

## User Manual

# DP-10D Thermal Imaging Camera



## User Manual of DP-10D Handheld Thermal Imaging Camera

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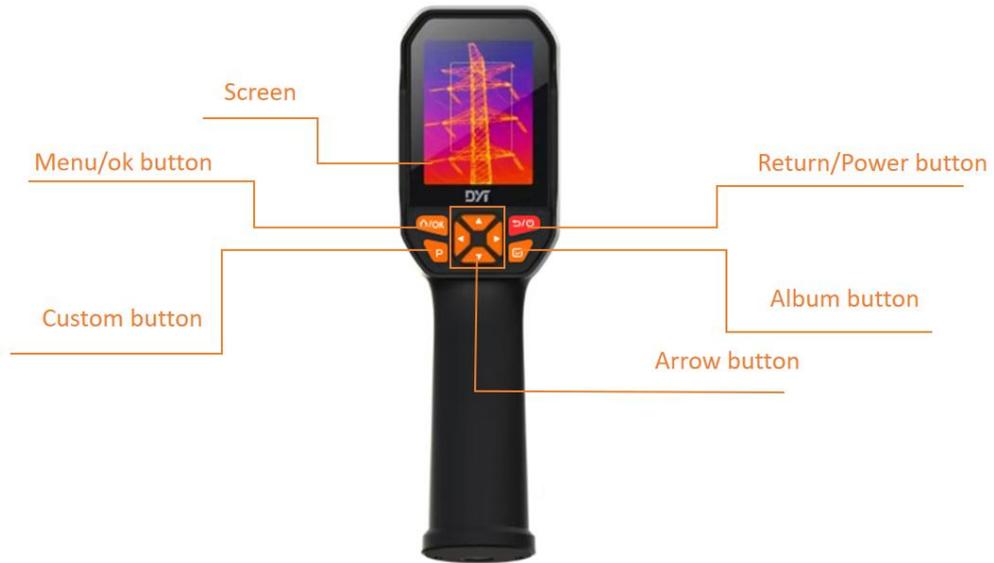
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## 1 Overview

The DP-10D thermal camera is a high-precision thermal imaging handheld camera. It can capture the temperature of each pixel of the target object.



## 2 Features

- 120x90 IR detector resolution with clear image effect.
- Support exclusive TisoView image processing (DDE enhancement, image super-resolution, image GAIN and other technologies)
- Built-in 8GB memory, can store more than 20,000 photos.
- Equipped with a 2600mAh lithium battery, it has a battery life of up to 8 hours, which is enough to meet most work needs.
- Support laser point's temperature measurement
- It uses a USB interface, which can take into account both charging and data transmission.
- Multiple color palettes allow users to choose the most suitable palette in different application scenarios.
- Dedicated PC analysis software is available to facilitate further data analysis.

### 3 Specifications

	Parameter	Specification
Thermal imaging	IR resolution	120x90
	Spectral range	8~14um
	Pixel size	17um
	TisoView	Supports multiple technologies such as DDE enhancement, denoising, and super resolution, making the image clearer with a resolution of up to 180x240
	Frame rate	25 Hz
	NETD	60mK@25 °C
	FOV	38° x 50°
	Lens	2.3mmF1.1
	Measurement range	-20°C ~ 550°C
	Measurement accuracy	±2°C or ±2% of reading, whichever is greater
	Temperature measurement	Support full-screen hotspot, cold spot, center point temperature measurement and regional temperature measurement
	Temperature compensation	Support distance compensation within 2 meters
	Color palette	Iron, White Hot, Black Hot, Rainbow, Red Hot, High Contrast, Lava, Arctic, Coldest
Image display	Screen size	2.8 inch
	Image mode	Thermal image
General	Language	Support English, French, German, Spanish, Russian, Portuguese, Arabic, Japanese, Korean and Chinese
	Interface	USB Type-C (supports charging and data transfer)
	Laser pointer	Support
	Led	Support
	Battery	2600mAh lithium battery
	Working hours	Approx. 8 hours, depends on specific environment
	Operation temperature	-10°C~+60°C
	Storage temperature	-40°C~+85°C
Storage	Capacity	8G built-in memory, actual available memory around 6.19G, can store up to 20,000 pictures
	Image format	JPG
	Video format	MP4

