

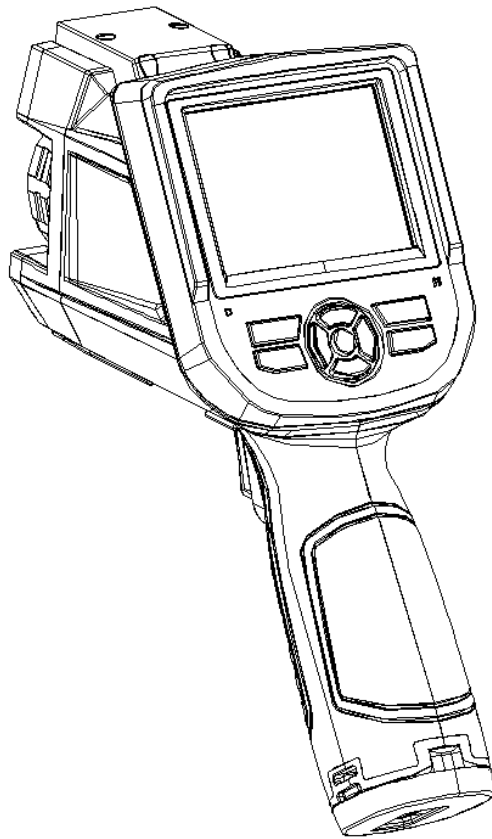
# T8-WH

(CTITE02-2)

## Human Body Temperature Rapid Screening Device

User Manual v1.0

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# ! Warning, Caution & Note

## Definition

- ! **Warning** refers to the hazardous situation or behavior that could result in personal injury or death.
- ! **Caution** refers to the situation or behavior that could cause damage to the thermal imager or permanent loss of data.
- ! **Note** refers to tips useful to users.

## Important Information – Please read before using the device

- ! **Warning** – Although the camera is rated IP54 (water resistant to spray), avoid using near water and keep camera dry. Do not submerge the camera in water. The water and dust cover for the power supply jack and micro-SD card must be closed for water resistance.
- ! **Warning** – Do not point the camera at the face of a person when using the laser pointer. The laser beam may cause eye irritation.
- ! **Caution** – As the thermal imager adopts a highly sensitive thermal sensor, the lens should not be directly aimed at substantial radiation sources (e.g.the sun, direct or reflected laser beam) under any circumstances (power on or power off), or it will cause **permanent damage** to the thermal imager!
- ! **Caution** – The original packing box must be adopted during transportation. Avoid violent shake or collide of thermal imager during utilization and transportation.
- ! **Caution** – For saving of thermal imager, it is recommended to adopt the original packing box and store in a cool, dry, and ventilated place without strong electromagnetic field.
- ! **Caution** – Avoid oil stains and various chemicals from contaminating or damaging the

surface of lens. After utilization, please cover the lens cap.

- ! **Caution** – To prevent the potential danger of data loss, please copy (backup) the data into computer frequently.
- ! **Note** – Before accurate reading of the data, the thermal imager may need a 3-5 minutes preheating process.
- ! **Note** – Each thermal imager has been calibrated before delivery. It is suggested to carry out temperature correction annually.
- ! **Caution** – Do not open the enclosure or modify without permission. The maintenance can only be carried out by the personnel authorized by the company.
- ! **Note** – Measurements should not be solely or primarily relied upon to diagnose or exclude a diagnosis of COVID-19, or any other disease. Absence of an elevated skin temperature does not exclude a fever.
- ! **Note – Recommended Process:** 1. Measure a point on the face, preferably the eye sockets, one person at a time, from 2 meters(m) away to detect an elevated skin temperature. 2. Elevated skin temperature should be confirmed with secondary evaluation method (e.g., clinical grade contact thermometer).
- ! **Note** – Visible thermal patterns are only intended for locating the points from which to extract the thermal measurement.
- ! **Note** – The blackbody reference source (used for thermal drift compensation) is important in obtaining an accurate temperature assessment.
- ! **Note** – The camera of the screening thermograph should be positioned perpendicular, both horizontally and vertically, to the face of the individual being screened so that the inner corner of both eyes can be imaged simultaneously. The individual being screened and the external temperature reference source should be in the correct position and orientation relative to the camera for proper focal distance, depth of field and image capture. There should be a means of ensuring that the individual being screened is in this proper position, e.g. marks on the floor. Consideration should be

given to individuals in wheelchairs. The backdrop behind the individual being screened and, when used, side screens should be thermally uniform, high emissivity (non-reflective in the IR spectrum) and light in color (visible spectrum). The operator should be positioned with a clear visual field of the individual being screened and the display of the screening thermograph. The operator may need to intervene to correct the individual's position. The operator should be able to divert individuals to a secondary screening area when required. Operators should be assessed for ability to discern the colors of the isothermal display.

**!** **Note** – This device is not FDA-cleared or approved.

**!** **Note** – For additional information regarding Medical Electrical equipment, see ISO/TR 13154:2017: Medical electrical equipment - Deployment, implementation and operational guidelines for indentifying febrile humans using a screening thermograph.

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# 1 Introduction

Thank you for choosing this human body temperature rapid screening device (hereinafter referred to as: thermal imager).

## 1.1 Model Identification

T8-WH thermal device adopts 25um 384×288 detector with a temperature scope of 20°C~50°C.

## 1.2 Functions

Functions include:

11 optional color codes

11 optional languages

1 regional temperature measurement

Customize shortcuts

Power save mode

LCD intensity control

Video output - NTSC or PAL system

Time / date setting

Restore factory setting

TF card unloading, formatting

TF card image capture, video saving

image capture voice or text notes

Continuous image capture

Alarm image capture

Alarm video

Isothermal function

Temperature measuring setting

Common Built-in Materials Emissivity Option List

CMOS visible image and saving

2 LED fill lights

Infrared and visible image fusion

Fusion for High and Low Temperatures

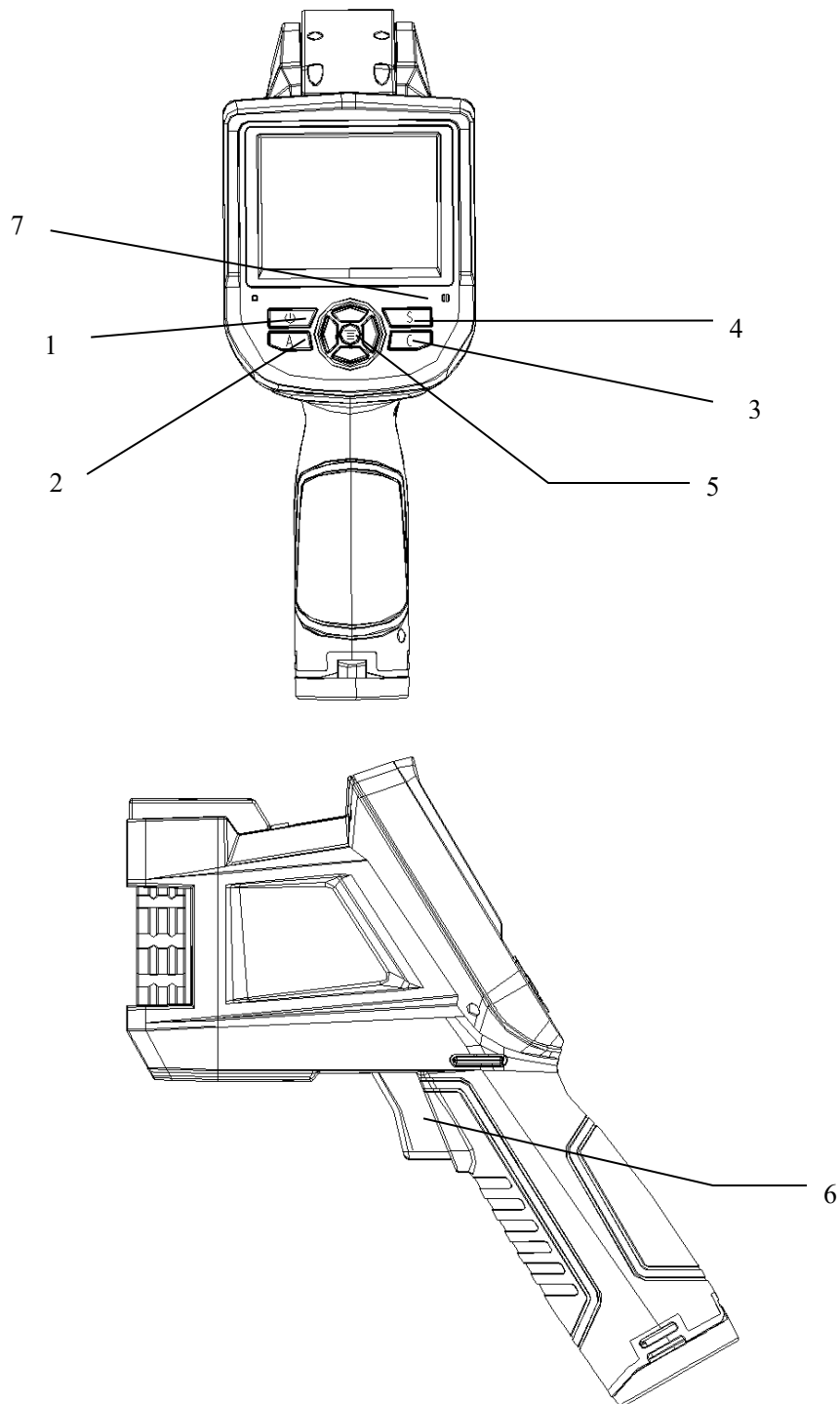
## **1.3 Standard Configuration**

- Thermal imager (hand strap)
- Carrying case
- Lithium battery
- Lens cap
- Optical disks for user manual, statement analysis system
- TFcard (8GB)
- TF card reader
- Video output cable
- External 12V power adapter
- External blackbody
- Tripod with carry case
- Speakers
- QC Certificate



## 2 Brief Introduction of Thermal Imager

### 2.1 Function Buttons



### **[1] Power Switch**

To turn on/off the thermal imager Press this button for more than 3 seconds to turn on/turn off the thermal imager.

