



P Series

Pocket Thermal Camera

User Manual V1.0.2



IRay Technology Co., Ltd.

www.infiray.com

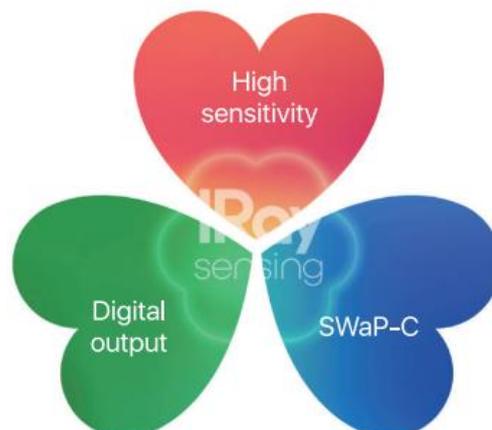
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Introduction to IRay Technology

IRay Technology Co., Ltd. concentrates on developing infrared thermal imaging technologies and manufacturing relevant products, with completely independent intellectual property rights. IRay is committed to providing global customers with professional and competitive infrared thermal imaging products and solutions. The main products include IRFPA detectors, thermal imaging modules, and terminal thermal imaging products.

With R&D personnel accounts for 48% of all employees, 662 intellectual property projects in terms of IRay have been authorized and accepted: 522 patented technologies authorized and accepted in China (including those for integrated circuit chips, MEMS sensors design and manufacture, Matrix III image algorithms and intelligent precise temperature measurement algorithms, etc.); 16 patented technologies authorized and accepted overseas; 86 software copyrights; and 38 integrated circuit layout designs. (The statistic data is up to April,2021)

IRay products have been applied in various fields, including epidemic prevention and control, industrial thermography, security and fire control, night vision observation, automatic driving, Internet of Things, AI, and machine vision.



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Any third party shall not modify, crack, decompile or delete the documents, systems, software and programs contained in the thermal camera without the consent of the company before it is sold to the end user, and shall not dismantle the terminal product or preinstall other equipment on the thermal camera without authorization.

The Company authorizes end users to use the camera within the scope of authorization and in the areas where the thermal camera has obtained patent rights. Anyone shall not dismantle, modify, crack, decompile or make other changes to the thermal camera without authorization or through any third party. The users should bear the relevant responsibilities of camera damage, abnormal function, unstable operation caused by above behaviors without authorization. In case of any damage caused by the above behaviors, the company reserves the right to pursue its legal liability.

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1. Legal Disclaimer

1.1 Legal Disclaimer

The thermal cameras manufactured by IRAY TECHNOLOGY are warranted for a period of two-year and the accessories are warranted for a period of three-month form the delivery date of the original purchase, provided such products have been under normal storage, use and maintenance.

This warranty extends only to the original purchaser and is not transferable. It is not applicable to any product which has be subjected to misuse, neglect, accident or abnormal conditions of operation.

In the case of a defect in a product covered by this warranty the product must not be further used or maintained in order to prevent additional damage. The purchaser shall promptly report any defect to IRAY TECHNOLOGY or this warranty will not apply.

IRAY TECHNOLOGY will, at its option, repair or replace any such defective product free of charge if, upon inspection, the product or accessories prove to be defective, the user can contact with after-sales service department of IRAY TECHNOLOGY within the said warranty period.

1.2 Copyright

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This manual is used as a guide. The photos, graphics, diagrams and illustrations provided in the manual are only used to explain, which may be different from the specific product. The real product shall prevail. We try our best to make sure the contents in this manual are accurate. We do not provide any representations or warranties in this manual.

IRAY TECHNOLOGY reserve the right to update the manual. If you need the latest version of this manual, please contact us. It is recommended that you use this manual with the guidance of professionals.

1.3 Quality Assurance

The Quality Management System under which these products are developed and manufactured has been certified in accordance with the ISO9001 standard.

We reserve the right to make changes and improvements on any of the products without prior notice.

2.Safety Information



WARNING

1. Make sure you read all applicable Material Safety Data Sheets (SDS) and warning labels on containers before you use a liquid. The liquids can be dangerous. Injury to persons can occur.
2. It is prohibited to use the product in a high temperature above 85 °C or in a low temperature below-45 °C.
3. It is forbidden to disassemble or refit the thermal camera at will.
4. Do not use too long screws when installing the front/rear mounting bracket, which may damage the thermal camera.



CAUTION

1. No matter there is a lens cover or not, do not point the infrared thermal camera towards strong light or equipment with laser radiation. This will affect the accuracy of the thermal camera and even damage the detector in the thermal camera.
2. Do not use the product under conditions that doesn't match the environmental requirements. For specific use environment requirements, see the product parameter table.
3. Do not apply solvents or equivalent liquids to the camera, the cables, or other items.
4. Be careful when you clean the infrared lenses. The lens has an anti-reflective coating which is easily damaged. Damage to the infrared lens can occur with too much force or cleaning with rough objects such as tissues.

