

Cute Thermal

User Manual

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Overview

CUTE THERMAL is a high-precision thermal imaging, which can measure the temp of target object online in real time, output thermal image video and check the over-temp condition. Going with different matching platform software, it can be suitable for different usage modes (such as power device temp measurement, fire alarm, human body temp measurement and screening). This document only introduces the usage modes for human body temp measurement and screening.

CUTE THERMAL employs USB supply power and transmit data are completed through one USB line, realizing convenient and rapid deployment.

Based on on-site deployment of clients, CUTE THERMAL can carry out temp compensation varying with environment changes voluntarily without continuous blackbody calibration and control the error within the range of $\pm 0.6^{\circ}\text{C}$ ($\pm 1.08^{\circ}\text{F}$).



1 Specifications

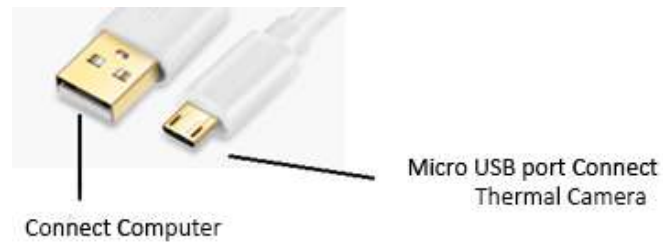
CUTE THERMAL specifications are as follows:

Parameters		Index
Infrared thermal imaging	Resolution	320x240
	Response wave band	8-14um
	Frame rate	9Hz
	NETD	70mK@25°C (77°F)
	Field angle	34.4 in horizontal, 25.8 in vertical
	Lens	6.5mm
	Measurement range	-10°C - 300°C (14°C-572°C)
	Measurement accuracy	For human body, the temp compensation algorithm can reach $\pm 0.6^{\circ}\text{C}$ ($\pm 1.08^{\circ}\text{F}$)
	Measurement	Temp measuring area and center point can be set
	Color palette	Whitehot, Rainbow, Iron, Tyrian.
General	Interface	Power supply and data transmission through standard Micro USB 2.0
	Language	English
	Operating temp	-20°C (-4°F) ~ +60°C (+140°F) (for the requirement of accurate temp measurement of human body, it is recommended to use at ambient temp of 10°C (50°F) ~ 30°C (+86°C))
	Storage temp	-40°C (-40°F)- +85°C (+185°F)
	Waterproof and dustproof	IP54
	Size	129mm*73mm*61mm (L*W*H)
	Net weight	295g
	Picture storage	BMP, JPG.
	Installation	Standard tripod or pan-tilt hoisting is adopted.
	Software	Temp display
Alarm		Available for alarm over the set threshold temp (high and low temp), can sound alarm, snapshot alarm photos and store simultaneously.
Frame temp measurement		Temp measurement is set according to different entry and exit personnel channels
Temp compensation		The staff can set up temp compensation according to the environments
Photograph		Manually under opening, automatically under alarming
Internet cloud upload		Customized according to cloud requirements

2 Connection mode



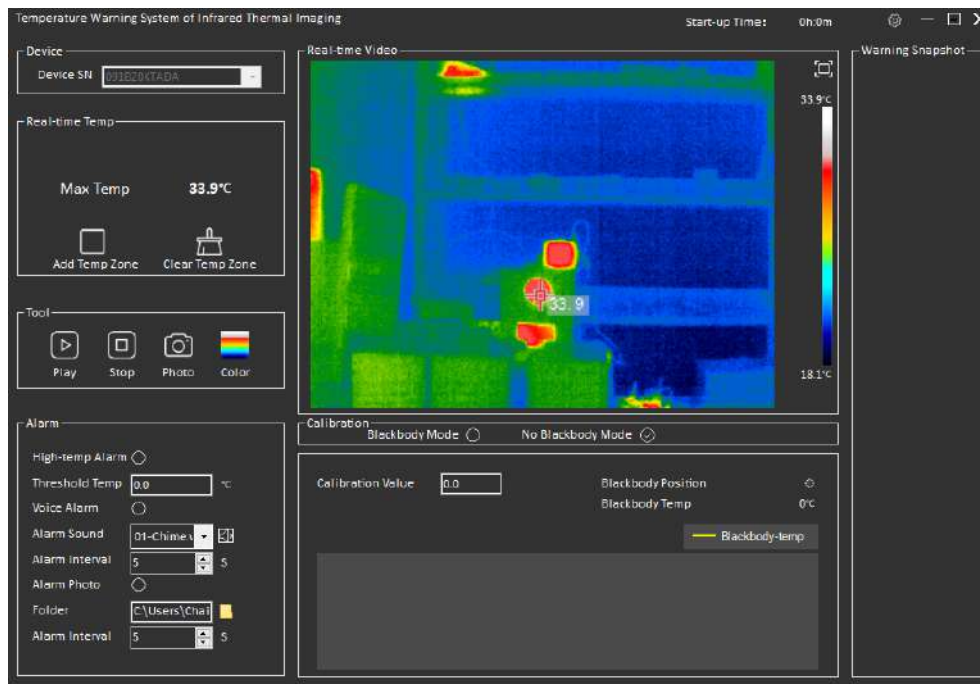
Only one USB cable is needed to connect the thermal imaging machine and the computer. The connection mode and interface model are shown in the following figure



