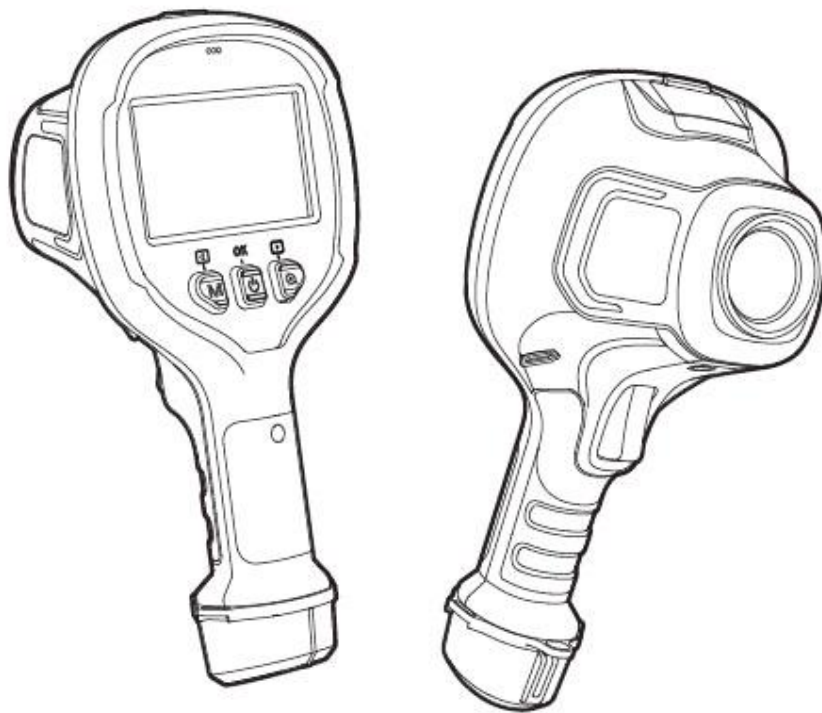


FIREFIGHTER THERMAL CAMERA

User Manual v1.0



Thank you for purchasing this product. Please read this manual before use. Images are for reference only, the actual product prevails.

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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 products should be stored in a well-ventilated and clean room with a temperature of $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$, a relative humidity not exceeding 95%, no condensation and no corrosive gases.

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 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 keep the device as stable as possible when using it and avoid violent shaking;

2) Use or store the device in an environment that exceeds the permitted operating temperature or storage 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 damage to the device ;

4) Do not knock , throw or vibrate the device and accessories to avoid damaging the device ;

5) Please do not disassemble the machine by yourself to avoid damage to the equipment and loss of warranty rights;

6) Do not wipe the device or cables with solvent liquids to avoid damaging the device ;

7) Do not use the device in an environment that exceeds the operating temperature to avoid damage to the device ;

8) Please follow the following measures when wiping this device:

- Non-optical surface: wipe with a clean, soft cloth;
- Optical surface: wipe carefully with professional lens paper;

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

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

3.3. Notice

1) Do not expose the device to dusty, humid, or corrosive environments;

