H1F6B/H2F6B User Manual of Dual Vision Thermal Camera v1.0

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H1F6B/H2F6B User Manual of Daul Vision Thermal Camera

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1 Overview

The dual vision 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. It also applies A visible light camera is used to assist infrared imaging, which can display the measured object more clearly than a single thermal product.

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, and the visible light digital camera uses 640x480 auxiliary imaging to achieve excellent imaging effects;
- Compared with traditional mobile phone thermal imaging cameras, it supports more temperature measurement in visible light mode, multiple fusion modes, and the image effect is clearer and more delicate;
- 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	256x192	160x120
Working wavelength	8 ~ 14 μm	
Frame rate	25Hz	
NETD	＜50mK @25 ℃	
Lens	3.2mm	
Field of view	56° x 42°	35° x 27°
Temperature measurement range	-15 ℃ ~600 ℃	
Temperature measurement accuracy	±2 ℃ or ±2% of reading，whichever is greater	
Visible light		
resolution	640x480	
Frame rate	25Hz	
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.	
Image display mode	Supports visible light mode, multiple visible light and infrared fusion modes, and single infrared mode display.	
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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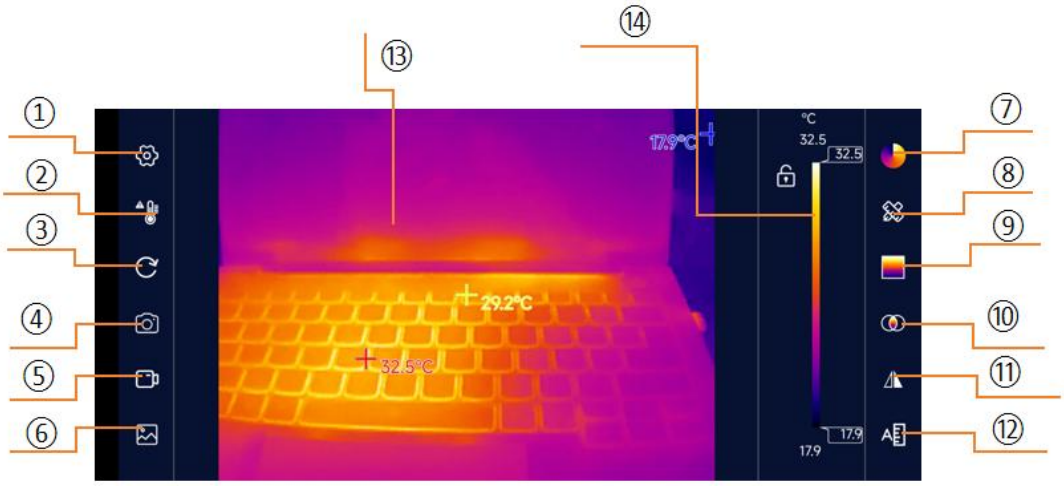
4 APP Overview

4.1 Main Interface

Connect the thermal instrument to your Android phone and run the App. You will see the following interface:



Interface description

①	Settings	Provides the App interface and parameter settings for the thermal camera
②	Over temperature alarm	You can set the high temperature alarm threshold. If the temperature in the video exceeds the threshold, a sound and picture alarm will sound.
③	Interface reset	Reset various information on the screen to the state at startup
④	Photograph	Take photos and store in the album
⑤	Video	Video recording and storage in the album
⑥	Album	Store photos and videos from this app
⑦	Color palette	You can switch between different color palettes to change the

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		color of the video
⑧	Zone temperature measurement	Points, lines and boxes can be added to measure temperatures in different areas
⑨	Display mode	Can display single infrared, visible light, fusion mode 1, fusion mode 2, layer overlay, picture-in-picture different modes
⑩	Fusion offset adjustment	Adjust the offset of the fusion according to the distance of the picture to keep the visible and infrared image fusion consistent.
⑪	Image locking and mirroring	Images can be locked and mirrored left and right, up and down.
⑫	High temperature quick check	The highest temperature area in the display screen
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

Click the Settings button to pop up the settings panel. For details of each setting item in the panel, see the table below:

General	
Language	Supports English, French, German, Spanish, Portuguese, Italian, Polish, Finnish, Swedish, 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