3 Background software

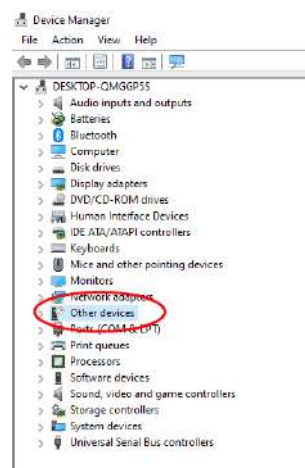
3.1 Interface

This system only available for Win10 OS, and the background software interface is as follows:

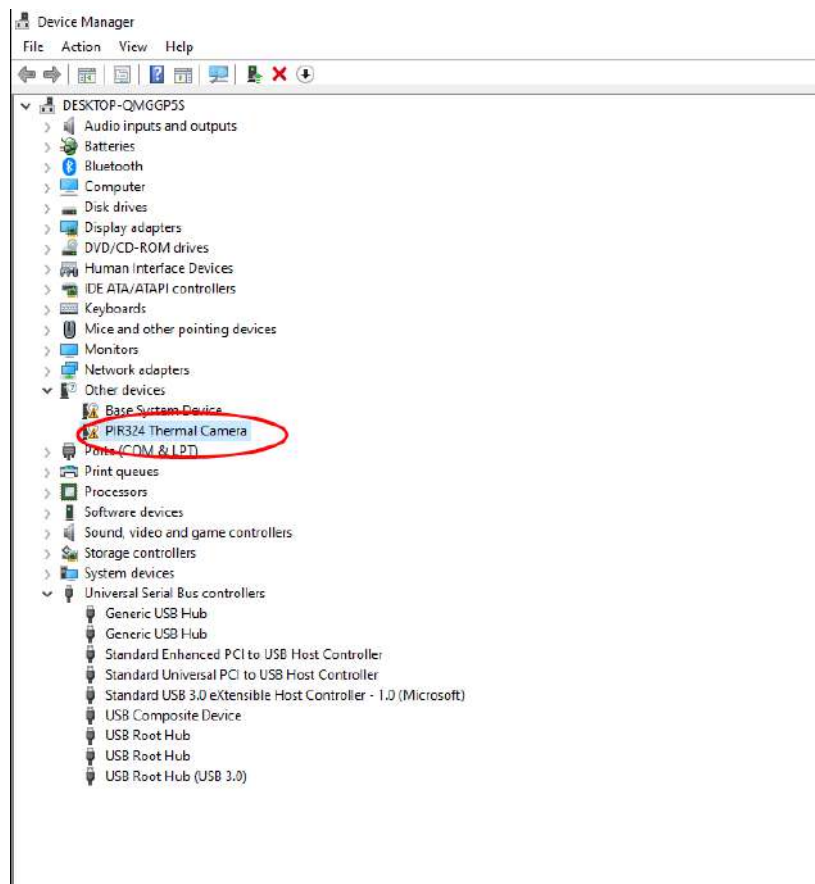


3.2 Driver installation

After connecting the computer to the CUTE THERMAL camera with Micro USB 2.0 cable, open the "Device Manager", and locate the "Universal Serial Bus devices" or "other devices" or "PIR324 Thermal Camera" with exclamation mark in "USB"



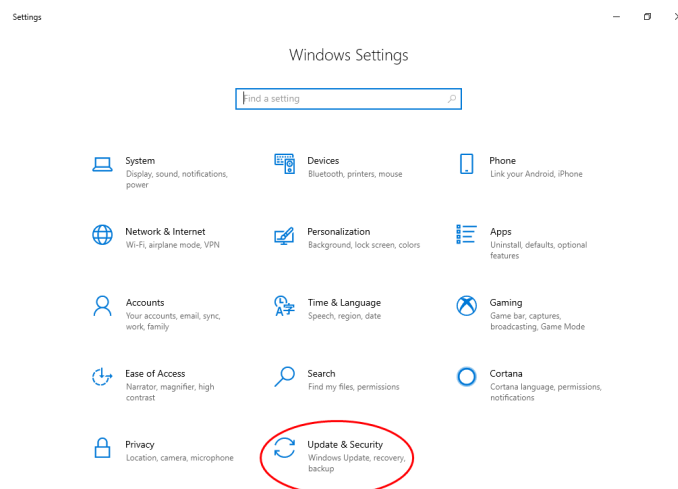
Double click and click "Update Driver", browse and find the driver directory. The exclamation mark disappears after installation completed