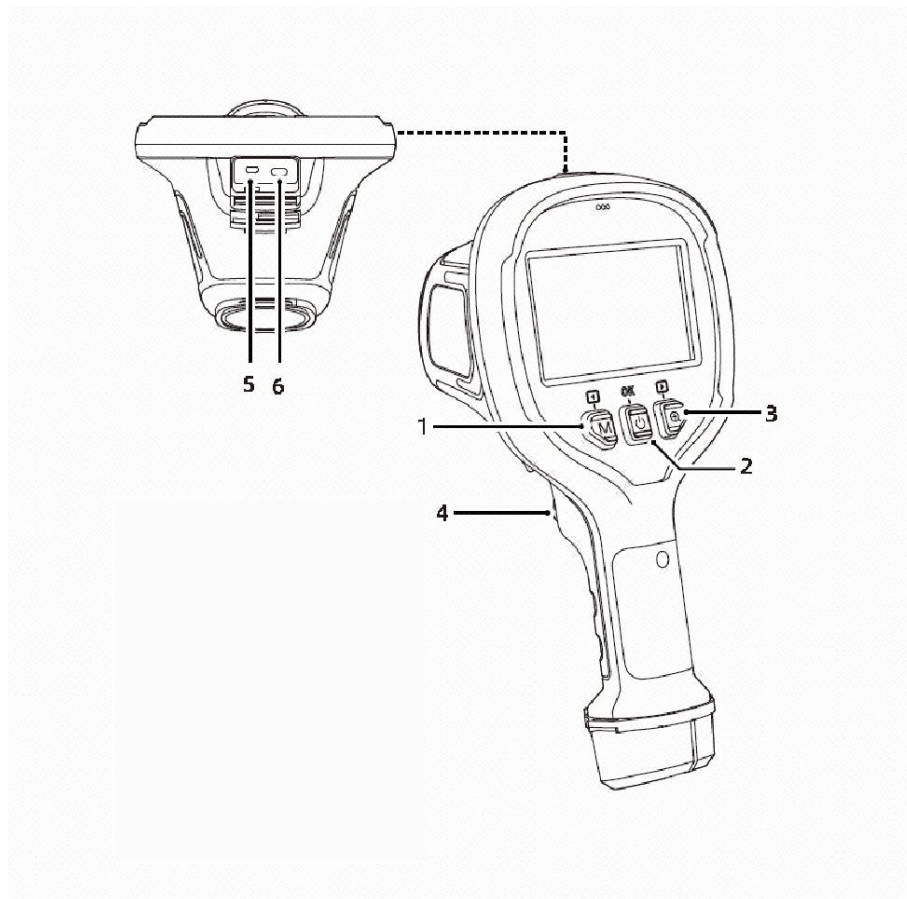
2) When the device is not in use, please place it and all accessories in a dedicated packaging box;

3) When the device is not used for a long time, it should be recharged every 3 to 6 months to maintain battery activity;

4. Product Introduction

This product is an infrared thermal imager designed specifically for the firefighting industry. It is mainly used for fire fighting and rescue, fire prevention inspection, emergency rescue and other operations. It can guide firefighters to rescue people and find the source of fire at the scene of thick smoke and high temperature fire, prevent firefighters from mistakenly entering high temperature dangerous areas, and ensure the property and life safety of the people.

4.1. Product Components Introduction

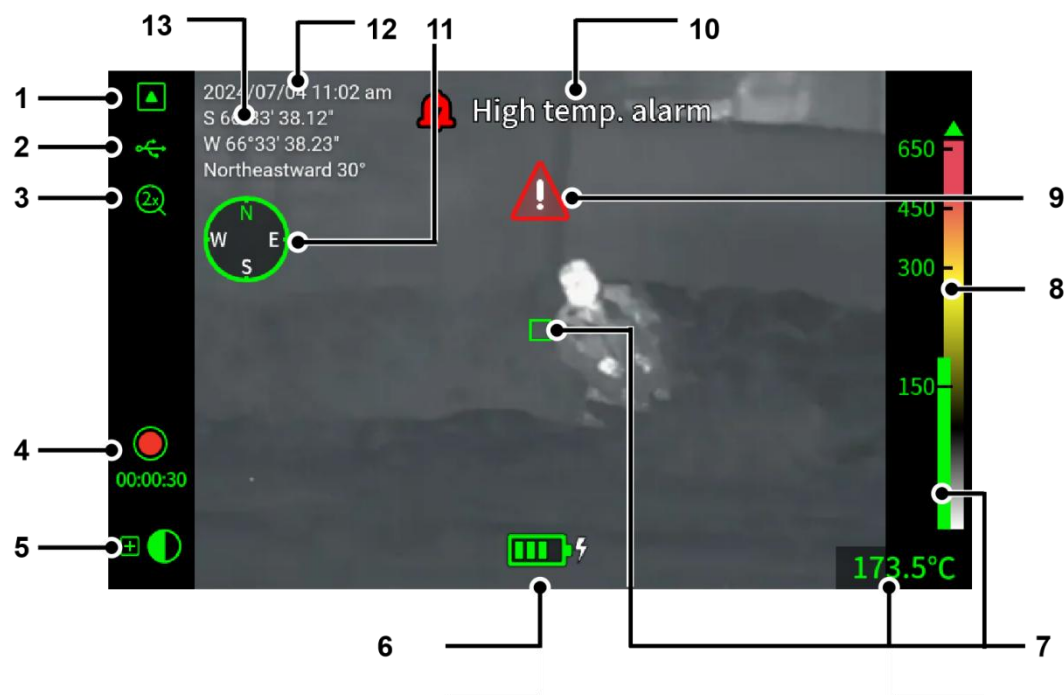


1. **【Menu/Left Button】**: When observing, short press or long press can realize the main menu function. When not observing, short press can realize the up, left, and down functions; long press can realize the fast up, fast left, and fast down functions.