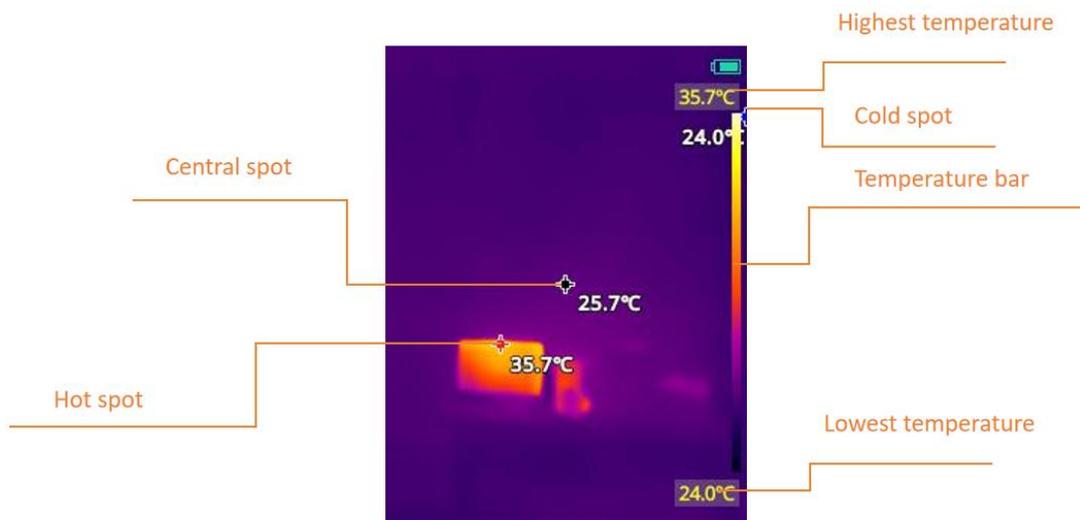
## 4 Functions

### 4.1 Button Description

No.	Name	Instructions
1	Return/power button	<ul style="list-style-type: none"> <li>● Long press 1s to power on the camera</li> <li>● Long press 3s to power off the camera</li> <li>● Press to return on menu screen</li> </ul>
2	Menu/ok button	<ul style="list-style-type: none"> <li>● Press the home screen to enter the first-level menu.</li> <li>● On the first-level menu, tap to enter the second-level menu.</li> </ul>
3	Up and down button	<ul style="list-style-type: none"> <li>● Press up and down to select in the menu setting interface.</li> </ul>
4	Left and right button	<ul style="list-style-type: none"> <li>● In the main interface, you can use the left and right button to switch color palettes</li> <li>● Press left and right to select in the menu setting interface.</li> </ul>
5	Trigger	<ul style="list-style-type: none"> <li>● Press this button to take a picture in the main screen. After taking a picture, you need to press the OK button to save the picture, or press the Return button to cancel the saving</li> <li>● Press and hold this button on the home screen until Recording time appears in the upper left corner of the screen, indicating that recording has started. Press the</li> </ul>

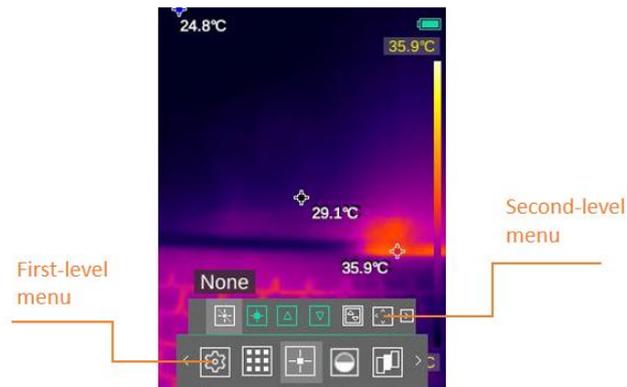
		button to stop recording
6	Album button	<ul style="list-style-type: none"> <li>In the main interface, short press the album button to enter the album</li> </ul>
7	Custom button	<ul style="list-style-type: none"> <li>After setting the custom button function in the setting interface, you can perform shortcut operations</li> </ul>