**! Note:** After shutdown, wait at least 10 seconds after re-starting, to ensure the safety of the thermal imager.

### **[2] Select / Auto Button (Tag A)**

The button with tag A has the three functions below.

a) The first function is to modify the parameters selected. To perform the function, shortly press (less than 2 seconds) and release the button, and modify the selected parameters. Then, press the button once each time to select the next parameter, and the selected parameter will be tagged in yellow. The function includes:

### **[3] Cancel/Visible light Button (Tag C)**

- Press the button to cancel the current menu operation in menu mode.
- Press the button to return to the active mode in frozen image or playback mode.
- Press the button to switch among thermal image, visible image and fusion in non-menu and parameter modification mode.
- Press the button to delete the measurement parameter when selecting a measurement parameter such as a measurement point.

### **[4] Frozen/Saving (Tag S)**

To freeze or save images. Press the button once to freeze the image, press the cancel button to return to the active mode, press the button twice to save the image. If the audio annotation function or text annotation function is on, the annotation dialog box will pop out. Select the image or video in file management, and press S button for the prompt whether to delete the item.

### **[5] Menu/OK Button**

Include up, down, left, right and menu/enter( ) buttons. It has different functions in different operation modes.

In menu mode, it is for menu selection, and up and down buttons for menu operation of the same level. When there is no sub-menu, adopt the left and right buttons to switch options; when there is a sub-menu, adopt the right button to enter into the next level of menu operation. Enter(in the middle)button is adopted to confirm the selection and return to the upper level.

When a temperature measurement point is selected, press the menu button to pop out the attribute dialog box, select from the four direction buttons to move the point.

When the temperature measuring line is selected, press OK button to pop out the attribute dialog box. Press S button to switch the line position or length, and select from four direction buttons to move the line position or change the length.

When the temperature measuring area is selected, press OK button to pop out the attribute dialog box. Press S button to switch the area position or size, and select from four direction buttons to move the area position or change the size.

Up, down, left and right buttons can also be defined as shortcuts. For details, refer to the definition of trigger button.

## **[6] Trigger/Shortcuts**

As a customize shortcut button, trigger button can be defined with the functions below:

Lighting – press the button to turn on light, and press again to turn off the light.

Temperature measurement point, temperature measurement area - press once to add a temperature measurement point or area, and then press once to delete a temperature measurement point or area.

Image capture, record – press once to save the image or start recording.

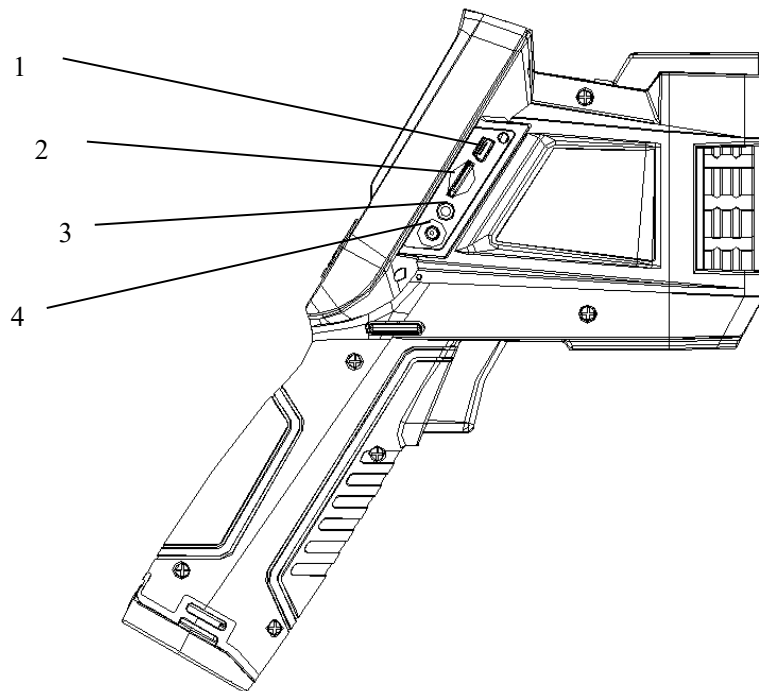
Zooming –press once to zoom in or out the infrared image.

Increase or decrease LCD brightness - press once to increase or decrease LCD brightness.

## **[7] Microphone**

For voice annotation when saving images.

## 2.2 Interface



### **[1] USB Interface**

The interface is for internal debugging.

### **[2] TF Card Slot**


Adopt standard TF card, e.g. 8G TF card configured at random, for device upgrading and image saving.

### **[3] Video Output**

For video and audio output.

### **[4] Power Interface**

External power input interface. DC12V power requirement. Positive central plug.

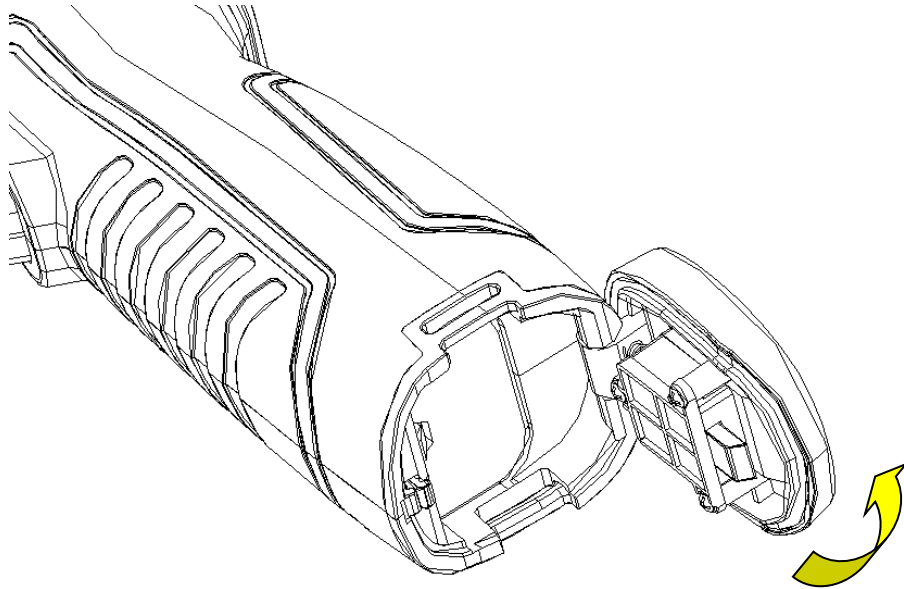
 **Attention: Do not plug the audio cable into the power interface, this will cause damage to the metal pin of the power supply, the external power can't be used.**

## **3 Basic Operation**

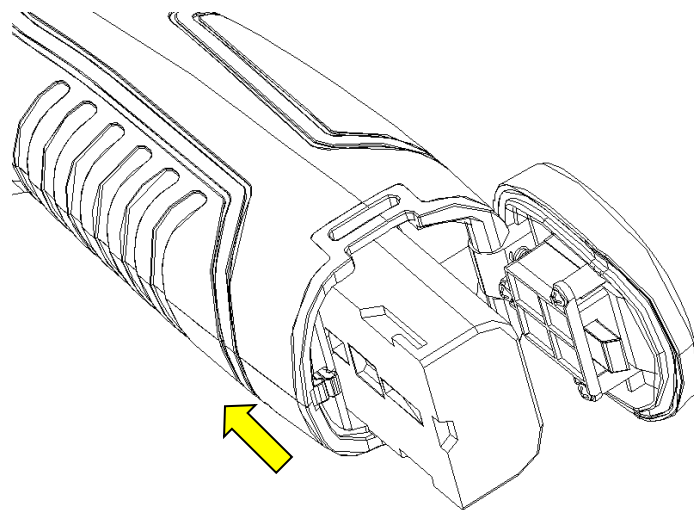
### **3.1 Battery Installation and Replacement**

#### **3.1.1 Battery Loading/Unloading**

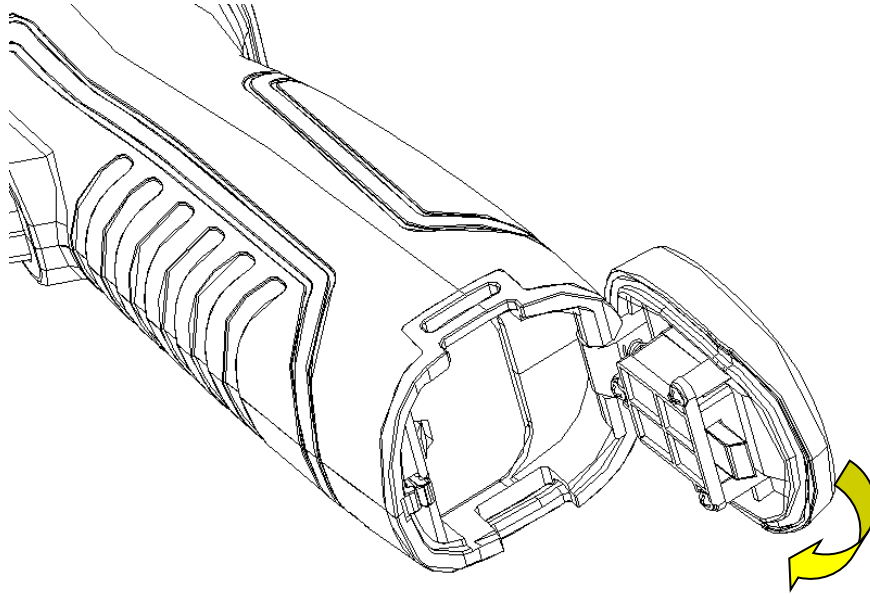
Battery cartridge is in the handle of the device. Push the push button at the bottom of the battery cover, switch out the battery buckle, and loaded or unloaded the battery.



When inserting the battery, please note that the end with contact spot should be inserted into the battery compartment first.



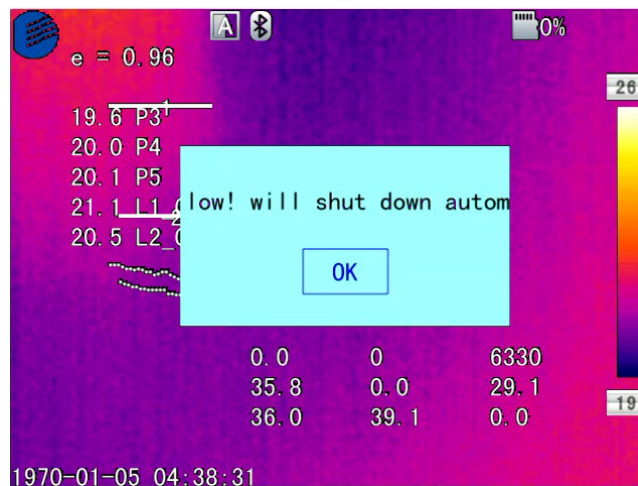
Close the battery cover. and use the device after hearing a "snap".