2. 【ower/OK button】 : Short press to select a function, long press to turn the device on or off.
3. 【Zoom/Right Key】 : When observing, short press to achieve digital zoom, long press to achieve picture enhancement. When not observing, short press to achieve down, right, and increase functions; long press to achieve fast down, fast right, and fast increase functions.
4. 【Trigger Button】 : Take photo, record video, save or return.
5. 【HDMI】 : Used for data transmission.
6. 【Type-C】 : Used for data transmission, charging, etc.

4.2. Main interface

4.2.1. Preview

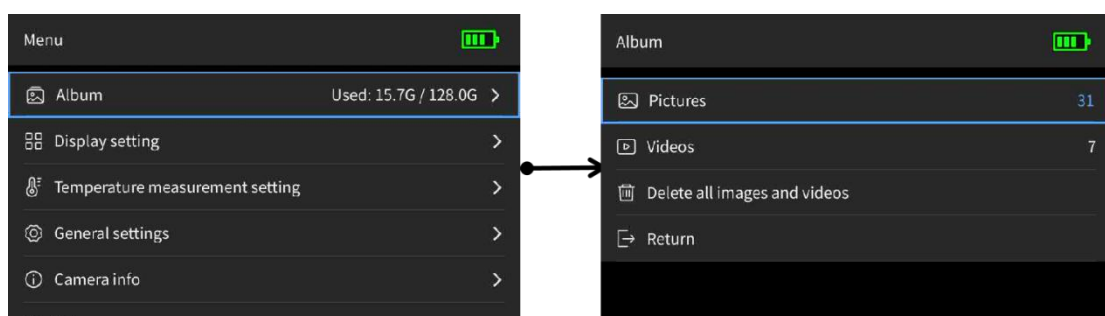


- (1)  : Low sensitivity indication ;
- (2)  /  : USB connection / HDMI connection/USB and HDMI connection at the same time ;
- (3)  /  /  : Image preview zoom ;
- (4)  : Video recording status indication;

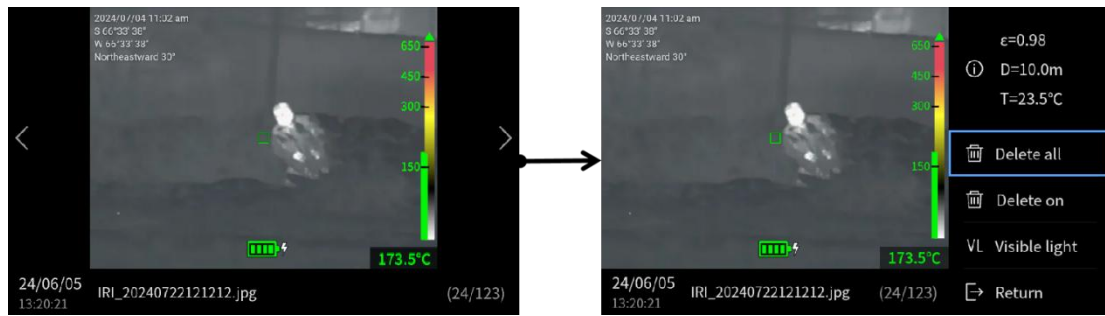
- (5)  /  /  /  /  / IR : Basic firefighting, black and white, fire , search and rescue, thermal detection, infrared ;
- (6)  : Equipment power;
- (7)  : Center point of the screen, center point temperature value, center point temperature indicator bar;
- (8)  : Palette;
- (9)  : Internal electronic overheat indication , indicating that the device is overheated and will stop working;
- (10)  /  : High temperature/low temperature alarm;
- (11)  :Compass;
- (12) Latitude and longitude: Display the latitude and longitude of the device location:
- (13) Time and date : Display the device time and date.