3. Notice to user

3.1 Calibration

IRAY TECHNOLOGY recommends that you verify your calibration yearly in order to ensure accuracy. You can verify the calibration through IRAY TECHNOLOGY or third-party organizations.

3.2 Accuracy

For very accurate results, we recommended that you wait 5 minutes after you have started the camera before measuring a temperature.

3.3 Video Teaching

You can search for mount and use videos from our website.

3.4 Documentation Updates

Our manuals are updated several times per year, and we also issue product-critical notifications of changes on a regular basis. Please visit our website to access the latest manuals and notifications.

3.5 Scope of Application

This manual is applicable for all products in a range, which means that parts of the manual may not apply to a particular model.

4. Customer Help

4.1 FAQ

You can find answers to FAQ about this model on the service support page of our official website.

4.2 Download

You can download the following contents from our website: www.infiray.com

- Product Documentation
- Client Software
- Video Teaching Courses

5.Quick Start Guide

5.1 Packaging

Thermal camera, adapter, lanyard, portable bag and cable.

5.2 Steps for Quick Start

Follow the following steps:

1.Charging

Use a USB cable to charge the camera with voltage DC 5V.

2.Power on and off

Long press the power button  to turn on/off the camera, and short press the power button  to sleep/wake up.

3.Find the target

Point the thermal camera at the object of interest.

4.Capture image

Click the photo button to capture the image.

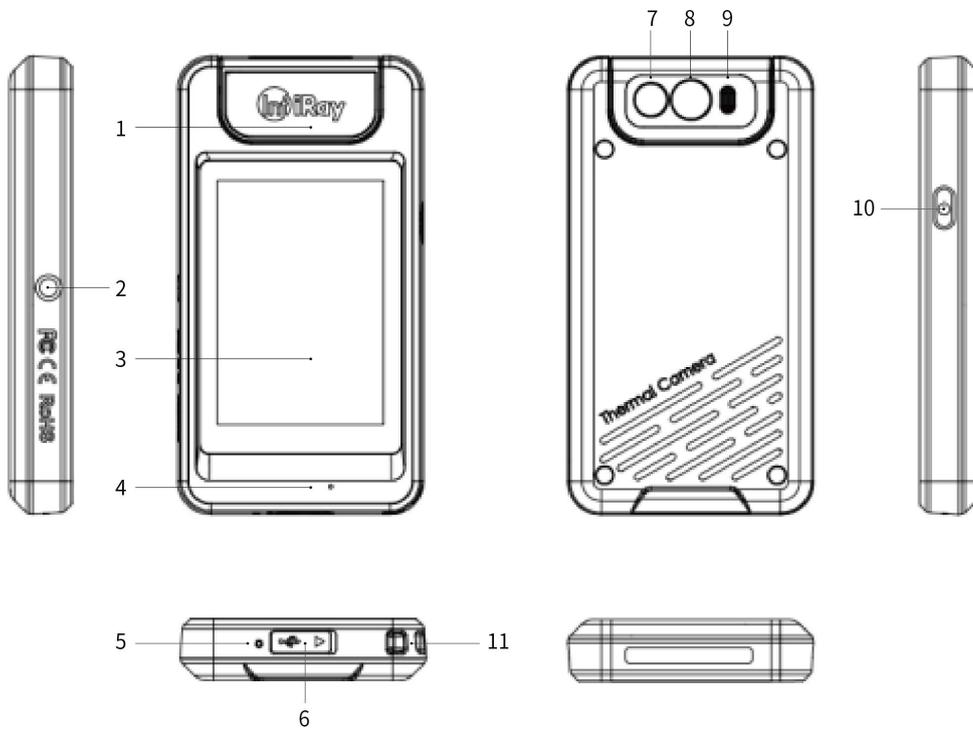
5.PC analysis

Install and run the client software on the PC, and use the USB cable to connect the camera to the PC to perform secondary analysis.

6. Overview of Thermal Camera and Application

The black design with the frosted texture offers a handy sense of comfort. The flexible rotating optical block can meet the requirements of special spaces for more convenient and comfortable shooting. The automatically rotated touch screen can display the menu cyclically, which is like experiencing a mobile game. With power-saving screen and humanized industrial design, the thermal camera is durable and reliable during work. It is also featured with dustproof, waterproof, anti-falling, and supports cloud uploading of data, convenient and efficient.

6.1 Camera Appearance



No.	Explanation	No.	Explanation
1	Lens rotation module	7	Digital camera
2	Tripod mount	8	Infrared lens
3	Touch screen	9	LED lights
4	Microphone	10	On/off button
5	Power indicator	11	Lanyard attachment point
6	USB-C connector		

6.2 Rotating Optical Block



The lens module can be rotated at angles of 0°, 30°, 60° and 90°. Please do not rotate more than 90° to avoid damage to the camera.