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Center point temperature	Display the temperature at the center point of the screen or turn it off
Low temperature tracking	Track the lowest temperature point in the screen or turn it off
Temperature unit	Set the temperature unit, supporting Celsius (℃), Fahrenheit (°F) and Kelvin (K)
Record sound	You can choose whether to record sound 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 (default does not require adjustment)
Correction (℃)	According to the temperature measurement deviation, fill in the correction parameters (no adjustment required by default)
Reflected temperature (℃)	Fill in the parameter values according to the reflected temperature of the test environment (default does not require adjustment)
Ambient temperature (℃)	Fill in the parameter values according to the test environment temperature (default does not require adjustment)

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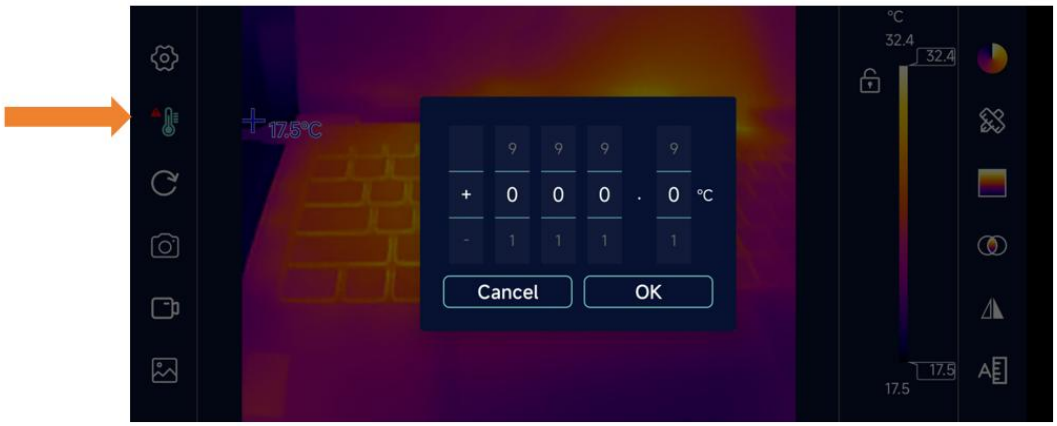
About	
About	Display company information, website, email and other information.

4.2.2 Over Temperature Alarm

Click the Over Temperature Alarm switch icon, and the high-temperature alarm threshold setting window will pop up, as shown in the figure below. When the highest temperature value in the picture exceeds the alarm threshold (in the area 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 picture will flash a red alarm.



4.2.3 Interface Reset

The interface reset button is used to reset the APP interface and APP settings to restore the APP to its default startup state.



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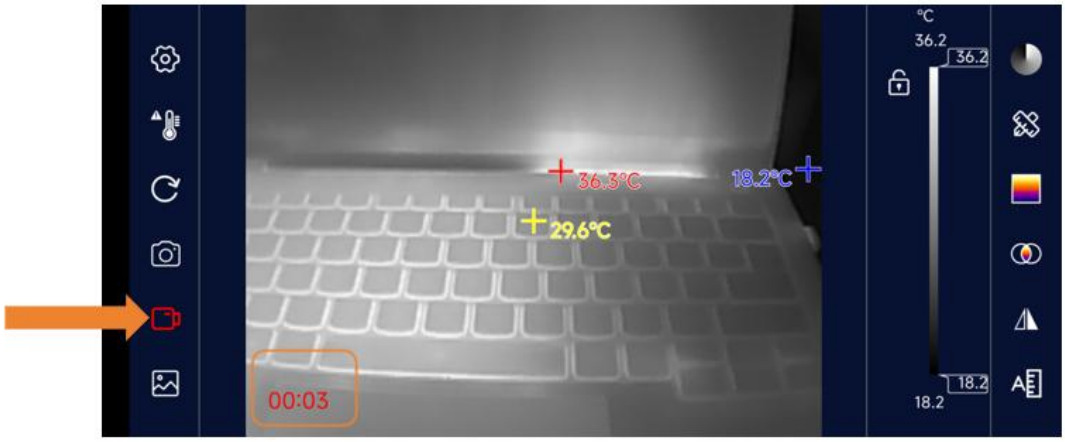
4.2.4 Photograph

Click the Photograph button to capture the current infrared image and save it automatically.



4.2.5 Video

Click the Video button to record video. After the Video button is clicked, the button turns red and enters the recording state, and the recording time appears in the lower left corner of the video window. Click the Video button again to stop recording.



4.2.6 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. All files are arranged in descending order of time.

