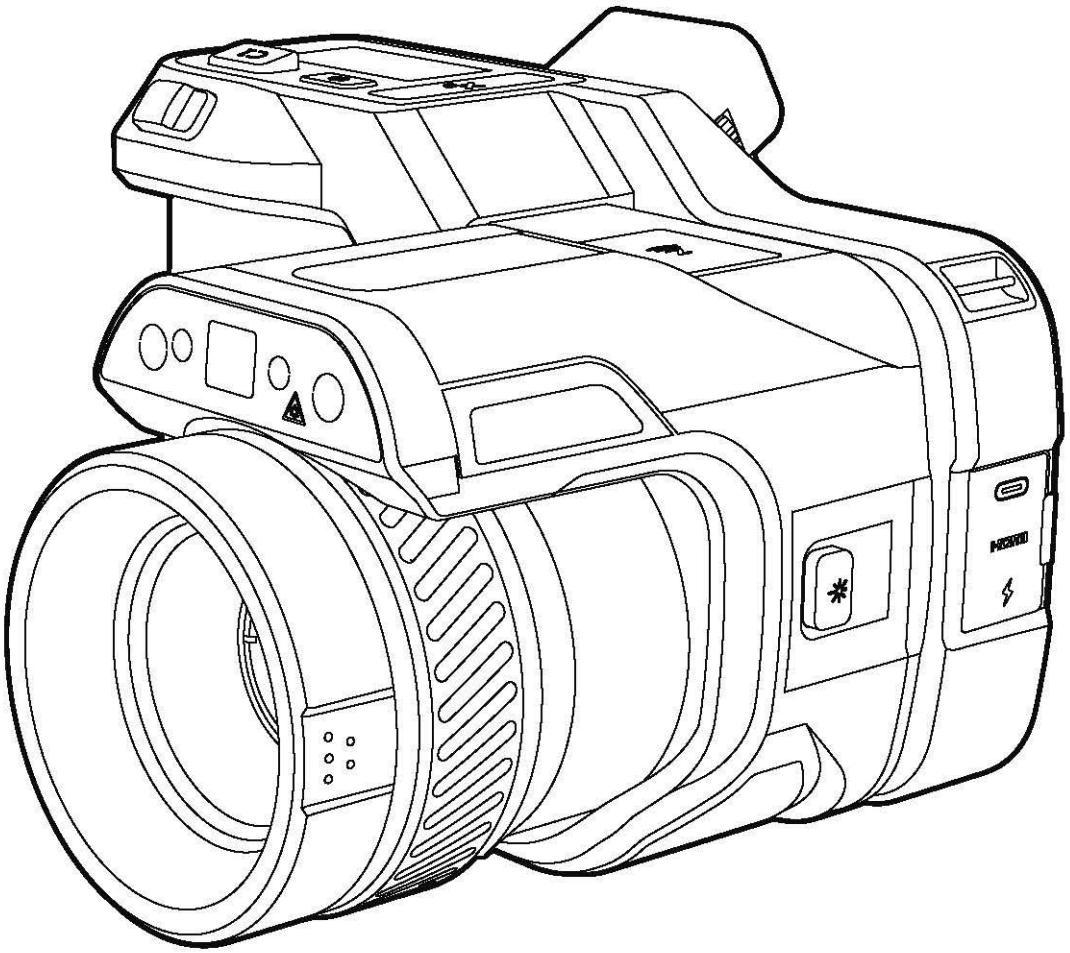
HD HIGH-PERFORMANCE *THERMAL CAMERA*

USER GUIDE



Thank you for choosing this product. Please read this Guide before use and properly keep it for future reference. We hope that the product meets your expectations.

Table of contents

1. Important

This manual is a general manual for this series of products, which means that the specific model product you receive may be different from the manual pictures. Please refer to the actual product received.

This manual is compiled for the convenience of users to use and understand our company's products. We will do our best to ensure the accuracy of the contents of this manual, but we cannot guarantee the completeness of the contents of this manual. Because our products have been continuously updated and upgraded, our company reserves the right to modify them at any time without prior notice .

2. Storage and transportation

Storage: The packaged product should be stored in a well-ventilated and clean room with a temperature between -40℃ and 70℃, relative humidity not exceeding 95%, no condensation and no corrosive gases;

Transportation: During transportation, the product should be protected from rain, water immersion, and inversion. It should not be subjected to severe vibration and impact. It should be handled with care and is strictly prohibited to drop it.

3. Precautions

3.1. Danger

1） Please charge the battery according to the instructions in the quick operation guide and follow the charging steps and precautions. Improper charging may cause the battery to heat up, damage or even cause personal injury;

2） Do not attempt to open or disassemble the battery at any time. If the battery leaks and liquid enters the eyes, rinse the eyes immediately with clean water and seek medical care.

3.2. Warn

1） Please try to keep the device stable when using it and avoid violent shaking;

2） use or store the device in an environment where the operating temperature or storage temperature exceeds the permitted temperature of the device ;

3） Do not point the device directly at high-intensity heat radiation sources, such as the sun, lasers, spot welders, etc., to avoid damaging the device;

4） Do not block the holes in the device;

5） Do not knock, throw or vibrate the instrument and accessories to avoid damage;

6） Do not disassemble the device by yourself, as this may cause damage to the device and void the warranty rights;

7） Do not wipe the device or cables with solvents or similar liquids, as this may cause damage to the device ;

8） Please do not use the device in an environment that exceeds the operating temperature of the device, as this may cause damage to the device ;

9） Please follow the steps below when wiping this device:

- Non-optical surfaces: wipe with a clean, soft cloth when necessary;
- Optical surface: When using the device, please avoid dirtying the optical surface of the lens, especially avoid touching the lens with your hands, because sweat stains on your hands will leave marks on the lens glass and may corrode the optical coating layer on the glass surface. When the optical lens surface is contaminated, use professional lens paper to wipe it carefully;

10） Do not place the battery in a high temperature environment or near high temperature objects;

11） Do not short-circuit the positive and negative terminals of the battery;

12） Do not expose the battery to moisture or water.

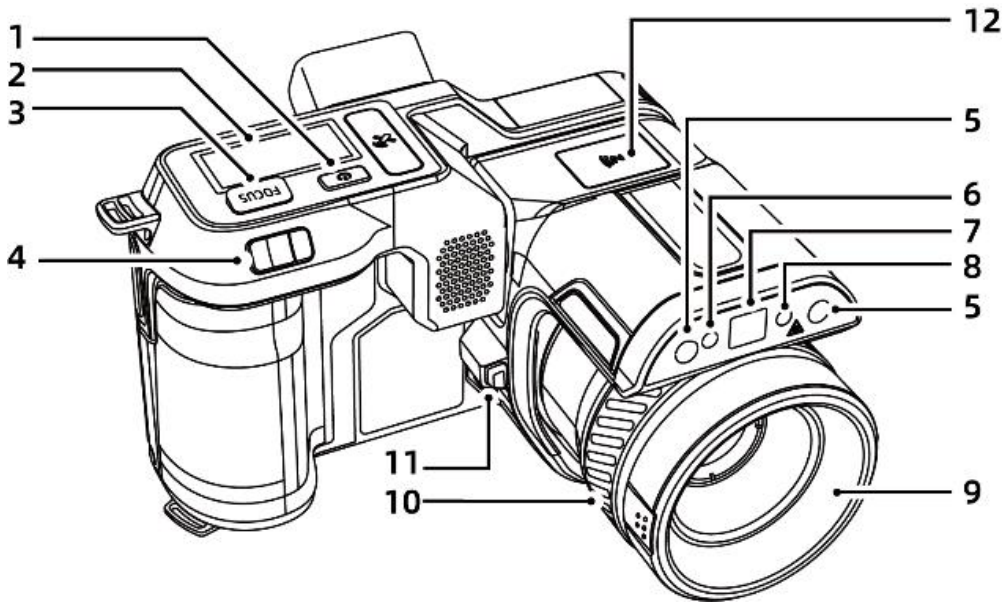
3.3. Notice

1) Do not expose the device to dust, moisture, or corrosive environments. When using the device in a watery environment, avoid splashing water onto the device.
2) When the device is not in use, please cover the lens cap and place it and all accessories in a dedicated packaging box ;
3) When the device is not used for a long time, it should be recharged every 3 to 6 months to maintain the activity of the battery;
4) Avoid using the SD card of this device for other purposes;
5) Using the eyepiece for a long time may cause the eyepiece contrast to decrease and the image to turn white. You can switch to the LCD screen display and then switch back to the eyepiece display after a period of time.

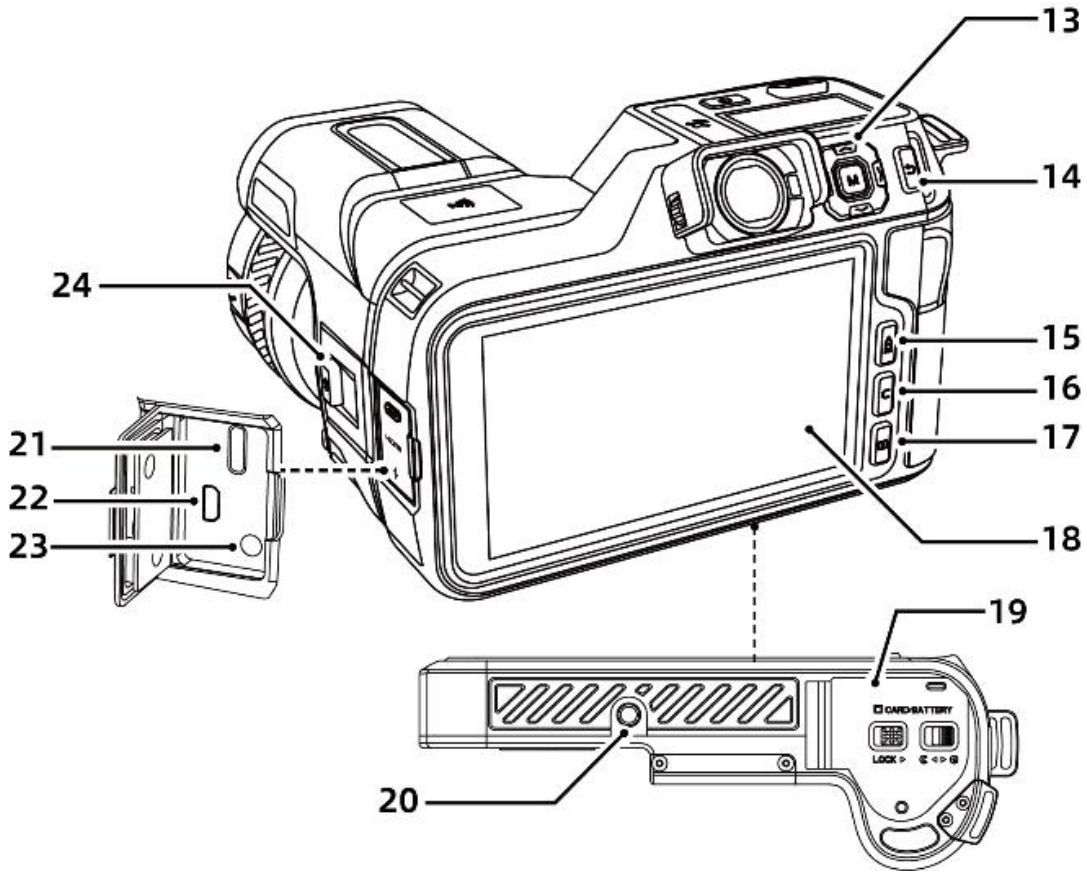
4. Product Introduction

This is a high-precision infrared temperature measurement thermal imager developed specifically for the industrial field . It uses a high-sensitivity, high-resolution infrared detector to provide clearer infrared images and higher temperature measurement accuracy. It simultaneously collects visible light and infrared images, supports multiple image modes such as picture-in-picture and MIF, and highlights key observation positions. With a large-screen display and a detachable lens structure, it is easy to use and powerful.

4.1. Appearance



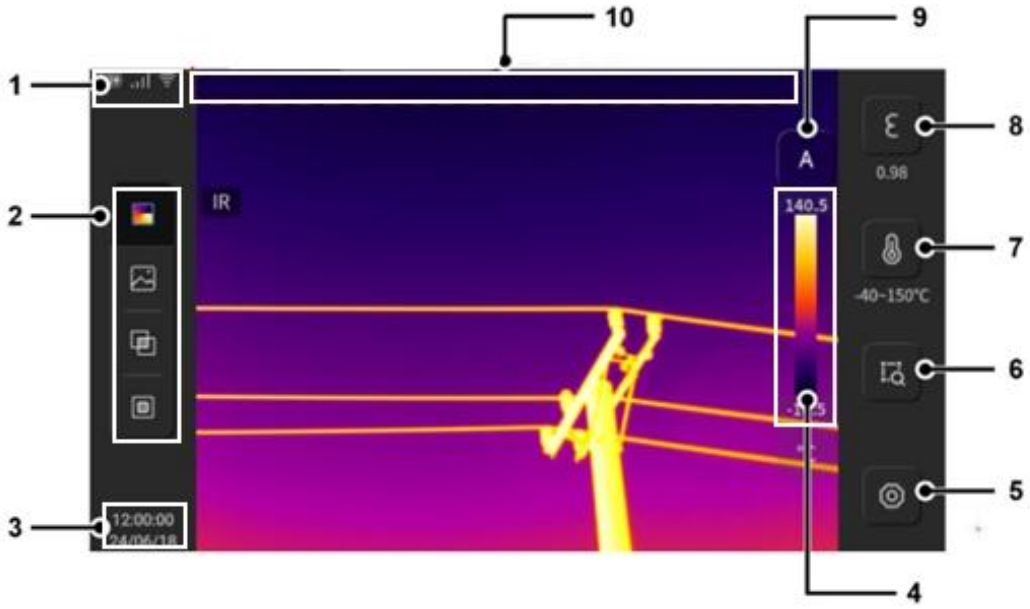
1	Power button	5	Visible light lens	9	Infrared lens
2	Shoulder screen	6	Lighting	10	Focus ring
3	Focus key	7	Laser ranging module	11	Change lens button
4	Camera button	8	Laser pointer module	12	NFC sensing area



13	Five-way key	17	Playback button	21	Type-C interface
14	Back key	18	LCD monitor	22	MicroHDMI output interface
15	Automatic/Manual	19	Battery compartment	23	Charging port
16	Auxiliary key C	20	Tripod interface	24	Laser Key

4.2. Main interface

4.2.1. Observation



(1) Status bar: displays battery power, 4G network (supported by some models), Wi-Fi, positioning status, etc.