6.3 User Interface



The screen displays temperature, power, date&time, temperature bar and the main menu below the main interface. The main menu includes five functions: photo viewing, image mode, temperature measurement tool, color palette, and setting. The fan-shaped menu displays the secondary menu in the central of the main menu.

6.4 Applications

The P series thermal camera is portable in pockets without affecting the daily work of engineers. Fuse overheating, air leakage, pipe blockage and other problems can be found during work at any time. Once potential risks are found, data can be collected, uploaded, shared and countermeasures can be taken in time to prevent problems before they occur, which is convenient and efficient. The application of P series pocket thermal cameras is not only limited to inspectors, but also engineers and technicians in various fields such as electrical maintenance, pipeline inspection, property maintenance, HVAC, roof water leakage inspection, architects, etc.

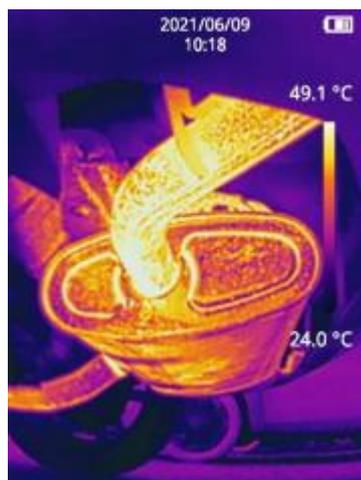
6.4.1 Equipment Detection in Narrow Space

P series handheld thermal camera is compact in size and has a 90° rotating camera, which can be used for equipment fault detection in all kinds of narrow space to avoid the inconvenience caused by equipment movement and easily obtain clear infrared images.



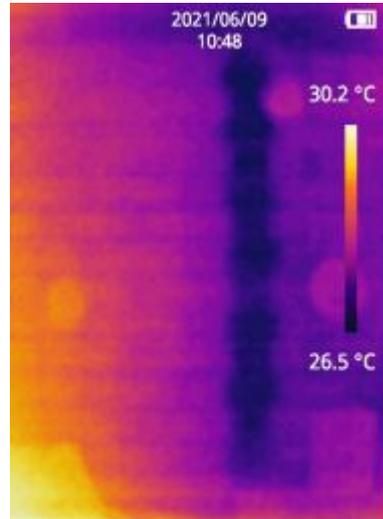
6.4.2 Automobile Inspection & Maintenance

The excessively high temperature of automobile exhaust pipe indicates insufficient fuel combustion and high compression ratio. The bad performance of heat preservation for the exhaust pipe has an impact on the operation of engine system, bearing system of automobile chassis, electrical equipment and comfort of automobile body. P series handheld thermal cameras can locate abnormal high temperature of automobile parts, and can be applied to all kinds of automobile maintenance scenarios besides exhaust pipe inspection and maintenance.



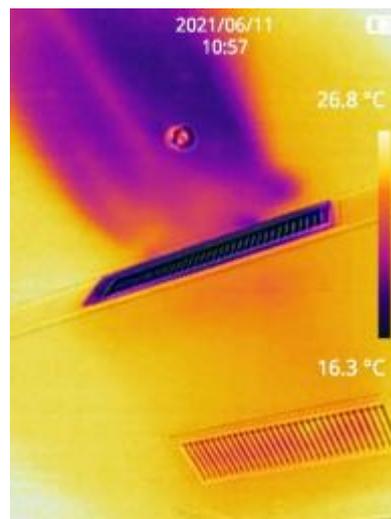
6.4.3 Wall Dampness

Leaks from water supply pipes, drain-pipes or heating pipes can cause wall dampness, which can lead to mold. P series handheld thermal cameras can find the damp condition of the wall invisible to the naked eye and help the user locate the leakage position.



6.4.4 Detection of Air Conditioning Outlet

Air conditioning is a necessary equipment for shopping malls and office buildings. Handheld thermal cameras can be used to quickly detect the air outlet of the air conditioner, judge whether the air conditioner is running normally, and avoid dangerous work such as climbing high and climbing ladders.

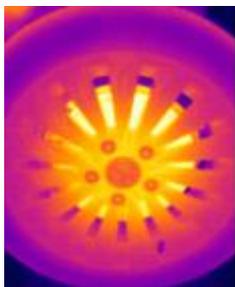
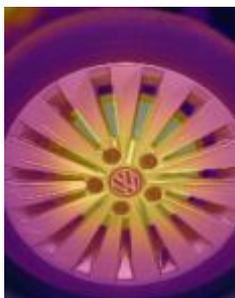


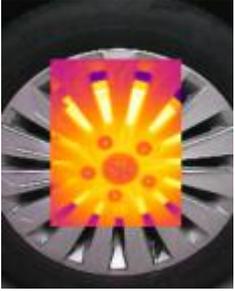
7. How to Get High-quality Images

For thermal cameras, the image quality is by no means limited to the resolution. The function of the image is to record information of target details, colors, temperature OSD, acquisition date, acquisition time, etc. Different application will have different requirements for imaging, so choosing the right shooting distance, image mode, color palette, magnification, temperature width, and fill light is also crucial for obtaining high-quality images.

