H1FB/H2FB User Manual of Phone Thermal Camera V1.0

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H1FB/H2FB User Manual of Phone Therma Camera

Version number	Modified date	Author	Business reviewer	Remark
V1.0	20250213			New

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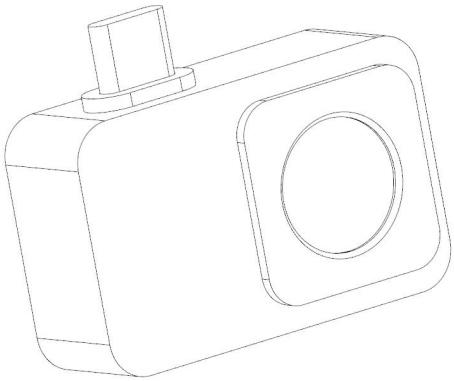
1 Overview

The phone thermal camera uses an industrial-grade thermal detector with small pixel spacing and high resolution, and is equipped with a 3.2 mm lens. It is a high-precision and fast-response portable thermal imaging analyzer.

The product is lightweight, portable, plug-and-play, and with a customized professional-grade thermal imaging analysis APP, it can be connected to an Android phone to conduct infrared observation and temperature measurement of target objects.



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2 Features

- High-quality optical lenses are paired with high-resolution infrared thermal imaging to achieve excellent imaging effects;
- Wide temperature measurement range: -15℃~600℃ (5°F ~ 1112°F);
- Support high temperature alarm and customize alarm threshold;
- Supports the display of customized temperature range screens, and there are many usage scenarios for displaying high-temperature areas;
- Support high and low temperature tracking;
- Supports adding points, lines, and rectangular frames for regional temperature measurement. Lines and rectangular frames support high and low temperature tracking and high temperature alarms;
- Supports offline analysis of points, lines and rectangular frames after taking pictures;
- Supports temperature-locked observation, focusing only on images in a fixed temperature range;

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3 Specifications

Thermal imaging		
Resolution	160x120	256x192
Working wavelength	8 ~ 14 μm	
Frame rate	25Hz	
NETD	＜50mK @25 ℃	
Lens	3.2mm	
Field of view	35° x 27°	56° x 42°
Temperature measurement range	-15 ℃ ~ 600 ℃	
Temperature measurement accuracy	±2 ℃ or ±2% of reading, whichever is greater	
Software function (APP)		
Temperature measurement	Supports automatic tracking of high and low temperatures, center point temperature measurement, point temperature measurement, regional temperature measurement, line temperature measurement, and temperature range viewing	
Offline analysis	Supports image offline analysis, can analyze the photos taken in the gallery, and supports point, line and rectangular frame analysis.	
High temperature quick check	Supports one-click quick search of high-temperature areas.	
Interval display temperature	support	
Live image flipping	support	
Color palette	Iron, white hot, black hot, rainbow, red hot, cool blue	
Photograph	Support taking pictures	
Video	Support video	
Image editing	Supports picture graffiti and text notes	
Set up	Thermal imaging professional parameter configuration, temperature unit, language, high temperature alarm settings.	
Language	Supports English, French, German, Spanish, Portuguese, Italian, Russian, Japanese, Korean and Chinese.	
General		
Operating temperature	-10°C ~ 75°C	
Storage temperature	-45°C ~ 85°C	
Waterproof and dustproof	IP54	

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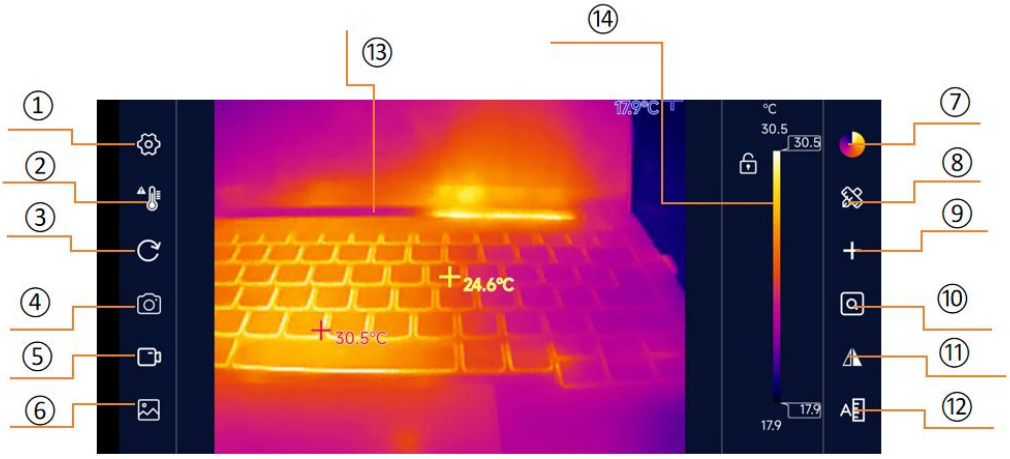
4 APP Overview