(2) Image mode: from top to bottom: infrared, picture-in-picture, image fusion, visible light;

(3) Time and date: Display device time and date;

(4) Palette: Palette settings;

(5) Settings: system settings;

(6) Temperature measurement parameters: analysis object, isotherm and temperature measurement parameter settings;

(7) Temperature measurement range: temperature measurement range setting;

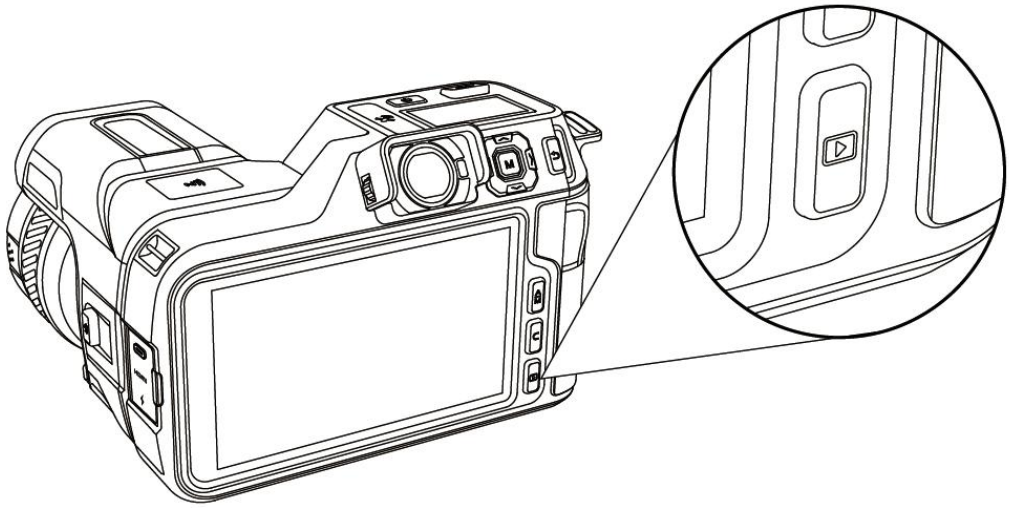
(8) Emissivity: emissivity setting;

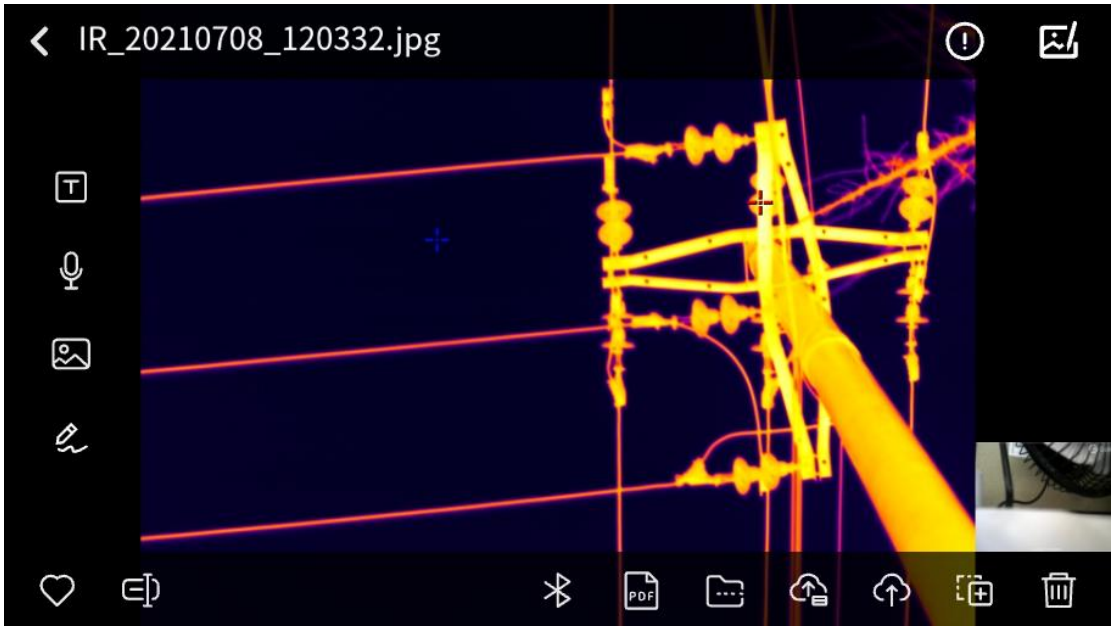
(9) LevelSpan mode: supports automatic mode (A), manual mode (M), semi-automatic mode (S), and regional dimming mode (L);

(10) Quick Settings: Supports Wi-Fi, Bluetooth, lighting and other settings.

4.2.2. Gallery

Press the "playback button" to enter the gallery, which supports operations such as viewing image information, analyzing images, and deleting.



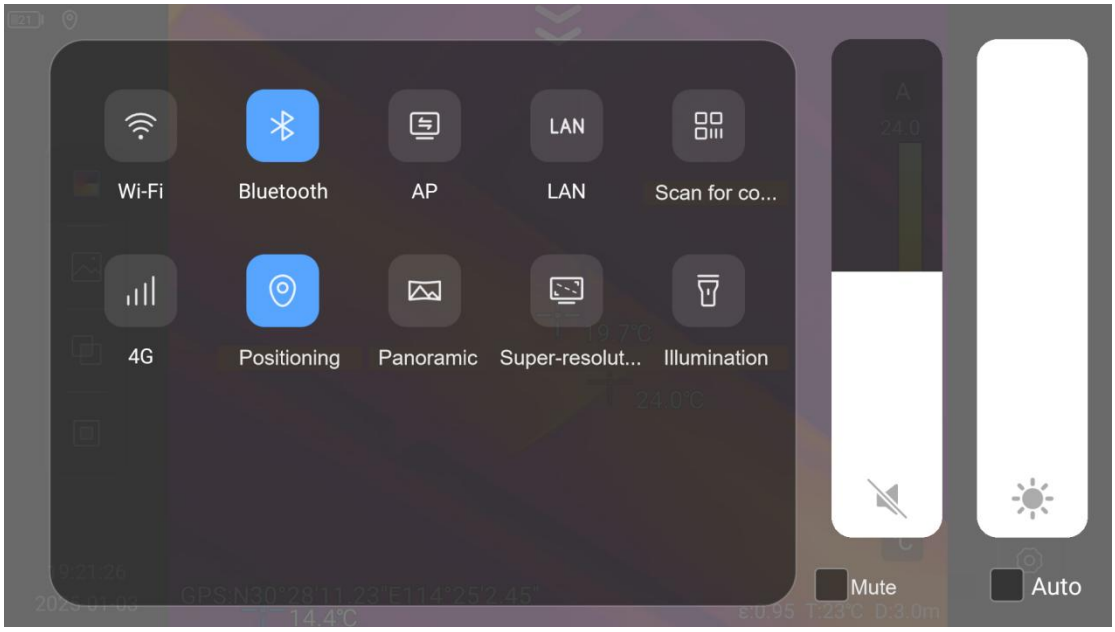


icon	Functional Description
<	Return to previous level
ⓘ	View image details
	Analyze pictures, such as adding analysis objects, setting temperature measurement parameters, modifying isotherms, etc.
T	Add text annotation

	Add audio notes
	Add photo material annotation
	Add Scribble Annotation
	Save the image
	Modify the image name
	Bluetooth image transfer, transfer images to the local photo album of the mobile phone or mobile phone analysis software
	Generate PDF report
	Add pictures to the specified album folder
	Upload to cloud photo album
	Cut to SD card or local storage
	delete

4.2.3. Quick Settings

Swipe down from the top of the screen to display the quick settings, and short press the "Back" button to return to the observation interface .



icon	Functional Description
Wi-Fi	Wi-Fi switch
Bluetooth	Bluetooth switch
AP	AP switch, mainly used for PC/mobile phone analysis software to connect to devices wirelessly to obtain video streams
LAN	LAN switch, mainly used for PC/mobile phone analysis software to connect devices to obtain video streams via wired connection
One Sweep	Device hotspot QR code, mainly used for mobile analysis software to quickly connect to device hotspots
4G	4G switch (supported only by some models)
position	Position switch
panoramic	Panorama mode switch, stitching two or more consecutively shot pictures into one panoramic picture through intelligent algorithms (only supported by some models)
Super Resolution	Super-resolution mode switch, using intelligent algorithms to enhance image clarity and detail

 illumination	Light switch
	Adjust screen brightness
	Adjust the volume

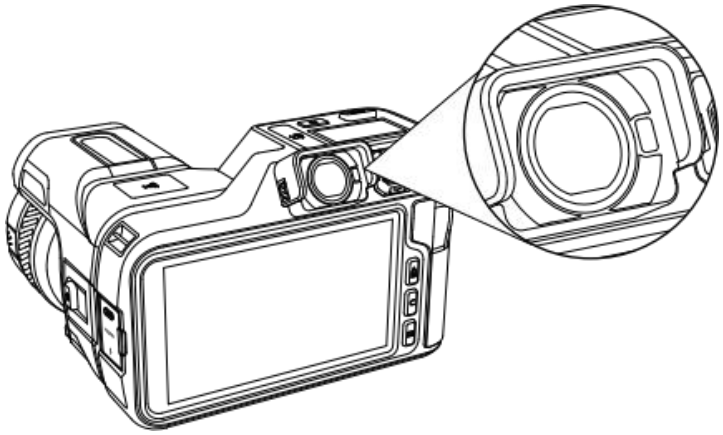
5. Instructions

5.1. Observation

5.1.1. Eyepiece switch

Flexibly switch between eyepiece observation and screen display to adapt to different observation needs and environments.

When observing, if you move closer to the eyepiece, the camera will automatically switch to the eyepiece for observation, and the LCD screen will be turned off; if you move away from the eyepiece, the camera will automatically switch to the screen display and the eyepiece will be turned off.



5.1.2. Image mode switching

According to the observation requirements in different scenes, different image modes are set during observation.

icon	Functional Description
	Click to turn on the IR (infrared) mode. The preview screen will display the infrared image of the target being measured.
	Click to turn on PIP (Picture in Picture) mode. The preview screen will show the superposition effect of the infrared image and the visible light image. Drag the infrared image to modify the size and position of the infrared area. Click ↖↘to set the transparency of the infrared image.
	Click to turn on MIF (fusion) mode. The preview screen will show infrared thermal image + contour enhancement effect.
	Click to turn on the visible light (VL) mode. The preview screen will display

	the visible light image of the target being measured.

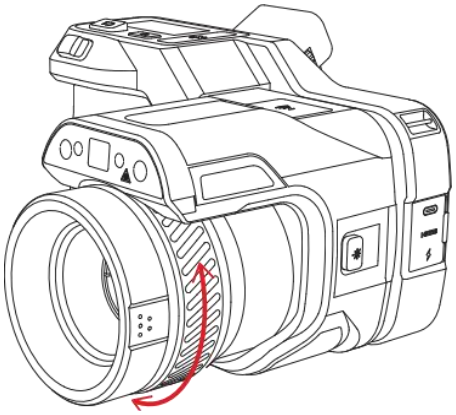
Note: In infrared, picture-in-picture and fusion modes, please make sure the image is in focus. If the infrared thermal image is not in focus, it will affect the accuracy of thermal temperature measurement and cause the visible light and thermal image to not match.

5.1.3. Focus Mode

This device supports multiple focus modes including manual focus, image focus, laser focus and continuous auto focus.

5.1.3.1. Manual focus

Manually rotate the "focus ring" to focus manually.



5.1.3.2. Image focus and laser focus

Enter "Settings-Focus Mode" and set image focus or laser focus.

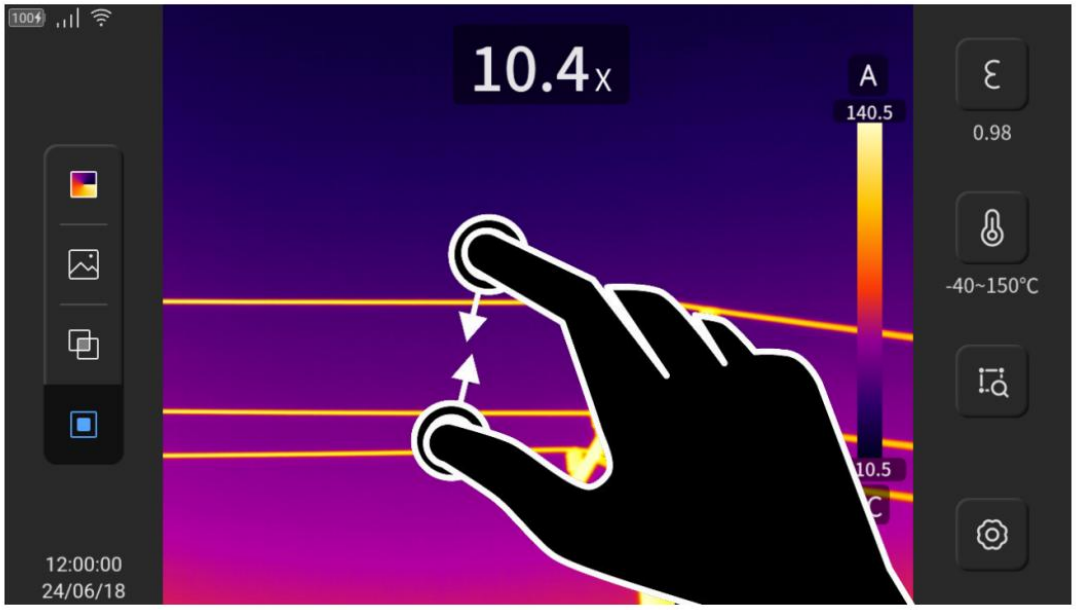
If laser focus is set, you can press the "laser key" to assist focusing during observation.

5.1.3.3. Continuous autofocus

Go to "Settings-Focus Mode" and turn on "Continuous Auto Focus". The device will achieve continuous and rapid auto focus based on the target scene.

5.1.4. Digital zoom

Digital zoom by pinching and pinching (supports infrared and visible light modes).



5.2. Photo/Record

5.2.1. Photoshoot

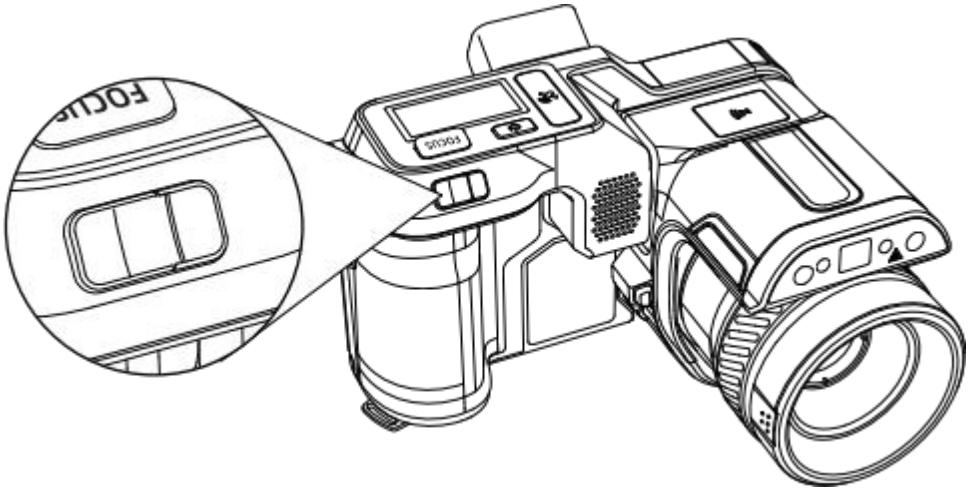
Turn on "Photo" in "Settings->Shooting Mode". Now short pressing the camera button will take you to "Photo".

The shooting mode can be set to take photo or freeze/take photo according to the actual usage scenario.

(1) Photographing: When observing, adjust the focus to make the image clear and then shortly press the "photographing key" to capture the current target image ;

(2) Freeze/Photograph: When observing, adjust the focus to make the image clear and then shortly press the "Photograph key" to freeze the current image. Press the "Photograph key" again to save the image and press the "Back key" to cancel the current

shooting.



5.2.2. Timed photo taking

Set a specific time interval to automatically take a specified number of photos.

In "Settings->Shooting mode", turn on the "Timed photo" switch and set the time interval and number of photos.

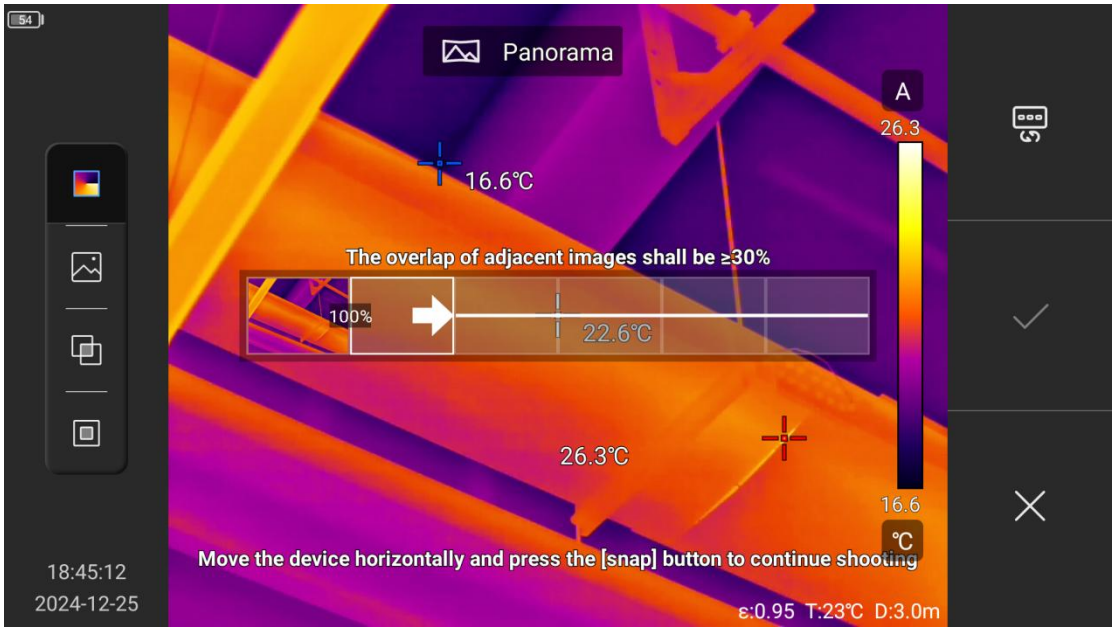
After the settings are completed, during observation, short press the "Photo" button to start the timed photo shooting, and short press the "Photo" button again to end the timed photo shooting task and save the picture.