7.1 Image Mode

The P series thermal cameras can capture infrared images and visible light images at the same time. Four different images can be displayed on the screen by selecting the image mode function: thermal imaging, dual-light fusion, picture-in-picture and visible light. Each image mode has a different emphasis on displaying information for different applications. The details are as follows:

Illustrations	Introduction
	<p>1. Thermal imaging: the infrared image records the heat distribution on the surface of the object, which is not limited by the visible light environment. It makes up the information blind area of the visible light image and plays a vital role in night vision and temperature analysis. In this mode, the +,- icons in the lower left corner of the main interface can adjust the magnification of the image so as to achieve the best effect of the target screen ratio.</p>
	<p>2. visible and infrared fusion images. The infrared image records abundant temperature information of the target, but its resolution is lower than that of the visible image, especially for the tightly packed target group. Due to the heat transfer effect, the infrared image can not record the sharp outline details of the target as the visible image as a result. The dual-light fusion mode combines the advantages of infrared and visible light, and can record abundant temperature information and outline details at the same time. Even the infrared light and visible light can be fused to a certain scale. Operation: in this mode, the +, - icons in the lower left corner of the main interface can adjust the fusion ratio.</p>

	<p>3. visible light and infrared overlay image. Because of the heat transfer effect, the infrared image can not distinguish the details of objects closely arranged in one dimension, such as multiple heating pipes, so it is difficult to identify the pipes. The picture-in-picture mode can solve this problem very well by overlaying the infrared image on the visible light image, and the overlaid position can be adjusted by the dual-light registration function.</p>
	<p>4. Visible Light: full color image in visible light. The light compensation design can adapt to the low light environment. The electronic zoom function can be used to capture the details of a long-distance target. The lower-left +, - icon of the main interface can adjust the image magnification, so that the target proportion of the screen can achieve the best results.</p>

7.2 Color Palette

Human eyes can only distinguish twenty gray levels. Although the gray level of collected infrared image can be up to thousands of gray levels, it is a pity that the human ability to distinguish gray level is limited, and information loss is dozens of times. However, the human visual sense of color resolution is strong enough to distinguish thousands of colors. Therefore, the image with color palette is more distinguishable and detailed than the gray image.

The three image modes of infrared, dual-light fusion and picture-in-picture are related to the temperature. Different temperatures can show different colors, and it is easier to analyze the image by choosing the right color palette which includes black heat, white heat, iron red, lava, rainbow, rainbow HC, and black red. The color palette can be set through the menu .

7.3 Electronic Zoom

The size of the target object in the image is related to the shooting distance. The shorter the distance, the smaller the object, which will make it impossible to see the details of the object; the shorter the distance, the larger the object, which will make the image unable to fully accommodate the object; Therefore, the appropriate screen ratio of the target is also an important factor affecting the image quality. Adjusting the distance allows the target to be the right size in the image. However, the distance from the target to the thermal camera will be limited in many cases, such as high-altitude targets. At this time, the electronic zoom function will become particularly important. In infrared mode and visible light mode, the ratio of

target to screen can be adjusted by electronic zoom function, and the +,- icons in the lower left corner of the main interface in each mode can adjust the magnification of the image, so that the ratio of target to screen can achieve the best effect.

7.4 Alignment Distance

For better dual-light image effects, you need to set the alignment distance separately, that is, the approximate distance from the thermal camera to the object when using dual-light fusion, picture-in-picture modes. Operation steps: after entering any of the two image modes of dual-light fusion, and picture-in-picture, the +,- icons appear on the main interface, and the distance parameters can be set. The distance range is 0.5m-4m, and the adjustment accuracy is 0.5m. When the adjustment is finished, touch the screen to hide the icon.

7.5 Temperature Range Adjustment

The temperature range adjustment refers to the adjustment of the upper and lower temperature limits. The gray value of the image in the thermal image is related to the temperature. If the temperature range is fixed and cannot be adjusted, the thermal camera cannot adapt to various scenes with changing temperature. Adjusting the temperature range can change the gray value distribution in the image and present a better image. The temperature range adjustment of the thermal camera has two types: automatic and manual:

Level/span Mode	Introduction
Auto Mode	In automatic mode, the thermal camera continuously adjusts the upper and lower temperature limits according to the highest temperature and the lowest temperature in the entire screen, and presents the best image in real time.
Manual Mode	In manual mode, you can drag the movable temperature scales to adjust the upper and lower limits of the temperature. The global best effect of the image in a specific scene may not be able to meet the demand, so the temperature range is set near a specific target temperature through the manual temperature range function, thereby shielding insignificant objects in the image, and making it easier to focus on the details of the target.

