



P2 Pro User Manual

InfiSense Technology Co., Ltd.

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The product described in this manual is only available for sale and use in the Chinese Mainland. This manual is intended to be used as a guide. The pictures, graphics, diagrams, illustrations, etc. provided in this manual are for explanation and illustration purposes only, and may be different from the particular product. Please refer to the physical product. The Company does its utmost to ensure the accuracy of content in this manual, while it makes no explicit or implicit claims or guarantees on this manual.

InfiSense may update this manual as a result of product upgrades or other needs. For the latest manual, please contact InfiSense Technology. InfiSense suggests you use this manual under the guidance of professionals.

Historical Versions

Version	Time	Description
V1.00	2022-06-14	Initial version

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1. General Description

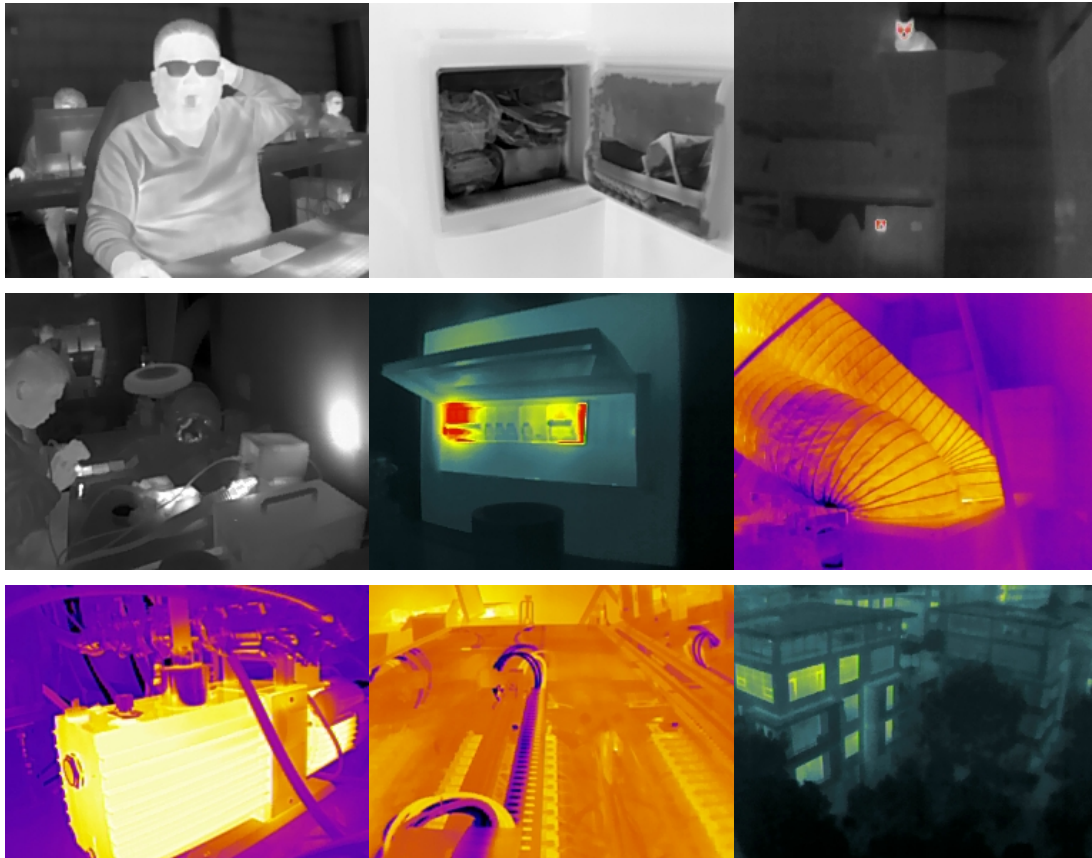
1.1. Brief Introduction

P2 Pro is an ultra-small professional thermal camera with a $12\mu\text{m}$ high-performance infrared detector and a self-developed ASIC chip. Its advantages include compact size, light weight, low power consumption, and high performance. You can connect it directly to the cellphone for plug-and-play accurate measurement.