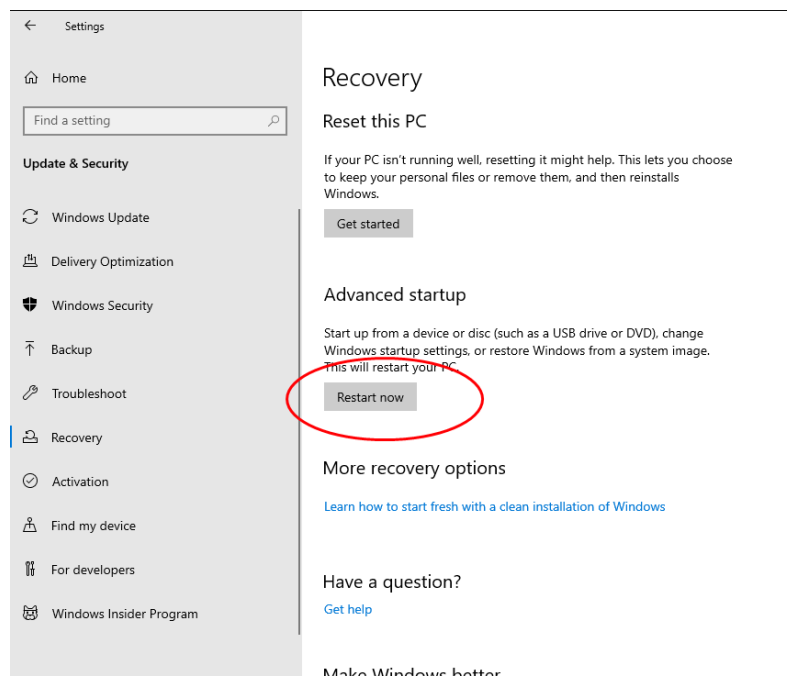
Double click "DYTiRViewer.exe" to operate the software.

Please refer to the following steps, if you are prompted that the driver cannot be installed due to driver hash value:

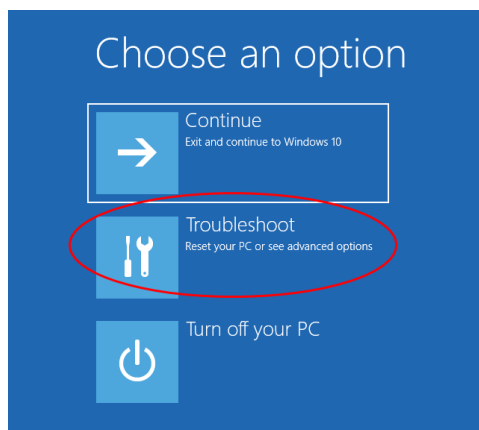
Open the "Settings" and click "Update and Security":



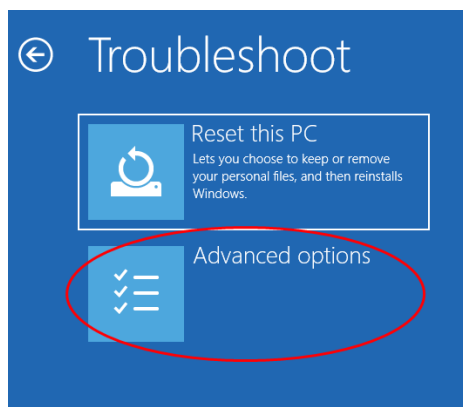
Click "Recovery"- "Restart Now",



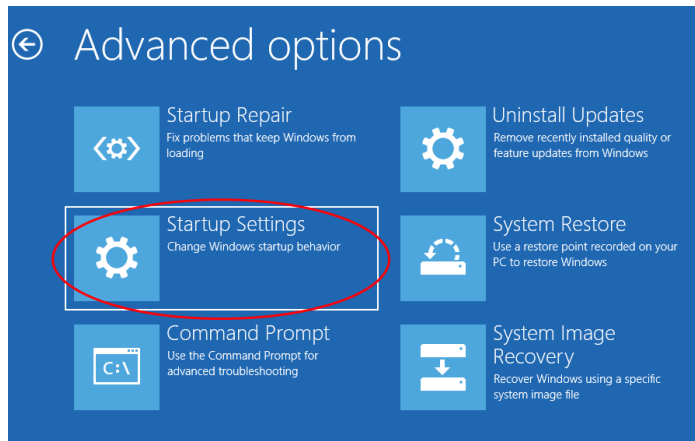
After the computer is restarted, enter the following interface, click "Troubleshoot",