5.2.3. Panoramic stitching

Use intelligent algorithms to stitch two or more consecutively shot pictures into a panoramic picture. (Only supported by some models)

1) In Quick Settings, tap Panorama. , enter panoramic mode;
2) Short press the "photo button" to start moving the device to take multiple photos (the overlap of adjacent images must be ≥30%);
3) After shooting, click ✓Finish stitching.

Note: The panorama stitching function is only supported in infrared mode.



5.2.4. Super Resolution

Improve image clarity and details through intelligent algorithms.

Click Super Resolution in the Quick Settings to enter the "Super Resolution" mode. The saved infrared image will be enlarged to 4 times the standard pixels, making the image clearer and more detailed.

Note: The super-resolution function is only supported in infrared mode.

5.2.5. Single video recording

Turn on "Video Recording" in "Settings->Shooting Mode". Now short pressing the camera button will activate the "Video Recording" function.

1) When observing, short press the "photo button" to start recording;
2) Short press the "Photo button" again to end recording and store both the infrared video and the visible light video.

5.2.6. Timer video recording

Automatically start recording at the set time and automatically stop recording after the preset time is reached .

In "Settings->Shooting Mode", turn on "Timed Recording" and set the delay time, duration and number of recordings. At this time, short pressing the camera button will function as "Timed Recording".

1) When observing, short press the "photo button" to start the countdown, and the video will start automatically when the countdown ends;

2) Short press the "Photo" button again to end the timed video recording.

5.3. Temperature measurement analysis

Analyze the image by drawing the analysis object, setting temperature measurement parameters , etc.

5.3.1. Emissivity

It refers to the ratio of the energy radiated outward by the measured object to the energy radiated by a black body at the same temperature and wavelength, and the value is between 0 and 1. The higher the emissivity, the stronger its infrared radiation ability; conversely, the lower the emissivity, the relatively weaker the infrared radiation ability.

Click ε to enter the emissivity setting interface and set different emissivities according to the target being measured; when the values in the standard emissivity table are not suitable for measurement, set a custom emissivity value .

Reference: See "8.1. Common Object Emissivity Table" in this document for details.

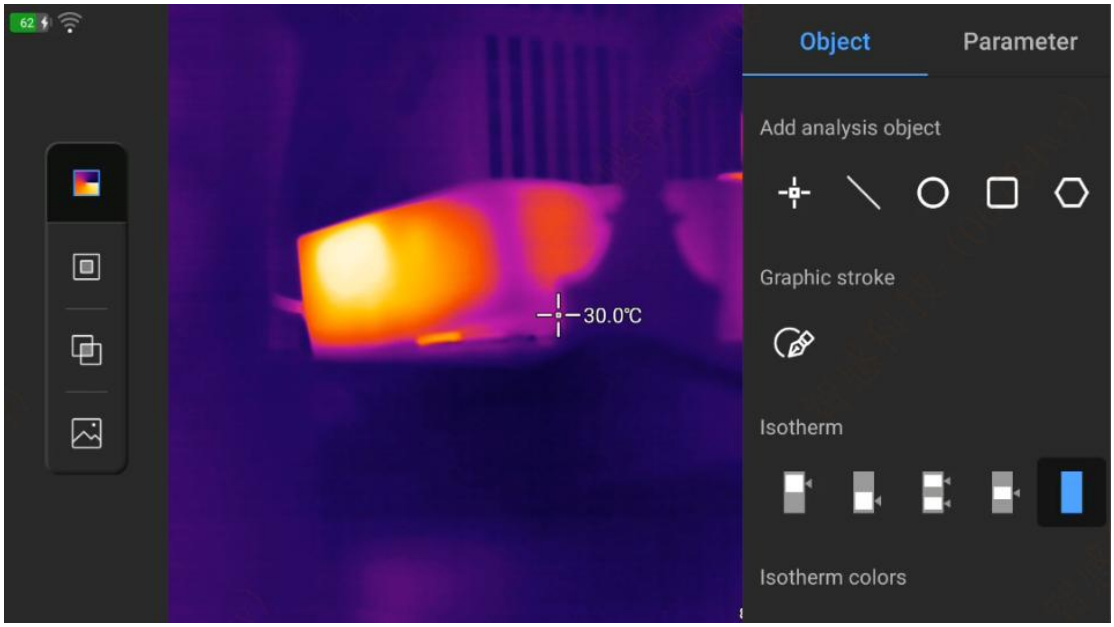
5.3.2. Temperature measurement range

Set the appropriate temperature measurement range according to the temperature requirements of the measurement target.

Click to set the temperature measurement range.

5.3.3. Real-time analytics

5.3.3.1. Add/remove analysis objects



1) Click on the right side to enter the object menu interface;

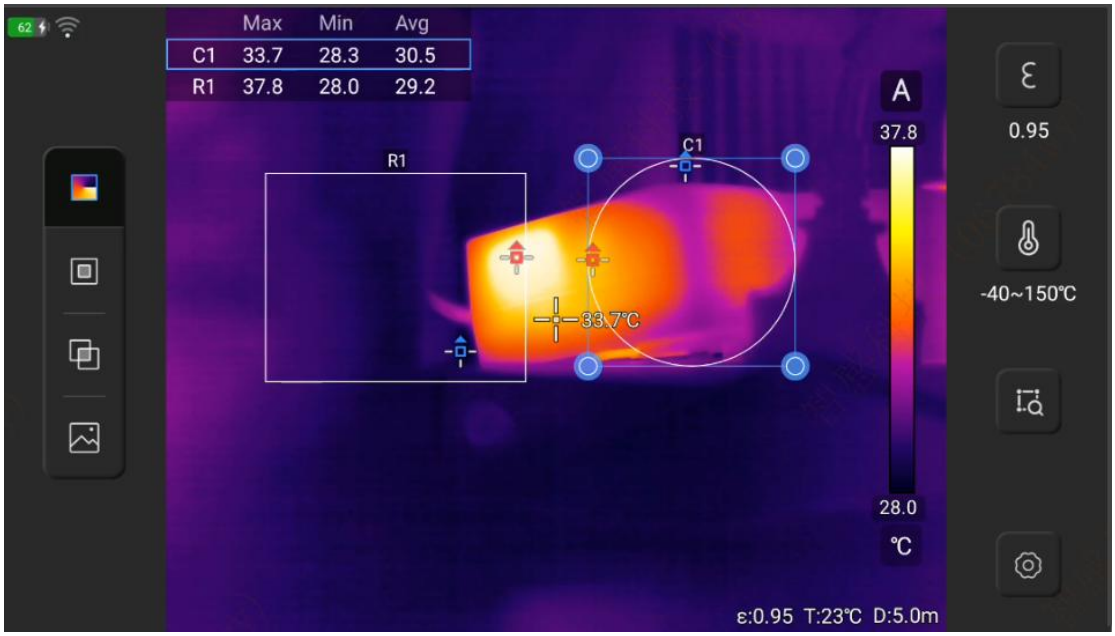
2) Supports adding various types of temperature measurement analysis objects such as points, lines, circles, rectangles, and strokes;

icon	Functional Description
	Point analysis objects
	Line analysis objects
	Circular analysis object
	Rectangle Analysis Object
	Irregular analysis objects
	delete

5.3.3.2. Change the size and position of the analysis object

1) Select the analysis object;

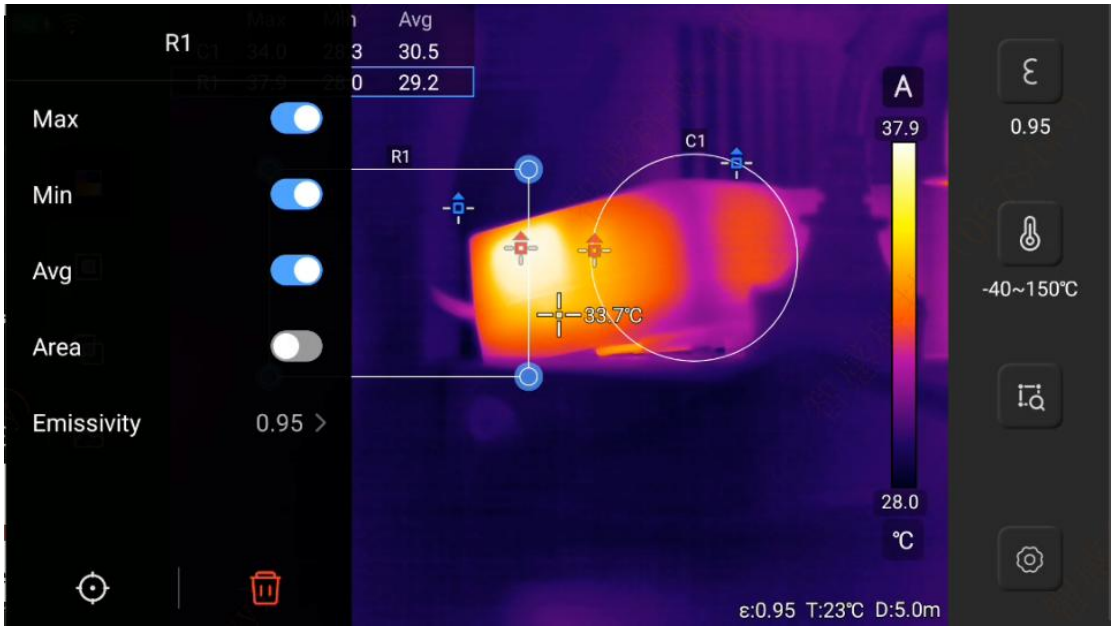
2) Drag to change the size and position of the analysis object.



5.3.3.3. Customize the display of analytical data

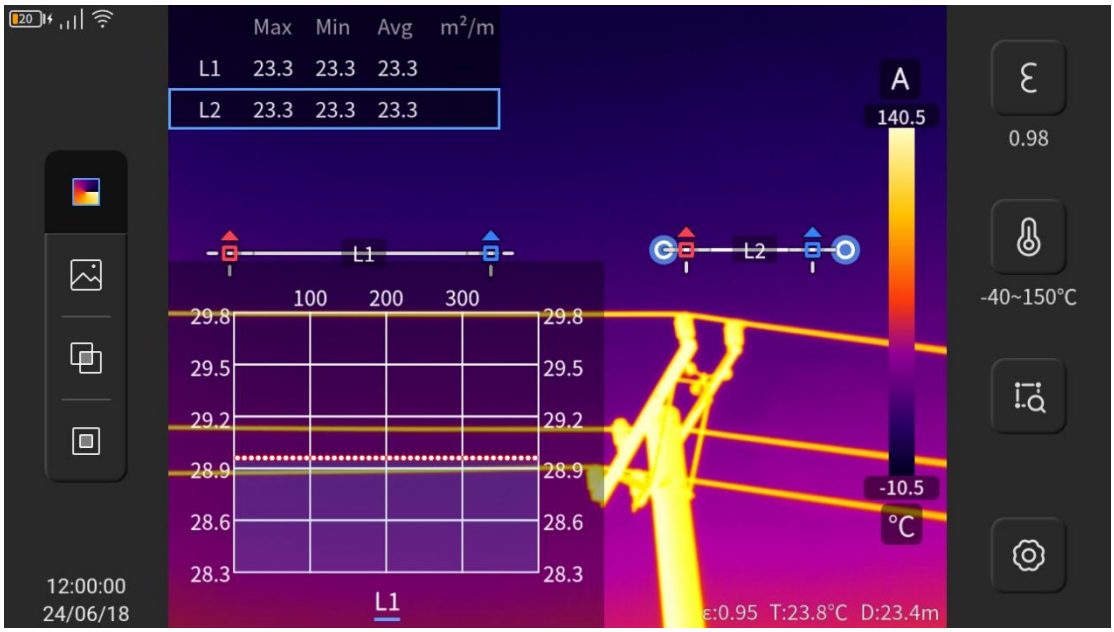
Long press the analysis object and select the data to be displayed, such as maximum temperature, minimum temperature, average temperature, and regional area (only for regional analysis objects, you need to press and hold the laser ranging key when measuring the area).

Click to delete the analysis object.



5.3.3.4. Line temperature trend chart

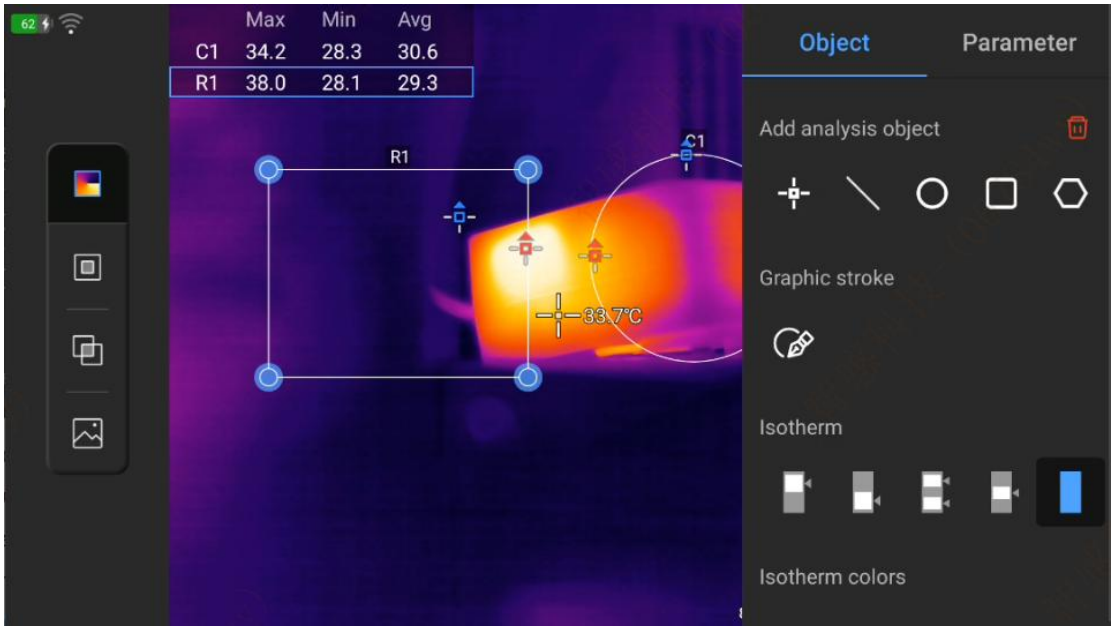
After selecting "Line Analysis Object", the temperature trend graph of the analysis object is displayed. The horizontal axis represents pixels and the vertical axis represents temperature.



5.3.3.5. Isotherms

Used to quickly screen abnormal temperature areas of the target being tested.