1.2. Applications

Personal consumption: household temperature measurement, water, electricity, and heating pipeline distribution and fault inspection, photo taking, peep-proofing, animal searching, etc.;

Industrial and engineering usage: PCB overhaul, pipeline inspection, equipment overhaul, heating alarm, breeding, heat map analysis, etc.



1.3. Specifications

Detector	
Resolution	256×192
Pixel Size	12μm
NETD	≤50mK@25°C, F#1.0
Spectral Band	8~14μm
Performance	
Frame Rate	25Hz
Operating Temperature	-10°C~55°C
Storage Temperature	-40°C~85°C
Power Consumption	350mw
Processor	Self-developed LY ASIC chip
Lens	
Focus Length	3.2mm
Aperture	F1.1
FOV	56.0° (H)×42.2° (V), 71.3°(D)
Focusing Mode	Athermalized Prime Lens
Temperature Measurement	
Object Temperature Range	-10°C~550°C
Measuring Accuracy	±2°C or ±2% of readings, whichever is greater
Temperature Correction	Distance, ambient temperature, and emissivity
Shell	
Size (w×h×d)	27×18×9.8(mm)
Color	Silver
Weight	About 9.5g
Product Interface	USB type C

Note: The parameters are updated on June 15, 2022, and are subject to change without notice.

Note: The above temperature measurement parameters are obtained in the laboratory environment.

2. Preparation for Use

2.1. Software Download

This device must be used together with the Android app in order to access infrared photo taking, thermography, and other functions from the app. Please scan the QR code below to obtain the latest version of the app.



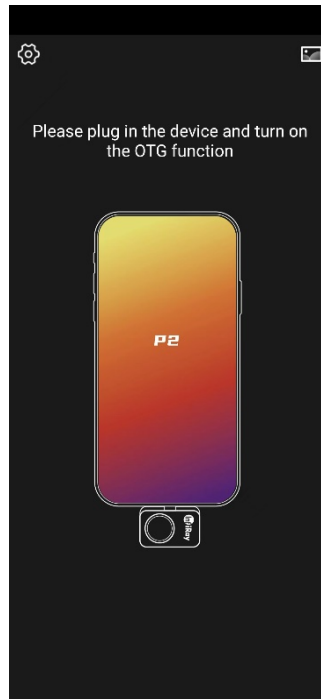
2.2. Establish a Connection

Ensure that all permissions required by the installed app are enabled on your phone. Otherwise, some functions may not be available. These include storage, camera, audio recording, and phone call permissions for managing the infrared photo album, using the visible light camera, accessing the video taking function, and storing image information, respectively.

Before plugging in the device, ensure that the OTG function has been turned on. On some phones, this function is turned on by default and therefore does not need to be set manually.

After plugging in the device and it is normally recognized by the phone, the phone will pop up a prompt "Do you want to allow P2 Pro to access USB Camera?", select **Yes**.

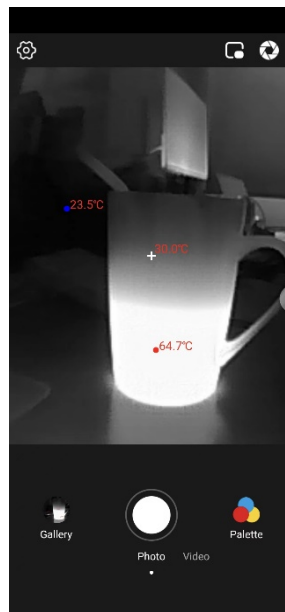
If the app has been opened and cannot detect the device, the following interface is displayed. This means that some functions are disabled.



