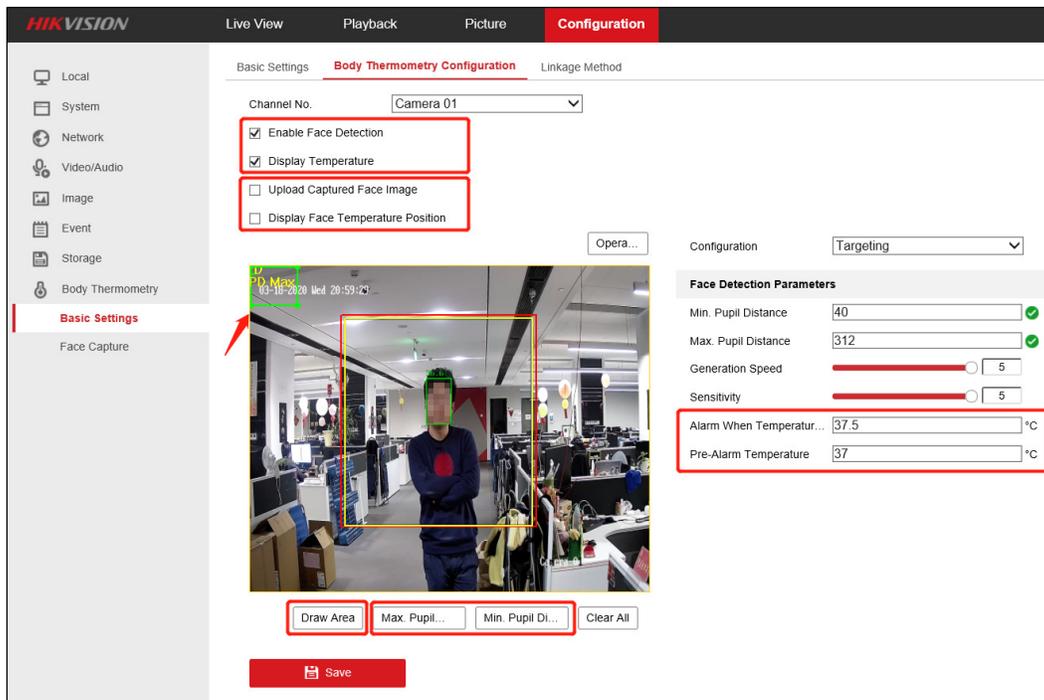
6. Configure the following settings:

- **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.

    NOTE: Default setting is unchecked, face images *will not* be saved or uploaded.

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

- **Configuration:** Select **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° C and **Pre-Alarm Temperature** as 37° C, or adjust it 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 being too close or too far. This pupil filter is actually based on the **pixel width of target frame.**

7. Click **Save**.

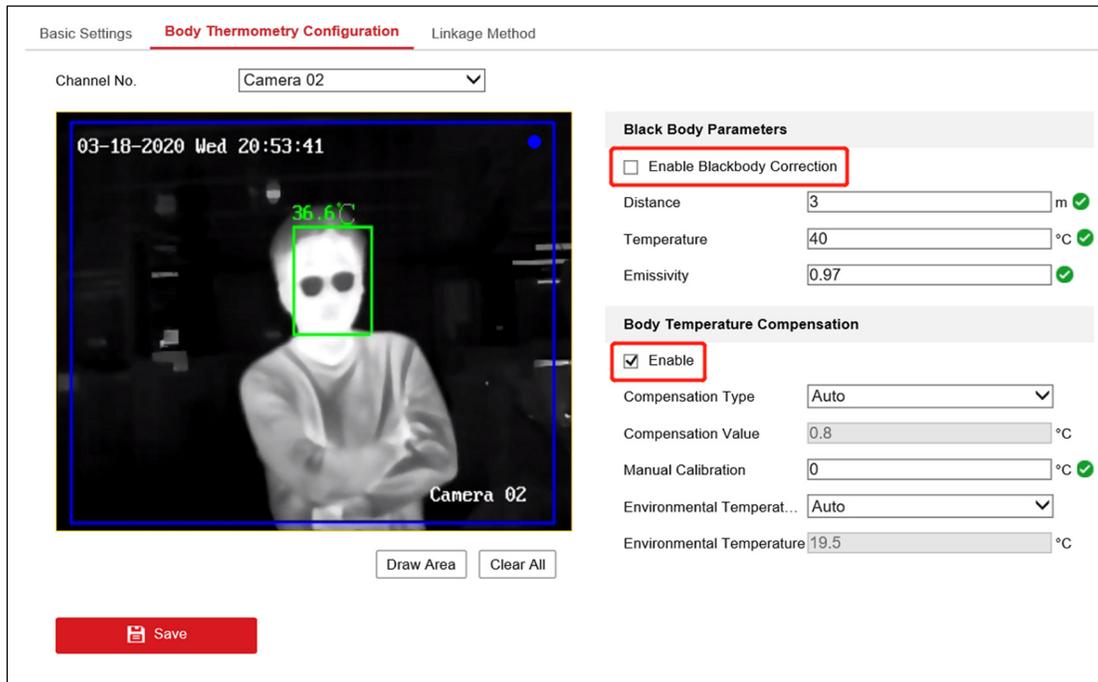8. Select the thermal camera channel (normally as **Camera 02**).

Figure 5, Body Thermometry Configuration

9. Configure the following settings:

- **Black Body Parameters:** If no black body 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: Auto** setting is suggested; in this way, auto compensation and manual calibration values would both be added to the measured value.

  - **Manual Calibration:** The set value would be added to the measured value. (If this value is set as 2° C and the measured value is 35° C. the displayed value would be 37° C). See *Manual Calibration* below for details.

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

10. Click **Save**.

- **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 an 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**.

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

Real Body Temperature/° C	Measured Temperature/° C	Difference Value/° C	Average Value (Manual Calibration)/° C
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	

    thereby setting the **Manual Calibration** as 0.5° C.

4. Other Notes

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

- This product is used for preliminary screening of people with elevated skin-surface temperature. If an alarm occurs, a specialized medical thermometer should be used for further body temperature check.

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