**! Note:** The device should adopt standard batteries, otherwise the mechanical or electrical performance of the device may be damaged due to incorrect battery size or voltage.

### 3.1.2 Battery Replacement

When showing empty battery and blinking for about 1 minute and 50 seconds, the device displays battery low prompt message, and will automatically shut down after about 10 seconds.



Shutdown Prompt

Replace or recharge the battery now.

## 3.2 General Instructions on Safe Battery Use

- The battery should be stored in the environment at a temperature between -20°C and 20°C, due to slight self discharge phenomenon during storage of battery, to avoid over discharge that may occur during storage and affect the battery capacity, the battery should be fully charged for storage and charged regularly. The following intervals should be adopted:

- Ambient temperature is -20°C-20°C. Once every 6 months;
- Ambient temperature is 20°C-45°C. Once every 3 months;
- Ambient temperature is 45°C-60°C. Once every 1 month.

The amount charged each time must exceed 50% of the battery capacity.

- Battery should be charged at the environment temperature between 0°C-40°C; charging at the ambient temperature of 0°C will decrease the battery capacity; charging at ambient temperature of over 40°C may cause over temperature and damage.

### **! Warning:**

! Do not disassemble, extrude or stab the battery;

! Do not short circuit the external contacts of the battery;

! Keep the battery dry. Do not put it in fire or water;

! Do not put it in any place easily accessible to children;

! Please dispose waste batteries in accordance with regulations of local government.

## 3.3 Quick Start Guide

### 3.3.1 Initial Battery Charging

- At the completion of battery installation into the camera handle, attach the short barrel plug adapter cable to the AC adapter. Plug the AC adapter into the wall.



- Plug the AC adapter into the camera under the plastic dust flap and you will see a faint red LED light to indicate charging.
- Charge the battery for 4 hours to ensure an adequate initial charge before using.

### 3.3.2 Acquiring Thermal Image

- At the completion of battery charging, press the power switch of the thermal imager (for over 3 seconds) until the display of power-on screen. After about 50 seconds, the device is initialized and enters the working status.
- Open the lens cap, aim at the black body from 2 meters away, and adjust the focal length of the lens of the thermal imager, to make the target image clear.
- Press "A" button for automatic calibration, to obtain favorable thermal image.

**! Note:** Unsharp focusing will lead to wrong measurement.

### 3.3.3 Monitoring Point Setting

- Press Up button among the direction buttons, to pop out the monitoring point setting box. The options below are available: black body area setting, shielding area setting, reset, amplitude-comparison factor and black body temperature.



- Press the direction button to select the black body area setting option, press the middle OK button to set the black position, and adopt the up, down, left and right direction buttons to move the red box to the black body, with the red cursor aiming at the center of the black body target as much as possible. Press the middle OK button after selection. The box will turn blue at the completion of selection.



- Press the direction button to select the shielding body area setting option, press the middle OK button to set the shielding area, and adopt the up, down, left and right direction buttons to move the red box to the position requiring temperature shielding. Press the middle OK button after selection. The system can provide three shielding areas in total. Press A button to switch the three shielding areas for setting of position size. When the shielding area is selected, press S button to switch the position or size adjustment mode, and C button to delete the shielding area.



- After setting, press C button to quit the monitoring point setting box.

### 3.3.4 Thermal Image Saving

To save the current thermal image acquired, choose one of the four ways below:

- Press OK button to pop out the floating panel menu, select the "Take Photo" option in the menu, and the system will save the image automatically.
- Press "S" button, and press this button again to save after the image is frozen.
- Press "S" button continuously for 3 seconds to save the image automatically.

- Press the Shortcut button to save the image by setting the shortcut as the "Take Photo" option.

### 3.3.5 Thermal Image Playback

- There are two ways to open a file:
  - 1、 Press OK button to activate the main menu, and select the file in the sub-menu of the "File Management" menu (Select by up, down, left and right buttons).
  - 2、 Click the "Preview" option in the floating panel, to open the file for options (Switch options by left and right keys).
- When the image is opened, replace the current image saved by up and down buttons in the playback control panel.
- Press cancel button, to exit the playback status and return to the real-time temperature measurement status.

### 3.3.6 Export of Saved Information

Handle the contents saved in TF card with a card reader, including image export, deletion, format and other operations.

**! Note:** It is recommended to adopt the formatting function in the firmware software of the thermal imager to format the TF card.




### 3.3.7 LCD Setting

Two setting methods: 1. Set the brightness of LCD screen by "LCD Brightness Adjustment" option in the general setting menu in the main menu, to achieve the best display effect. 2. Set the shortcut button as "LCD Brightness Adjustment" option, to set the brightness of the LCD screen.

### 3.3.8 Menu Operation Instruction

- Keyboard operation: Press "OK" button to pop out the floating panel. Select the icon by left and right buttons on the floating panel, and press "OK" button to enter relevant interface.
- Main menu interface: select the menu icon by "Up, Down, Left and Right" buttons, and press OK button to enter sub-menu.
- Sub-menu interface: select by "up" and "down" buttons. If there is a ">" tag, right click to enter sub-menu.
- Parameter interface: press "up" and "down" buttons to modify, and press "left" and "right" buttons to select.
- < > refer to modify the setting in the current menu
- Press "OK" button to confirm the modification, save and return to the previous menu,

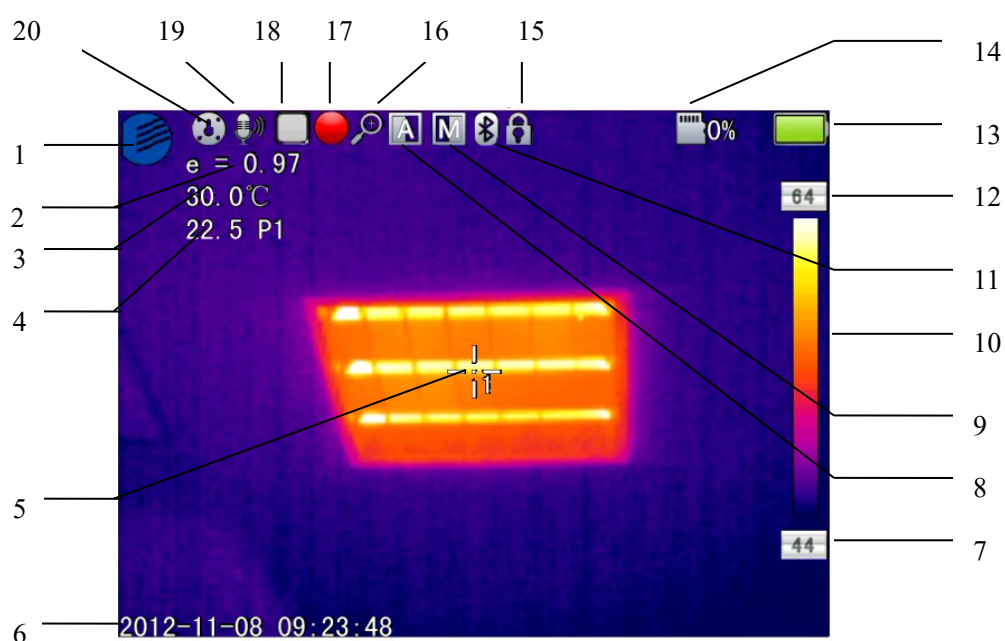
press "C" button to cancel the modification and return to previous menu.

-  button is to cancel and return to the previous menu;  button is to save and return to the previous menu. (For touch screen)
-  It is a switch button. Change the switch settings by left and right buttons.

# 4 Operation Guidance

## 4.1 Operation Interface Description

### 4.1.1 Graphic Interface of Working Status Screen of Thermal Imager



Graphic Interface of Working Status Screen of Thermal Imager

[1] Company Icon

[2] Emissivity: Default emissivity set.

[3] Reference Temperature Measurement: Fixed temperature measurement for reference.

[4] Temperature Measurement Results: Display the temperature value of the temperature measurement object (If the reference temperature measurement is set, the difference with the reference temperature measurement will be displayed).

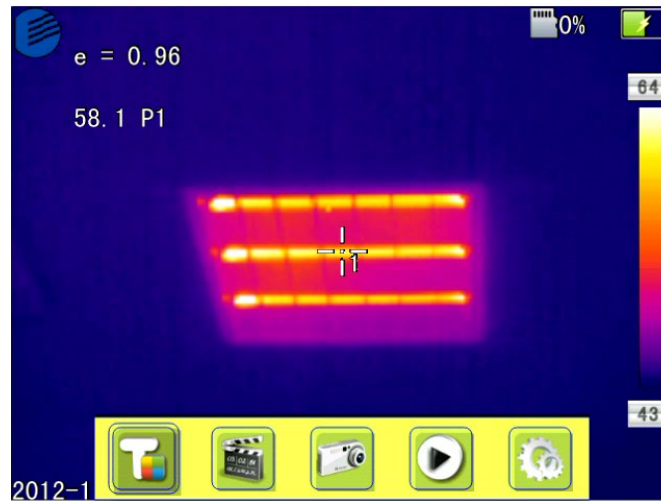
[5] Point Temperature Measurement Icon: Point temperature measurement cross cursor.

[6] System Time: The system time displayed by the current device.

- [7] **Minimum Temperature:** The minimum temperature value of the color code.
- [8] **Auto-Enhance:** Select auto enhance mode.
- [9] **Manual Enhance:** Select manual mode.
- [10] **Color Code:** Color code bar. Press up and down buttons to switch the color code bar.
- [11] **Bluetooth:** enable Bluetooth function.
- [12] **Maximum Temperature:** The maximum temperature value of the color code.
- [13] **Battery Status:** Display the current battery level. The scales of battery indicate different battery levels.
- [14] **TF Capacity:** Display the TF card capacity used.
- [15] **Frozen Icon:** indicate that the image is frozen currently.
- [16] **Zoom Out Icon:** indicate that the image is enlarged currently.
- [17] **Video Recording Icon:** indicate that the current status is video recording status.
- [18] **Continuous image capture Icon:** indicate that the current status is continuous image capture status.
- [19] **Audio Recording Icon:** indicate that the current status is audio recording status.
- [20] **Zeroing Icon:** indicate that the current device is zeroing.