3. Software Function

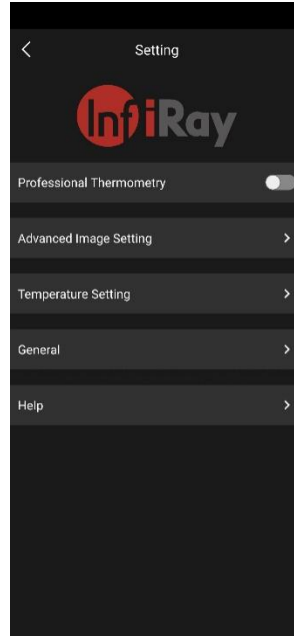
3.1. Simple Mode

The app's home page includes upper and lower function areas and an image area in the middle. From left to right of the upper function area, they are **Settings**, **Dual-Spectrum Switch**, and **Image Correction**; from the left to right of the lower function area, they are **Gallery**, **Photo**, **Video**, and **Palette**; and the image area in the middle is used to display infrared imaging, temperature measurement results, and other information.



3.2. Settings

The **Settings** menu contains **Professional Thermometry**, **Advanced Image Setting**, **Temperature Setting**, **General**, and **Help**.



3.2.1 Professional Thermometry

Users can tap this switch to activate the professional temperature measurement mode.

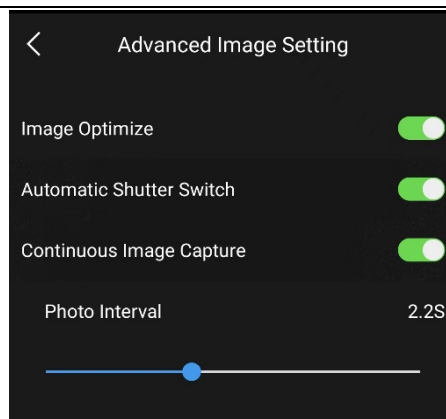
3.2.2 Advanced Image Setting

Advanced Image Settings include **Image Optimize**, **Automatic Shutter Switch**, and **Continuous Image Capture** functions.

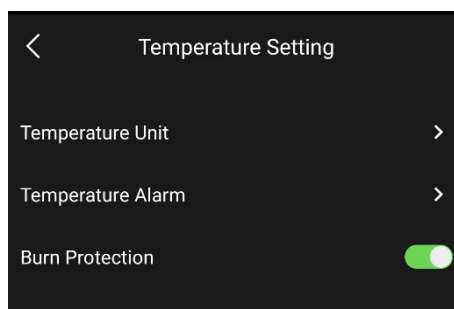
Image Optimize: Turn on the switch to improve the image quality.

Automatic Shutter Switch: Turn on the switch, and the image will be automatically corrected according to the default settings. Users are advised to turn it on during daily use. If there is a long-term camera need, you can turn off Automatic Shutter.

Continuous Image Capture: Turn on the switch, when users press and hold the photo taking button, the device supports continuous photo taking and photo taking interval setting.



3.2.3 Temperature Setting



(1) Temperature Unit

The temperature unit can be selected as Celsius ($^{\circ}\text{C}$), Fahrenheit ($^{\circ}\text{F}$), or Kelvin (K).

(2) Temperature Alarm

In the alarm setting, users can set the threshold.

High temperature alarm: enter a threshold and save. The phone sounds an alarm when any temperature shown on the image exceeds the threshold.

Low temperature alarm: enter a threshold and save. The phone sounds an alarm when any temperature shown on the image is lower than the threshold.

(3) Burn Protection

When it is detected that the infrared image temperature measurement exceeds the specified time of threshold temperature, the shutter plate will be closed, and a window will be popped up to prompt that the burn protection is enabled. Please do not aim at high-temperature objects for a long time. If you need to release it, please press the shutter plate!

3.2.4 General

Users can set the language in the **General** interface.

The default language follows the system. Users can select Chinese or English.

3.2.4 Help

Users can find **About Us**, **User Agreement**, **Help Document**, **Feedback**, and **Version Information** in the **Help** interface for more information.

3.3. Temperature Measurement Function

The current temperature measurement mode is divided into simple mode and professional mode. Press the **Professional Temperature Measurement** button in **Settings** to switch.