4.1 Main Interface

Connect the thermal imager to your Android phone and run the App, you can see the interface as shown below:



Interface description

①	Set up	Provide the interface of the App and the parameter settings of the infrared thermal camera
②	Over-temperature alarm	You can set the high temperature alarm threshold, and if the temperature exceeds the threshold in the video, an audible and visual alarm will be issued
③	The screen resets	Reset the information on the screen and restore it to the state it was in when it was started
④	Photograph	Take a photo and store it in an album
⑤	Video	The video is recorded and stored in an album
⑥	Album	Save photos and videos of the app
⑦	Toggle the color swatches	You can switch different color palettes to change the color scheme of your video

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⑧	Regional temperature measurement	Points, lines, and boxes can be added to measure the temperature in different areas
⑨	Temperature tracking	You can track the current highest, lowest, and center point temperature in the screen
⑩	Check in the box	You can highlight the temperature in all current rectangular boxes, and if there are no rectangles in the current screen, a will be automatically added
⑪	Screen lock flip	When the phone or camera is flipped, this function allows you to lock or flip the image
⑫	Quick check on high temperatures	The area with the highest temperature in the screen is displayed
⑬	Infrared thermal imaging image area	Displays footage from an infrared thermal imaging camera
⑭	Temperature color bar area	Use different color bars to display the highest and lowest temperatures in the current screen

4.2 Features

4.2.1 Settings

General	
Language	Support English, French, Spanish, Portugal, Italian, German, Russian, Japanese, Korean and Chinese.
TisoView	Support image enhancement algorithm such as super resolution
High temperature tracking	Track the highest temperature point in the screen or turn it off
Center point temperature	Display the temperature at the center point of the screen or turn it off

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Low temperature tracking	Track the lowest temperature point in the screen or turn it off
Temperature unit	Set temperature units to support Celsius (°C), Fahrenheit (°F), and Kelvin (K)
Record sound	You can choose whether to record sound or not when recording video.
High and low temperature switching	Supports automatic and manual switching of high and low temperature range. The default is to automatically switch between high and low temperature range. The applicable range for low temperature: -15℃ (5°F)-160℃ (320°F), and the applicable range for high temperature: 160℃ (320°F)-600℃ (1112°F). When there is a target object in the screen with a temperature exceeding 160℃ (320°F), it will automatically switch to the high temperature range. If the temperature of all targets on the screen is lower than 160℃ (320°F), it will automatically switch to low temperature mode. During the switching process of range, the screen will freeze for a few seconds, which is normal. When switching to manual switching of high and low temperature range, when the temperature of the measured object is higher than160℃ (320°F), you need to manually select the high range. When the temperatures on the screen are all lower than 160℃ (320°F), it is recommended to switch to the low temperature range.
Parameter	
Emissivity	Fill in the emissivity parameter value according to the measured target
Calibration (°C)	According to the temperature measurement deviation, fill in the correction parameters
Reflection Temperature (°C)	Fill in the parameter value based on the reflection temperature of the test environment
Ambient temperature (°C)	Enter the parameter value based on the test environment temperature