**! Note:** As different models or modes have different functions, different models or modes may not display all the tags in the interface.

#### 4.1.2 Floating Bar Interface



**Floating Bar Interface**

**Floating bar interface:** add, record, take photos, preview and set the temperature measurement target from left to right.

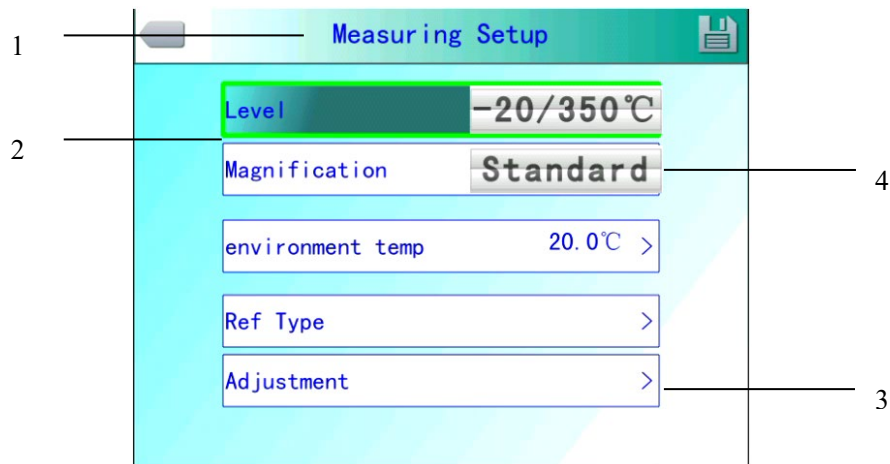
#### 4.1.3 Main Menu Interface



**Main Menu Interface**

**Main menu item:** display the main menu items, including 8 items, i.e. file management, temperature measurement setting, image setting, photo setting, general setting, network setting, TF card management and system setting.

#### 4.1.4 Sub-menu Interface



**Sub-menu Interface**

[1] **Dialog Box Name:** display the name of dialog box. The name of the dialog box as shown in the example is "Temperature Measurement Setting".

[2] **Item Title:** a dialog box may contain multiple items. As shown in the figure, "Gear", etc.

[3] **Item Content:** each item corresponds to one item content, which can be changed by left and right buttons. ">" indicates that there are sub-menus.

[4] **Parameter Options:** Press left and right buttons to select different parameters.


## 4.2 Addition of Temperature Measurement Object

This function is adopted for addition or deletion of temperature measurement objects. Press OK button to pop out the floating menu, select Add Temperature Measurement Target and press OK button to pop out the dialog box below.





**Adding Temperature Measurement Object Menu**

If "  " is selected, press OK button to delete all the temperature measurement objects.

**! Note:** For deletion of a single temperature measurement object, directly press "A" button to select the temperature measurement object, and then press "C" button to delete.

### 4.3 Video Recording

This function is adopted to save the video in MP4 format. Press OK button to pop out the floating menu, select Video Recording and press OK button, as shown in the figure below.



**Video Recording Interface**

Press stop button to end recording and return to the operation interface.

### 4.4 Photo Taking

This function is adopted to take photos, and the saving format is JPG. Press OK button to pop out the floating menu, select Take Photo and press OK button to finish taking photos. If the image annotation mode is activated, a Save prompt will be displayed when taking

photos, as shown in the figure below.

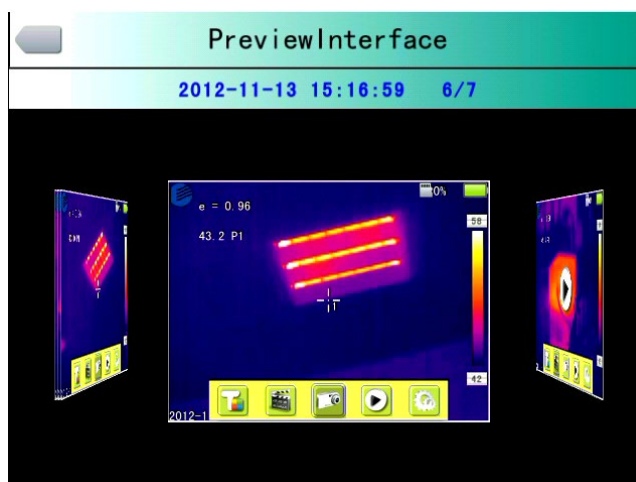


**Photo Taking Audio Recording Prompt**

If continuous shooting is set in the photographing setting, the continuous shooting icon will be displayed on the status bar when taking photos.

## 4.5 Preview

This function is adopted to preview the files saved. Press OK button to pop out the floating menu, select Preview and press OK button, as shown in the figure below.



**Preview Interface**

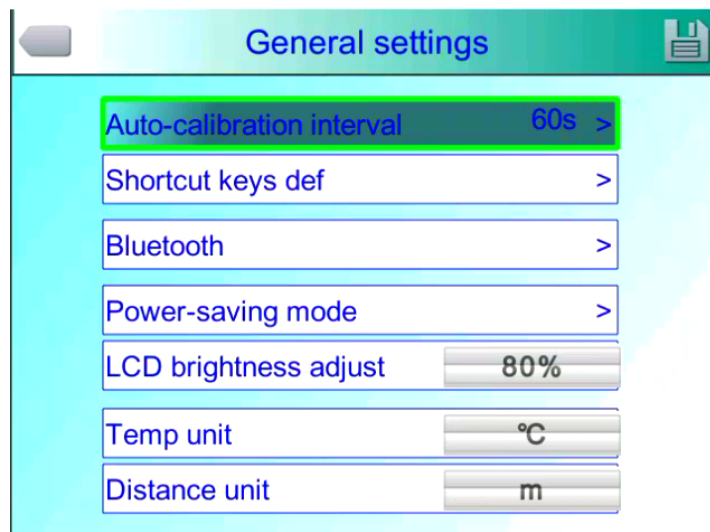
Press left and right buttons to switch files, press OK button to open the files displayed right in the center, and press C button to exit the preview mode.

## 4.6 Setting



**Main Menu Interface**

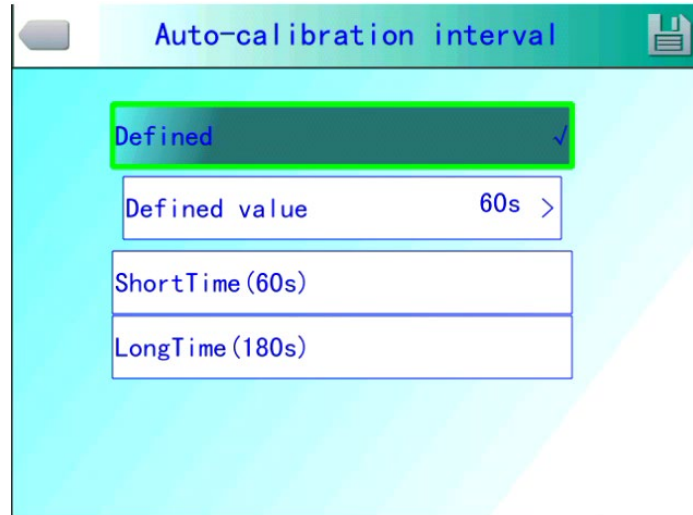
### 4.6.1 General Setting



**General Setting Dialog Box**

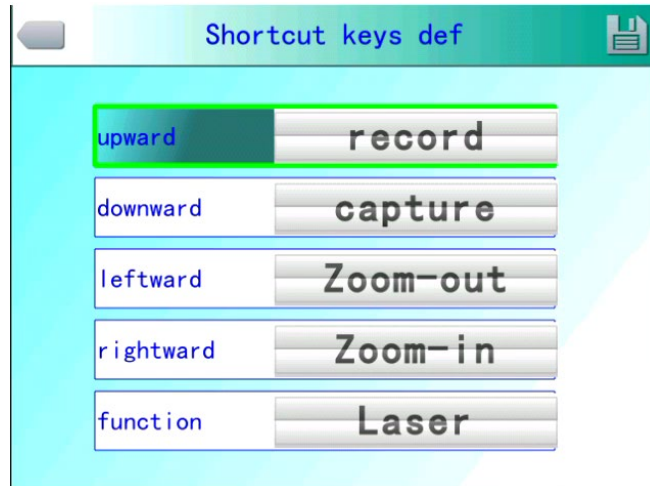
Press OK button to pop out the floating panel, select "Setting" option to activate the main menu, select "General Setting" item in the menu, and press OK button to pop out the general setting dialog box. User may set the seven items: auto zeroing interval, shortcut definition, Bluetooth, power saving mode, LCD brightness adjustment, temperature unit setting and distance unit setting. Press up and down direction buttons to switch items. Press left and right direction buttons to set the item contents. ">" indicates sub-menu. Press right button to enter.

**Automatic zeroing adjustment interval:** set the automatic correction interval, to obtain favorable thermal image and improve the temperature measurement accuracy. The time unit is second.



**Automatic Zeroing Selection Menu**

**Shortcut button definition:** user may customize the functions of setting shortcuts. The system offers options including video recording, image capture, zoom in, zoom out, LCD brightness increasing, LCD brightness decreasing, lighting, addition or deletion of temperature measurement point 1, addition or deletion of temperature measurement area 1, etc. When selecting "Laser", press shortcut button to open the laser sight, and release the shortcut button to close the laser sight; when selecting "Lighting", press the shortcut button to open or close the illuminator; when selecting "Edit Temperature Measurement Point 1", press the shortcut button to add or delete the temperature measurement point 1; when selecting "Edit Temperature Measurement Area 1", press the shortcut button to add or delete the temperature measurement area 1; when selecting "Edit Temperature Measurement Area 1", press the shortcut button to add or delete the temperature measurement area 1; when selecting "Video Recording", press the shortcut button to start recording; when selecting "Take Photo", press shortcut button to save the current image.