Notes: Only Auto Mode is available for P200.

7.6 Fill Light

In case of applying visible light mode in dark scenes, fill light is needed to achieve the ideal image effect. The secondary menu  icon or  icon in the main menu can set the turn-on and turn-off of fill light, which can also be used for lighting.

8.Measuring Temperature

Besides capturing high-quality images, the thermal camera also has another characteristic function, that is, temperature measurement. How to measure temperature accurately? To obtain accurate temperature, it is not enough to have high-performance detectors and stable hardware components only, correct methods are also required. The main factors that influence the result of temperature measurement are emissivity, ambient temperature, distance, temperature measurement range, unit selection, and so on. Therefore, before using the camera for measuring temperature, be sure to set the temperature measurement parameters. In addition, in order to obtain accurate temperature efficiently, suitable temperature measuring tools should be selected for different target objects.

8.1 Set Measuring Parameters

8.1.1 Set Emissivity

Emissivity refers to the ratio of the radiant power of an object to the radiant power of a black body at the same temperature, which is relative to the reflectivity of the object. At the same target temperature, higher target emissivity means that the target can radiate a higher proportion of energy. For example, the emissivity of body skin is 0.98, and the emissivity of printed circuit boards is 0.91. For more information on emissivity, please refer to the attached common emissivity table or search from other channels. In order to obtain more accurate measurement results, it is necessary to set the corresponding emissivity according to the target to be measured before each measurement. For specific operation steps, please refer to chapter 11.1.

8.1.2 Set Ambient Temperature

The ambient temperature is an important factor that affects the temperature measurement of the thermal camera. Before measuring the temperature, it's necessary to set this parameter in advance. For the specific operation steps, see 11.1 Measurement Parameters.

8.1.3 Set Distance

Infrared rays will be attenuated in the atmosphere. In the process of temperature measurement, the

distance between the target and the thermal camera will have different effects on the measurement results. The farther the distance, the lower the temperature. In order to ensure the accuracy of the temperature measurement, the thermal camera will compensate the result according to the distance of the object. Therefore, be sure to set the appropriate distance before temperature measurement. Refer to chapter 11.1 for detailed operation steps.

8.1.4 Set Measuring Gear

The temperature measurement range of the camera is $-20 \sim 550^{\circ}\text{C}$. In order to ensure the imaging effect, the temperature measurement range is divided into $-20 \sim 150^{\circ}\text{C}$ and $100 \sim 550^{\circ}\text{C}$. The user can independently select different temperature measurement ranges according to the conditions of use. For specific operation steps, please refer to chapter 11.2.

8.1.5 Set Units

The temperature unit supports three display modes: Celsius, Fahrenheit, and Kelvin. The default distance unit is meters. For specific operation steps, please refer to chapter 11.9.4.

8.2 Choose Measurement Tools

Different measurement tools should be chosen for different scenarios because choosing a suitable measurement tool can improve your work efficiency. Click the icon  in the main menu, the fan-shaped sub menu will be displayed, which contains six icons of temperature measurement tools: center spot, the min. temperature, the max. temperature, spot, line and region.

8.2.1 Center Spot Measurement

The measuring result will be displayed on the top left corner of the screen when the center spot measurement is chosen. You can turn on or turn off center spot measurement by clicking the icon  in the sub menu.

8.2.2 Cold Spot Tracking

The min. temperature of the whole frame will be displayed on the top left corner of the screen when the cold spot tracking is chosen. You can turn on or turn off the cold spot tracking by clicking the icon  in the sub menu.

8.2.3 Hot Spot Tracking

The max. temperature of the whole frame will be displayed on the top left corner of the screen when the hot spot tracking is chosen. You can turn on or turn off the hot spot tracking by clicking the icon  in the sub menu.

8.2.4 Custom Spot Measurement

The measurement results will be displayed on the screen following the custom spot while custom spot measurement is chosen.

Function	Introduction
Set	Click the icon  in the sub menu of the measurement tools, then click anywhere on the screen to set the custom spot, repeat to set the next measuring spot, at most 10 custom spots can be set.
Move	You can move the custom spot to anywhere you want by mouse dragging.
Remove	Click any custom spot, the spot will display in bold, and at the same time two icon buttons will appear on the top left corner of the screen: remove  , remove all  , click to remove single custom spot or remove all custom spots respectively.

8.2.5 Custom Line

The max. temperature will display on the screen following the custom line while custom line measurement is chosen.

Function	Introduction
Set	Click the icon  in the sub menu of the measurement tools, then click and drag anywhere on the screen to set the custom line, repeat to set the next measuring line, at most 10 custom lines can be set.