4.2.2. Photo Album

Select "Album" in the menu list and press the "Power/OK" button to enter the album and view pictures or videos.



When viewing pictures/videos, press the "Left Key"/"Right Key " to switch pictures/videos, and press the "Power/OK" key to delete them.



5. Observation

5.1. Image mode switching

During observation, press the "Power/OK" button to cycle through image modes, including: Basic Fire, Black and White, Fire , Search and Rescue, Thermal Detection, and Infrared. Different image modes are suitable for different scenarios. For details, see Appendix 8.1.



5.2. Digital zoom

When observing, short press the "right button" to digitally zoom the observation screen and view the details of distant targets.



5.3. Picture Enhancement

When observing, long press the "right button" to turn on image enhancement and optimize the imaging quality.



6. Photo/Record

6.1. Photoshoot

When observing, press the "trigger button" to save the photo of the current preview screen. (When the shooting mode is set to "freeze", press

the "trigger button" to shoot the current screen and freeze it on the screen, and press the trigger button again to save the picture.)



6.2. Video

When observing, long press the "trigger button" to start recording, press the trigger button again to end recording and save the video. (When the shooting mode is set to "video", short press the "trigger button" to start recording video.)



6.3. Screenshot

Press the "Power Button + Left Button" at the same time to save a screenshot of the current interface.



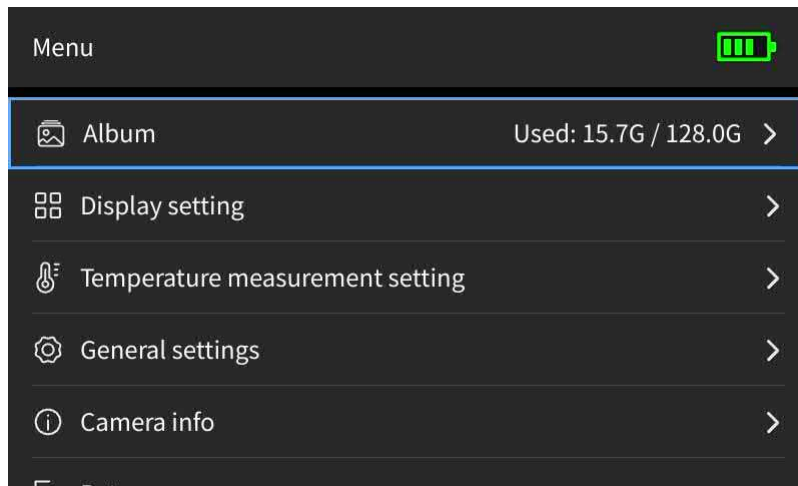
6.4. Screen Recording

Press the "power button + right button" at the same time to start screen recording. Press them at the same time again to end the screen recording and save it.



7. Menu

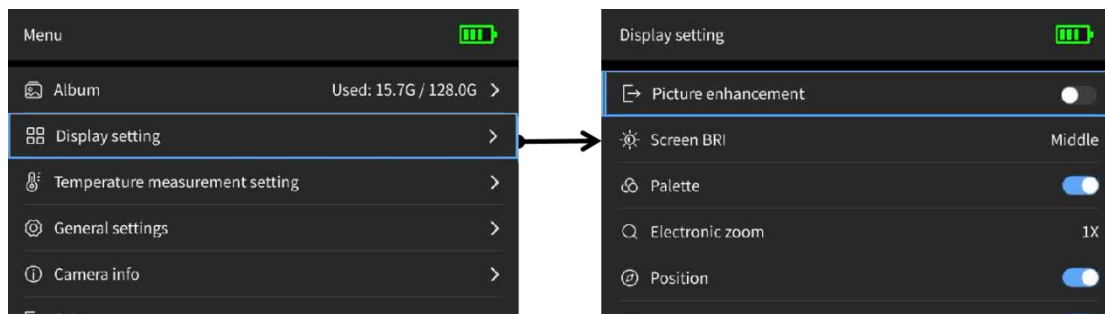
When observing , press the "left button" to enter the menu list .



7.1. Photo Album

Please refer to Section 4.2.2 of this document for details.