**Shortcut Button Customize Menu**

**Bluetooth:** when Bluetooth is "ON", the scanning and searching device below is in scannable status; when it is "OFF", it is in gray and unselectable status. Select "Scan and Search Device" button to start scanning the Bluetooth device, and display the type and name of the scanned Bluetooth device in the display box. It takes effect immediately after activated, and carry out scanning once automatically.



**Bluetooth Menu**

**Power saving mode:** power saving mode includes screen off and power off.

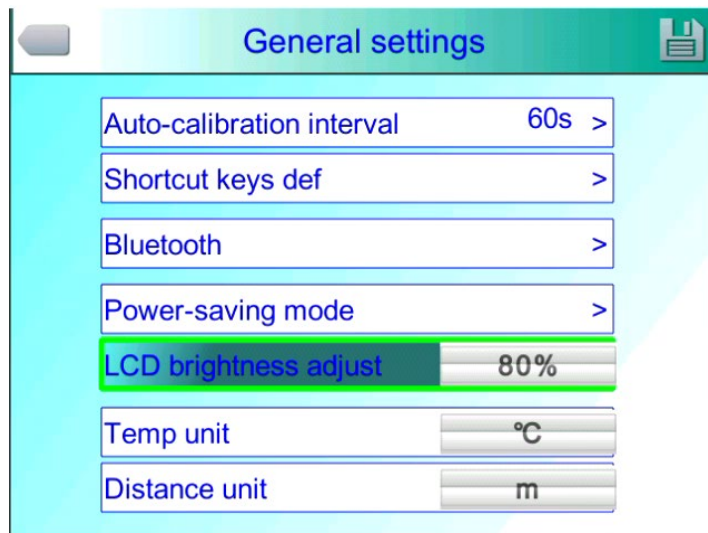
**Screen OFF duration:** when there is no operation within defined duration, the thermal imager will automatically shut down the display, to save battery power. Press any button except the power switch, to turn on the display again. The option set as "00 minute" indicates that this function is not enabled.

**Power off duration:** when there is no operation within the set time, the thermal imager will automatically turn off the main power to save battery power. The option set as "00 minute" indicates that this function is not enabled.



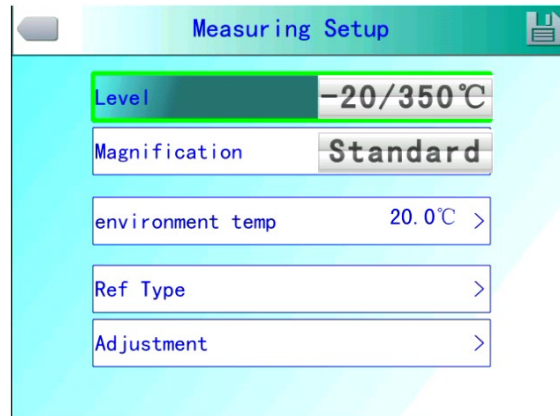
**Dialog Box of Power Saving Mode**

**LCD brightness adjustment:** adjust the current LCD brightness, and is effective all the time.



**LCD Brightness Adjustment Interface**

## 4.6.2 Temperature Measuring Setting



### Temperature Measuring Setting

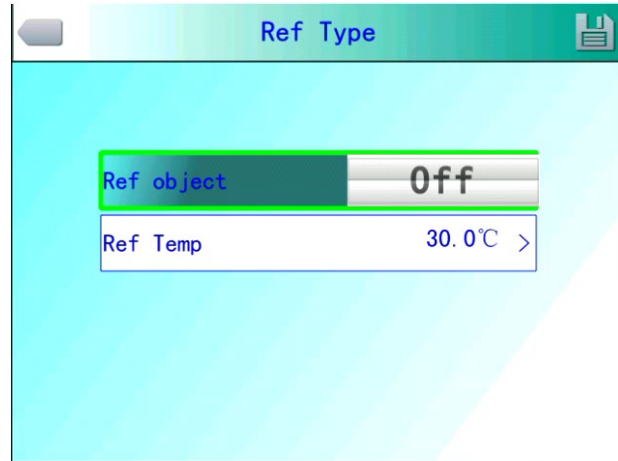
Press OK button to pop out the floating panel, select "Setting" option to activate the main menu, select "Temperature Measurement Setting" item in the menu, and press OK button to pop out the temperature measurement setting dialog box. User may set gear, Balow lens, ambient temperature, reference temperature measurement and temperature measurement correction items. Press up and down direction buttons to switch items. Press left and right direction buttons to set the item contents. ">" indicates sub-menu. Press right button to enter.

**Gear:** Set the temperature measurement gear of the thermal imager.

**Balow lens:** Set different Balow lens and corresponding temperature measurement ranges.

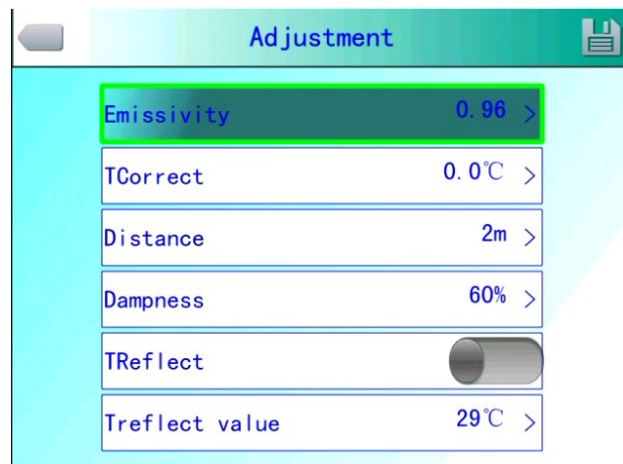
**Ambient temperature:** Once turned on, the thermal imager will automatically detect the ambient temperature.

**Reference temperature measurement :** When the reference temperature measurement is set as "On", the value displayed on the screen is the difference between the temperature of each temperature measurement object and the reference temperature.



**Reference Temperature Measurement Menu**

#### 4.6.3 Temperature Measurement Correction



**Temperature Measurement Correction Menu**

For Temperature Measurement Correction item in Temperature Measurement Setting menu, press OK button to pop out temperature measurement correction dialog box. User may set emissivity factor, corrected temperature, distance, humidity and other items. Press up and down direction buttons to switch items. Press left and right direction buttons to set the item contents. ">" indicates sub-menu. Press right button to enter.

**Emissivity factor:** As different objects have different emissivities, different emissivities can be set for different temperature measurement points. When it is not set, apply the system default specific emissivity factor. For the emissivities of common materials, refer to the attachment for reference.



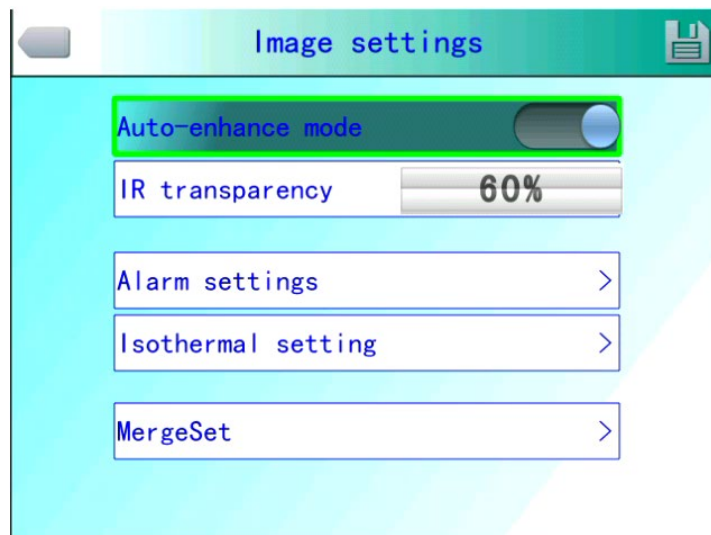
**Corrected temperature:** it is adopted to modify the temperature measurement value of the temperature measurement object.

**Distance:** set the distance between the thermal imager and the temperature measurement target, to facilitate the accuracy of the temperature measurement. When the distance is less than 10m, adopt the actual distance (to the accuracy of 0.5m) as much as possible.

**Humidity:** set the relative humidity of the utilization environment of the thermal imager.

**Background temperature:** This item is valid when it is set to "On". A fixed temperature can be adopted as reference temperature.

#### 4.6.4 Image Setting



**Image Setting Menu**

Press OK button to pop out the floating panel, press OK button to pop out the floating panel, select "Setting" option to activate the main menu, select "Image Setting" item in the setting menu, and press OK button to pop out the image setting menu. Users can set Auto Enhance mode, infrared transparency, alarm setting, isothermal setting, fusion of High and Low Temperatures. Press up and down direction buttons to switch items. Press left and right direction buttons to set the item contents. ">" indicates sub-menu. Press right button to enter.

**Auto / manual / AutoEnhance:** meet the user's demand on richer color and more

favorable image of treatment effect by adjusting the corresponding relationship between temperature and color, to achieve the goal of convenient searching and analysis of thermal failure.

When the Auto Enhance mode is activated, you can switch between the AutoEnhance mode and the manual mode. Switch to the maximum and minimum limit of the color bar by pressing "A" button and then one button among up, down, left and right buttons. Now, you can enter manual mode, and return to AutoEnhance mode by pressing "C" button.

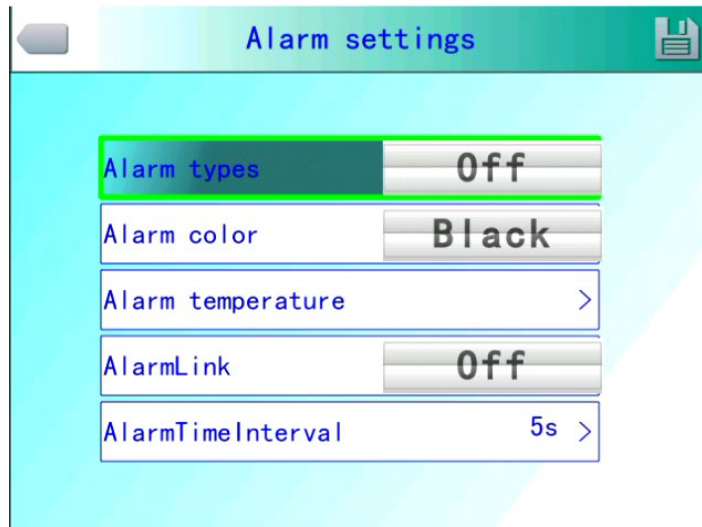
When the AutoEnhance mode is off, you can switch between the auto mode and the manual mode. Switch to the maximum and minimum limit of the color bar by pressing "A" button and then one button among up, down, left and right buttons. Now, you can enter manual mode, and return to auto mode by pressing "C" button.