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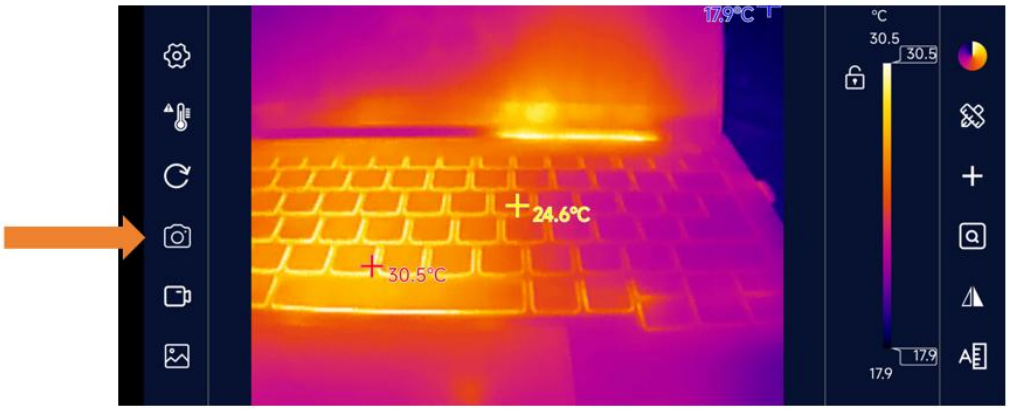
4.2.2 Threshold Alarm

Click the [Threshold Alarm] switch icon, and the interface will pop up the window for setting the threshold value of the over-temperature alarm, as shown in the figure below. When the maximum temperature value in the screen exceeds the alarm threshold value (in the regional temperature measurement mode, the temperature in the area is used as the benchmark, except for spot measurement), the system will sound an alarm, and the video screen will flash a red alarm.



4.2.3 Photograph

Click the [Take Photo] button to take the current infrared image and save it automatically.



4.2.4 Video

Click the [Record] button to record a video. When the [Record] button is clicked, the button turns red to enter the recording state, and the recording time will appear in the lower left corner of

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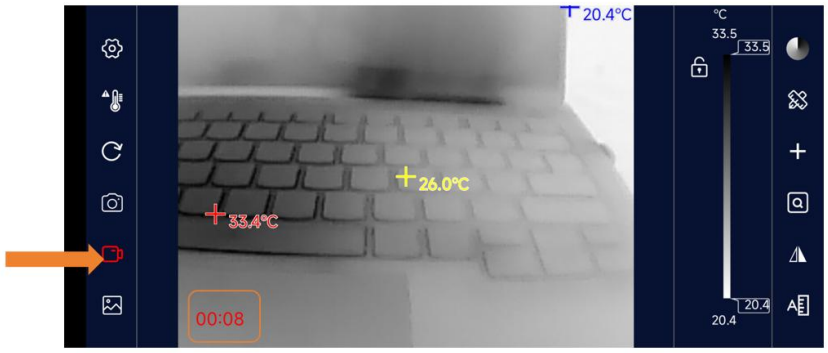
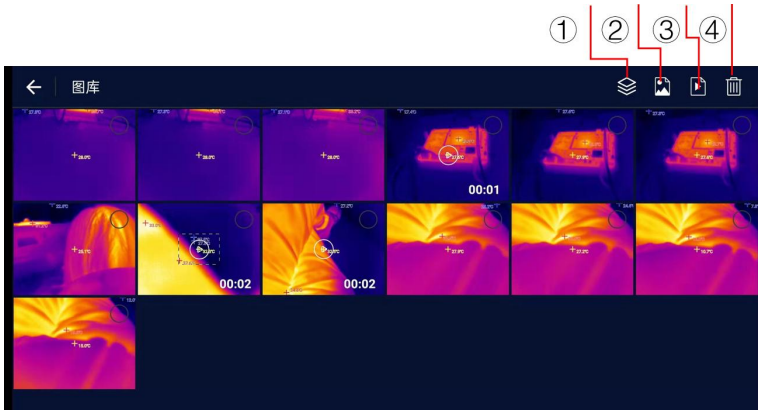
the video window at the same time. Click the [Record] button again to stop recording.



4.2.5 Album

All photos and videos taken by the APP can be easily viewed by clicking [Album]. The gallery interface is shown in the figure below, and all files are arranged in descending chronological order.



①	Album	Display photo and video files simultaneously
②	Photo	Show only photo files
③	Video	Only video files are displayed, and the preview includes the video duration.
④	Recycle bin	Delete files after selecting them

4.2.5.1 Note

The photos after taking them support the graffiti function. You can choose the appropriate color and make graffiti notes on the picture by hand-drawing patterns or typing on the keyboard .