7.2. Display Settings



7.2.1. Screen brightness

Set the screen brightness, support adjustment of high, medium and low;

7.2.2. Color Palette

Set the palette to show/hide;

7.2.3. Digital zoom

Set the image magnification, support adjustment of 1X, 2X, 4X, 8X;

7.2.4. Direction

Set compass to show/hide;

7.2.5. position

Set the latitude and longitude information to be displayed/hidden;

7.2.6. Date and Time

Set date and time to show/hide;

7.2.7. Logo

Set LOGO to show/hide;

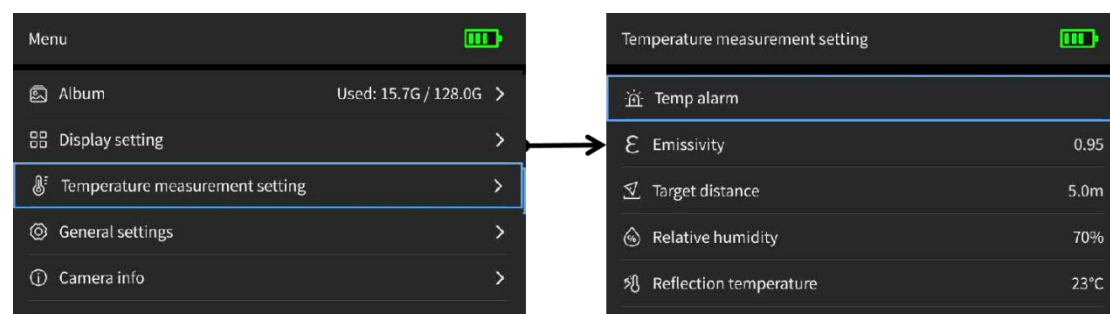
7.2.8. Center point/highest temperature point/lowest temperature point

Set the display/hide of the center point/highest temperature point/lowest temperature point mark and temperature data on the screen.

7.2.9. Regional temperature measurement

Set up a regional temperature measurement rectangular frame, and display the highest temperature point/lowest temperature point and temperature data in the rectangular frame during observation.

7.3. Temperature measurement settings



7.3.1. Temperature measurement range

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

7.3.2. Temperature alarm

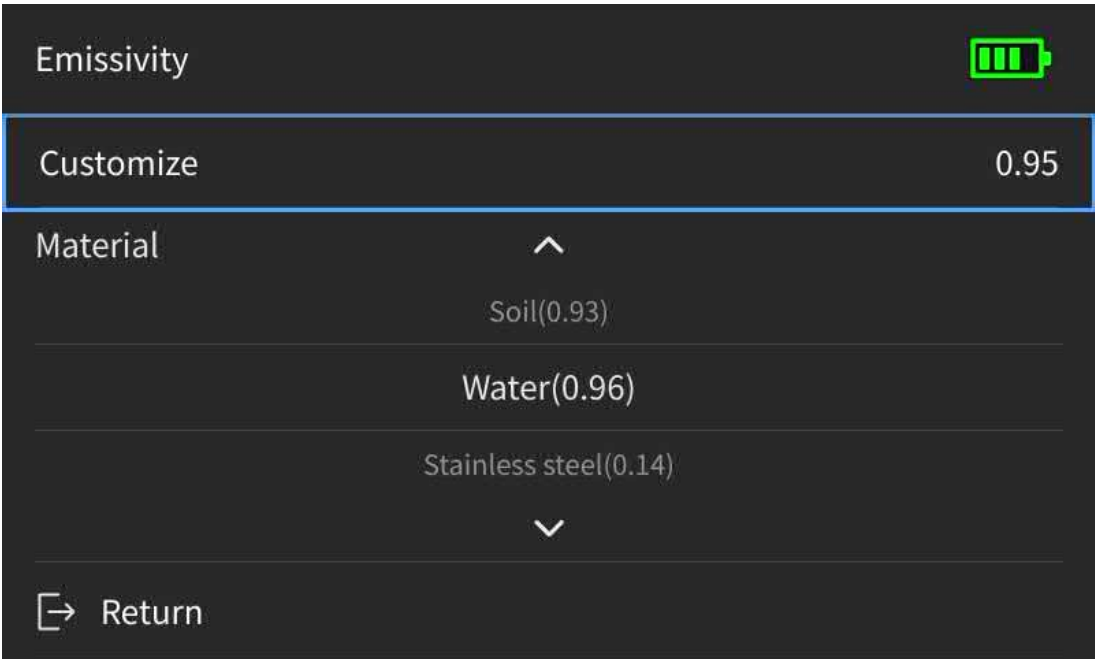
Set high temperature alarm and low temperature alarm, support screen flashing and buzzer reminder.