Auto mode and AutoEnhance mode can be switched by the AutoEnhance mode switch.

When selecting "Auto", the thermal imager will adjust the image hierarchy automatically.

When selecting "AutoEnhance adjustment", the high and low temperatures can be viewed in the temperature measurement screen of the thermal imager at the same time.

When selecting "Manual", user can adjust the image hierarchy by changing the maximum and minimum limit values of the color icons. When pressing up button, the maximum and minimum limit range of the color bar will be increased; when pressing down button, the maximum and minimum limit range of the color bar will be decreased; when pressing left button, the maximum limit value of the color bar will be decreased and the minimum limit value of the color bar will be increased; when pressing right button, the maximum limit value of the color bar will be increased and the minimum limit value of the color bar will be decreased.



**Alarm Setting Menu**

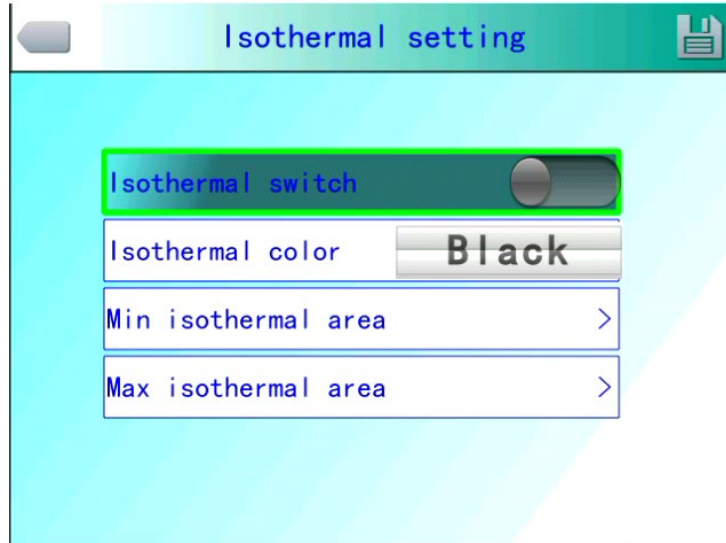
**Alarm type:** This setting is only valid for temperature measurement. It is divided into OFF, high temperature alarm and low temperature alarm. When the corresponding option is set, the device will give alarm when the temperature of the temperature measurement object is higher or lower than the alarm temperature set. Set the alarm color in "Alarm color" column.

**Alarm color:** when the target temperature exceeds the alarm temperature set, the color of the area exceeding the alarm temperature will be shown in the alarm color set. The system provides 9 optional colors. When the alarm color is set as "Colorless", it indicates that the original color of the screen will not be changed.

**Alarm temperature:** set the alarm temperature. It is valid only when the alarm type is set as "On".

**Alarm linkage:** include image capture and video recording. When the alarm linkage is activated, the alarm will be automatically recorded according to the selected type.

**Time interval:** set the time interval between actions of alarm.



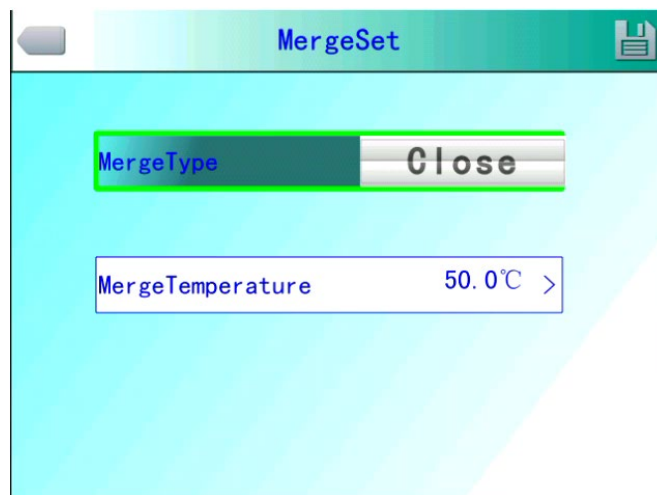
### Isothermal Setting Menu

**Isothermal color:** display the image display colors within a certain temperature range by the isothermal colors set.

**Isothermal color:** The system provides 9 optional colors. When the isothermal color is set as "Colorless", it indicates that the original color of the screen will not be changed.

**Upper limit of Isothermal zone:** set lower limit of isotherm.

**Lower limit of isothermal zone:** set the lower limit of equal temperature.

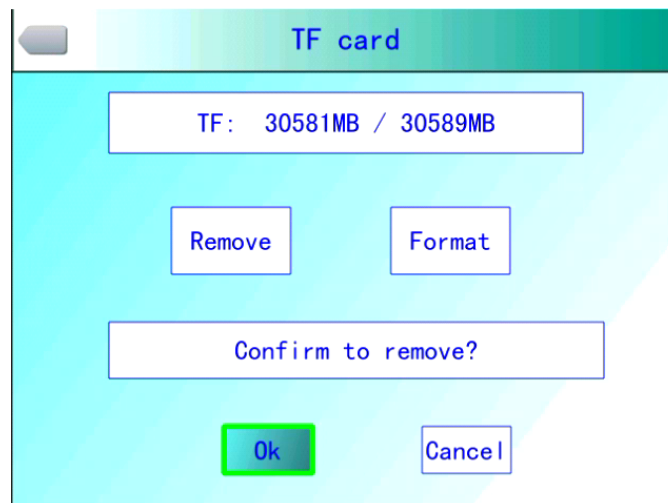


### Menu of Fusion for High and Low Temperatures

**Fusion for high and low temperatures:** three fusion types include OFF, fusion for high temperature and fusion for low temperature. When selecting fusion for high temperature, and the actual temperature exceeds the fusion

temperature set, the infrared part of the fusion will be displayed as visible light; When selecting fusion for low temperature, and the actual temperature is lower than the fusion temperature set, the infrared part of the fusion will be displayed as visible light.

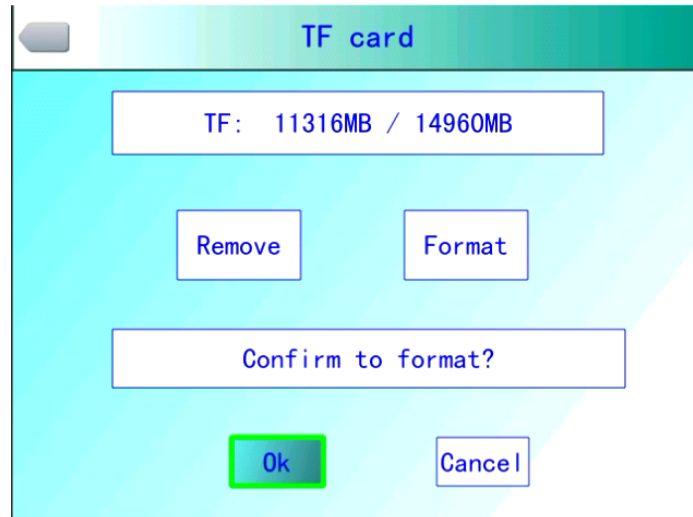
#### 4.6.5 TF Card Management



TF card uninstall dialog box



TF card uninstalled successfully



**TF card formatting dialog box**



**TF card formatted successfully**

Press OK button to pop out the floating panel, select "Setting" option to activate the main menu, select "TF card management" item in Setting menu.

**Uninstall:** Uninstall the TF card in the device.

**Formatting:** this function is for TF card formatting. Select the formatting option and press OK button to pop out the formatting prompt box. Press OK to format immediately. Press cancel or "**C**" button to cancel formatting.

**! Caution:** Please use this function with caution!! Before formatting, please confirm that the file is no longer needed or has been backed up. After formatting, all the thermal images saved in the thermal imager will be lost and cannot be restored. If formatting the memory by PC, please apply FAT16 format to format.

#### 4.6.6 Photo Setting



##### Photo Setting Menu

Press OK button to pop out the floating panel, select the "Setting" option to activate the main menu, and select the "Photo Setting" option in the setting menu.

**Correlated image capture:** this function is to save along with the CMOS visible image corresponding to the current infrared.

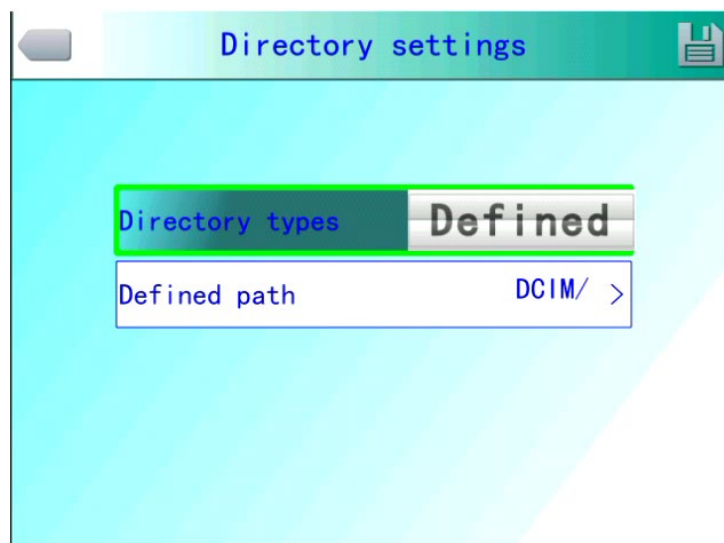
**Image annotation mode:** this option includes audio annotation and text annotation. Audio annotation is to add voice records when saving images; text annotation is to add text information records when saving images. The text information added must be imported into the device in a fixed format first.