Function	Introduction
Edit and Move	By clicking the line center you can drag the line to other positions. By clicking the end of line, you can extend the measurement line or change its direction.
Remove	Click any custom line, the line will display in bold, and at the same time two icon buttons will appear on the top left corner of the screen: remove  , remove all  , click to remove single custom line or remove all custom lines respectively.

8.2.6 Custom region

The max. temperature, min. temperature and AVG temperature will display on the screen following the custom region while custom region measurement is chosen.

Function	Introduction
Set	Click the icon  in the sub menu of the measurement tools, then click and drag anywhere on the screen to set the custom region, repeat to set the next measuring region, at most 10 custom regions can be set.
Edit and Move	By clicking the region center or border, you can drag the region to other positions. By clicking the end of region and then drag, you can change the size and shape of the measurement region.
Remove	Click any custom line, the line will display in bold, and at the same time two icon buttons will appear on the top left corner of the screen: remove  , remove all  , click to remove single custom region or remove all custom regions respectively.

9. How to Do Effective Data Management

An excellent thermal camera can not only acquire high quality images but manage data effectively. The data management includes data acquisition, naming, annotation, saving, classification, upload, query, deleting, etc. This thermal camera integrates several data management advantages such as flexible acquisition function, multiple saving mode, enough storage space, stable data transmission, which will ensure perfect user experience.

9.1 Data Acquisition and Saving

P series thermal camera will generate .jpg and .irg files for each image capture. The data saving mode for manual image capture, timed image capture and auto alarm image capture is the same, which is applicable for second analysis. The default image naming rules: month/day/hour/minute/second of the image capture.

9.1.1 Manual Acquisition

Call up the secondary fan-shaped menu by clicking the icon  in the main menu via touch screen, then click the image capture icon , click anywhere on the touch screen to hide and quit the menu bar.

9.1.2 Auto Image Capture

The camera supports timed image capture, you can set the time interval and number of captured image, the unit of time interval is sec, the range is 10-3600, the range for the number of captured image is 10-1000. If this function is enabled, the image will be captured according the preset time interval and stop capturing after the number limit and at the same time this function will be disabled, refer to 11.6 for detailed operation procedures.

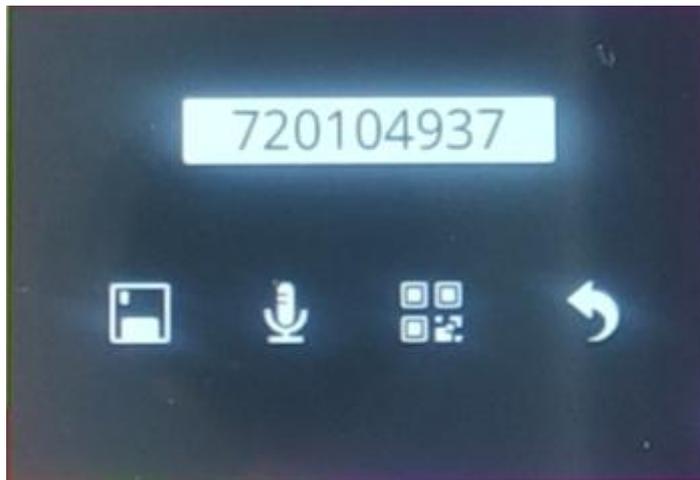
While auto image capture is enabled, you can mount the camera to the tripod to ensure the scene consistency. Please do not perform other operations during auto image capture process, you can tap the touch screen to call up the quit button and disable the auto image capture function by clicking.

9.1.3 Save Data

The data should be given annotation, renamed and saved. There are two kinds of data saving modes: manual saving and auto saving.

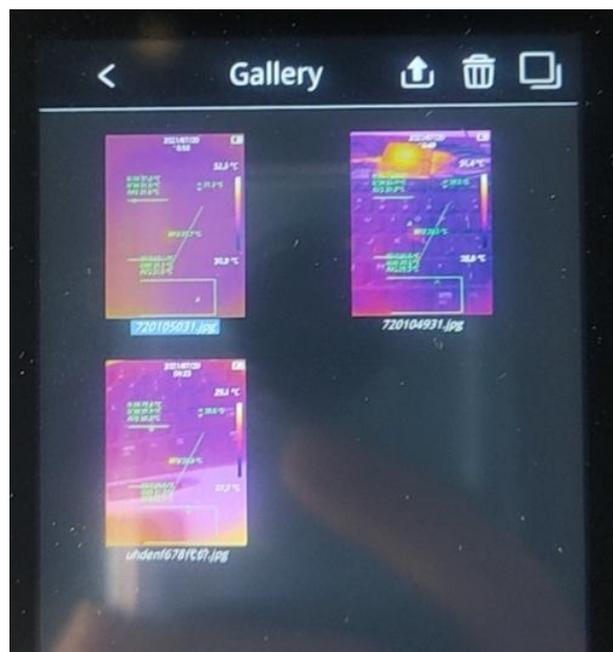
Function	Introduction
Manual Saving	The save interface will pop up after snapshot or image capture. The default file name(month/day/hour/minute/second) and four icon buttons (save , annotation, QR code, back) will be displayed on the interface. You can rename files, add voice notes or add QR code annotation, then click the save button to save or cancel by clicking back button.
Auto Saving	While this function is enabled, the saving interface will not pop up after image capture. The image will be saved automatically, the file name is