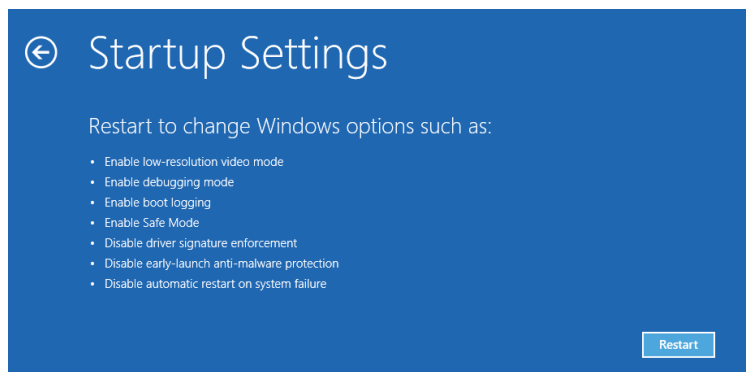
Click "Advanced options":



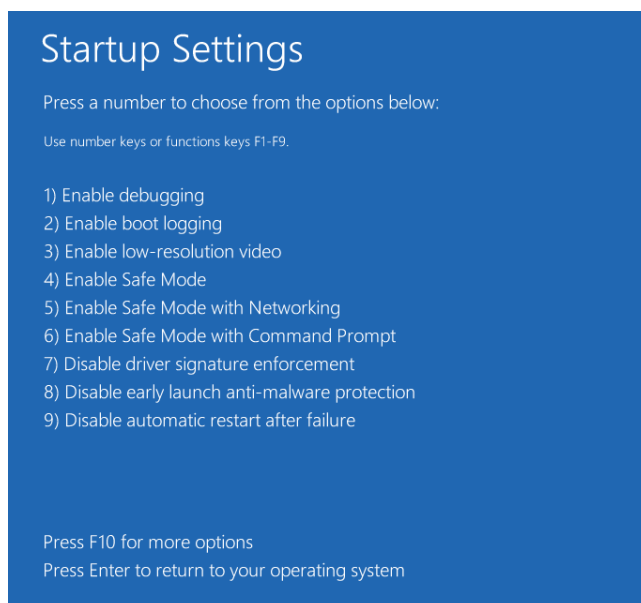
Click "Startup Settings":



Click "Restart":



After restarting again, enter the following screen, press the keyboard number 7 to restart,



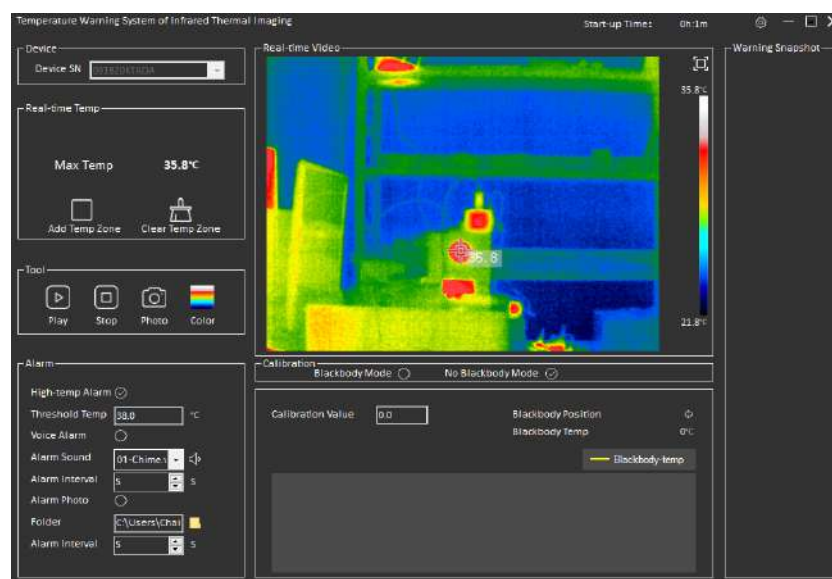
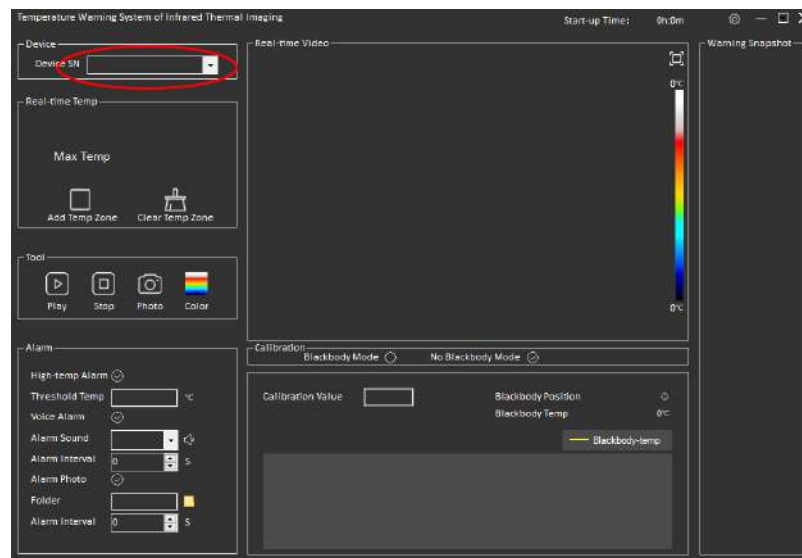
After the restart is completed, install the driver again.