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

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

7.3.3. Emissivity and temperature measurement parameters

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



Parameter	Functional Description
Emissivity	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

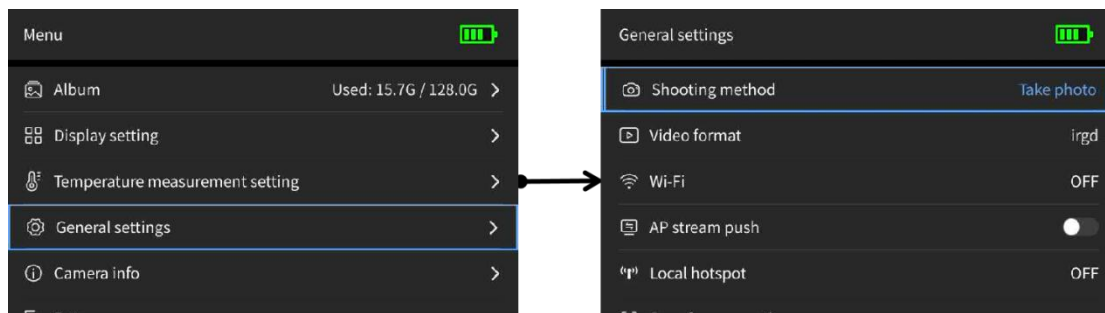
	weaker the infrared radiation ability; Set different emissivity values according to the target being measured; when the values in the standard emissivity table are not suitable for measurement, set a custom emissivity value.
Target distance	The actual distance between the thermal imager and the target 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.
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.
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; The 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.
Ambient	The ambient temperature around the target being

temperature	measured; The ambient temperature is set to the actual temperature of the current environment
-------------	--

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

Emissivity	0.95
Target distance	3.0m
Relative humidity	70%
Reflected temperature	23°C
Atmospheric temperature	23°C
Ambient temperature	23°C

7.4. General settings



7.4.1. Shooting method

Set the trigger button function to "Photo", "Freeze", "Freeze/Photo", or "Video Record".

7.4.2. Video Format

You can choose irgd/mp4 (irgd: video encoding format with temperature data; mp4: video encoding format without temperature data).

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

7.4.4. AP streaming

After it is turned on, the local hotspot is automatically turned on. The hotspot name and password are manually configured to enable mobile phones and PC analysis software to remotely obtain device-side images.

The following describes how to connect the device to the real-time screen of the mobile APP/PC analysis software:

- 1) 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.

7.4.5. One Sweep

The device hotspot QR code is mainly used for mobile analysis software to quickly connect to the device hotspot.



7.4.6. Date and Time

Set the device date and time.

7.4.7. Temperature Units

Switch between temperature units: Celsius, Fahrenheit, Kelvin.

7.4.8. Distance Units

Switch between distance units: meters, yards, feet.

7.4.9. File naming

Set the device image file naming convention.

7.4.10. Automatic shutdown

Set the automatic shutdown time.

7.4.11. Automatic sleep

Set the automatic sleep time.

7.4.12. language

Set the language.

7.4.13. Factory Reset

Restore the machine to factory settings. Note: Restoring the machine to factory settings will permanently delete all images and other data, so please operate with caution.