## 4.2 Main Interface



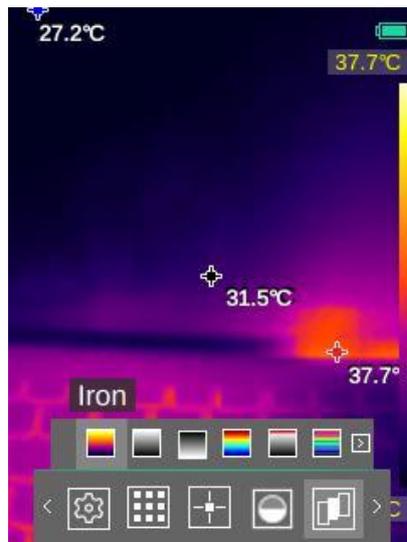
### 4.2.1 Measurement

Select Measurement in the first-level menu to enter the second-level menu interface of the measurement function. The second-level menu interface of the measurement function is shown in the figure below:



### 4.2.2 Color Palette

Select the color palette in the first-level menu to enter the second-level menu. The second-level menu interface of the color palette is as shown below:



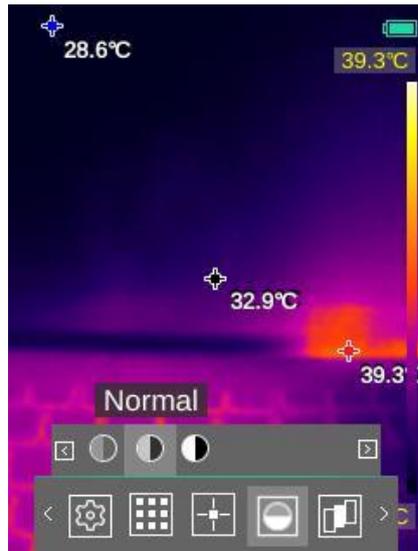
No.	Function	Functional Description
1	Iron	In high temperature areas, the red color accounts for a larger proportion, which is suitable for detecting scenes where high temperature areas account for a large proportion.
2	White hot	In the high temperature range, white is used, and the whole screen is mainly black and white transition, which is suitable for users of traditional black and white mode.

3	Black hot	In the high temperature range, black is used, and the whole screen is mainly a transition between white and black, which is suitable for users of the traditional black and white mode.
4	Rainbow	The highest temperature is indicated by red, the medium temperature is indicated by yellow, and the low temperature is mainly blue and black, which is suitable for scenes with distinct low temperature colors.
5	Hottest	The main color is red, and the transition from the lowest temperature to the highest temperature is black, white and red, which is suitable for scenes that focus on high temperature conditions.
6	High contrast	Rich colors increase the contrast of the picture, and small temperature differences can be accurately identified, which is suitable for use in scenes with small temperature differences
7	Lava	Similar to Iron and Arctic, the Lava palette shows hotter objects in warm tones and cooler objects in blue, making it another good choice for quickly capturing body heat and other details in low-contrast environments.
8	Arctic	The Arctic palette combines the simply tinted Iron Red palette with the low-contrast performance of the Rainbow High Contrast palette, using gold to identify warm objects and blue to identify cooler objects. The different colors quickly detect heat sources, while the darker shades make it possible to distinguish slight temperature changes.
9	Coldest	Blue represents lower temperatures and is suitable for detecting colder objects.

### 4.2.3 Thermal Effect

Select thermal effect in the first-level menu to enter the thermal effect second-level menu interface. The thermal effect includes three modes: "Smooth", "Normal" and "High contrast".

The thermal effect second-level menu interface is shown in the figure below:

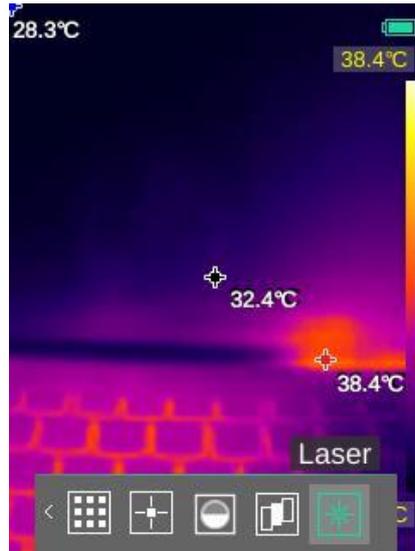


#### 4.2.4 Saturation

Select Saturation in the first-level menu to enter the second-level menu. You can switch between different saturations in the Saturation second-level menu.