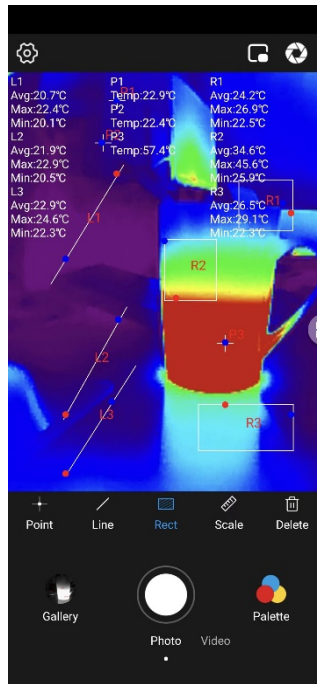
3.3.1 Simple Mode



In Simple Mode, users can see the infrared image, and the functions of photo taking, video taking, gallery and palette replacement are supported.

3.3.2 Professional Mode

The professional mode supports temperature measurement by three points, three lines, and three frames. For frames and lines, the highest, lowest, and average temperatures are displayed.



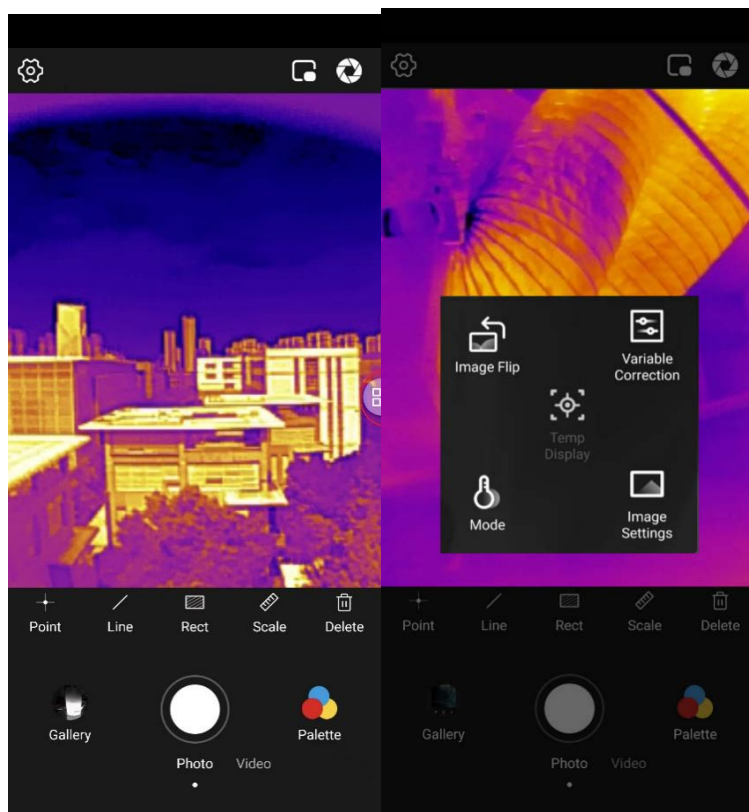
Only point-based temperature measurement supports adding or dragging measurement points. To delete a measurement point, tap the point. This is also the case for other controls.



The isotherm scale can be used for palettes other than white-hot or black-hot to highlight the temperature zone requiring special attention. The selected zone is displayed in the form of a palette while others are white-hot.

To clear all the points, lines, and frames, tap the rightmost **Delete** control.

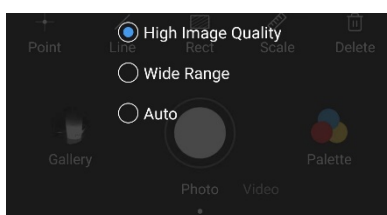
In the professional mode, there is a hover button, which is centered on the right side of the interface and marked with a blue curve in the figure below. Tap the hover button, and the interface shown in the lower right figure will appear to enter the temperature measurement and screen adjustment and optimization interface.



3.3.3 Temperature Measurement Mode

In the temperature mode control, you can select **High Image Quality**, **Wide Range** or **Auto** mode.

The target temperature range corresponding to high image quality is $-20^{\circ}\text{C}\sim 120^{\circ}\text{C}$, and the target temperature range corresponding to wide range is $20^{\circ}\text{C}\sim 550^{\circ}\text{C}$. The image of the high image quality mode is clearer than that of the wide range mode, and the temperature measuring range of the wide range mode is wider than that of the high image quality mode. Automatic switching is to automatically switch to high image quality or wide range according to the temperature of objects on the screen.