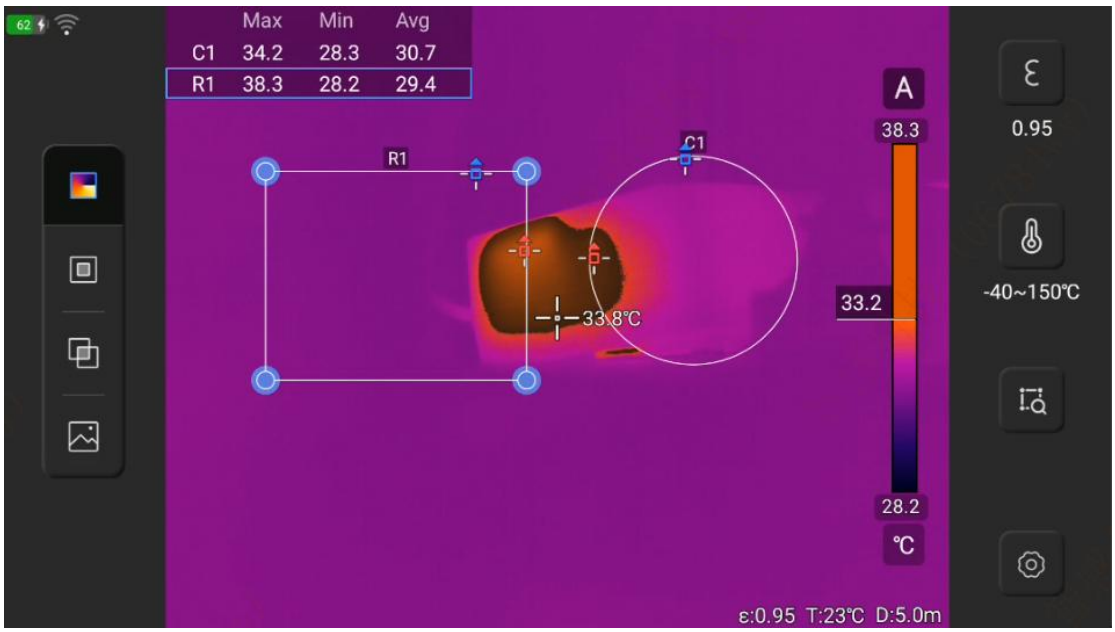
Note: Isotherm is only supported in A (auto dimming) mode.



1) Click on the right side to enter the object menu interface;

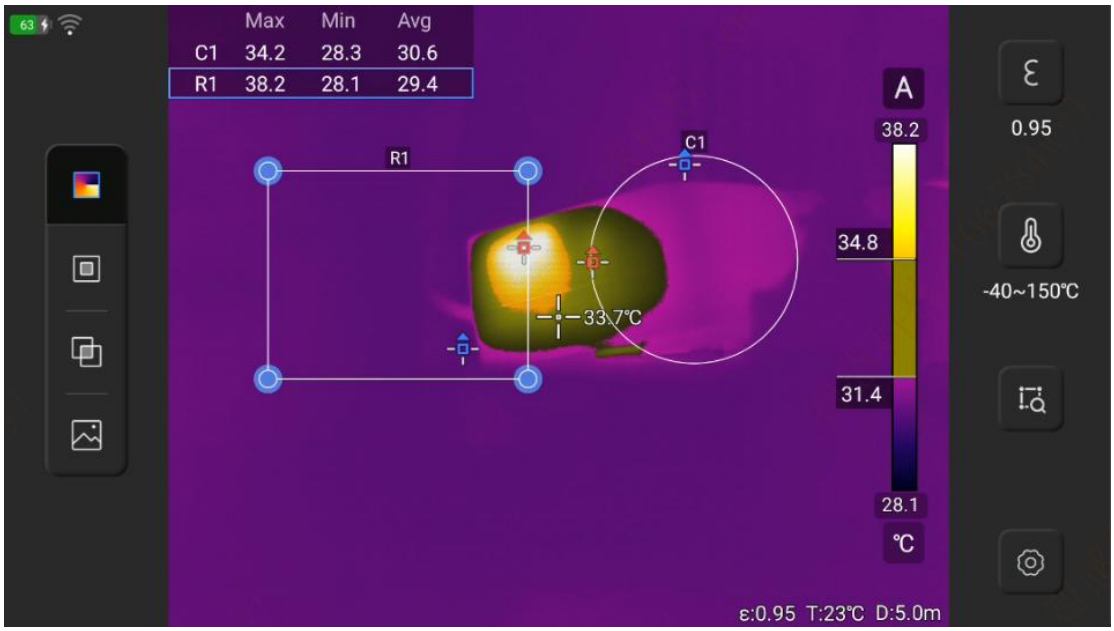
2) You can select upper isotherm, lower isotherm, isotherm within the interval, isotherm outside the interval, and customize the isotherm color.

Upper limit: Set the upper limit temperature threshold and color. The area above the upper limit temperature will be filled and displayed according to the set color.



Lower limit: Set the lower temperature threshold and color. The area below the lower temperature will be filled and displayed according to the set color.

Within the range: Set the temperature threshold and color within the range, and the area within the range temperature will be filled and displayed according to the set color



Outside the range: Set the upper/lower temperature threshold and color respectively, and the area outside the temperature range will be filled and displayed according to the set color.

5.3.3.6. Color highlights

Through image processing technology, the color of specific temperature areas is highlighted for easy observation and identification.

Note: Not effective in visible light mode.

1) Click on the right side to enter the object menu interface;

2) Four modes are available: upper limit, lower limit, inside interval and outside interval.

Upper limit: Set the upper limit temperature. The screen above the upper limit temperature will be mapped with the corresponding color palette, otherwise it will be mapped in the form of visible light.

Lower limit: Set the lower limit temperature. The picture below the lower limit temperature will be mapped with the corresponding palette, otherwise it will be mapped in the form of visible light.

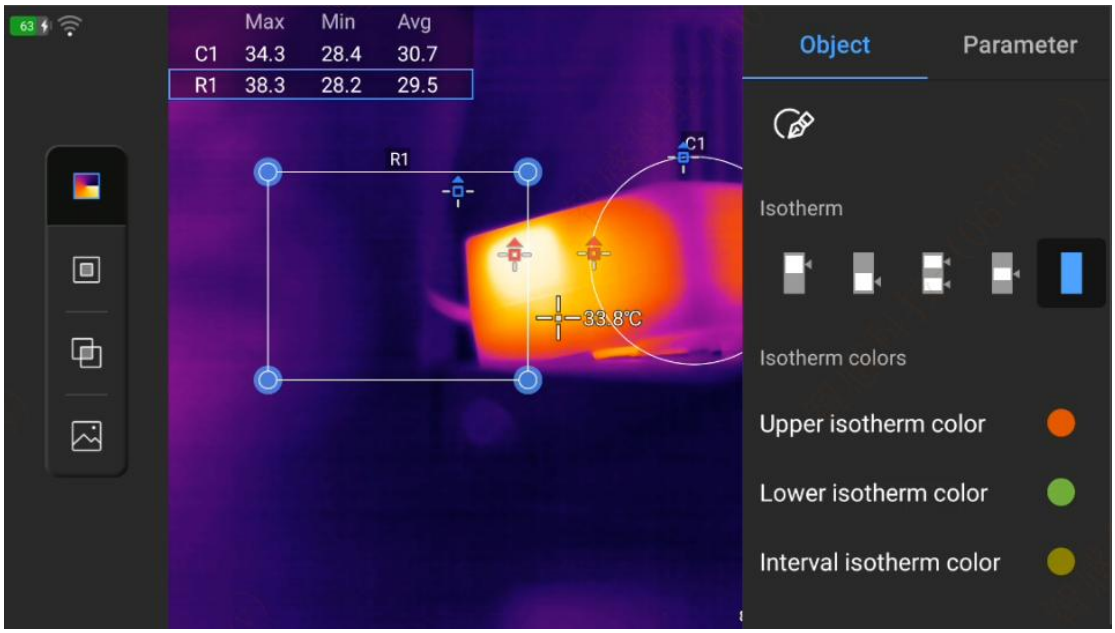
Within the interval: Set the upper and lower temperature limits. The images within the set temperature range will be mapped with the corresponding color palette, and those outside the range will be mapped in the form of visible light.

Outside the interval: Set the upper and lower temperature limits. The screen outside the set temperature range will be mapped with the corresponding color palette, and the screen within the range will be mapped in the form of visible light.

5.3.3.7. Temperature difference analysis

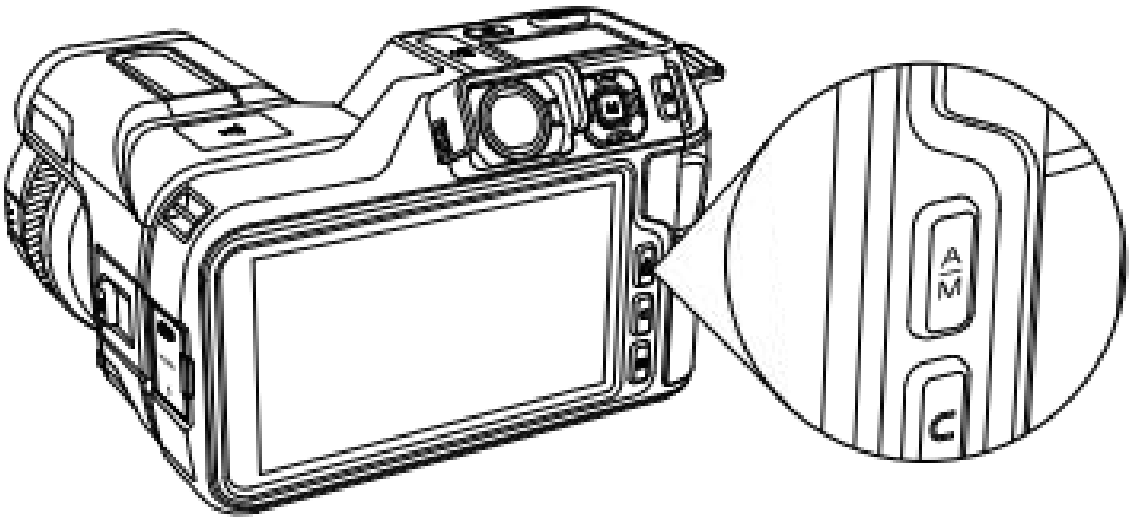
Analyze the temperature difference between two areas.

After adding at least 2 analysis objects, click the temperature difference mode "△T", select any 2 analysis objects, and perform temperature difference calculation. Click "△T" again to exit the temperature difference mode.



5.3.4. Level/Span

According to the current target heat distribution, set the Level/Span mode to obtain the best thermal image effect. Supports four modes: automatic (A), manual (M), semi-automatic (S), and regional dimming (L).

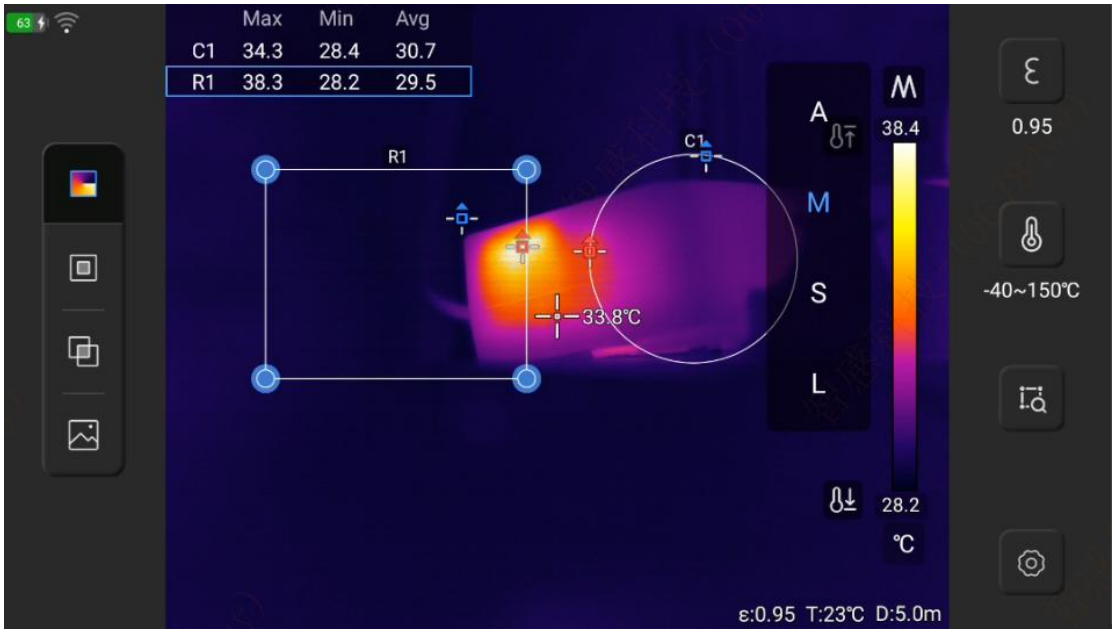


(1) Automatic (A) mode: Automatically adjusts the upper and lower limits according to the global maximum and minimum temperatures of the image to achieve the best image presentation effect.

(2) Manual (M) mode: Manually set the upper and lower limits of the temperature width . During the adjustment process, the image dimming changes synchronously.

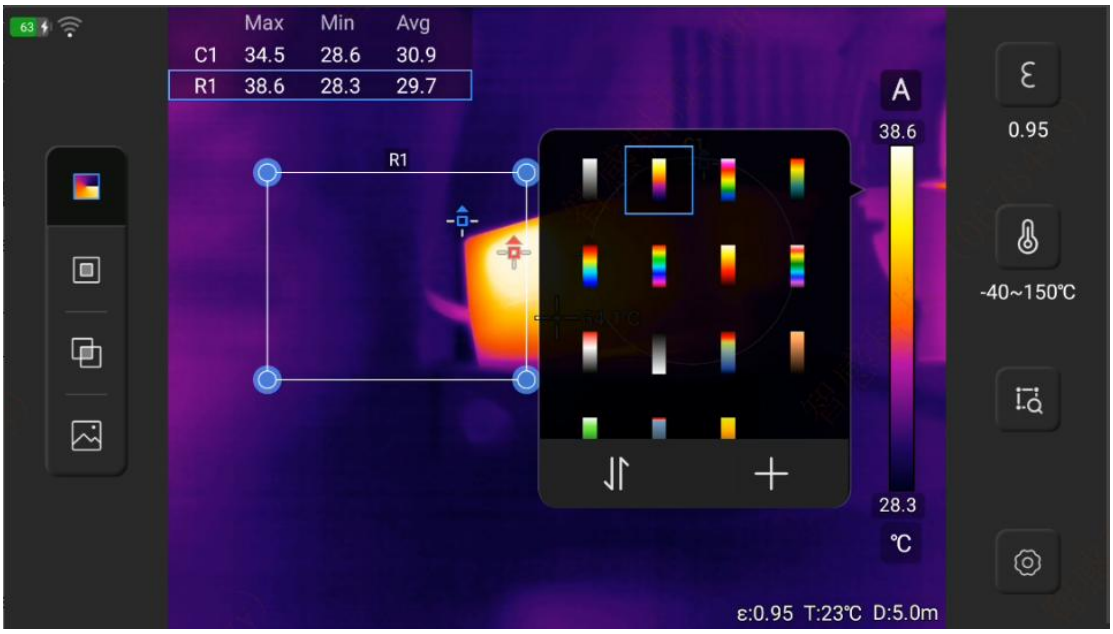
(3) Semi-automatic (S) mode: Manually set the △T (temperature difference) value, automatically adjust the upper and lower limits of the temperature width according to the set temperature difference value, and the image dimming changes synchronously.

(4) Local dimming (L) mode: Based on the contrast of the selected target area (automatically drawn based on the screen for the first time, the size and position can be adjusted and dragged), it is mapped to the entire image.



5.3.5. Color Palette

Different color palettes will display different temperature colors, and the colors will vary with the temperature, making it easier to analyze the details of the image.



Click the color palette on the right to set it.