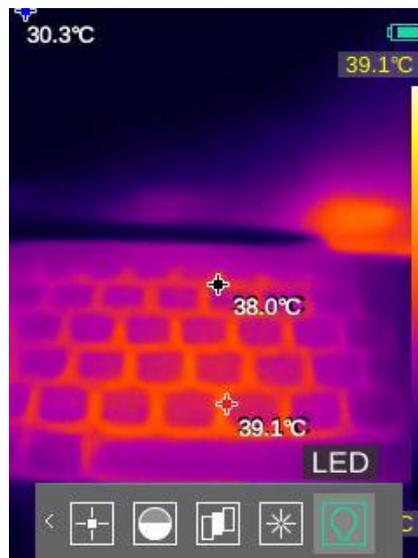
#### 4.2.5 Laser Pointer

Select laser in the first level menu. The laser icon turns green to indicate that the laser is on. The laser indication position is the center point of the image. Combined with the center point temperature of the image, the position and temperature of the object being measured can be more intuitively understood. As shown below:



#### 4.2.6 Lighting

Select the light in the first level menu, and the icon turns green to indicate that the light is on. As shown below:

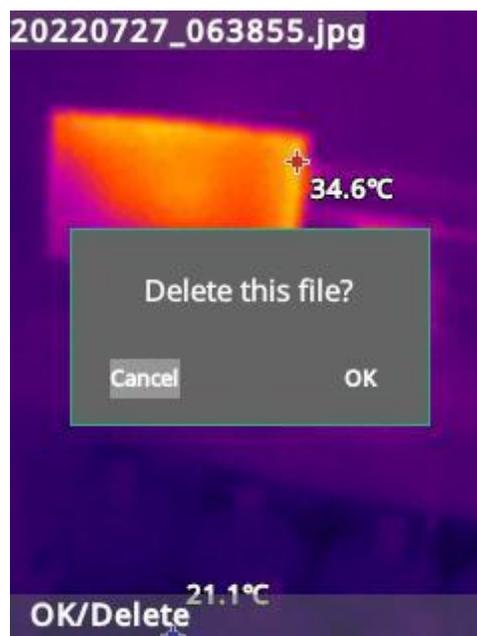


#### 4.3 Album

In the first level menu, select album. The album interface is as follows:

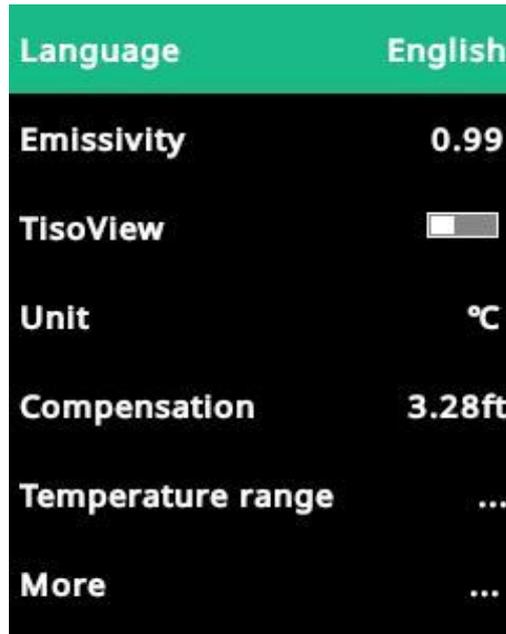


In the album interface, you can use button to select the corresponding photos, and press menu/ok button to choose whether to delete the photos.