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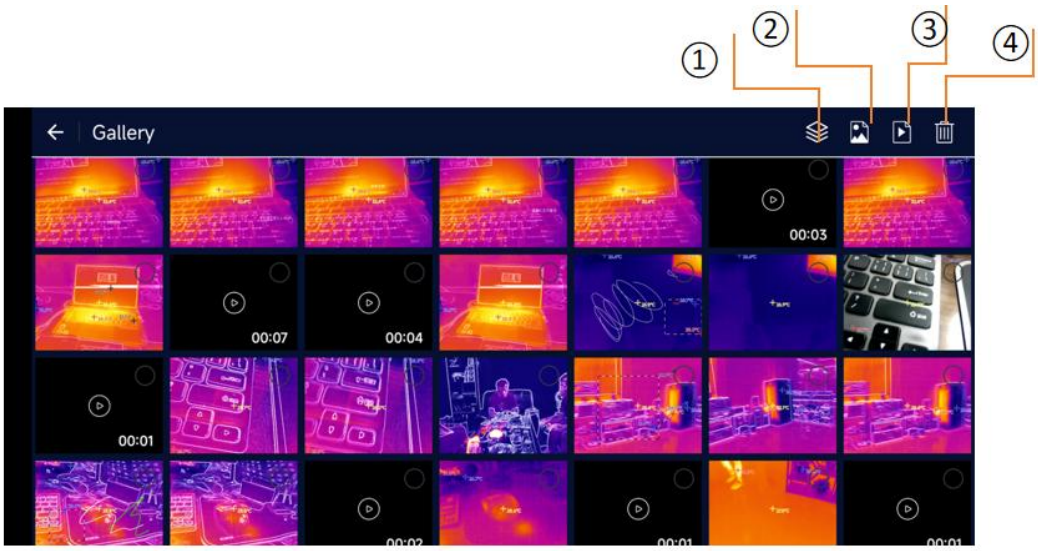
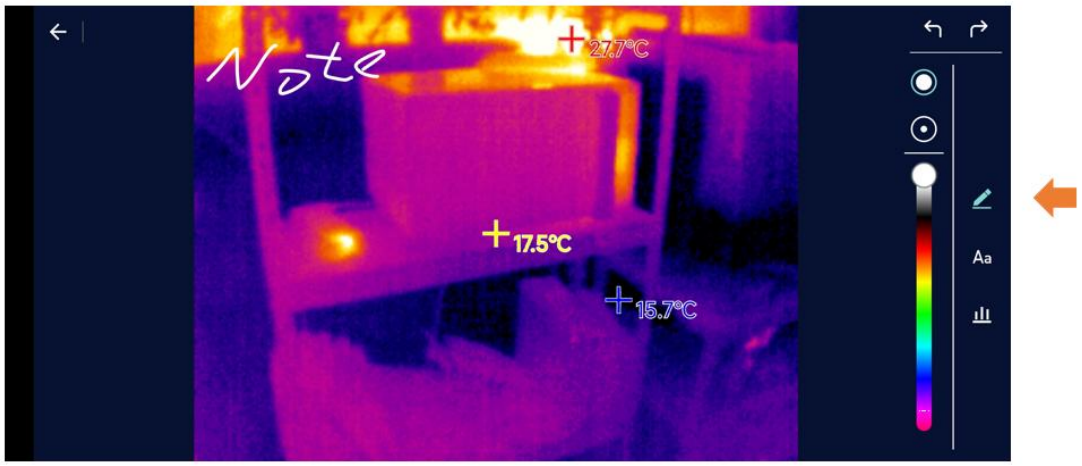


①	Album	Display photo and video files simultaneously
②	Photo	Show only photo files
③	Video	Only video files are displayed, and the preview includes the video duration.
④	Recycle bin	Delete files after selecting them