(1) Color palette selection example

type		Example
Application Scenario	Power inspection/petrochemical metallurgy	**Iron red** palette is usually used , which has high visual contrast, especially in strong outdoor light environment, which can enhance the visibility of the image and enable inspectors to clearly see the temperature difference even in complex outdoor environment.
	Building HVAC	Typically using a **rainbow 1** color palette, it provides a rich color variation that helps detect subtle temperature differences, which is critical for thermal imaging inspections in the building industry, where thermal defects often manifest as small temperature

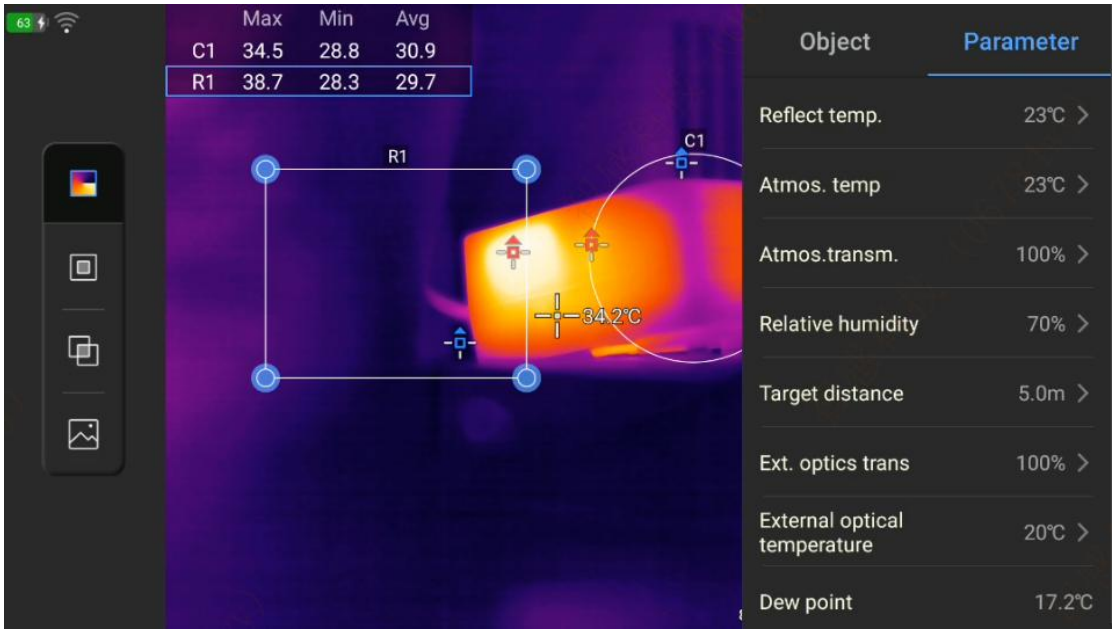
		changes.
	Industrial temperature measurement	**Rainbow 2 color palette** is commonly used . In industrial applications, accurately identifying small changes in temperature is critical to monitoring equipment performance and preventing failures . Rainbow 2 helps users identify temperature differences more clearly by enhancing color contrast.
Temperature Difference	Large temperature difference environment	It is recommended to use **white hot** and **black hot** palettes . These two palettes can provide clear images and accurate temperature comparison in large temperature difference environments, helping users better identify and distinguish different temperature areas.
	Small temperature difference environment	It is recommended to use **Rainbow 2** and **Arctic** palettes . These two palettes can enhance the contrast of the image and help accurately locate objects in environments with small temperature differences.

(2) Custom color palette

Long press the color palette to move, edit or delete; click "+" to add a new color palette and customize the color type; click " ⇵ " to invert all color palettes. (Supported by some models)

5.3.6. Temperature measurement parameters

The temperature measurement parameters include emissivity, reflection temperature, atmospheric temperature, atmospheric transmittance, relative humidity, target distance, external optical temperature, and optical transmittance. To obtain more accurate temperature measurement, the parameter values can be modified manually, and the modified parameters will take effect immediately.



1) Click on the right side to enter the object menu interface;

2) Click "Parameters" to enter the parameter setting interface.

icon	Functional Description
	Reflected temperature: the temperature corresponding to the infrared radiation reflected by other objects in the target environment; If the emissivity of the target is low and the actual temperature is much lower than the temperature of its reflection source , the reflection temperature value should be set to the temperature value of the reflection source (if the on-site test conditions permit, avoiding reflection interference as much as possible can greatly improve the measurement accuracy)
	Atmospheric temperature: the air temperature between the thermal imager and the target object ; atmospheric temperature value is usually set to the default value. This parameter needs to be set only when the atmospheric temperature is higher than the actual temperature of the measured target.
	Atmospheric transmittance: Atmospheric transmittance refers to the different attenuation degrees caused by the interaction

	between the target's infrared radiation and the absorption and scattering of atmospheric components (gas molecules such as water, carbon dioxide, aerosols) when it is transmitted in the atmosphere; Intelligent correction, does not support modification
	Relative humidity: relative humidity of the ambient air where the target is located; In case of short distances and normal humidity, relative humidity is usually the default value.
	Target distance: The actual distance between the thermal imager and the target being measured. At short distances or less than the maximum accurate temperature measurement distance of the thermal imager, the target distance is usually set to the default value.
	Optical transmittance: Optical transmittance refers to the transmittance of any external lens or infrared window used in front of the device lens; If the optional external optical lens has been calibrated at the factory, or there is no external infrared window , the optical transmittance is usually set to the default value.
	External optical temperature: The external optical temperature setting is used to compensate or correct the influence of the temperature of the external optical device itself on the measurement target; The external optical temperature is set to the default value. The setting is considered only when the temperature of the external optical device is higher than the temperature of the measured target.
	Dew point: The temperature at which the air is cooled to saturation while the water vapor content in the air remains unchanged and the air pressure remains constant is called the

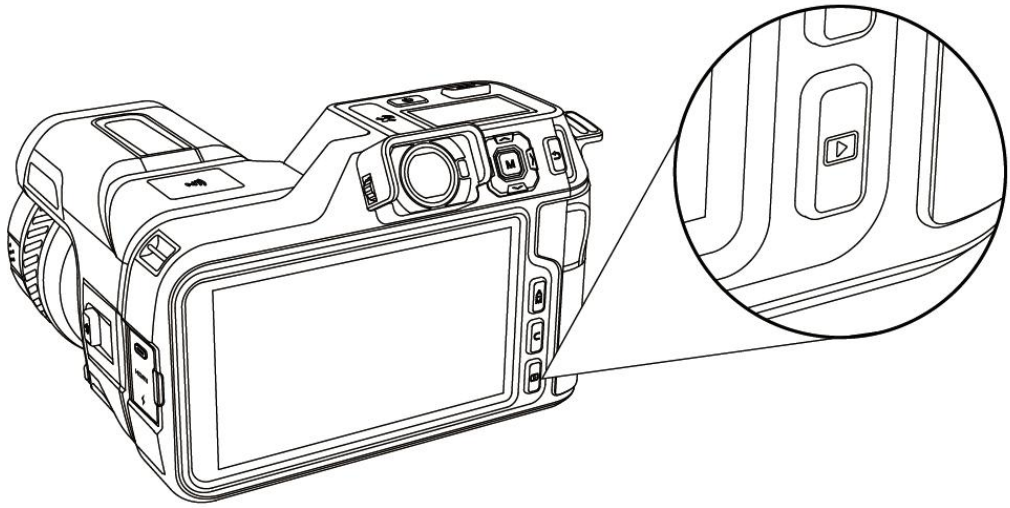
	dew point temperature. The dew point value is automatically calculated by the formula and cannot be modified.

If you are unsure which values to use, the following values are recommended :

Emissivity	0.95
Reflected temperature	23℃
Atmospheric temperature	23℃
Relative humidity	70%
Target distance	3.0m
External optical temperature	20℃
Optical transmittance	100%

5.4. Gallery

View all the images that have been saved. Press the "Playback" button on the camera to enter the gallery preview interface.



Click " Local" at the top to switch between viewing files on the local device, SD card, and cloud disk.

5.4.1. Select image

In the gallery interface, click the "Select" button in the upper right corner or long press the image to select the image for Bluetooth transmission, generate PDF report, etc.

5.4.2. Image Editing

1) In the gallery interface, click any picture to enter the editing interface;
2) Click to add text, voice, picture, or graffiti annotations to the current picture;
3) Click to save, rename, transfer via Bluetooth, generate PDF report, upload to cloud, cut to SD card, delete, etc.
4) Click " " to modify the current image analysis object, isotherm, temperature difference and temperature measurement parameters. The operation is the same as Section 5.3.3 of this document.

Zoom in and out of an image

In picture editing mode, pinch two fingers together to zoom in or out. When the image is zoomed in, slide anywhere on the screen to move the image .

5.4.3. Video Editing

1) Click to enter the video preview interface;
2) Click any video file to view the video details;

3) Click to play the video;

4) The operations of collection, renaming, transfer, cutting to SD card, deletion, analysis (only supports videos in irgd format) are the same as those for pictures;

5) When playing a video, click to capture the current frame .

5.4.4. Photo Album

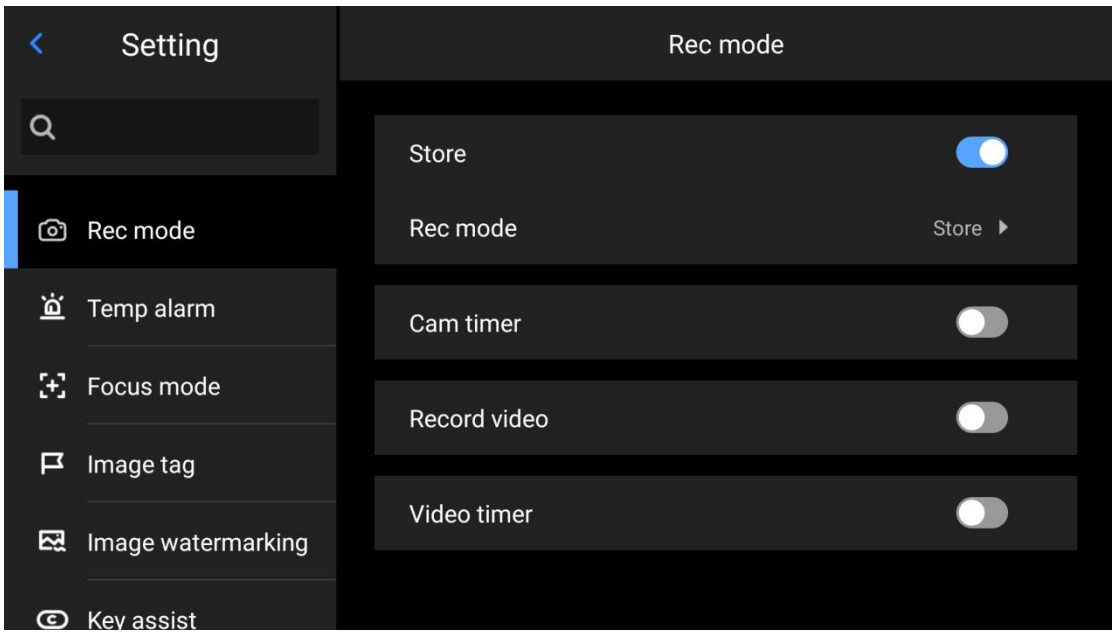
Click to enter the album interface to view and edit "Personal Favorites" and user-created albums.

5.4.5. File Search

Click to enter the search interface, enter the picture name, time, tag and other information, and search for the corresponding picture/video.

5.5. System Settings

Click on the observation interface to enter the setting interface.



5.5.1. search

Click to search for the function options you want to set by keyword .

5.5.2. Shooting Mode

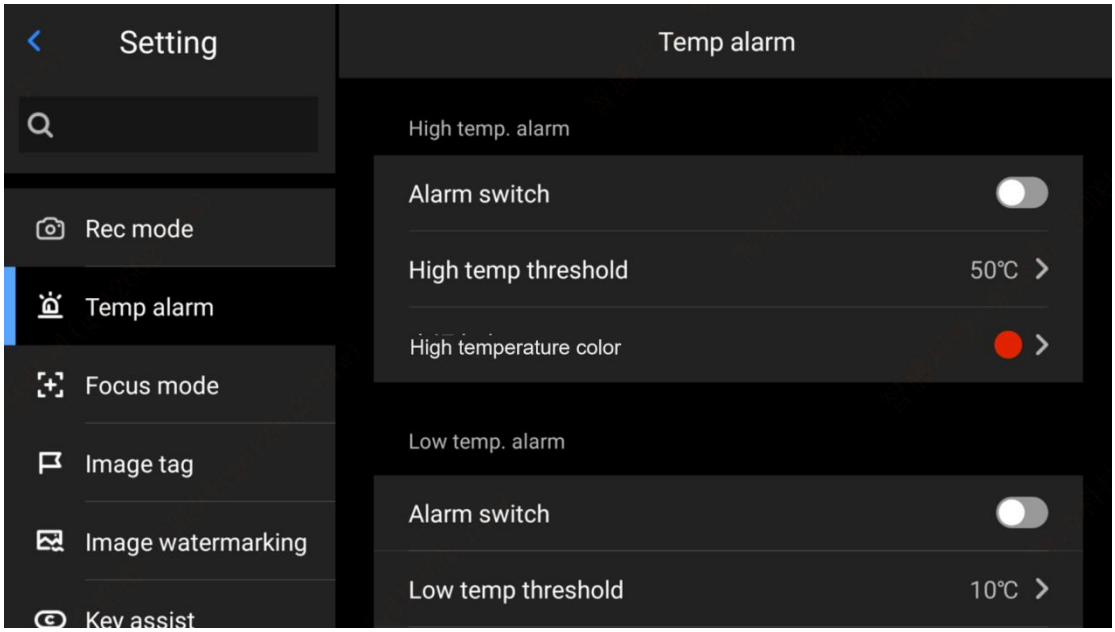
For details, please refer to "5.2. Photo/Record" in this document.

5.5.3. Temperature alarm

Set high temperature alarm and low temperature alarm, and support three kinds of reminders: light, sound and color.

(1) High temperature alarm: triggered when the target temperature exceeds the high temperature threshold;

(2) Low temperature alarm: triggered when the target temperature is lower than the low temperature threshold;

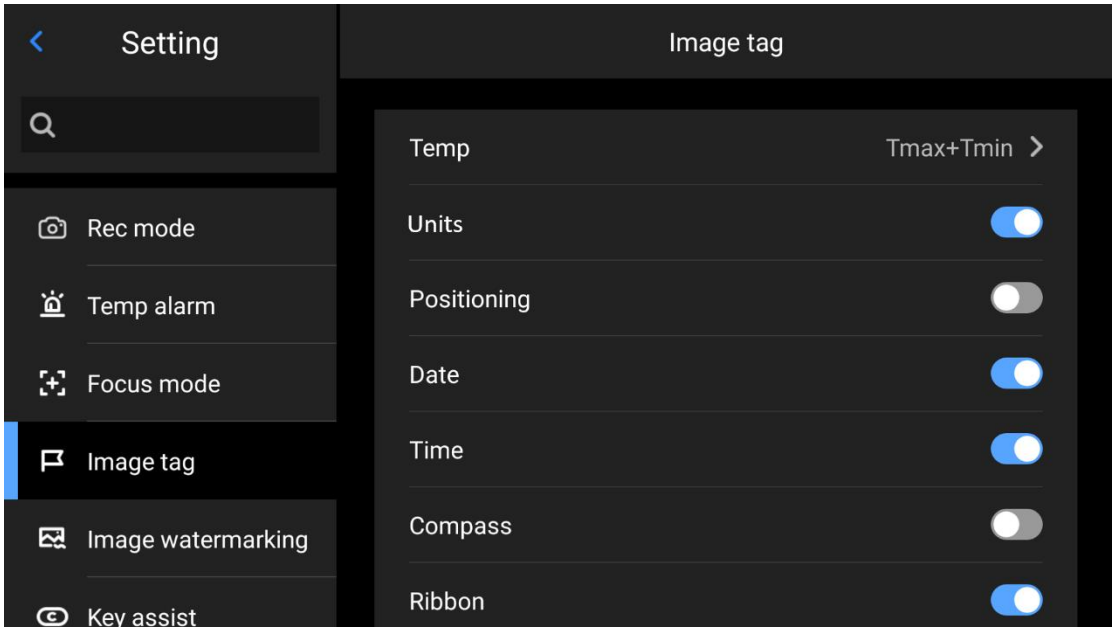


5.5.4. Focus Mode

For details, see "5.1.3. Focus Mode" in this document.