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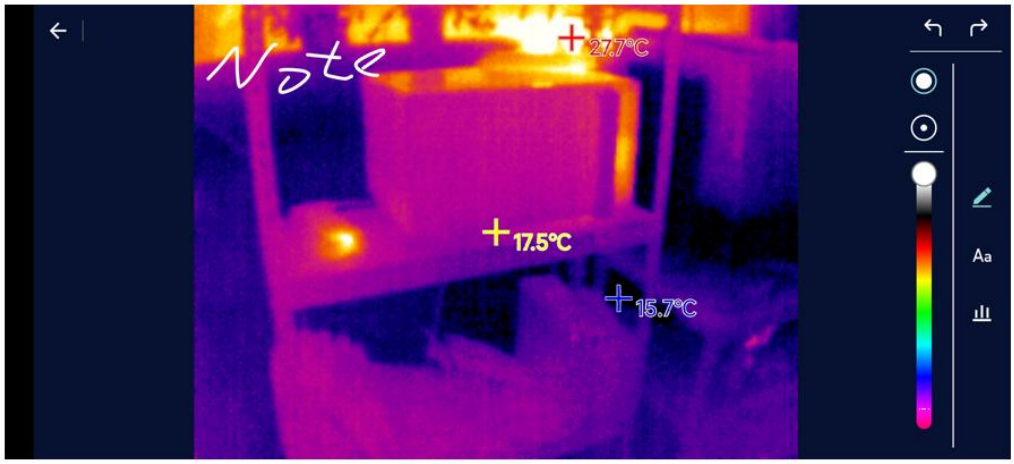
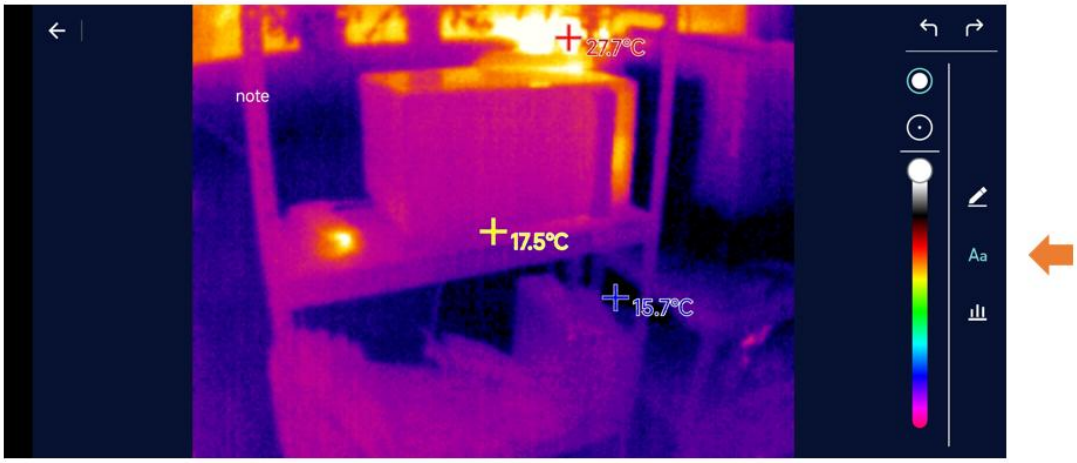
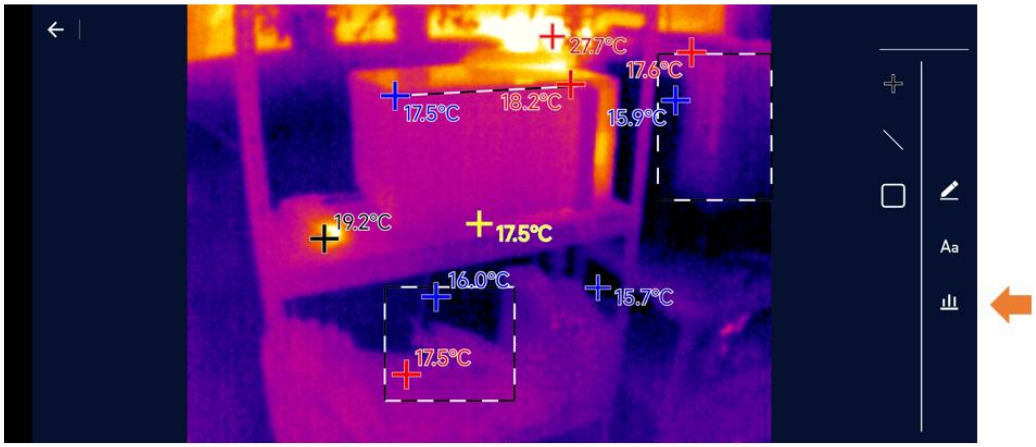