4.2.6.1 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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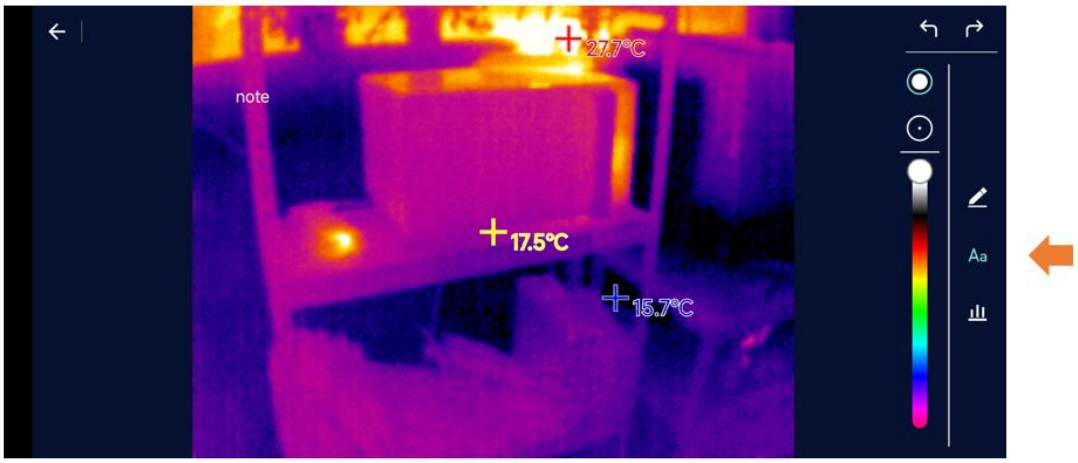
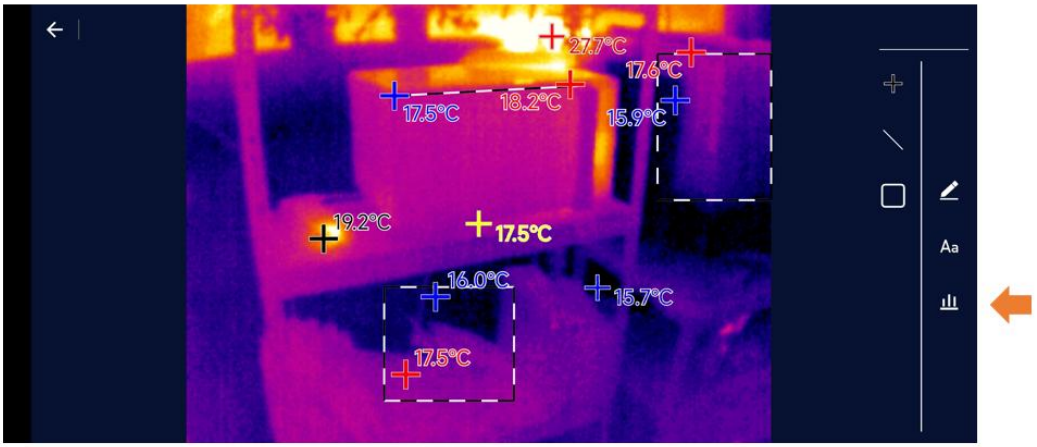


4.2.6.2 Offline Image Analysis

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.



4.2.7 Color Palette

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

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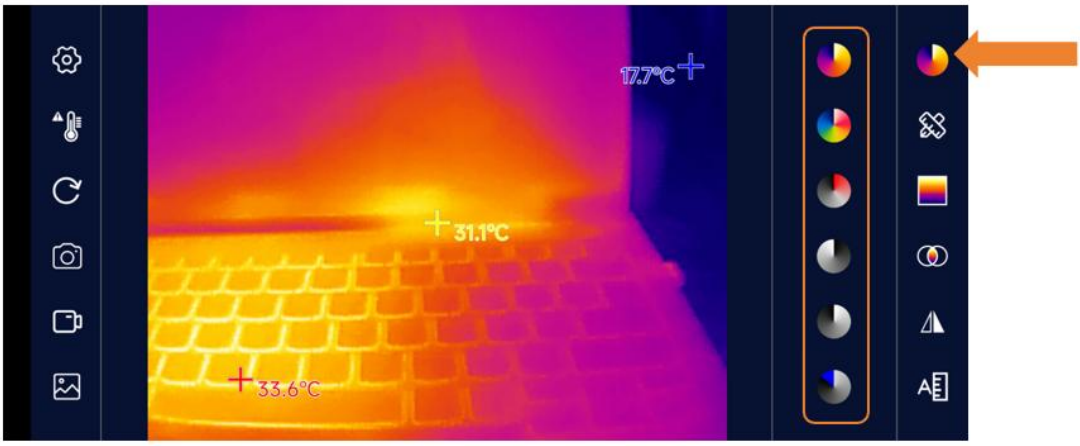

Iron		In high-temperature areas, the proportion of red is larger, which is suitable for detecting scenes where high-temperature areas account for the main proportion.
Rainbow		The highest temperature is represented by red, the medium temperature is represented by yellow, and the low temperature is mainly blue and black, which is suitable for scenes with distinct high and low temperatures.
Red hot		The main colors are red and black, from the lowest temperature to the highest temperature, using black, white and red transitions, suitable for scenes that focus on high temperature conditions.
Black hot		In the high temperature section, black is used, and the whole screen is mainly white and black, suitable for users in the traditional black and white mode.
White hot		In the high temperature section, white is used, and the entire screen is mainly black and white, suitable for users in the traditional black and white mode.
Cold blue		Blue will be used to mark cooler areas, which is more suitable for observing low-temperature target objects.