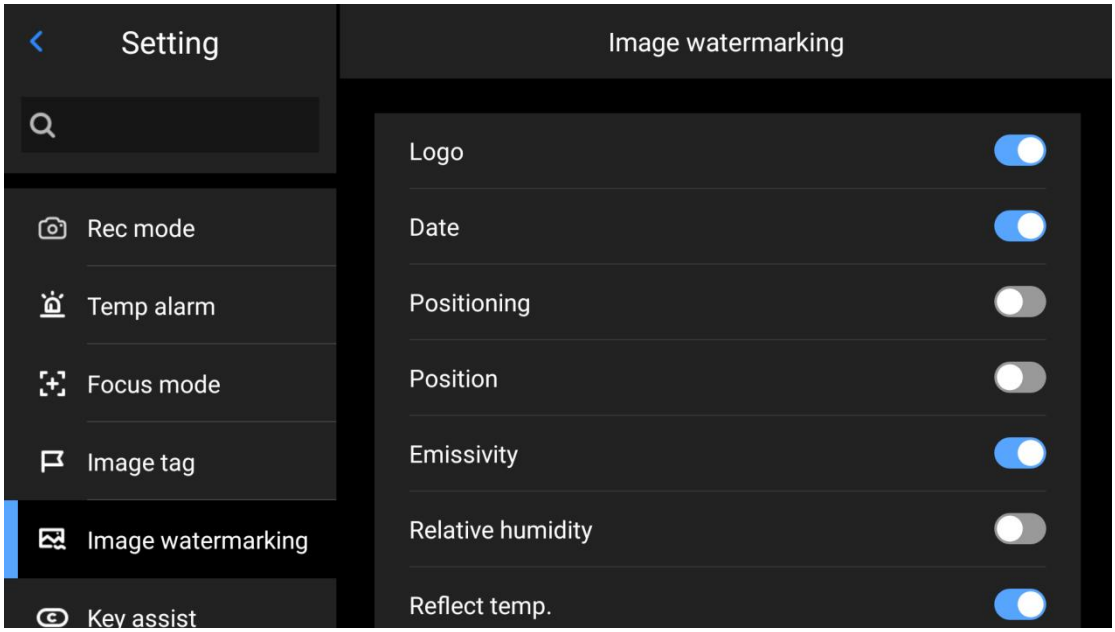
5.5.5. Image tagging

Watermark information displayed on the preview screen during real-time observation.



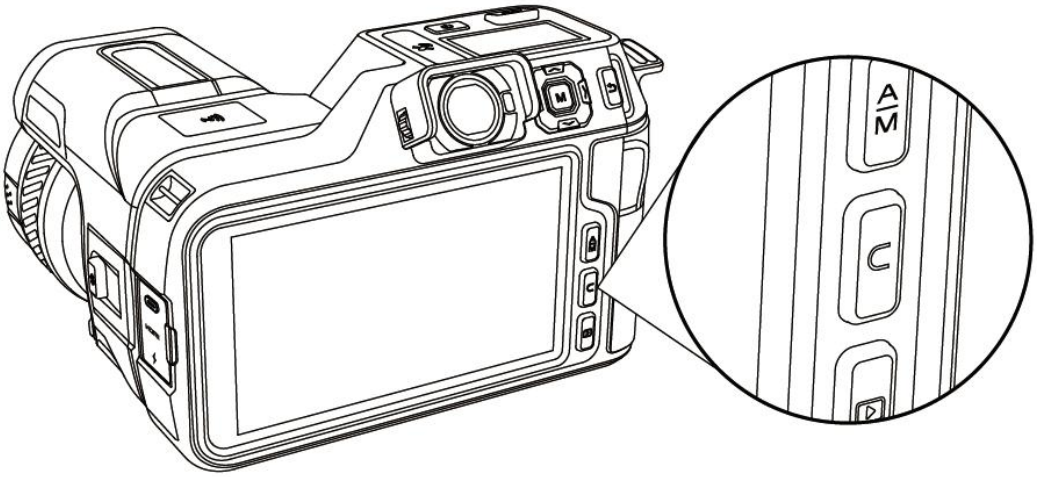
5.5.6. Image Watermark

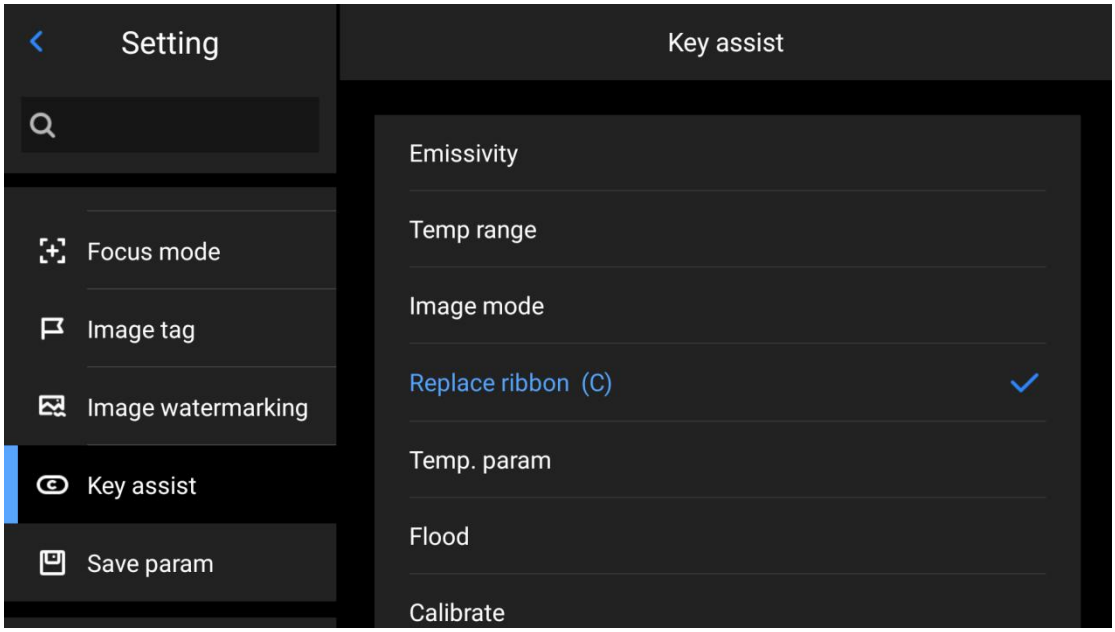
Watermark information superimposed when saving images.



5.5.7. Assistive buttons

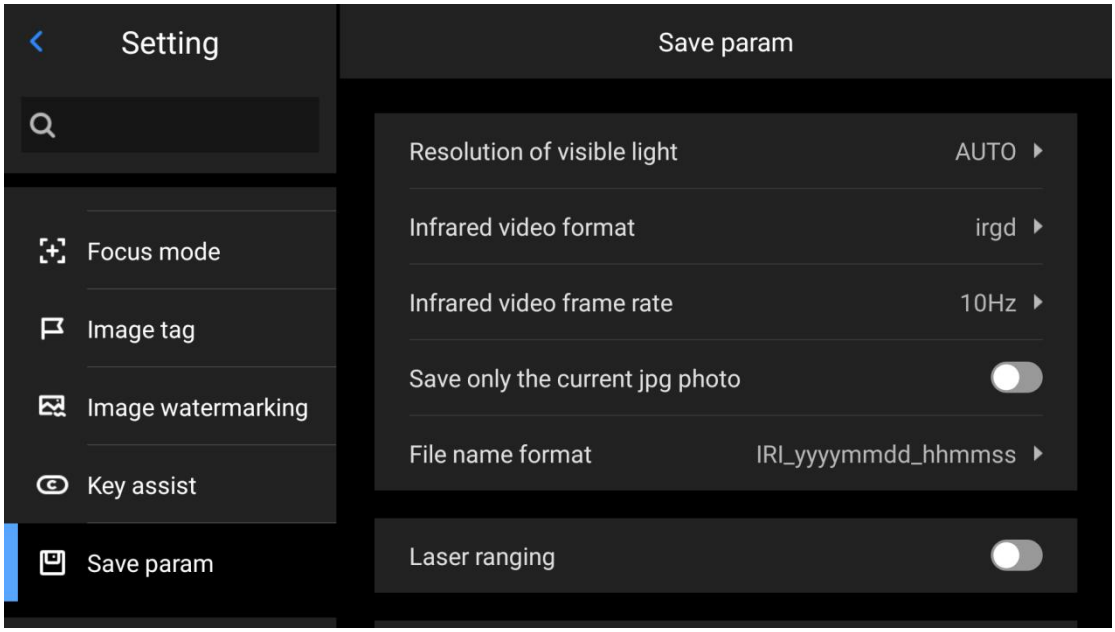
Set the quick operation of the "C" auxiliary key on the fuselage to support emissivity, temperature measurement range, image mode, ribbon replacement, temperature measurement parameters, lighting, calibration, etc.; after the setting is completed, the "C" auxiliary key has the corresponding function.


A/M
C


Setting
Focus mode
Image tag
Image watermarking
Key assist
Save param
Key assist
Emissivity
Temp range
Image mode
Replace ribbon (C)
Temp. param
Flood
Calibrate

5.5.8. Save Parameters

Save and set the image parameters of the device.



5.5.8.1. Visible light resolution

Sets the visible light resolution.

5.5.8.2. Infrared video formats

Set the infrared video format, including 2 types: irgd/mp4.

irgd: video encoding format with temperature data;

mp4: Video encoding format without temperature data.

5.5.8.3. Infrared video frame rate

Set the infrared video frame rate.

Frame rate: The number of frames per second that a device can capture and output.

5.5.8.4. Only save the current JPG photo

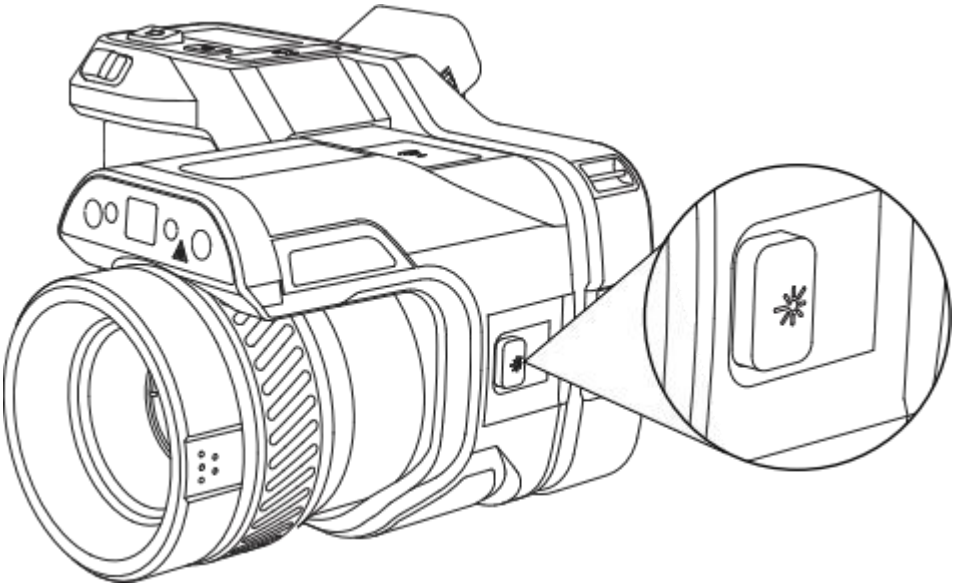
Only pictures in the current image mode are saved.

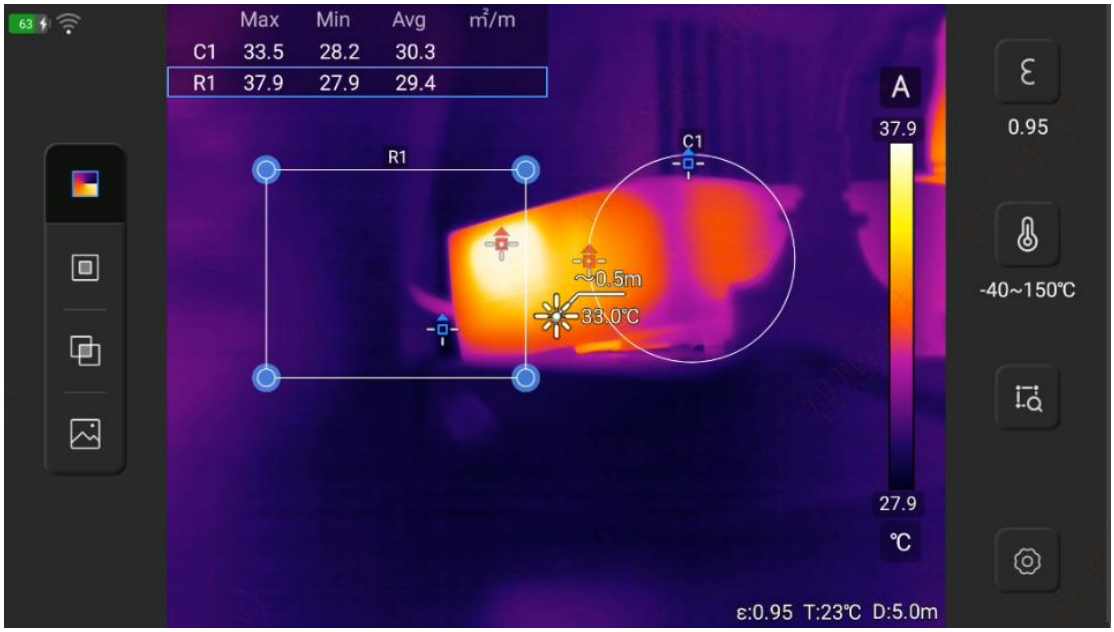
5.5.8.5. File naming

Set up file naming conventions.

5.5.8.6. Laser Distance Measurement

When the laser ranging function is turned on, press or long press the "laser button" to emit a laser beam, start real-time ranging, and display the target distance (if area calculation is turned on, the area of the target area is calculated in real time).





Long press the laser button to calculate the distance/area in real time. Press the camera button at this time to save the corresponding distance and area data on the picture.

5.5.9. Cloud Services

Used for image uploading, storage and sharing, users upload the images and videos they take to the cloud for access and management at any time .

After the device is connected to the Internet, you can register/log in to the "Cloud Service" and upload the images of this device to the cloud.

5.5.10. Wi-Fi

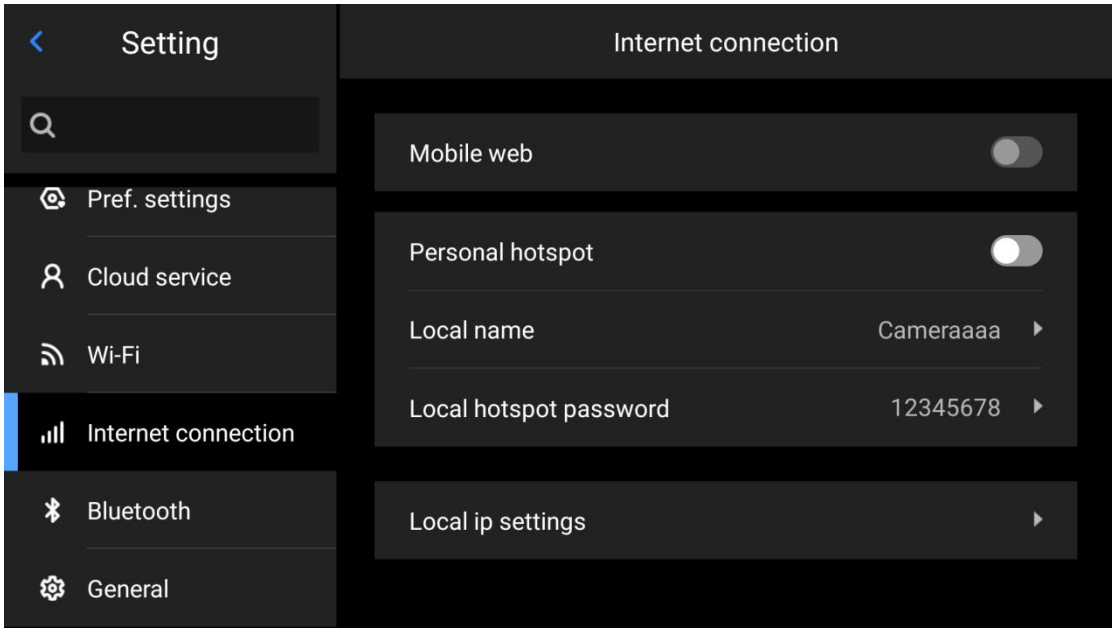
Connect the device to a wireless LAN via Wi-Fi, mainly for data transmission and OTA upgrades.