3.3 Software application

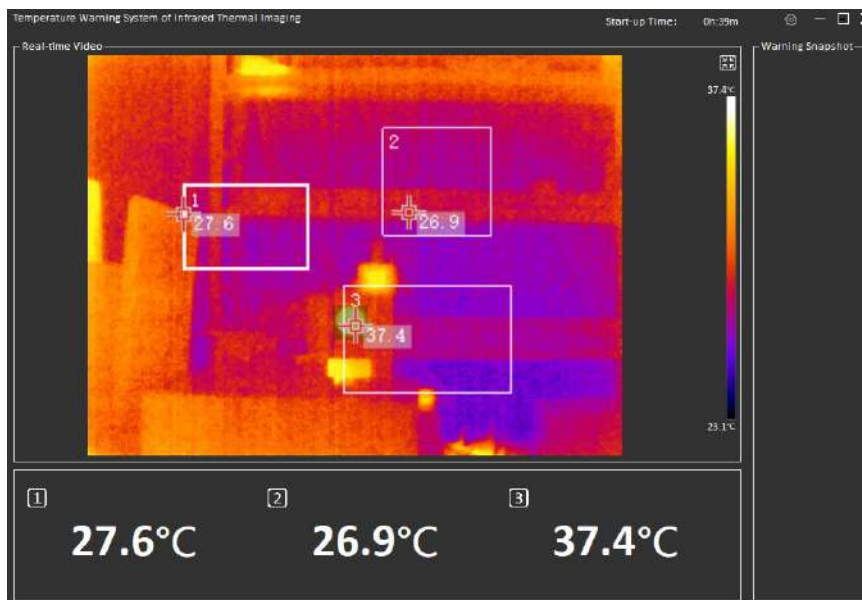
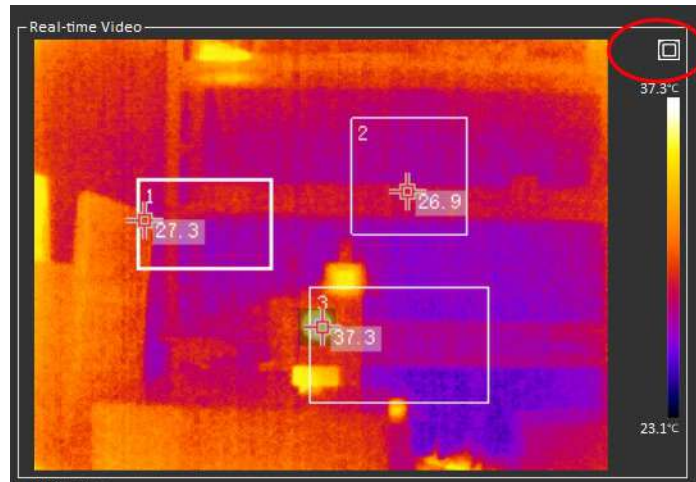
Double click DYTirViewer.exe to run the program. If the program cannot be run after the driver installation is completed, please confirm whether the last supported "Microsoft VC++ Redistributable" has been installed. If not, please search and download the corresponding version online, and the program will run normally after installation.

3.3.1 Real-time image

Select the camera in red box in the figure below, click the "Play", and the current image of the camera will be displayed on the right. Click "Stop" to stop displaying the real-time image. Click "Photo" to select "Folder" and save the image.