4.2.5.2 Offline Image Analysis

The captured pictures can be subjected to secondary analysis. By inputting points, lines and rectangular boxes in the pictures, the temperature of all other locations in the picture can be displayed, or the high and low temperatures of lines and rectangular boxes can be displayed.



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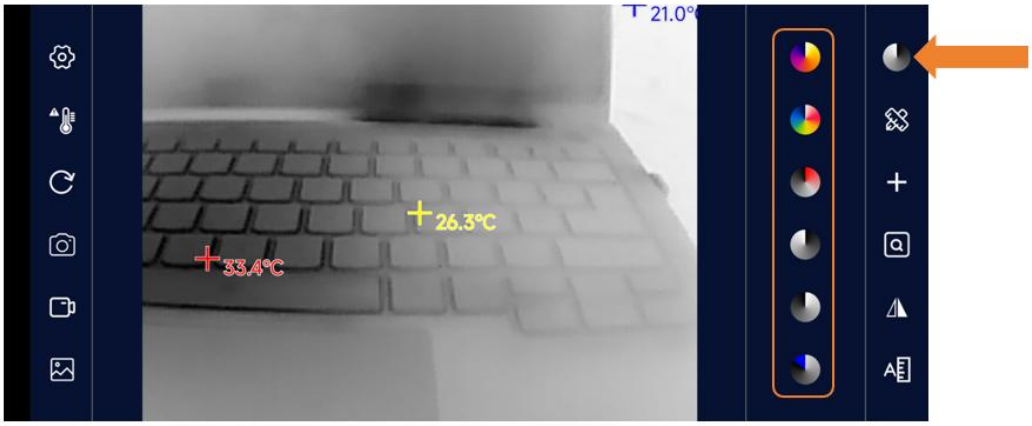
4.2.6 Color Palette

The color palette panel has a total of 6 display modes, as shown below.



Iron		In the high-temperature area, the specific gravity of red is large, which is suitable for detecting scenarios where the high-temperature area accounts for the main proportion
Rainbow		The highest temperature is indicated in red, the medium temperature is yellow, and the low temperature is mainly blue and black, which is suitable for scenes with clear colors at high and low temperatures
Red hot		The main color is red and black, from the lowest temperature to the highest temperature, and the use of black, white and red is excessive, which is suitable for scenes that pay attention to high temperature conditions
Black hot		In the high-temperature section, black is used, and the full picture is mainly white-black, which is suitable for users of the traditional black and white mode
White hot		In the high-temperature section, white is used, and the full picture is mainly black and white, which is suitable for users of the traditional black and white mode
Cold blue		Colder areas are marked in blue, which is more suitable for observing low-temperature targets

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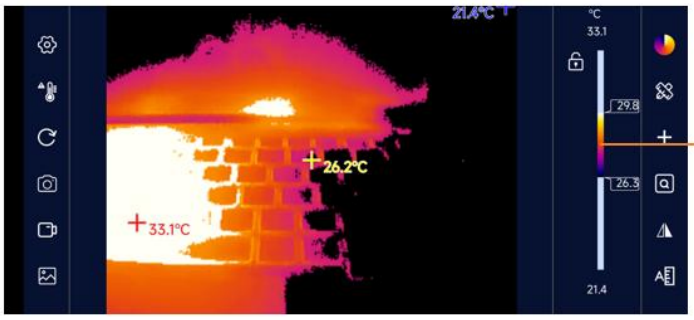
By adjusting the swatch strip on the right side of the screen, you can adjust the temperature width to make the areas that need to be focused on more visible. The image below shows a comparison of simply adjusting the swatch strips on the same screen.