Turn on the Wi-Fi switch, search for nearby networks, select the network you want to connect to, enter the password and connect.

Note: To ensure reliable WiFi signal connection and stable data transmission, please try to ensure that the connection distance is within 10m and there are no obstacles (such as walls, etc.)

5.5.11.Network connection

Through network connection, functions such as real-time video streaming, data transmission and OTA upgrade can be realized.



(1) Mobile network (supported only by some models): External 4G mobile network.

(2) Personal hotspot: Set the device hotspot name and password to enable mobile phone and PC analysis software to remotely obtain device images.

(3) Supports connection to mobile phones and PC analysis software via AP and LAN:

① AP Connection

1) Enter the quick settings interface and turn on the " AP " switch;

2) Connect your mobile phone/computer (TCP/IP properties on the computer must be set to "Auto-acquire") to the hotspot of this device;

3) Click "Connect Device" on the mobile phone or PC analysis software and select " AP " mode to load to complete video streaming and wireless connection.

② LAN connection

1) Enter the quick settings interface and turn on the "LAN" switch;

2) Set the device IP and gateway information to ensure that the device and the computer are in the same network environment, such as the device IP address is 172.16.14.216 , the DNS server address is 202.103.24.68 , the computer IP address is 172.16.14.230 , and the DNS is 202.103.24.68 ;
3) Connect the device to the computer with an RJ45 network cable;
4) Click "Connect Device" on the PC analysis software and select "LAN" to load to complete video streaming and wireless connection.

Note: IP addresses cannot be set in the 192.168.42.xxx network segment.

5.5.12.NFC

Use near-field communication technology to quickly create a device Wi-Fi hotspot and connect to mobile phone analysis software to achieve fast data transmission and sharing .

1) Install the analysis software on your phone and turn on NFC;
2) Place the NFC sensing area of your phone close to the NFC sensing area of your device;
3) After the connection is successful, you can view the real-time image and control the device in the mobile analysis software

5.5.13.Bluetooth

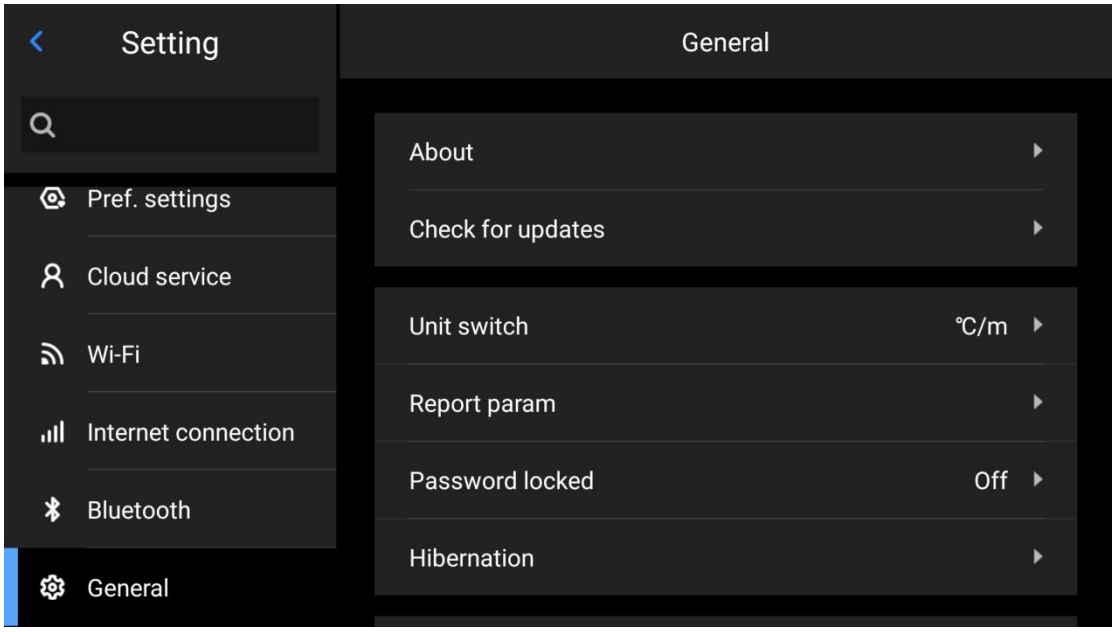
After the Bluetooth headset is connected to the device, it supports voice annotation of images, and can also be connected to other devices for Bluetooth image transmission.

1) Turn on the Bluetooth headset and follow the device pairing steps to enter pairing mode;
2) Turn on the Bluetooth switch, the system will automatically search for Bluetooth devices, and select the Bluetooth headset to pair in the device list;
3) Once pairing is complete, the headset will attempt to reconnect each time it is turned on.

Note: Due to compatibility issues, please try to choose mainstream brands. The model we tested is: Xiaomi.

5.5.14.General settings

Contains information such as device software version and SN, and supports changing language, time and date, storage path, and other information.

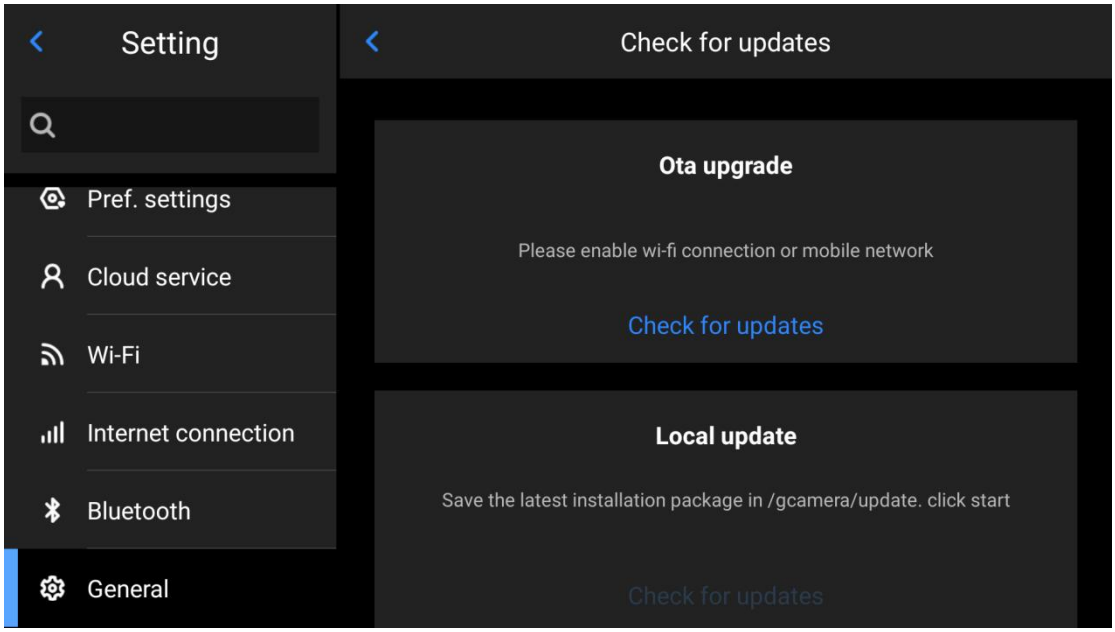


5.5.14.1. About this machine

Check the device version information.

5.5.14.2. Check for updates

Check the device version update status, supporting OTA upgrade and local upgrade.



OTA Update

1) After the device is connected to the Internet, click "Check for Updates" and the latest upgrade package is detected;
2) Click "Download and Install", restart the device after the upgrade is complete, and upgrade to the latest version.

Local upgrade

1) Put the upgrade package in the /GCamera/Update directory;

2) Click "Check for Updates" and the latest upgrade package is detected;

3) Click "Upgrade Installation" and restart the device after the upgrade is complete to upgrade to the latest version.

Note: OTA upgrades require an unobstructed network and sufficient battery power. If you have any questions during the upgrade process, please contact the device manufacturer in a timely manner .

5.5.14.3. Unit Switching

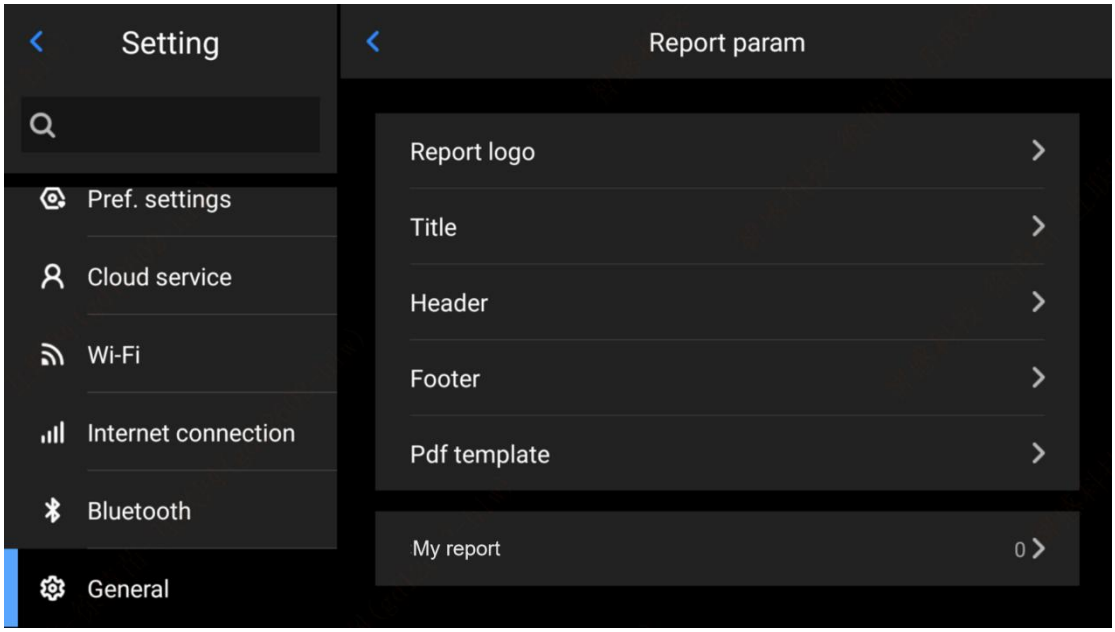
Set the temperature units and distance units .

(1) Temperature units: Celsius, Fahrenheit, Kelvin.

(2) Distance units: meters, yards, feet.

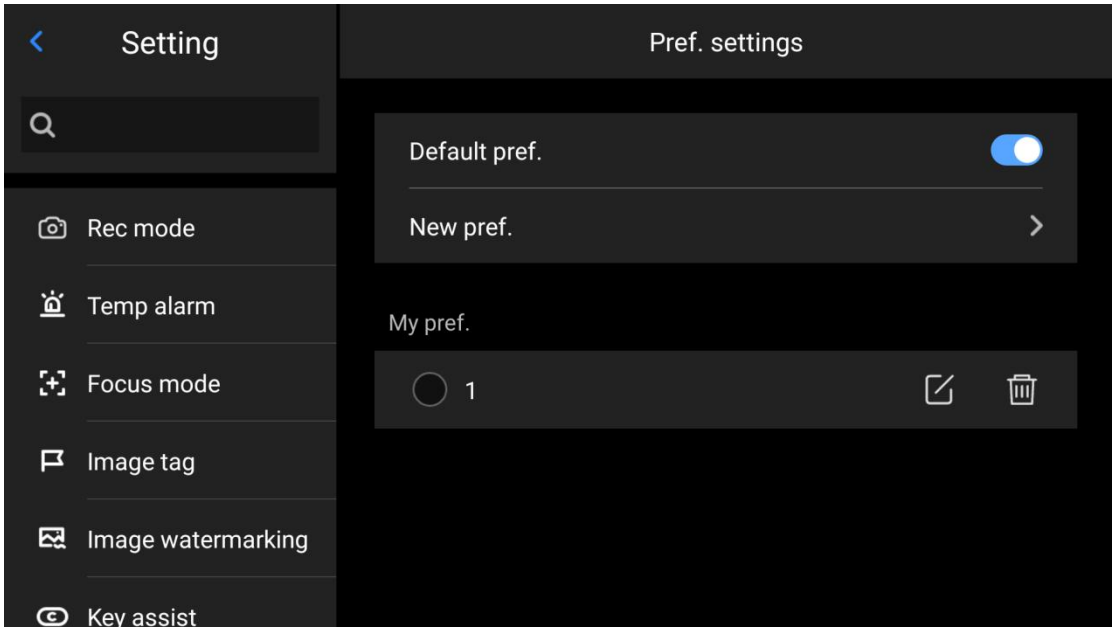
5.5.14.4. Report parameters

Set PDF report parameters .



5.5.14.5. Preferences

Users can adjust device parameters according to specific application scenarios and personal needs to optimize image quality and improve temperature measurement accuracy. Supports adding, editing, and deleting operations.



5.5.14.6. Password lock

Set a password to protect the device when it starts. If you forget the password, contact the device manufacturer.

5.5.14.7. Shutdown and hibernation

Set scheduled shutdown and sleep time.

5.5.14.8. Date and Time

Set the system date and time. "Date automatic update" requires automatic synchronization after connecting to the Internet.

5.5.14.9. Language settings

Set the language.

5.5.14.10. Storage Management

Displays the capacity of internal storage devices and information of external SD cards, and supports custom settings for storage options.

Note: Due to software compatibility issues, it is not possible to adapt to all brands of SD cards on the market. It is recommended to use the SD card that comes with the device .

5.5.14.11. Factory Reset

Restore the device to factory settings. Please back up data in time and operate with caution.

5.5.14.12. Format

Delete all pictures, videos and other files currently saved on the device.

Note: Formatting will permanently delete all images and other data, so please operate with caution.

5.5.14.13. Synchronize Data

If you cannot view data after remote copying, file deletion, or SD card cross-use, you can restore the data by synchronizing the data.

5.5.14.14. Lens recognition

Automatically identify the lens information installed on the current device.

5.6. Quick Operations

Support shortcut keys for screenshot and screen recording operations.

(1) Screenshot: Press and hold the M key while pressing the Gallery key to take a screenshot and save the current image. The storage path is: This computer\Camera\Internal shared storage space\ScreenShot\Image;

(2) Screen recording: Press and hold the M key while pressing the auxiliary key to start screen recording, click  the button on the screen to start recording, click  to end recording, click to ✕exit recording, the storage path is: This Computer\Camera\Internal Shared Storage Space\ScreenShot\Video.

Note: Screen capture and screen recording do not support secondary analysis.

6. Connecting with external devices

This device can be connected to external devices using HDMI data cables and USB data cables.

6.1. MicroHDMI port

The MicroHDMI port is mainly used to connect to an external high-definition display. Please make sure that the displays you want to connect have an HDMI port.

1) Connect the HDMI cable to the thermal imager.
2) Insert the MicroHDMI plug with the <HDMI> logo facing the front of the device.
3) Connect the HDMI cable to the HDMI IN port of the HD monitor .
4) Turn on your HD monitor and switch the video input signal.

6.2. USB interface

Connect to a computer to transfer files.