Function	Introduction
	month/day/hour/minute/second by default. The data saving mode is auto under auto image capture mode. See chapter 8.6 for detailed operation procedures.



9.2 Gallery Search and Data Upload

Call up the secondary fan-shaped menu by clicking the icon button  on the main interface, click gallery search icon  to enter gallery interface, the gallery interface includes image thumbnail, back, upload, delete, check button icons and scroll bar on the right.



Click any image to open image preview interface, the image preview interface includes such button icons such as back, last, next, delete and edit. Click edit button to enter into edit interface where you can rename the files.

Tick the check box and click several images to select the images, then click upload and delete button to perform batch upload and delete.

10.Alarm

P series can not only get accurate temperature data but achieve smart alarm function compared with other ordinary thermal cameras. Smart alarm can not only detect alarm event automatically but give prompt message and collect data. The alarm functions of P series can automatically select temperature information on the screen, detect abnormal temperature, give prompt alarm and collect data automatically, which is easy, fast, effective and exhaustive compared with human eye detections.

10.1 Alarm Settings

The camera supports above-temperature alarm and below-temperature alarm, the setting path: set-above/below temperature alarm, the user can set above-temperature alarm threshold, below-temperature alarm threshold. To turn on or turn off the alarm function via on/off button. The following icons will appear after the above-temperature alarm or below-temperature alarm is triggered.



10.2 Alarm Linkage

Alarm linkage means prompt message, data collection, prevention measures (such as fire control linkage). The warning box in one type of alarm linkage.

Besides warning box, alarm image capture can collect the related temperature information for secondary analysis.

Set path: setting-above/below temperature alarm, alarm image capture can also be turned on or turned off in this interface, the time interval and the number of captured image can be set. When this function is enabled, the image will be captured according to the preset time interval after the above/below temperature alarm is triggered. The image capture will be ended after the number of captured image is up to preset limit and this function will be disabled automatically. You should enable this function again when you use next time.

11. Camera Settings and Maintenance

11.1 Thermographic Parameters

To enter into the setting interface by clicking the icon button  in the main interface via touch screen, then click the “thermographic parameters setting” to perform parameter settings, click save to quit.

11.2 Gain Switch

To enter into the setting interface by clicking the icon button  in the main interface via touch screen then click the “gain switch” to perform gain switch settings, click save to quit.

11.3 Above/Below-Temperature Alarm

To enter into the setting interface by clicking the icon button  in the main interface via touch screen then click the “above/below temperature alarm” to perform on/off settings, temperature value setting, and auto alarm image capture, click save to quit.

11.4 Cloud Service

To enter into the setting interface by clicking the icon button  in the main interface via touch screen then click the “cloud service” to enter into platform account login interface, type in user name and password and device name to perform login. Please check Internet connection if “server connection error” appears. You need to register via temp.iraytek.com for the first use because the hand-held cameras can not be registered.

11.5 Wi-Fi Settings

To enter into the setting interface by clicking the icon button  in the main interface via touch screen, then click the “Wi-Fi setting” to enter into hotspot and Wi-Fi setting interface.

11.6 Image Capture Settings

To enter into the setting interface by clicking the icon button  in the main interface via touch screen, then click the “image capture setting” to turn on or turn off the function of auto image save and timed image capture. You can set time interval and the number of captured image for timed image capture.

11.7 Auto Power Off

To enter into the setting interface by clicking the icon button  in the main interface via touch screen, four modes can be selected: 5 minutes, 10 minutes, 20 minutes and off.

11.8 Screen Rotation Setting

To enter into the setting interface by clicking the icon button  in the main interface via touch screen, then click the “screen rotation setting” to enter into screen rotation setting interface where you can choose auto rotation or manual rotation. Two modes are optional in manual rotation mode: landscape and portrait.

11.9 System Settings

To enter into the setting interface by clicking the icon button  in the main interface via touch screen, click “system settings” to enter into system settings interface which includes 8 kinds of secondary setting items.

11.9.1 Device Information

You can view device model, version information, storage capacity and remaining storage capacity.

11.9.2 Date/Time

The device time (including year/month/day/hour/minute/second) is shown on date/time interface.

11.9.3 Language

You can select the language.