**Number of MultiShot:** set the number of continuous captures, which can be set as 1, 3, 5 or 10 continuous shots.

**MultiShot interval:** the time interval during continuous capture can be set as 0.5s or 1s.

**Recording duration:** set the records saving duration. The close duration can be set as 1, 3, 5, 10 or 15 minutes.

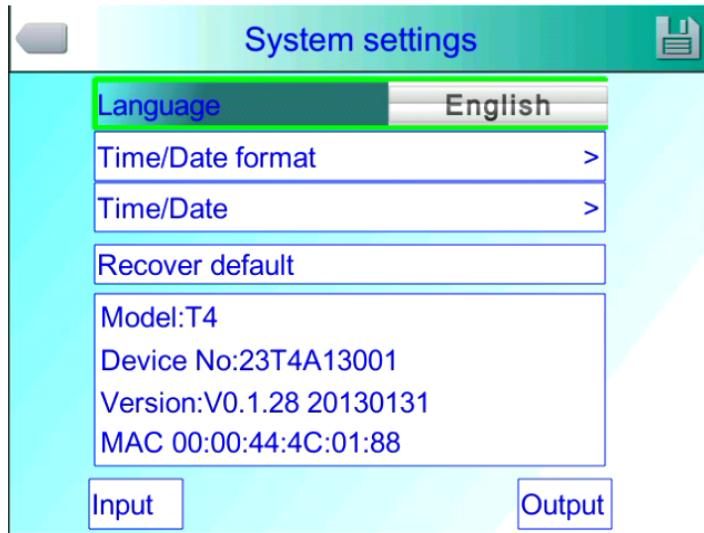
**Directory Setting:**



### Directory Settings Menu

Set the save path for files. Set customize, by month or by date in the directory type column. In preview mode, set the path for file playback according to the directory type here.

#### 4.6.7 System Setting



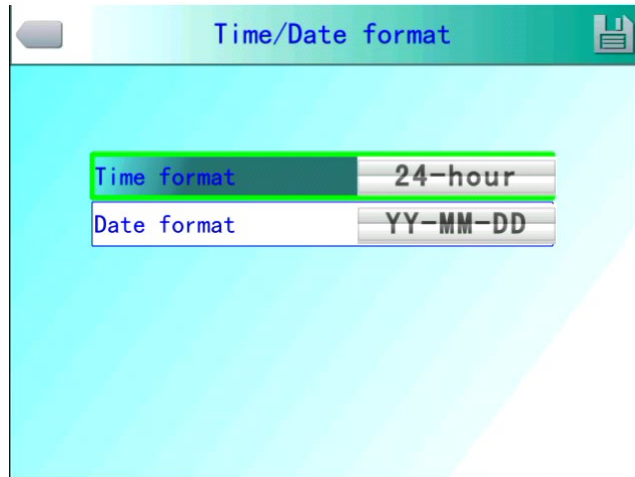
### System Setting Menu

Press OK button to pop out the floating panel, select the "Setting" option to activate the main menu, and select the "System Setting" option in the setting menu. You can customize the system language, time / date format, time / date, and factory reset items. Press the up and down direction keys to switch between items. Press the left and right direction keys to set the item content. ">" indicates that there is a lower menu. Press the right key to enter.

**Language:** set the language of the thermal imager.

**Time / Date Format:**

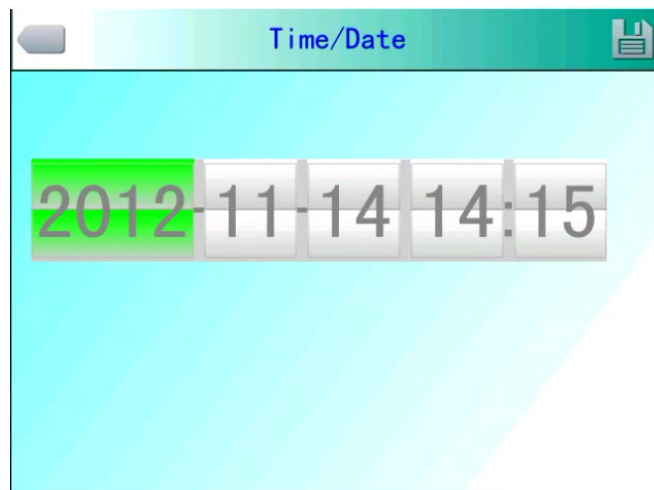




**Time / Date Format Menu**

Change the display formats of time and date.

**Time Setting:**



**Time Setting Menu**

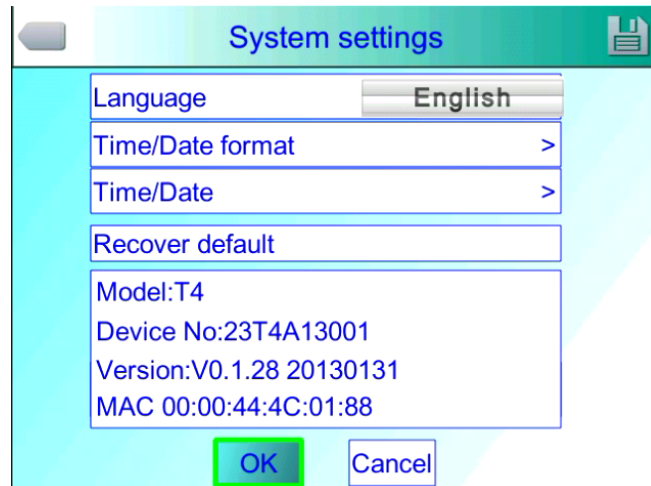
User can set the system date and time of the thermal imager in the time setting menu. After completing the date and time settings, the thermal imager will save the current settings.

User can customize year、month、date、hour、minute items. Press left and right direction buttons to switch items. Press up and down direction buttons to set the item contents.

**! Note:** When the thermal imager lies idle for a long term, as the internal battery level is limited, it is necessary to readjust the system time after starting up.

**Factory reset:** this function is adopted to restore factory settings. Press OK button to pop out a prompt message dialog box. Continue to press OK button and the system will restore the factory settings. When pressing **cancel** button, the system will quit Factory

Reset without restoring any data. For detailed factory parameters of the thermal imager, please refer to the factory settings parameter list attached.



### Factory Reset Prompt

**! Note:** Factory Settings function will cancel all the user-defined parameters.

Display the device model, device number, software version number and MAC address of the thermal imager.

**Import:** create a new DCIM / Import directory on the TF card, and set the import file name as PicNote.cfg

File content format:

[Note]

Note1 =

Note2 =

Note3 =

Not over 20 characters per line. At the completion of import, restart the device to take effect.

**Export:** first confirm that TF card is in the device , and click the export button in the menu. The exported content is saved in the DCIM / Export directory of the TF card.

## 4.7 File Management

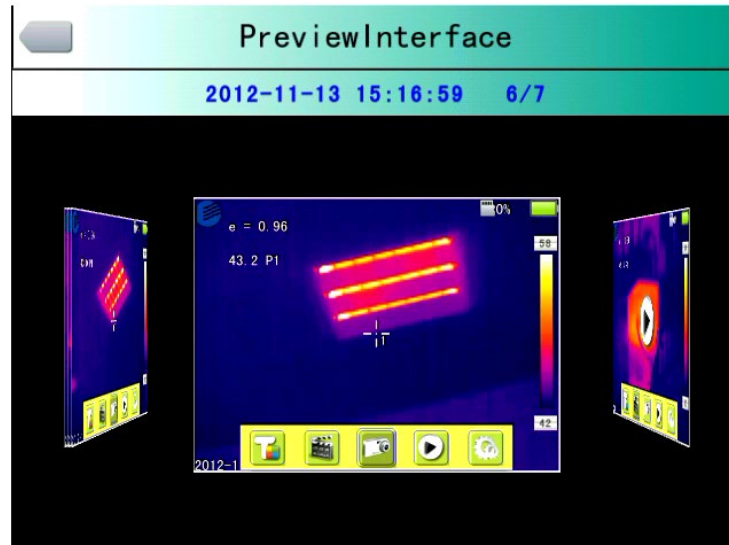
### 4.7.1 Playback

There are two playback modes:



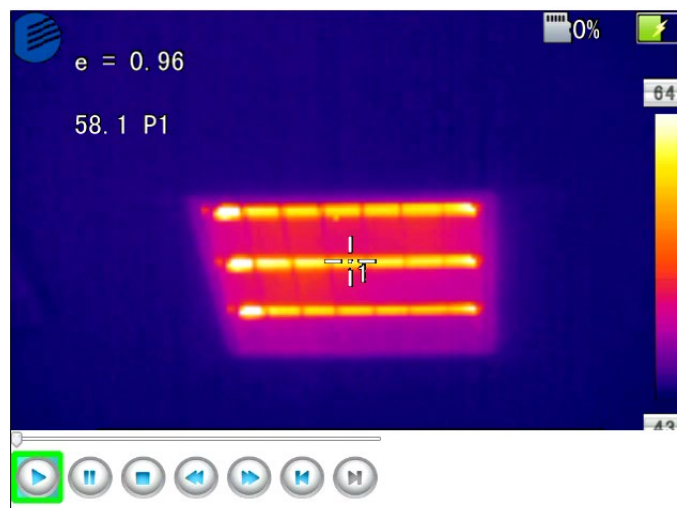
**File Management Interface**

- 1、 File management mode: Press OK button to pop out the floating panel, select "Setting" option to activate the main menu, select File Management menu in Setting menu., and press the OK button to open the image saved in the thermal imager. The image arrangement format is displayed a nine-screen mode. Press up, down, left and right direction buttons to switch the saved image. Press "**C**" button to quit the image opened and return to the temperature measurement status.



**Preview Mode Interface**

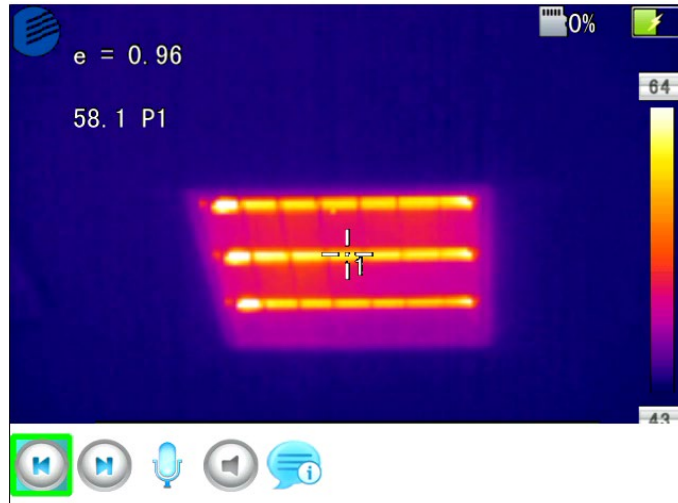
- 2、 Preview mode: press OK button to pop out the floating panel and select "preview" option to enter the preview mode. Through left and right buttons to switch options, select and press the OK button to enter playback. Press "C" button to quit the image opened and return to the temperature measurement status.