3.3.4 Environmental Variable Correction

In the environmental variable correction function, users can choose to adjust the parameters in the default mode, and select the emissivity according to the material of the target object in the use scene. With this function, you can add custom modes, change the mode name and parameters, and select modes you have defined to quickly switch between different radiometric scenarios for temperature measurement demand.

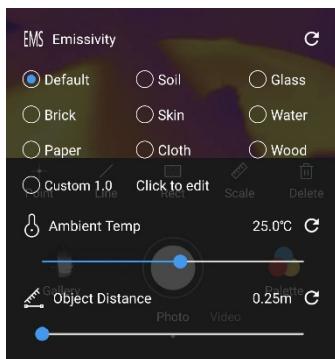
Difference between default mode and custom mode: The default mode cannot be deleted and can be restored to the preset temperature measurement parameters of the product;

Emissivity correction: provides the surface emissivity of eight common objects and allows customized object surfaces.

The allowed emissivity range is 0.01~1.00.

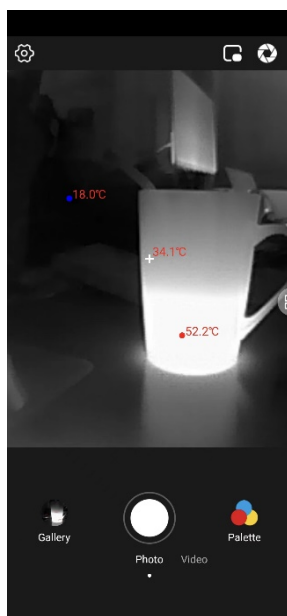
Distance correction: corrects temperature measurement based on the input distance to the measured object. The allowed distance range is 0.25m~5m. For a distance greater than 5m, select 5m, but the measurement accuracy cannot be guaranteed.

Ambient temperature correction: corrects temperature based on the input ambient temperature of the current device. The allowed ambient temperature range is the temperature range supported by the device.



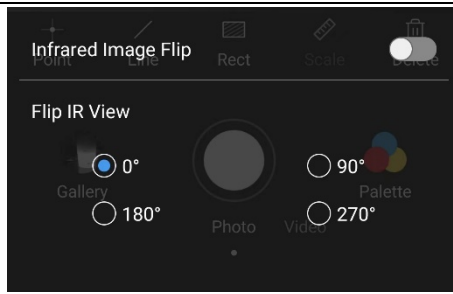
3.3.5 Temperature Display

The temperature display function is only available in simple mode. Tap **Temperature Display**, and a cross icon will appear in the center of the screen, and the highest temperature, lowest temperature and center point temperature of the screen will be displayed in real time. Tap again, and the cross icon in the center of the screen will disappear.



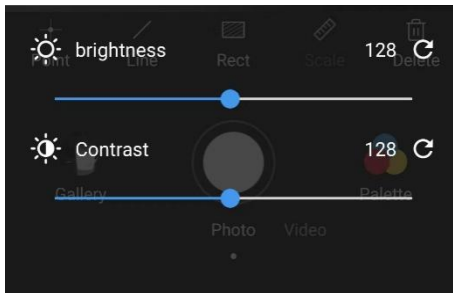
3.3.6 Image Flip

In the **InfraredImage Flip** interface, users can flip the interface freely.



3.3.7 Image Setting

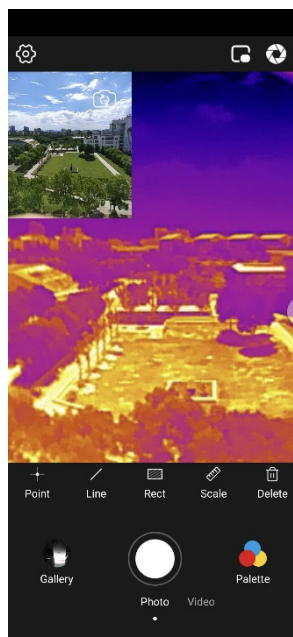
In **Image Setting**, users can adjust the brightness and contrast freely. Tap the rounded arrow button on the right to reset the brightness and contrast to the default value of 128.