## 4.4 Settings

After entering the first-level menu, select the settings function. The settings interface includes the following:



Options	Parameter
Language	Support English, French, German, Spanish, Russia, Portuguese, Arabic, Japanese, Korean and Chinese
Emissivity	0.01 to 0.99 adjustable
TisoView	Turn on/off the image enhancement algorithm function
Unit	Celsius, Fahrenheit, Kelvin
Compensation	Compensation is performed according to the distance of the measured object, with 0.5m, 1m, 2m, 3m, 4m, and 5m optional
Temperature range	-20°C~550°C
Custom button	None, switch once, switch infrared effect, switch to the previous color palette, switch color palettes in a cycle, switch temperature gear, switch all temperature measurement points, switch laser, switch all alarms
Date	Display date and time
Storage	View or format the storage
Temperature alarm	Setting the temperature alarm threshold
Auto power off	Automatic shutdown time can be set after long period of inactivity
Distance Unit	Meters (m) or feet (ft)
Temperature Bar	Turn it on or off
Brightness	10 level
Restore factory settings	Restore emissivity, TisoView, alarm, compensation, temperature range, auto power off, brightness, temperature bar, measurement, color palette, thermal AGC restore to the original state.
Upgrade	For version upgrade
About	View camera model, SN, firmware version, software version and website information

## 5 Analysis Software

### 5.1 Overview

Infrared thermal imaging offline analysis software is a professional computer-based data analysis software that can perform secondary analysis and processing on images taken by specific infrared equipment.

### 5.2 Characteristic

- The software interface is easy for understanding and operation;
- The temperature can be displayed at all points on the entire screen;
- Multiple image modes can be switched;
- The processed images can generate corresponding reports;
- Available to integrate other related software or hardware cameras;

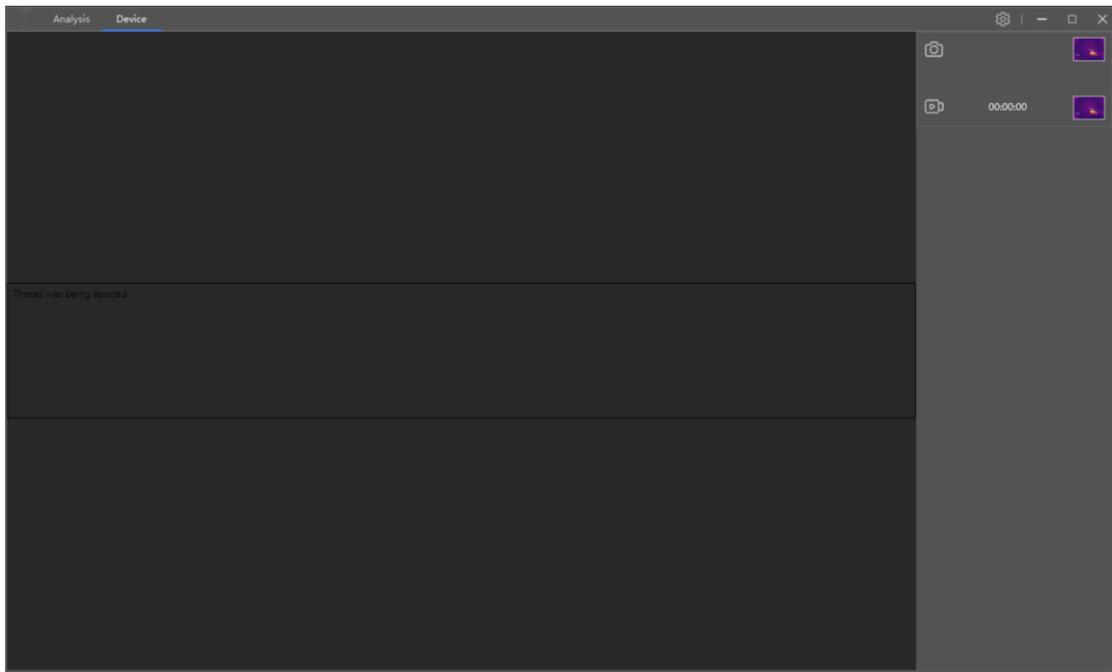
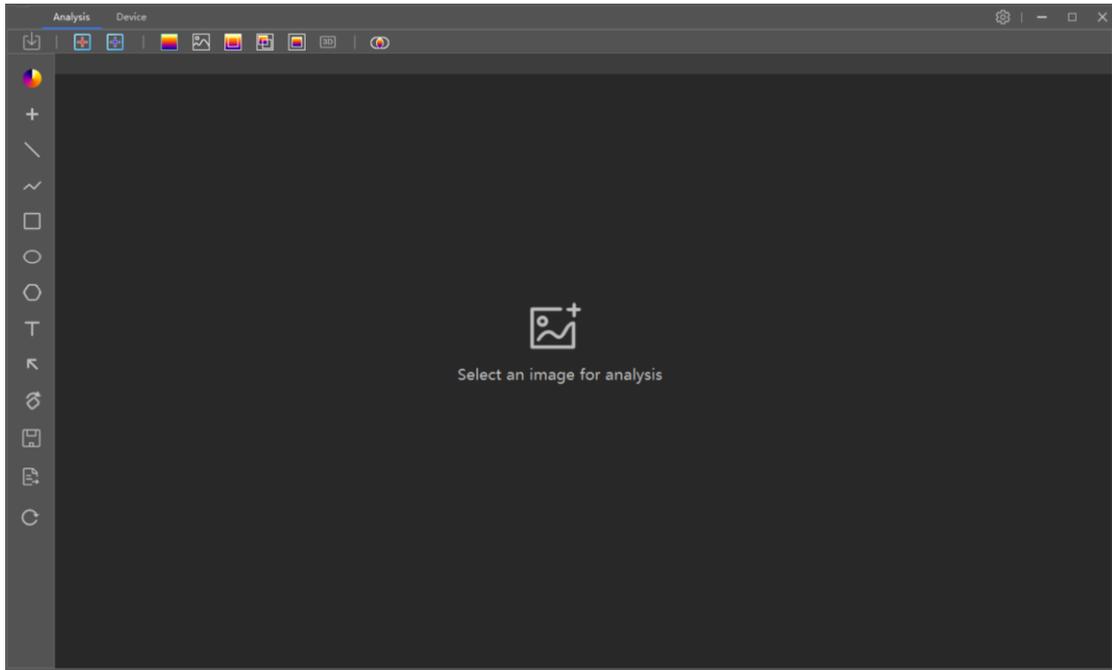
### 5.3 Details