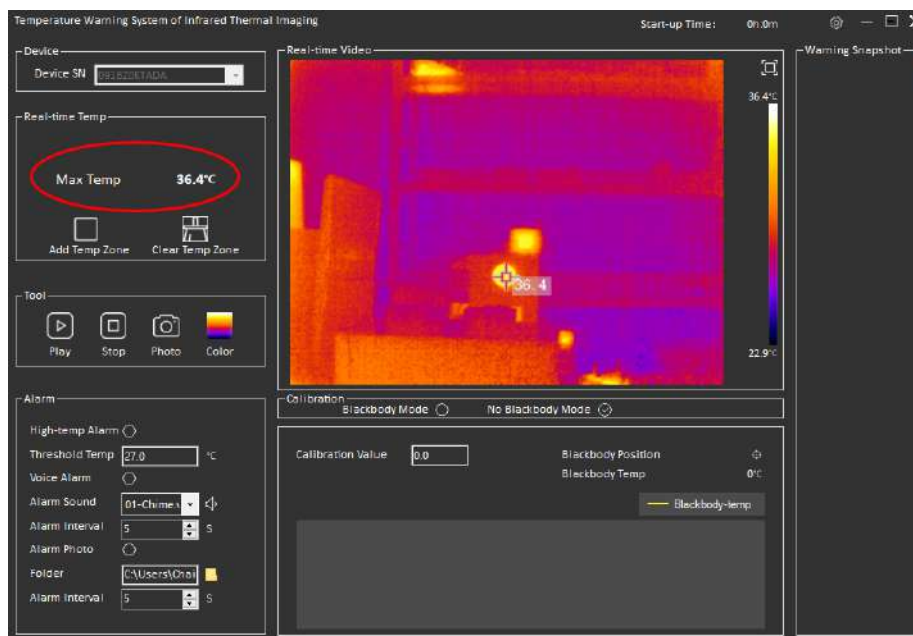
Press the maximize icon in the upper-right of the image, the image and measured temperature value will be enlarged, and press again will change back the normal mode.



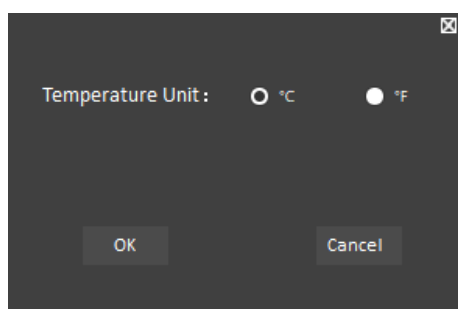
3.3.2 Temp measurement

CUTE THERMAL infrared thermal imager needs 10min of preheating after start-up. After 10min, the thermal imager can output accurate temp values stably. View the start-up time at the top right of the software. Temp fluctuation is normal within 0.5°C (0.9°F). In context of human body temp measurement, because the high accuracy is required, the environment needs to be stable, avoiding air opening, outdoor and constantly changing occasions, such as strong wind, air conditioning tuyere, fan and hot water surrounded, otherwise the measurement may be inaccurate.

The upper-left shows the current maximum temperature in the whole image, and if add temp zone, then the maximum temp only show the current zone area highest temp.



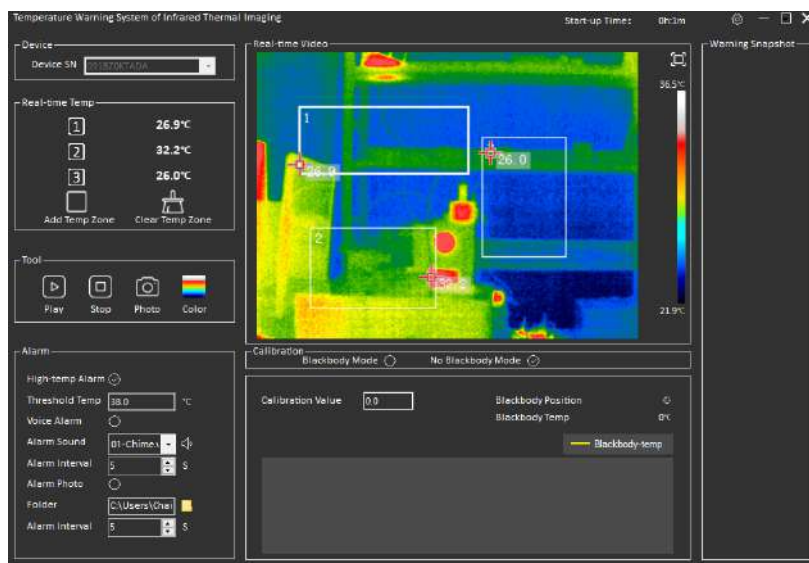
Press the upper right corner configuration icon, there will be a temperature unit transformation, press the unit and OK, then all the temperature unit will be transformed.