3.4. Dual-Spectrum

Dual-Spectrum enables the presence of a small window in the image display area to simultaneously display the image taken by the phone camera. The small window supports drag operation.

To switch the front and rear camera of the phone, tap the reversal icon in the small window.



3.5. Shutter Switch

If the infrared image has poor quality or displays obviously inaccurate temperatures, tap the shutter switch in the upper right corner to refresh the infrared imaging effect by turning on the shutter.

Under the preset conditions of the system, the device may also automatically turn on the shutter to increase the image quality.

3.6 Palette

By default, the app has white-hot, black-hot, and other palette modes. Select different palettes as you prefer or as required.

The palette does not affect temperature measurement. However, the isotherm scale only applies to palettes other than white-hot and black-hot.

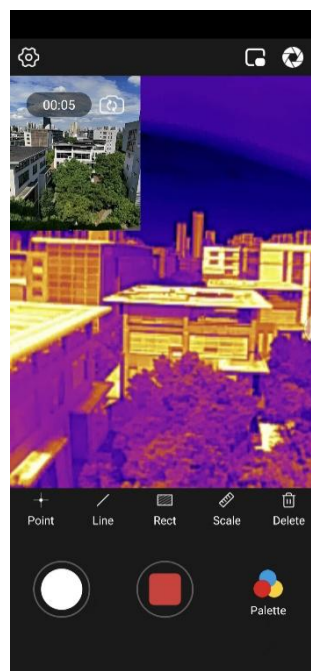
3.7. Photo Taking

Tap **Photo Taking**, the infrared image, visible light image (dual-spectrum enabled), and temperature measurement elements (temperature measurement enabled) in the displayed area can be captured and saved to the Album.

Continuous photo taking is supported.

3.8. Video Recording

To record the infrared images and sounds and save to the Album, tap **Video**. Taking photos while taking video is supported.



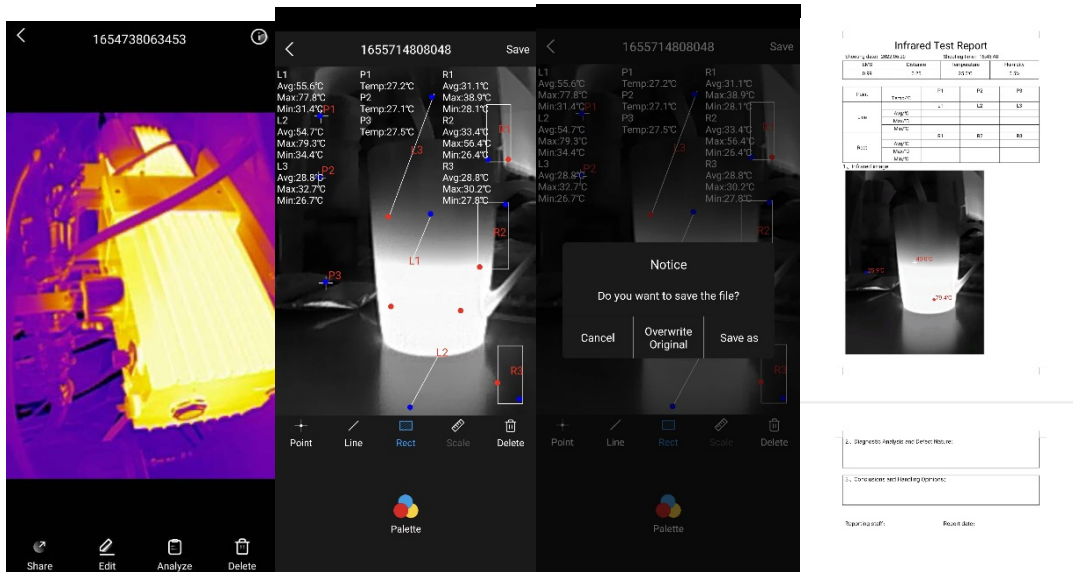
3.9. Photo Album

You can share or delete any photo(s) and video(s) in the Album of the app.