#### 5.3.1 Operation Environment

It is recommended to install this software on Windows 10 and above operating systems to ensure normal and stable operation of the software.

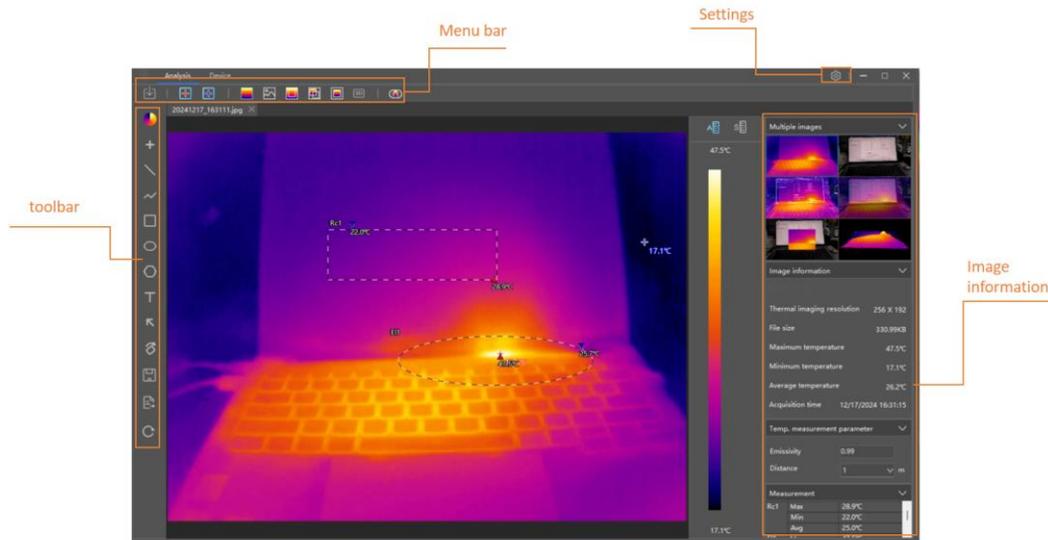
### 5.3.2 Main Interface

Open the software, which includes the thermal image analysis section and the camera import section. The interface is shown in the figure below.