**Video File Playback Interface**

In the video playback interface, select the button on the play status bar by left and right buttons, press "OK" button to take effect, and press up and down buttons to display and hide the play status bar (press "up" button to display and "down" button to hide)

The icon buttons from left to right are: play / pause, stop, rewind, fast forward, previous (section), next (section).

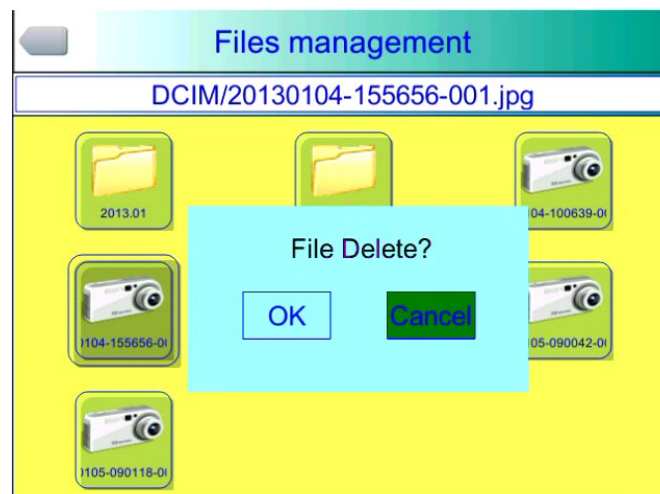


### Image Playback Interface

In the image playback interface, select the button on the play status bar by left and right buttons, press "OK" button to take effect, and press up and down buttons to display and hide the play status bar (press "up" button to display and "down" button to hide) Icon buttons from left to right are: previous (section), next (section), audio recording, audio playback, text playback.

#### 4.7.2 Deletion

This function is adopted to delete files saved in TF card. After opening the file management, select the file to be deleted by pressing up, down, left and right buttons, and press "S" button to pop out the file deletion prompt box. When pressing OK button, delete the image file selected currently. If the image has audio or text annotation, the annotation will also be deleted. Press "C" button to cancel the deletion.



## File Deletion Dialog Box

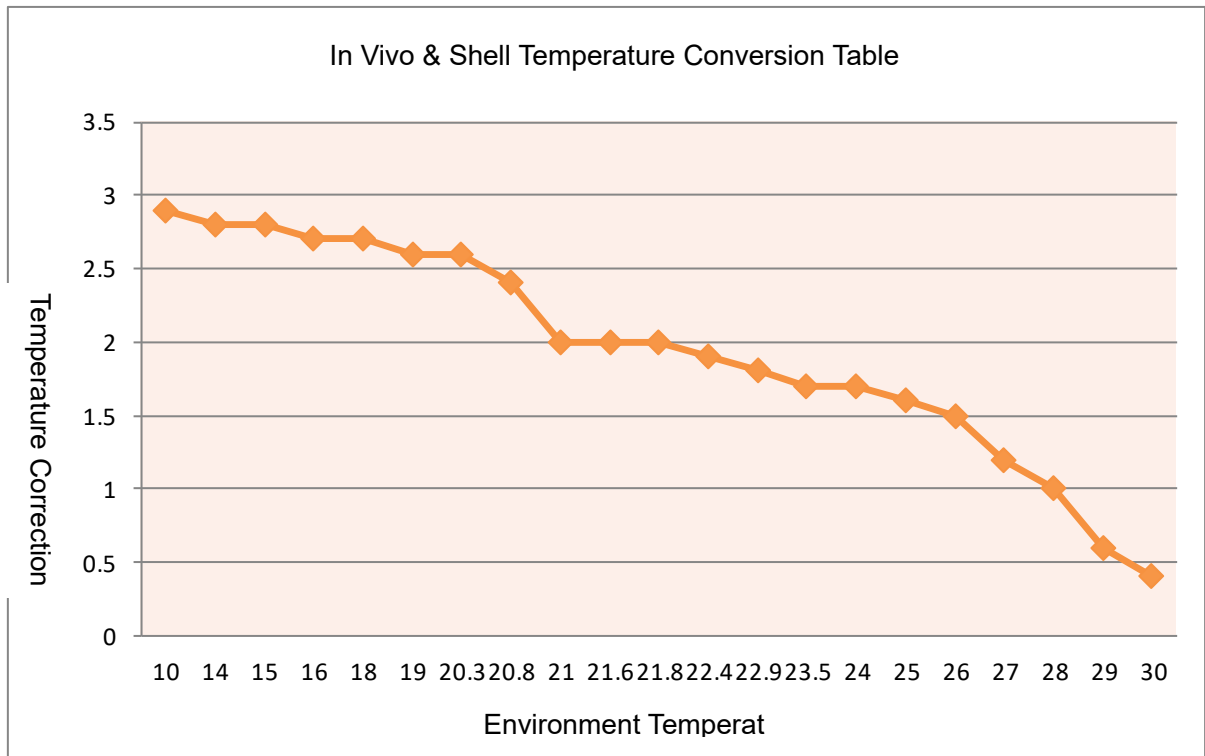
**! Caution:** before deleting, make sure the file is no longer needed or has been backed up, and the deleted image will not be restored.

# 5 Technical Specifications

Item		Technical Parameters	
		TE-W300H	TE-W400H
Detect or	Type	Uncooled focal plane micro-heat type	
	Pixel	160×120	384×288
	Pixel interval	25μm	
	Wavelength coverage	8-14μm	
	Sampling frequency	50Hz	
	Thermal sensitivity	0.06°C@30°C	0.04°C@30°C
Lens	Angle of View Field	25°×19°	
	Min. object dimension	10cm	
	Focusing mode	Manual focusing	
	Interface mode	Bayonet connection	
Figure Performance	Spatial Resolution	2.72mrad	1.36mrad
	Visible light camera	1.3 megapixel CMOS module set with two built-in LED fill lights	3.2 megapixel CMOS module set with two built-in LED fill lights
	Frame frequency	50HZ/60HZ, optional	
	Video Output	PAL / NTSC, optional	
Figure Display	LCD	3.5" TFT LCD, 640×480, color, with touch screen	
	Pallet	11 optional pallets	
	Figure display	Infrared image and visible image can be switched quickly, and fusion of infrared image and visible image is available	
	Image Adjustment	Auto / manual adjustment of contrast, brightness, Auto Enhance mode	
Measurement	Temperature Measurement Range	+20°C~+50°C	
	Temperature Measurement Accuracy	0.3°C standard external black body	
	Temperature Measurement Correction	Automatic (short duration, long duration, customize duration) / manual	
	Measurement mode	Full screen maximum temperature tracking, temperature alarm (sound, color)	
	Radiance correction	0.01 to 1.0 adjustable (0.01 increments), or select from a predefined material list	

	Background temperature correction	Automatic
	Atmospheric transmittance correction	Automatic, subject to the input distance, ambient humidity and ambient temperature
	Setup function	Date / time, temperature in °C / °F/ K, language, contrast / brightness, LCD backlight, IP address
Figure Saving	Memory Card	8GB Micro TF card, max. supportability 32GB
	Saving Mode	Manual / automatic saving; single frame infrared image, infrared and visible light correlated image, infrared and visible light fusion image; infrared video, infrared and visible light fusion video.
	Thermal Image Format	JPEG format, with original infrared measurement data H.264 Format
	Visible light image format	JPEG format, H.264 format, including fusion
	Audio annotation	60 seconds (saved along with image)
	Text annotation	Optional at local machine; can be uploaded
	File Directory	Optional at local machine; can be uploaded
Power System	Battery	Rechargeable, replaceable lithium batteries
	Working Time of Battery	Continuous operation for over 4 hours (50% LCD brightness, LED light is off)
	Charging Mode	Charging or random charging by smart charger (AC power adapter or 12V on-board power supply)
	Charging Time	Random charging for 1.5 hours to reach 50% capacity
	Power saving mode	Auto sleep, auto power-off
Interface	Memory card slot	Micro SD (TF) card mount
	Power Port	With (DC12V)
	Video Output	Yes
Other	Microphone	Built-in
	Buzzer	Built-in
	Tripod connections	1/4"-20-UNC
	Hand strap	Can be installed on both sides
	Lens cap	Yes
	Sun shade	Available, optional
Environment Parameter	Work Temperature	0°C- +40°C
	Saving Temperature	-40°C- +70°C
	Humidity	≤95% Non-Condensing
	Level of Protection	IP54
	Shock resistance	25G, IEC68-2-29
	Vibration resistance	2G, IEC68-2-6
	Falling	2 meters
Physical Features	Outline Dimension	105x230x245mm
	Weight	980g

## 6 In Vivo & Shell Temperature Conversion Table



## 7 Common Failure Countermeasures

In case of any problem during utilization of the thermal imager, please adopt the table below for maintenance. If the problem cannot be resolved, please disconnect the power supply and contact our maintenance department.

Symptoms	Causes & Solutions
Failure to startup the Thermal Imager	<ul style="list-style-type: none"> <li>● The battery isn't installed or incorrectly installed. → Install or reinstall the battery.</li> <li>● The battery power is exhausted. → Replace the battery.</li> <li>● Thermal imager power-off protection → Wait 5 seconds and restart the device.</li> </ul>



Auto power-off of thermal imager	<ul style="list-style-type: none"> <li>● The battery power is exhausted. → Replace the battery.</li> <li>● The power-off duration is set in the display setting. → Select "None" option here.</li> </ul>
Battery power drains too fast	<ul style="list-style-type: none"> <li>● The ambient temperature is too low.</li> <li>● The rechargeable battery isn't fully charged. → Recharge the rechargeable battery.</li> <li>● The rechargeable battery power is exhausted and the battery can no longer be charged. → Replace it with a new rechargeable battery.</li> </ul>
No thermal image	<ul style="list-style-type: none"> <li>● The lens cap is not removed. → Remove the lens cap.</li> <li>● In frozen image status → Press quit button to return to the real-time temperature measurement status.</li> </ul>
The thermal image is turned into black and white status	<ul style="list-style-type: none"> <li>● Black and white color code is selected. → Select the normal color code.</li> </ul>