By adjusting the color bar on the right side of the screen, you can adjust the temperature and width to make the areas that need to be observed more obvious. The picture below is a

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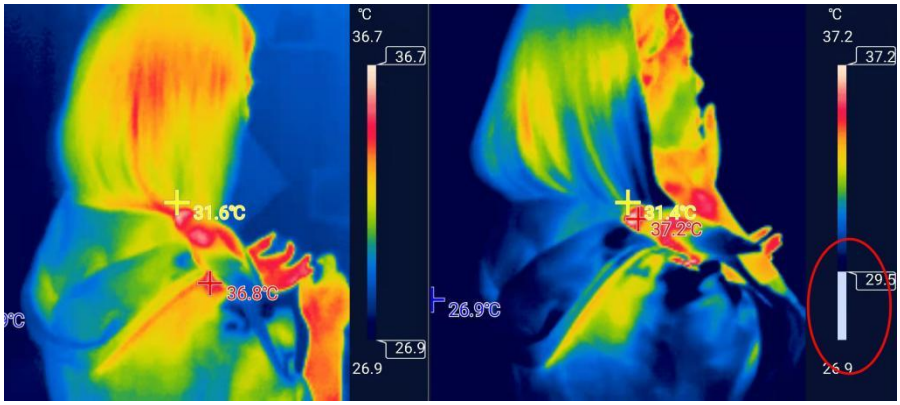
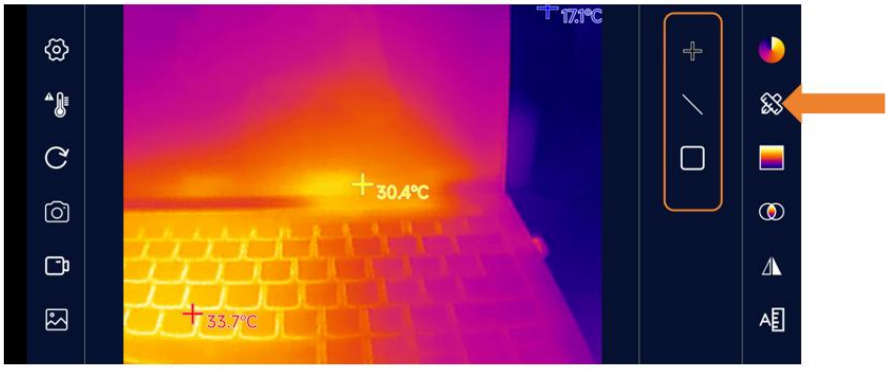
comparison of the same image simply adjusting the color bar.



4.2.8 Zone Temperature Measurement

Click the Zone Temperature Measurement button on the right, and the following interface will pop up. You can add points, lines and rectangular zone 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.



4.2.9 Display Mode

Click the display mode button on the right to choose to observe the target in different modes. Currently, the following modes are supported:

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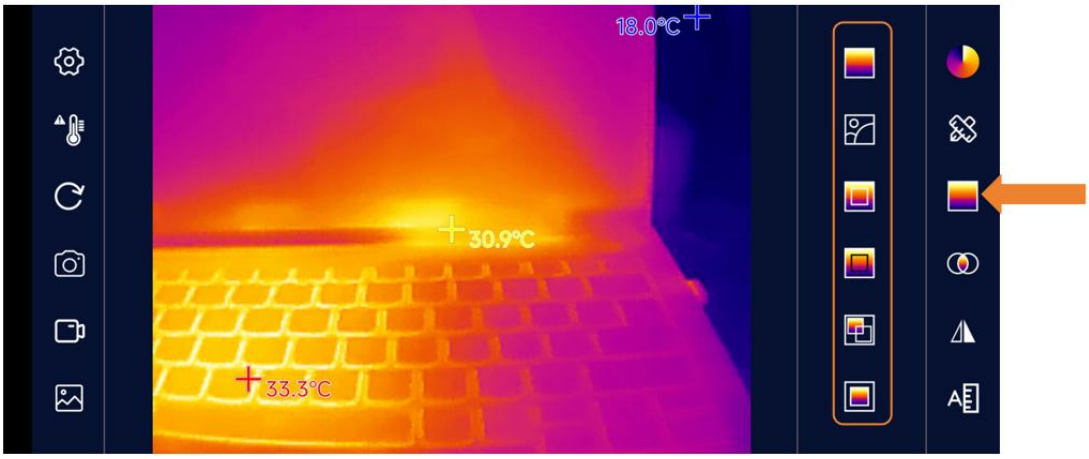
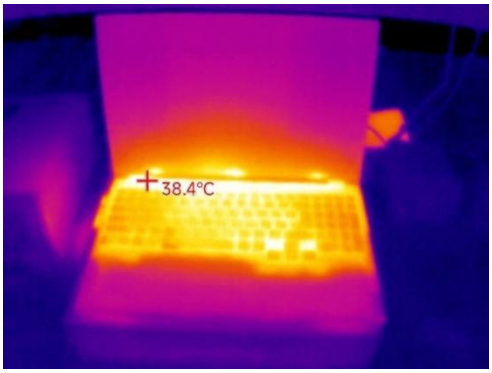


- Thermal



- Visible light



- Fusion mode 1

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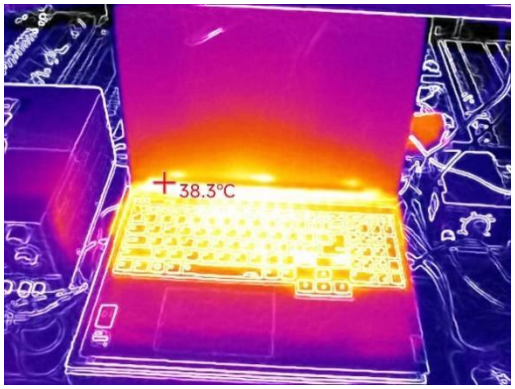

- Fusion mode 2



- Overlay fusion



- picture in picture

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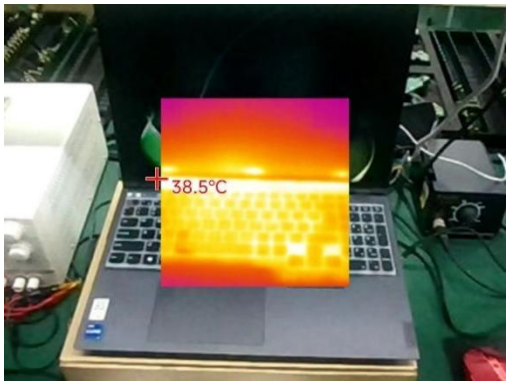
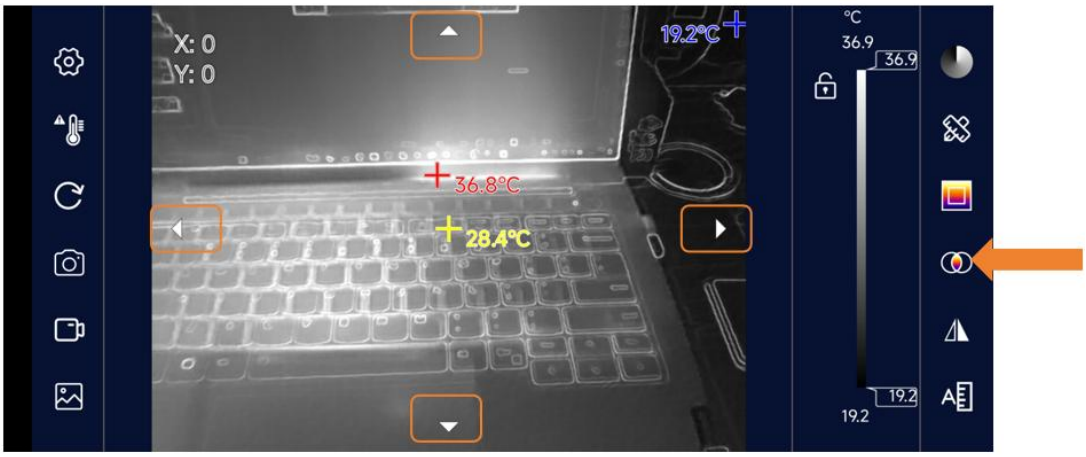


4.2.10 Fusion offset adjustment

When observing a target object at close range, there may be a deviation in the visible light and thermal lines in the fusion mode. This is caused by the inconsistent optical axes of the visible light and infrared. By clicking the fusion offset adjustment button on the right, four pop-ups will appear. Direction button, click the button to adjust the fusion offset. After the adjustment is completed, click this button to save the offset value.