### 5.3.3 Radiometric Analysis

Import the picture in the radiometric analysis sector for analysis. The interface is shown in the figure below.



The toolbar contains the following functions:

No.	Function	Functional Description
1	Color Palette	Different color palettes can be replaced according to needs
2	Points	Select to view the temperature information of the corresponding point on the image
3	Line	Draw a line on the image and observe the highest and lowest temperatures on the line.
4	Polyline	Draw a polyline on the image and observe the highest and lowest temperatures on the line.
5	Rectangle	Draw a rectangle on the image and observe the highest and lowest temperatures on the line
6	Ellipse	Draw an ellipse on the image and observe the highest and lowest

		temperatures on the line
7	Polygons	Draw a polygon on the image and observe the highest and lowest temperatures on the polygon.
8	Text	Annotate images with text
9	Arrow	Marking arrows on images
10	Rotate	Rotate the image 90° clockwise
	Horizontal mirror	Mirror the image horizontally
	Vertically mirror	Mirror image vertically
11	Save	Save the picture
12	Export report	Exporting graphical reports of analyses
13	Reset screen	Restore the graphics, rotation Angle and color temperature area drawn on the screen to the initial state

The menu bar contains the following functions:

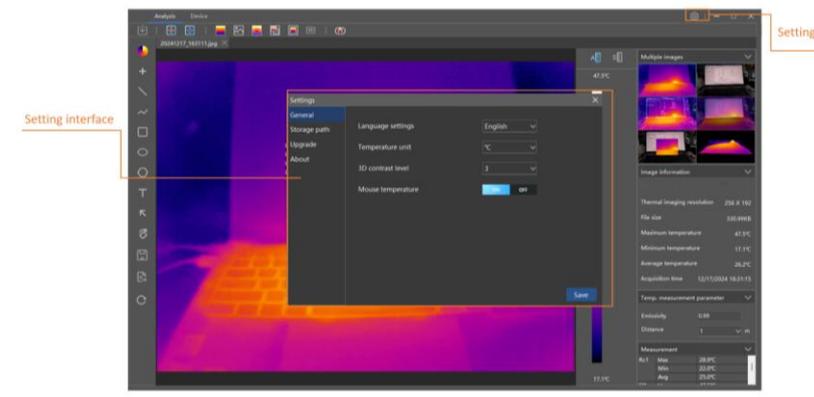
No.	Function	Functional Description
1	File	File opening, closing, saving, exporting reports
2	High temperature	Cancel or enable high temperature display in the image
3	Low temperature	Cancel or enable low temperature display in the image
4	Thermal imaging	Switch to thermal imaging
5	Visible light	Switch to visible light image (Single infrared device does not have this function)
6	Edge fusion	Switch to edge fusion image (Single infrared device does not have this function)

7	Overlay fusion	Switch to overlay fusion image (Single infrared device does not have this function)
8	Picture-in-Picture	Switch to picture-in-picture image (Single infrared device does not have this function)
9	3D	Switch 3D image
10	Fusion alignment	Thermal and visible light images are not completely fusion, so they can be universally fusion, aligned and adjusted. (Single infrared device does not have this function)



"" in the upper right corner of the software is the setting options, which includes the following:

No.	Options	Description
1	Language settings	Support English, French, German, Spanish, Russian, Japanese, Korean and Chinese.
2	Temperature unit	Celsius, Fahrenheit, Kelvin
3	3D contrast level	Adjust image contrast in 3D mode
4	Mouse temperature	Enable or disable the function of displaying temperature on the image when the mouse is on
5	Storage path	Storage location for pictures, reports, and videos
6	Upgrade	For version upgrade
7	About	Software name, version number.



## 6 Precautions

- Do not expose this camera to dust or moisture.
- Do not allow strong light sources such as sunlight and lasers to directly shine on the lens, otherwise it may cause permanent physical damage.
- Do not disassemble the camera by yourself, otherwise it may cause damage to the camera and invalidate your warranty rights.
- Do not attempt to open or disassemble the battery, and do not place the camera in a high temperature environment or near high temperature objects.
- Do not use alcohol, detergent or other organic cleaners to clean the lens, recommend soft fabric dampened with water.