11.9.4 Unit

You can set the temperature unit and distance unit. The temperature unit includes Celsius, Fahrenheit and Kelvin, the distance is in meter.

11.9.5 Screen Brightness

Three levels can be selected: high, medium and low.

11.9.6 Format SD Card

You can perform the operation of formatting the SD card.

11.9.7 USB Mode

USB flash disk and USB camera can be chosen in USB mode settings interface. The USB flash disk should be chosen if the thermal camera is connecting with PC software for secondary analysis. The USB camera should be chosen if the thermal camera is connecting with the PC software for live image preview.

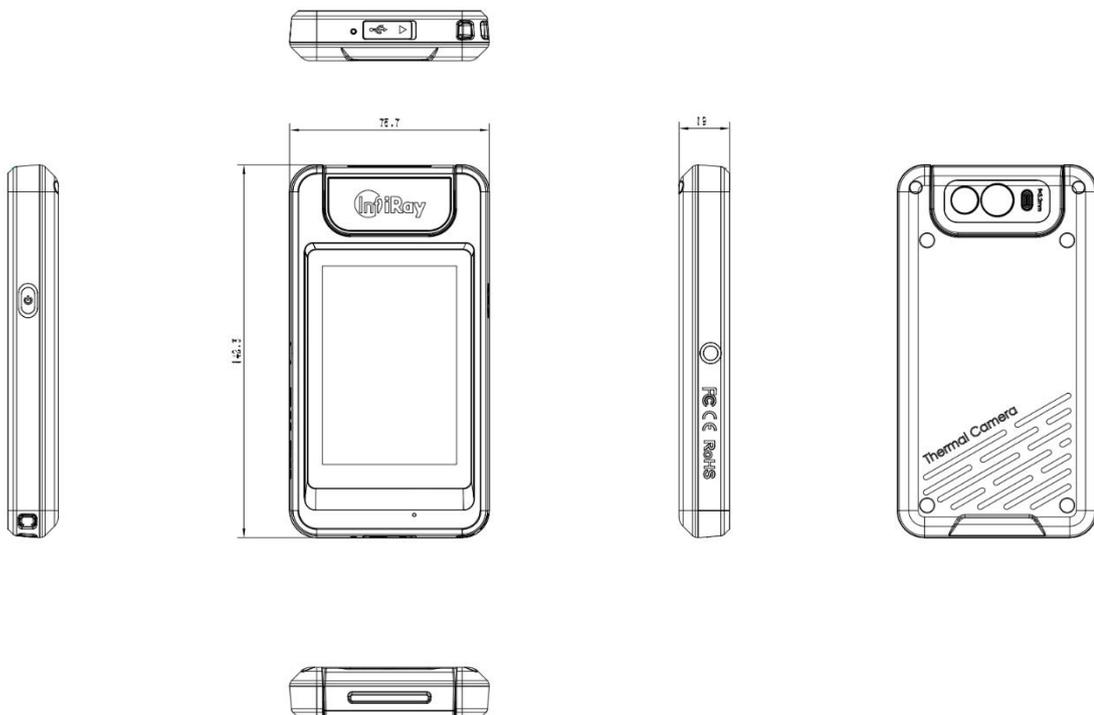
11.9.8 Restore Factory Defaults

The camera can be restored to factory defaults in case of choppy image and other abnormal situations.

11.9.9 Device Upgrade

The thermal camera can be updated via SD card.

12. Product Drawings



13.FAQ

1.The client software can not be connected to preview the real-time image.

Possible Cause: the USB mode has not been set correctly.

Solution: change the USB mode to USB camera mode.

2. The temperature display is -273.1°C after the client software is connected.

Possible Cause: the version of the client software is not the latest.

Solution: install the latest client software.

3.The digital zoom button can not be found.

Solution: under infrared mode or visible mode, the image magnification times can be adjusted through the icon+ or icon – on the left bottom of the main interface.

4.The device can not be connected by App of the cellphone.

Possible cause 1: the hotspot of the P series handheld thermal cameras has not been turned on.

Solution: turn on the hotspot in the setting menu.

Possible cause 2: the WLAN of the cellphone has not connected to the hotspot of the P series handheld thermal camera.

Appendix: Emissivity of Common Materials

Material	Emissivity
Human Skin	0.98
Printed Circuit Board	0.91
Cement Concrete	0.92
Ceramics	0.92
Rubber	0.95
Wood	0.90
Pitch	0.96
Brick	0.93
Sand	0.90
Soil	0.92
Cardboard	0.90
White Sticky Membrane Paper	0.93
Water	0.96
Snow	0.85
Marble	0.94
Polished Glass	0.94
AAO	0.55
Oxidized Iron	0.64
Oxidized Steel	0.79
Oxidized Stainless Steel	0.85

Worth comes from Service

24h Hotline:

400-998-3088

Technical Support

Hotline:

400-883-0800

Customized Services