3.3.3 Zone temp measurement

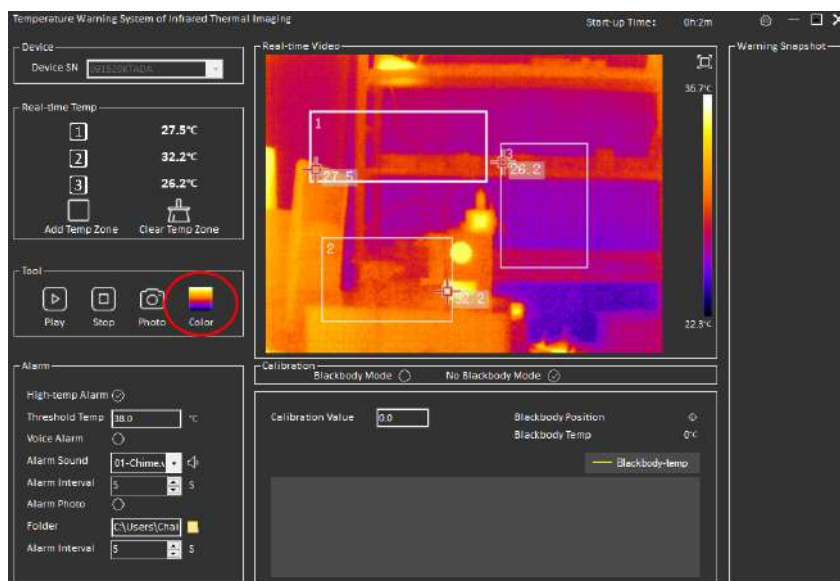
If you do not select area to be measured, the location and temp of the max temp in entire screen will be displayed. When you select the zone, only the max temp in the selected area will be displayed.

On the real-time displayed image, you can select to add a temp measurement zone on the left to select area to measured, and you can select up to 3 areas for temp measurement. Click "Clear" will clear all temp measuring zones displayed in the screen. There are 1,2,3 for the label of the zone to differential different zones.



3.3.4 Color palette

You can click "Color" at the red circle in the figure below to display the thermal image.



The optional color palettes are as follows:

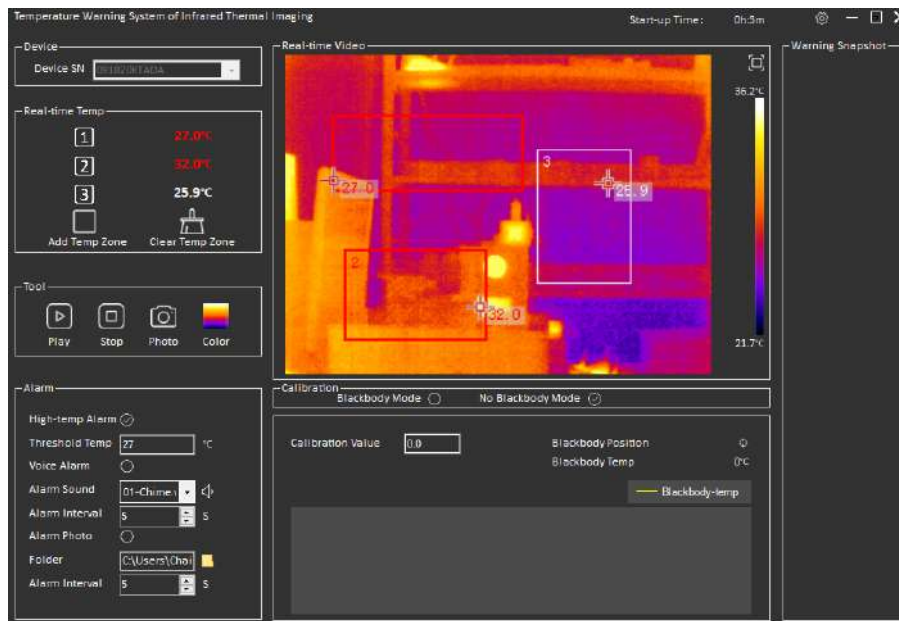
- Rainbow
- Iron
- Tyrian
- Whitehot

3.3.5 Alarm

Available for image alarms and sound alarms, and automatic saving of snapshot when alarms occur.

When the temp exceeds the threshold, the area temp measuring box will turn red to give an alarm.

Click on the ellipsis following the word "Voice Alarm" to select different sounds and intervals for sound production, and click on the ellipsis following the word "Alarm Photo" to select the directory and interval for automatic snapshot.



3.3.6 Snapshot

If "Alarm Photo" is checked, the snapshot will be displayed on rightmost side of the software and the snapshot time will be displayed. Click this picture to view with Win10 default software.

3.4 Temp measurement

3.4.1 Distance

The measurement accuracy of the infrared thermal imager is affected by the distance to the

targeted object. The closer the distance is, the stronger the thermal radiation received by the sensor is, and the higher the temp displayed is. It is recommended to measure within 2-3 meters.