4.2.7 Regional temperature measurement

Click the [Region Temperature Measurement] button on the right, and the following interface will pop up. You can add points, lines and rectangular frames to the video to measure temperature. The lines and rectangular frames will display the real-time highest and lowest temperatures of the area. Long press each new A delete icon will pop up for the added area. Click the icon to delete it.

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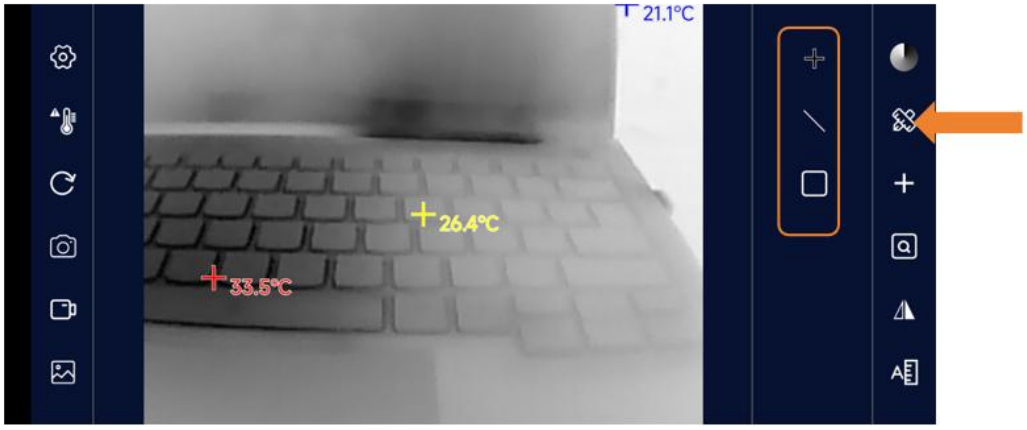

4.2.8 Temperature tracking

Click the temperature tracking button on the right to enable or disable the highest temperature, lowest temperature, and center point temperature measurement in the real-time video. Red is the highest temperature, blue is the lowest, and yellow is the center point temperature. Tap to turn on temperature tracking, and tap again to turn it off.



4.2.9 Detail in Zone

You can highlight the temperature in all current rectangular zone, and if there are no rectangles in the current picture, a rectangular zone will be automatically added in the default position.

Press and hold the rectangle to adjust the size and drag position, or click the delete icon next to it to delete the rectangle.

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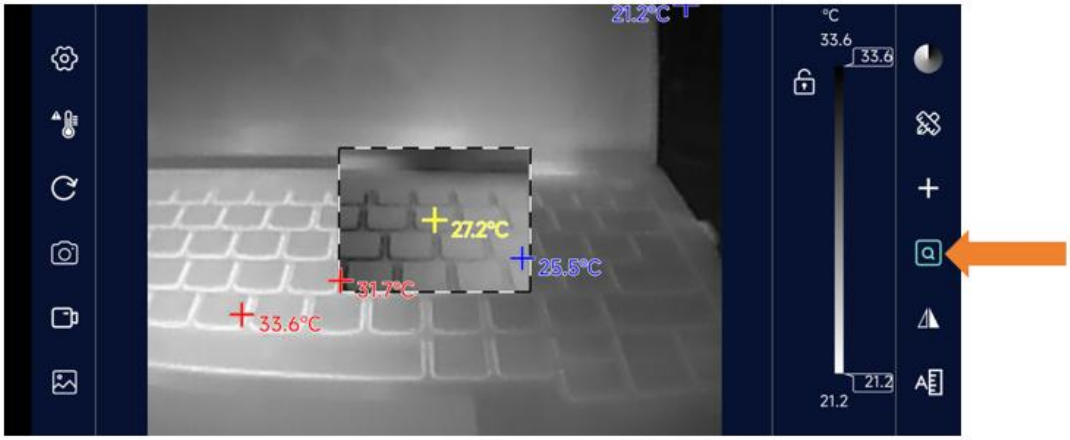
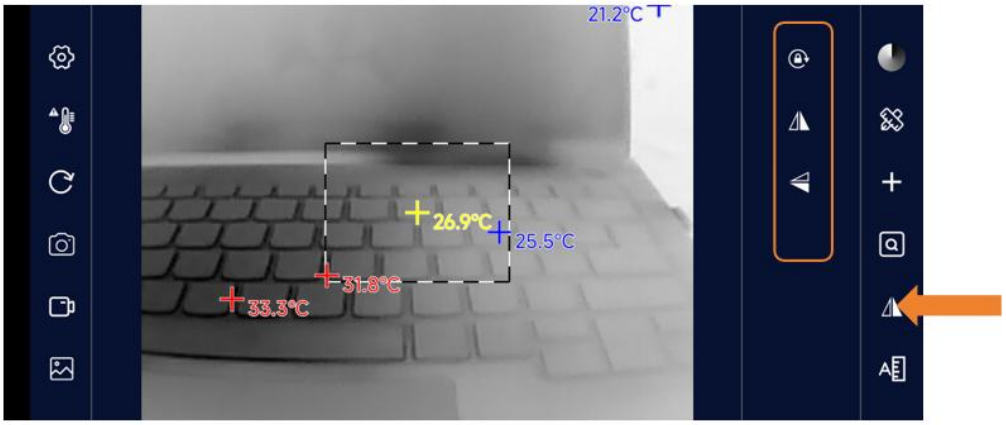