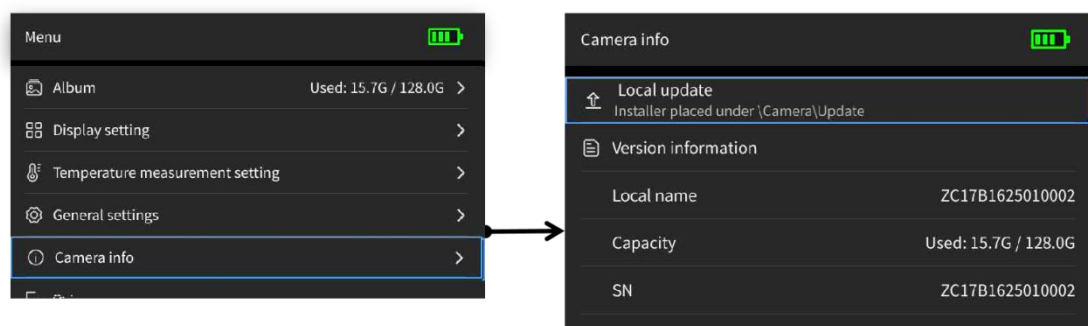
7.4.14. Format

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.

7.4.15. 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.

7.5. About the device



7.5.1. Local upgrade

Place the upgrade package in the /GCamera/Update directory, click "Check for Updates", and when the latest upgrade package is detected, click "Upgrade and Install". After the upgrade is complete, restart the device to upgrade to the latest version.

7.5.2. OTA Update

After the device is connected to the Internet, click "Check for Updates" to detect the latest upgrade package, click "Download and Install", and restart the device after the upgrade is complete to upgrade to the latest version.

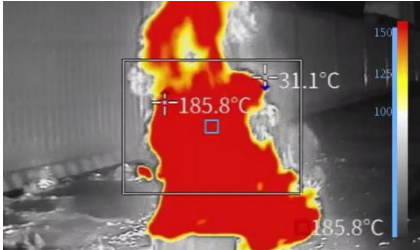
Note: OTA upgrades require an unobstructed network and sufficient battery power. If you have any questions during the upgrade process, please contact the device manufacturer in a timely manner.

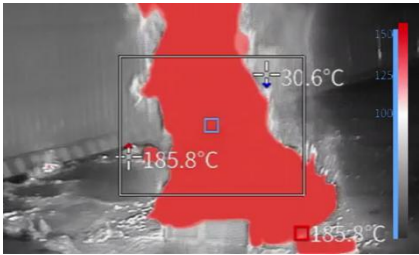
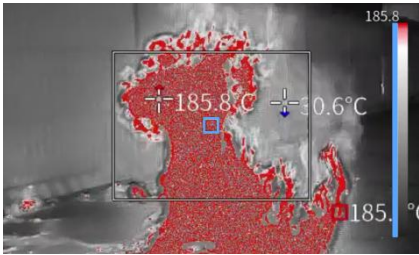
7.5.3. Version Information

View device-related information, including device name, storage capacity, SN, MAC, software version, firmware version, and system version.

8. appendix

8.1. Image mode application scenarios

mode 1	Introduction	Example
 Basic Fire Fighting	Applicable to early fire fighting scenarios, such as life rescue, fire control, etc. Provides optimal infrared images to ensure safe and consistent thermal coloring of the fire scene.	
 Black and White	Applicable to fire fighting scenarios, including life search and rescue and firefighting disaster relief. White highlighted areas have higher temperatures.	
 Fire	Applicable to scenes with many open flames and high background temperature. The display effect is similar to the basic fire fighting mode. The starting temperature of the red and yellow areas is higher.	
 Search and Rescue	Suitable for searching and rescuing people at the scene of a scene, building or traffic accident. The display effect is similar to the basic firefighting mode. The starting temperature of the red and yellow color areas is lower.	

 Thermal Detection	Useful for searching for hot spots during a thorough inspection after a fire is extinguished, often to ensure no hidden fire hazards are left behind. This mode is also useful for looking for heat patterns (such as signs of people in car seats after an accident) to ensure everyone is found , as well as searching for people in water and open areas.	
 IR standard	In standard mode, 8 color ribbons can be replaced, including Black Hot, White Hot, Iron Red, Arctic, Hot Iron, Rainbow 1, Lava, and Tracing Red. Users can switch different color ribbons according to the application scenario.	

8.2. 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	Battery drain	Replace the battery with a fully charged one

greatly from the actual usage	Battery life has expired	Replace the battery with a new one
Infrared image is not clear	The lens is fogged or contaminated	Use professional equipment to clean the lens
Inaccurate temperature measurement	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 .						