3.4.2 Calibration

Calibration is in two modes:

- No blackbody mode
- Blackbody mode

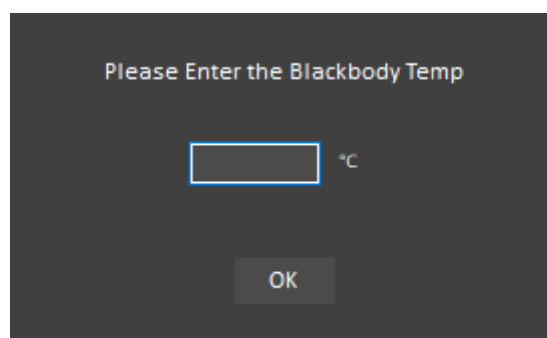
3.4.2.1 No blackbody mode

If there is no blackbody, the thermal imager needs to be calibrated as follows:

Enable the thermal imaging thermometer, after stable operation, first measure the forehead temp of a normal human body with a medical infrared thermometer indicated as T1, then measure the temp of the human body with thermal imaging at a fixed distance of 2-3 meters from the camera indicated as T2, and enter the compensated temp value $T=T1-T2$ in the temp adjustment box to start normal temp measurement.

3.4.2.2 Blackbody mode

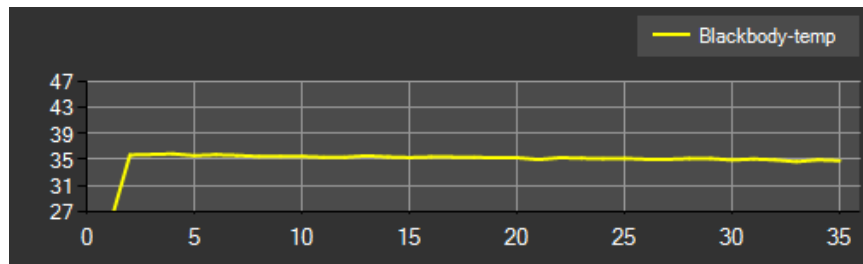
Blackbody should be placed at a position, distance and height close to the measured head as far as possible to ensure temp measurement accuracy. Check "Blackbody Mode" and click "Select Blackbody Position", then the mouse will become the crosshair on the video. Align the crosshair with the center of the blackbody and click again. Enter the temp value set by the blackbody in pop-up input box, click "OK" and start measuring.



Please try to use frame to measure and avoid blackbody, otherwise the temp set by blackbody is higher than that of human body, which may cause the temp value of human body not to be displayed.

The "Temp Calibration Value" in blackbody mode cannot be entered manually. The value in the box is the one currently compensated. The historical temp measurement curve of boldface will be displayed below. If this curve rises or falls sharply, it is necessary to check whether the blackbody

is blocked or the camera and blackbody are moved.



4 Deployment Precautions

1. Environmental changes have a great influence on the temp measurement accuracy of infrared thermal imaging. Try to choose a stable room temp environment, and do not deploy thermal imaging thermometer beside tuyere, air conditioner direct blowing position, fan direct blowing position, heating device, etc.
2. Behind the position where the lens is located, try not to place other high-temp device higher than the body temp, such as heating air conditioner, water boiling machine, high-power incandescent lamp and other high-temp objects, to prevent false alarm.
3. If the high-temp objects cannot be excluded in the picture, a frame area can be drawn on the software video, so that only the temp in the area frame will be measured to avoid other interferences.
4. It is suggested to correct the temp every day or every few days according to the method of 3.4.2.1 to maintain the accuracy.
5. When the thermal camera is turned on for 10min, the internal heat balance of the machine can be reached. At this time, the temp measurement value is the most accurate, so it is recommended to measure 10min after turning on the camera.
6. The placement of blackbody will directly affect the measurement accuracy, so it should be placed at a position, distance and height close to the measured head as far as possible to ensure the measurement accuracy.
7. If the temp measuring software is interrupted due to the disconnection of the network cable and the instability of WINDOWS system in intermediate process, if the interruption time is less than 5min, the measurement can be continued after starting up; if more than 20min, and the machine cools down, it should be continued 10min later after start-up.
8. Try to ensure one person appearing in the measuring area at a time when selecting position, to prevent multiple people from entering simultaneously to give false alarm.
9. Some non-infected fever patients may have an alarm of ultra-high temp, such as after drinking, exercising violently, after drinking boiled water, local facial inflammation, long-term sun exposure, just coming out of a sultry environment, etc. At this time, the tested person can be allowed to being calm down for a while or cool, then measure and screen.