4.2.10 Screen Lock & Flip

When the phone or camera is flipped, this function allows you to lock or flip the image.



4.2.11 Highlight High Temperature

In this mode, the hot areas are displayed for the current swatch and the other areas are white-hot, and the temperature range can be adjusted via the slider on the right side of the swatch strip. The high-temperature area of the target can be quickly located, which is convenient for quickly locating the high-temperature area.

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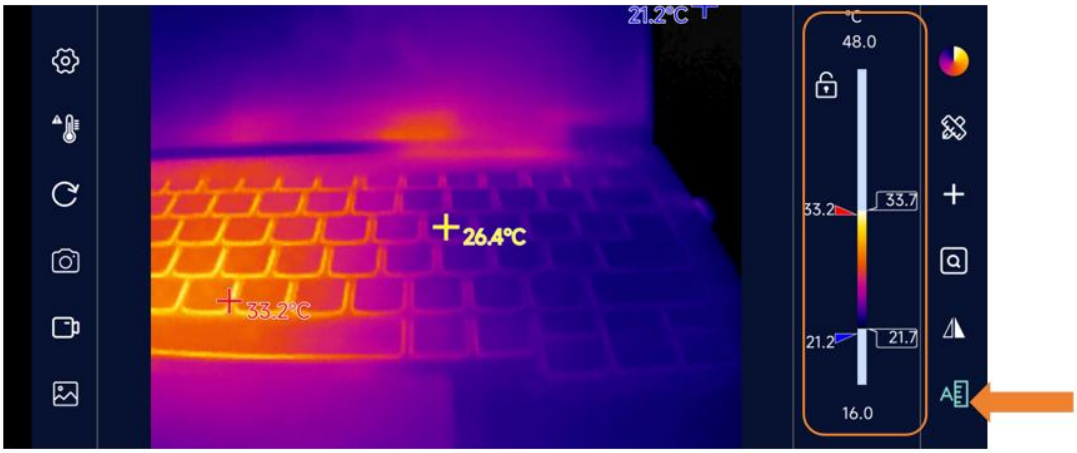
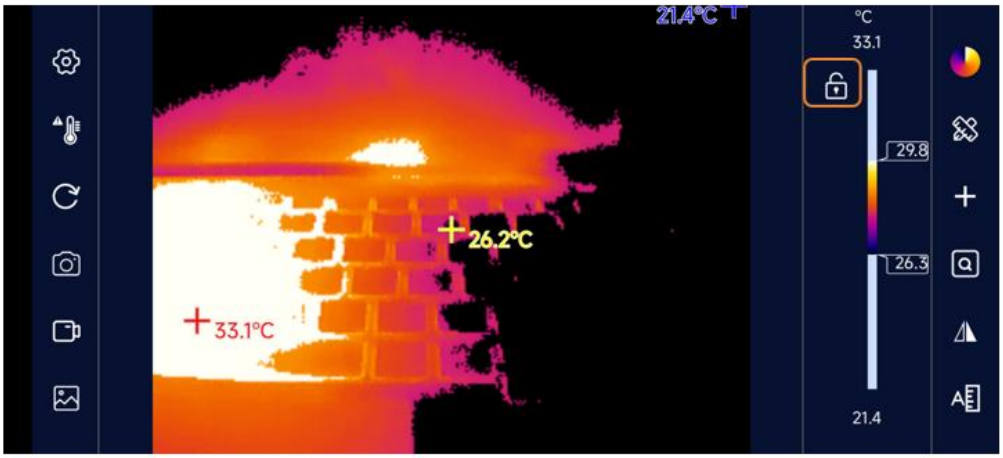