If the photo is a pure infrared image taken by the device, it can be edited in the Album, and the analysis report can be output.

In the **Edit** function, users can collect the temperature measurement data of points, lines, and surfaces of the infrared graph in the Album, or delete the points, lines and surfaces. Users can also use the isotherm scale in the image with palette. Tap the upper right corner to save the edited content. The device supports covering the original image with the modified image or saving a new image.

In the report output function, users can obtain an editable report by tapping **Output Report**, and then optimizes the report on an as-needed basis.



4. Precautions

- (1) Do not place this product in a humid environment or rinse it with water, to prevent electrical leakage or short circuit.
- (2) This product is sensitive to thermal radiation. Whether you are using it or not, do not direct its lens to the sun or other heat sources at temperatures above 300°C for a long time.
- (3) Please keep it properly after use.
- (4) To prevent device failure, disassembling the device shell without permission is strictly prohibited.
- (5) The lens and the Type-C connector are prone to damage. Do not knock, pry, puncture, or scratch them.

5. FAQs

(1) Q: Why does my P2 Pro not respond after being plugged into the phone?

A: Troubleshoot in this order:

a) Ensure that your phone runs with Android 6.0 or later

b) Verify that the OTG option is available on your phone and is enabled. If you are using OPPO, VIVO, OnePlus, Realme, or iQOO, search "OTG" in Settings and manually turn it on. This function is automatically turned off after 10 minutes of inactivity. On most other phones, OTG is turned on by default and can be used directly.

c) Ensure that you have downloaded the P2 Pro app and granted all permissions required by the app.

d) Unplug and plug in P2 Pro. If it still does not respond, contact our after-sales staff.

(2) Q: What should I do in the event of a blurry screen or inaccurate temperature measurement?

A: Given the operating characteristics of uncooled infrared detectors, you need to refresh the screen using the shutter, that is, tapping the shutter icon in the upper right corner. This helps produce clearer images and more accurate temperatures.

(3) Q: Can I use P2 Pro to observe objects under water, outside glass windows, under clothes, or under the skin?

A: P2 Pro mainly detects an infrared wavelength range of 8~14 μ m. So it cannot observe through water or ordinary glass and can only measure temperatures on the surfaces of clothes and skin.

(4) Q: How should I select the "temperature measurement mode"?

A: When the temperature of your target object is less than 120°C, or you have high requirements for image quality, it is recommended to use the high image quality mode. When the temperature of your target object is greater than 120°C and less than 550°C, it is recommended to use the wide range mode. The automatic switching mode is to intelligently select the temperature measurement mode of "high image quality and wide range" according to the temperature distribution in the temperature measurement screen. The product is in high image quality mode by default, and mode switching requires a period of time. Users can select the temperature measurement mode according to his/her actual situation.

(5) Q: Does P2 Pro pose a radiological hazard to the human body?

A: P2 Pro does not actively emit any hazardous radiation but only collects the heat information of objects. It can be used with peace of mind.

(6) Q: The temperature readings of people at a distance are relatively lower and can get higher when I come close to them.

Why is this happening?

A: The infrared radiation attenuates after passing through the atmosphere. The farther the distance is, the more it attenuates. As a result, the temperatures measured are less accurate for objects at a distance. For users who only need to find abnormal heat sources, the distance attenuation does not affect the relative temperature distribution. So they can use the product as usual. Users who need accurate temperature data can obtain the corrected temperature by inputting the distance from the object to be measured (up to 5m) in Temperature Measurement Correction - Distance Correction.

6 Support and Service

6.1 Service

InfiSense Technology Co., Ltd. is committed to providing quality training, maintenance, and technical support for customers. The Company wishes to maintain a long-term relationship with the customers. It continues to offer systems of the latest version and effective, timely support, retraining, and consulting services based on customer needs to help maximize customers' economic benefits.

6.2 After-Sales Contact

E-mail: sales@infisense.cn

Tel: +86-400-998-3088

Website: <https://www.infiray.com>