4.2.11 Image Locking and Mirror

Click the image lock and mirror button on the right to choose to lock, mirror the screen left and right, and mirror it up and down. After locking the screen, the screen will not rotate when the phone is rotated.

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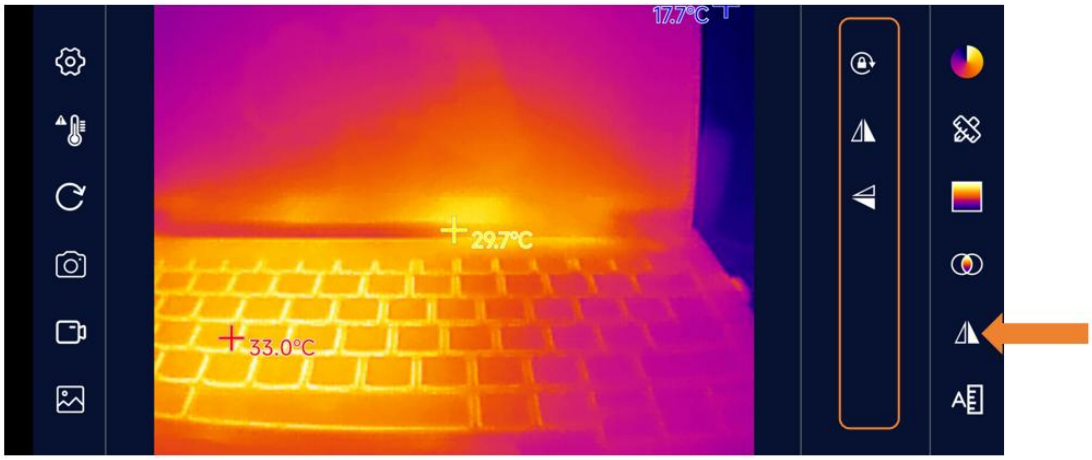
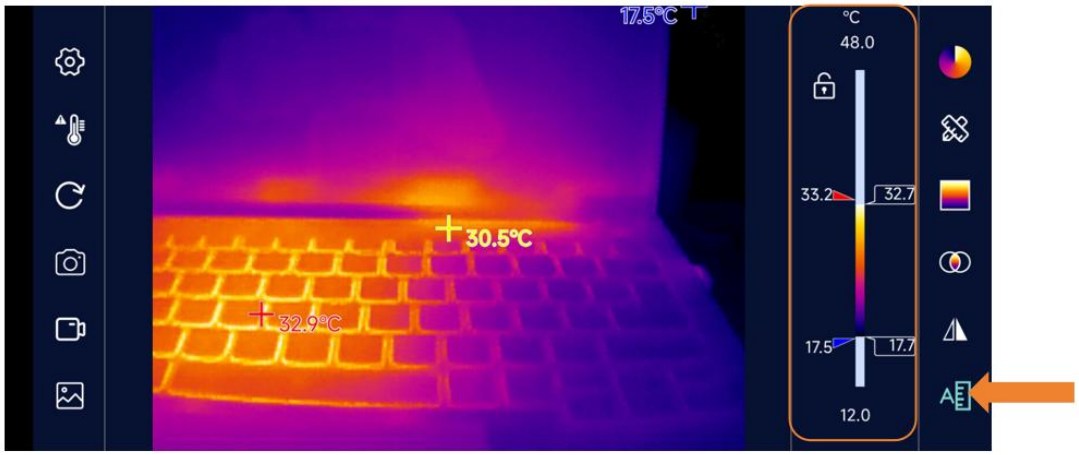


4.2.12 High Temperature Quick Check

In this mode, the high temperature area is displayed as the current color palette, other areas are white hot, and the temperature range can be adjusted through the slider on the right side of the color bar. The highlighted high-temperature area analysis mode brings convenience to most application scenarios that focus solely on the temperature value of the high-temperature area, especially circuit board repair.



4.2.13 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 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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