4.2.12 Temperature lock

Click the lock button near the temperature bar on the right, and the image will be locked within the required temperature range. Temperatures within this temperature range will be displayed using the selected color palette. Temperatures above this range are all represented by the highest temperature color of the color palette, all temperatures below this range are represented by the lowest temperature color of the color palette.



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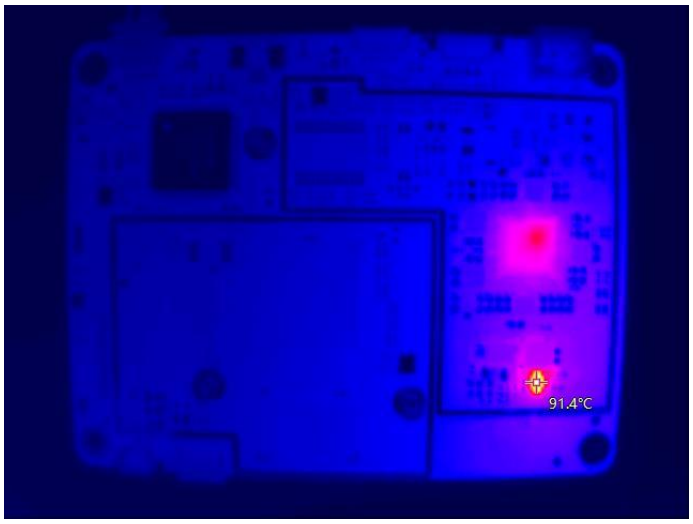
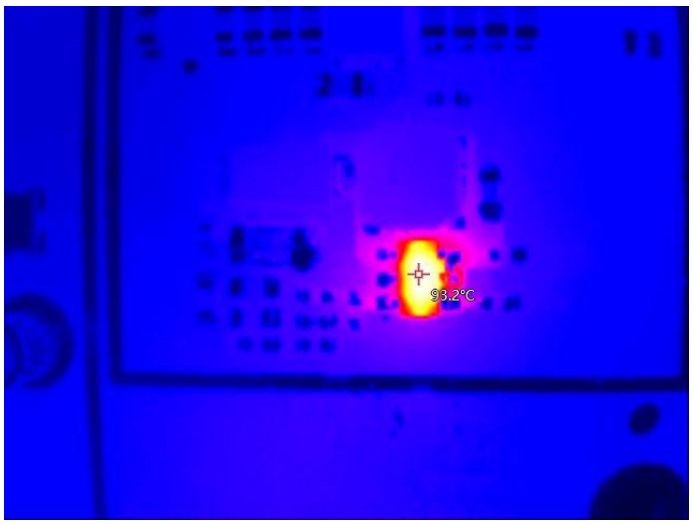
5 Optional Teleconverter Lens

When you need to observe relatively small targets, such as the pins of integrated circuits, resistors and capacitors, etc., you need a zoom image, then you can add an optional teleconverter lens. The image below is a comparison of images without using and using an extender lens. Teleconverters work best when the distance from the lens to the object to be measured is 30 mm.







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6 Precautions

- It is recommended to use Android 10 or above Android system, and the CPU should be Qualcomm Snapdragon 7 series or above processor (CPU performance of other brands can reach or exceed Qualcomm Snapdragon 7), otherwise the image may freeze or the app may freeze. collapse.
- Some versions of Android 10 are downloaded through Google Play.
- You need to enable OTG connection in the phone settings to run the APP normally (different phone settings have different locations, you can search for OTG in the settings, some phone models have OTG turned on by default).
- Do not use alcohol, detergent and other organic cleaners to clean the lens. It is recommended to use soft objects dipped in water to wipe;
- Do not allow strong light sources such as sunlight or lasers to directly illuminate the lens, otherwise it will cause irreparable physical damage to the thermal imaging camera.

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