1) Open the USB port cover on the top of the device;
2) Use a USB cable to connect your device to your computer;
3) Open My Computer on the computer, and the list will show the device disk Camera ;
4) Double-click to open the disk, enter the picture/video folder, and view/export the target picture/video;

The internal storage path is as follows:

- Image: …Camera\Internal Shared Storage \DCIM\GCamera\SourceImage
- Video: …Camera\Internal shared storage \DCIM\GCamera\SourceVideo

If you need to store the captured images in the SD card, please go to Settings-General-Storage Management, select SD card as the storage medium, and then save the captured images to the SD card. The SD card image storage path is as follows:

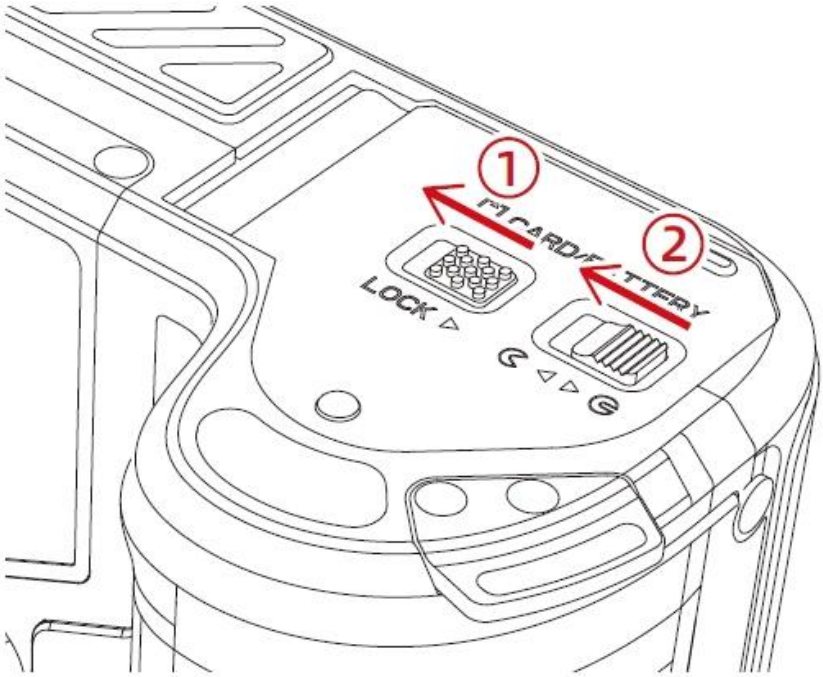
- Image: …Camera\SDCard \DCIM\GCamera\SourceImage
- Video: …Camera\ SD card \DCIM\GCamera\SourceVideo

6.3. Installing the memory card and lens

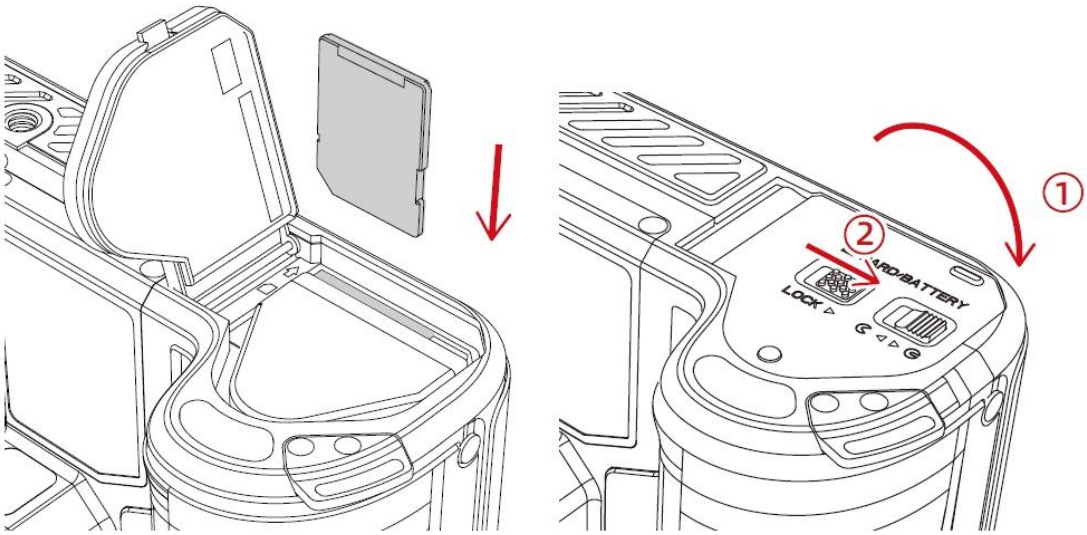
This device supports the use of SD cards. The images and videos you shoot can be recorded on this device or on an SD card . Make sure the write-protect switch of the memory card is set to the upper position to allow writing/deleting.

6.3.1. Installing a Memory Card

1) Open the slot cover, slide it in the direction of the arrow and open it, and insert the memory card.



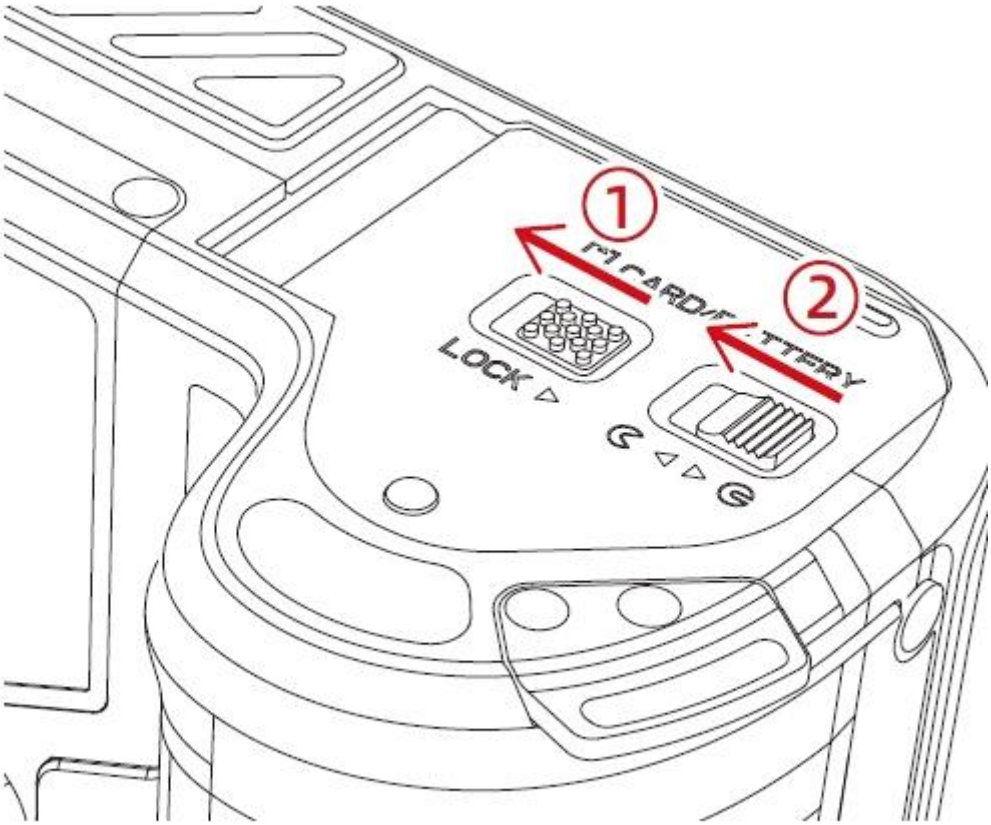
2) Insert the memory card until it clicks into place.



3) Close the slot cover and slide it in the direction of the arrow until it locks.

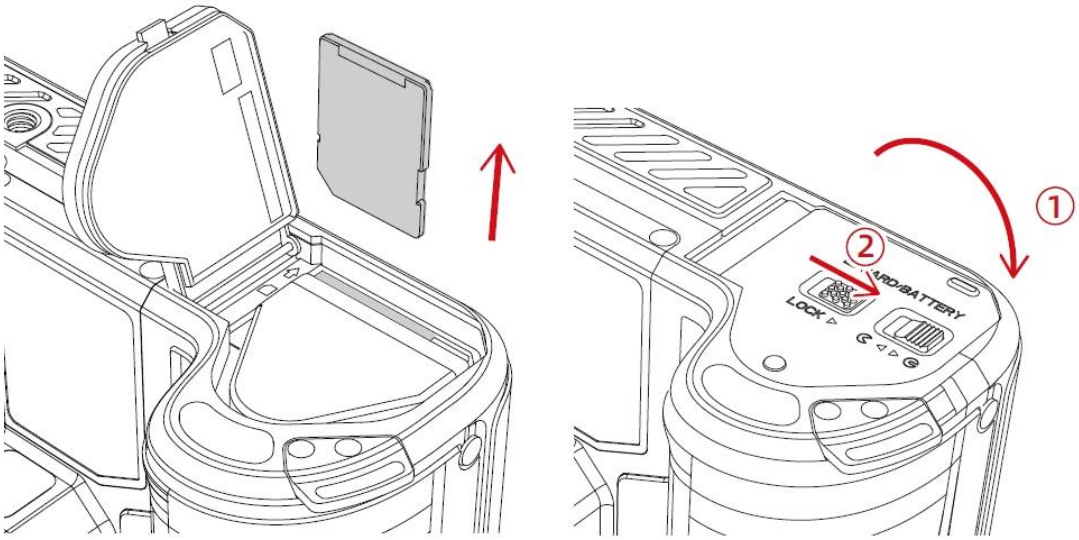
6.3.2. Removing the memory card

1) Turn off the device power first, then open the slot cover. (Confirm that the indicator light is off, then open the slot cover)



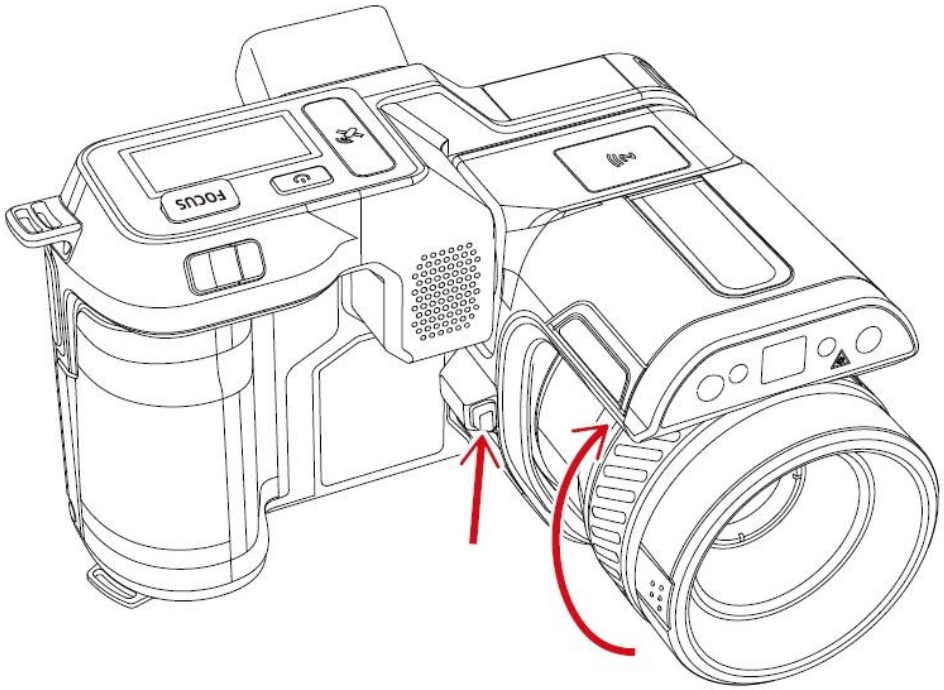
2) Gently push the memory card in, then release it to remove it.

3) Close the slot cover and slide it in the direction of the arrow until it locks.

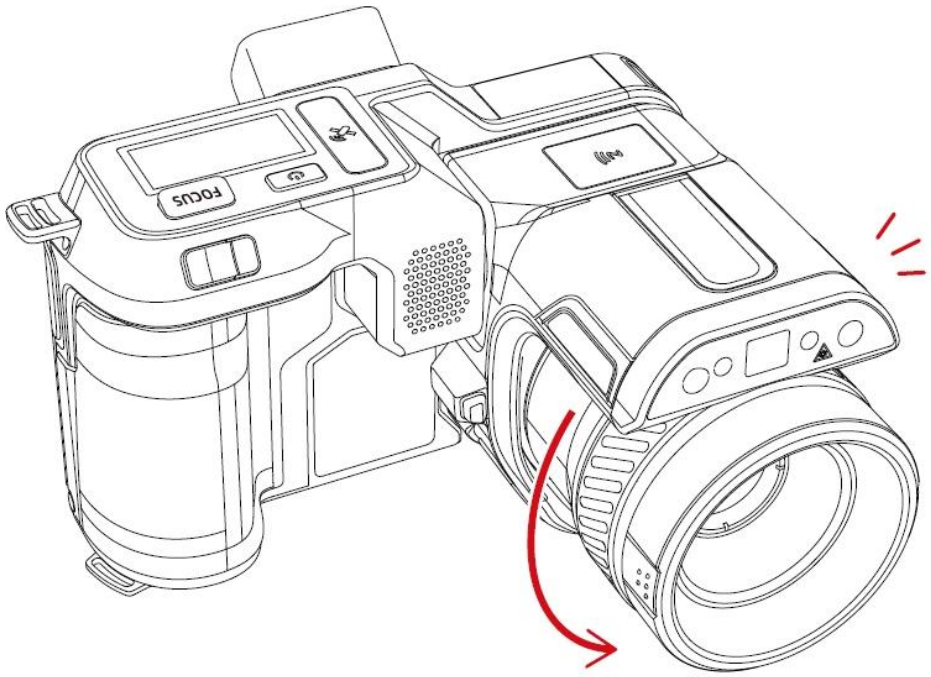


6.3.3. Installing the Optional Lens

1) Press the change lens button and rotate the lens clockwise to remove it .



2) Select the desired lens, place the lens U-shaped groove upwards, align it with the red dot on the machine, insert the lens, rotate the lens counterclockwise, and when you hear a "click" sound, it means the lens is installed successfully.



Note: Please handle with care when using it to avoid direct collision and damage to the lens. When not in use, please place the extended lens in a safe box and store it properly.

7. Appendix

7.1. Table of emissivity of common objects

Material	Emissivity
wood	0.85
water	0.96
brick	0.75
Stainless steel	0.14
adhesive tape	0.96
Aluminum Plate	0.09
Copper Plate	0.06
Black Aluminum	0.95
Human skin	0.98
asphalt	0.96
PVC	0.93
Black Paper	0.86
Polycarbonate	0.8
Concrete	0.97
Copper Oxide	0.78
cast iron	0.81
rust	0.8
plaster	0.75
paint	0.9
rubber	0.95
earth	0.93

7.2. Common Troubleshooting Guide

Fault phenomenon	Reason	Measure
Unable to turn on	Low battery	Recharge the battery before using it
	Bad battery contact	Remove the battery, put it back into the battery compartment and install it in place
	The external power plug is not plugged in properly	Unplug the power plug, reinsert and push until it clicks into place
The battery level indication deviates greatly from the actual usage	Battery drain	Replace the battery with a fully charged one
	Battery life has expired	Replace the battery with a new one
Infrared image is not clear	Not focusing	Manual focus or auto focus for a clear image
	The lens is fogged or contaminated	Use professional equipment to clean the lens
Visible light images are not clear	The environment is too dark	Take appropriate lighting measures
	There is water mist or pollution at the front of the visible light	Use professional equipment to clean the visible light front end
Inaccurate temperature measurement	No focus on target	Focus manually or automatically to make the image clear, then read the temperature.
	The temperature measurement related parameters are incorrectly set.	Change parameter settings, or directly restore default parameter values
	Long time without non-uniformity correction	Set the custom button to compensation in the menu, press the custom physical button, hear the shutter sound, and perform a non-uniformity correction
	Measure temperature immediately after power on	To ensure the accuracy of temperature measurement, we recommend that you wait 5 to 10 minutes after turning on the thermal imager before starting temperature measurement.
	Long time without calibration	To obtain accurate temperature measurement results, we recommend that you send your thermal imager for calibration once a year.
File cannot be stored	Insufficient storage space	Delete pictures and videos from the gallery
	SD card corruption	After unplugging the SD card and inserting it into the computer to format or replace the new SD card

Names and contents of hazardous substances in products						
Part Name	Hazardous substances					
	lead (Pb)	mercury (Hg)	cadmium (Cd)	Hexavalent cadmium (Cr6+)	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Lens protection window	○	○	○	○	○	○
Infrared module	○	○	○	○	○	○
shutter	○	○	○	○	○	○
PCBA	○	○	○	○	○	○
This form is prepared in accordance with the provisions of SJ/T11364 ○: Indicates that the content of the hazardous substance in all homogeneous materials of this component is below the limit required by GB/T 26572 . ×: Indicates that the content of the hazardous substance in at least one homogeneous material of the component exceeds the limit requirement specified in GB/T26572.						
	☐Product name: Lens protection window ☐Product name: infrared module ☐Product name: Shutter ☐Product Name: PCBA ☐Environmental protection period: 10 years is only valid when the product is used normally according to the instructions for use .					