

# UNI-T®



P/N:110401113148X



**UTi120MS**  
**Smartphone Thermal Camera**  
**User Manual**

## **Preface**

Thank you for purchasing this brand new UTi120MS smartphone thermal camera module. In order to use this product safely and correctly, please read this manual thoroughly, especially the safety notes.

After reading this manual, it is recommended to keep the manual at an easily accessible place, preferably close to the device, for future reference.

## **Limited Warranty and Liability**

Uni-Trend guarantees that the product is free from any defect in material and workmanship within one year from the purchase date. This warranty does not apply to damages caused by accident, negligence, misuse, modification, contamination or improper handling. The dealer shall not be entitled to give any other warranty on behalf of Uni-Trend. If you need warranty service within the warranty period, please contact your seller directly.

Uni-Trend will not be responsible for any special, indirect, incidental or subsequent damage or loss caused by using this device.

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## 1. Specifications

|                               |                                                                                       |
|-------------------------------|---------------------------------------------------------------------------------------|
| IR resolution                 | 120x90                                                                                |
| Super Resolution              | 240 x 180                                                                             |
| Frame rate                    | ≤25Hz (controllable)                                                                  |
| Spectral range                | 8-14μm                                                                                |
| Pixel size                    | 17μm                                                                                  |
| NETD                          | < 60mK                                                                                |
| Field of view                 | 50°(H)×38°(V)                                                                         |
| Focus                         | Focus free                                                                            |
| Temperature display           | Center Spot, High Spot, Low Spot                                                      |
| Temperature measurement range | -20°C ~ 400°C                                                                         |
| Accuracy                      | For temperature > -10°C, ±2% or ±2°C (whichever is greater, ambient temperature 25°C) |
| Temperature units             | °C, °F, K                                                                             |
| Temperature resolution        | 0.1°C                                                                                 |
| Emissivity                    | 0.01-1.00 adjustable                                                                  |
| Palettes                      | Ironbow, Rainbow, White Hot, Red Hot, Black Hot, Lava, Rainbow HC                     |

|                               |                                                                   |
|-------------------------------|-------------------------------------------------------------------|
| On Screen Analyzer            | Point, line, rectangle, circle (up to 6 can be added)             |
| Image capture/Video recording | √                                                                 |
| PIP                           | Display visual image (on phone) and infrared image simultaneously |
| Hi/Lo tracking                | Real-time tracking of Hi/Lo spot in the thermal images            |
| Hi/Lo alert                   | Custom temperature                                                |
| Image editing                 | Saved images can be edited, but videos cannot.                    |
| Data communication            | USB (Lightning)                                                   |
| Operating temperature         | 0 ~ +45°C                                                         |
| Storage temperature           | -20 ~ +60°C                                                       |
| Relative humidity             | 10%~85%RH, non-condensing                                         |
| Altitude                      | 2000m                                                             |
| Certificates                  | CE, UKCA, FCC, MFi, RoHS                                          |
| Drop proof                    | 1m                                                                |

## 2. Connection

Enter mobile APP. If the thermal camera module (the Device) is not detected, an interface that reminds users to insert it will appear, as shown below.



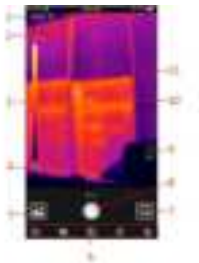
At this time, users can open the "Settings" page, but other functions are unavailable.

After inserting the device, a prompt will pop up, as shown in the following figure.



### 3. Screen Indicators/Icons

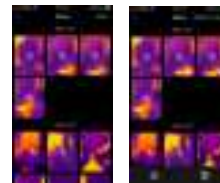
After the device is loaded, the initial smartphone page is shown in the figure below. The palette is Ironbow by default, and the main page is divided into the following sections.



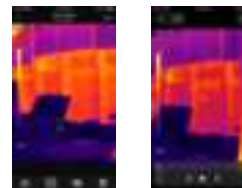
| NO. | Description       | NO. | Description                       |
|-----|-------------------|-----|-----------------------------------|
| 1   | Center spot value | 7   | PIP                               |
| 2   | Upper limit       | 8   | Image capture/<br>Recording/Saved |
| 3   | Temp. bar         |     |                                   |
| 4   | Lower limit       | 9   | Lo spot                           |
| 5   | Gallery           | 10  | Center spot                       |
| 6   | Menu bar          | 11  | Hi spot                           |

### 4. Gallery

On the initial page, tap "Gallery" (NO.5 in Screen Indicators/Icons) to view the photos/videos. Tap "Select" to select/select all/share/delete photos/videos.



Tap an image to enter an interface where users can share/delete/preview/edit this image or view its PIP/fusion mode. Tap a video to play/share/fast forward/rewind/full screen play it.



If the PIP or fusion mode is turned on when capturing a photo, tap the icon  when viewing this photo, a small PIP window will appear in the lower right corner. Users can tap  to check the fusion status, and drag the upper slider to adjust the fusion ratio of visible light and infrared light.

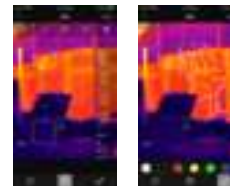


If the PIP or fusion mode is not turned on when capturing a photo, when users tap the PIP or fusion icon while viewing this photo, a prompt "No visible light!" will pop up.



In the photo viewing interface, tap "Edit" at the upper right corner to edit the current photo. The specific editing operations are as follows:

- 1) Rotate: Tap  icon to change the photo direction.
- 2) Add measurement tools: Tap  to display the interface as shown in the lower left. The tools can be added/moved/stretched/deleted.
- 3) Brush: Tap  to display the interface as shown in the lower right. Users can mark a photo in different colors. Tap  to withdraw the previous mark. (After saving a photo, tap  can still withdraw.)



## 5. Main Interface

### 5.1 Switch Camera

Tap  to switch between the front and rear cameras of the smartphone. The infrared light image will be mirrored.

## 5.2 Fusion

When users tap the icon  , a slider for adjusting fusion will appear at the top. Dragging the slider can adjust the fusion ratio of visible light and infrared light. Tap the icon  at the upper right corner, and then drag the screen to manually adjust the fusion distance.



## 5.3 On Screen Analyzer

Tap  to enter the interface for adding measurement tools. Users can add/move/stretch/delete the tools (point/line/rectangle/circle). Tools added in the main interface can be edited in the editing interface.

Tapping the corresponding icon can add a measurement tool and expand a semi-transparent information bar on the right of the interface to display the temperature information of the added tool. When the number of added tools exceeds 6, a prompt "Exceed max tools" will pop up. If users drag a tool to change its position, its temperature information will be updated synchronously. Select a tool and tap the Delete icon (NO.5 in the figure below) to delete it.

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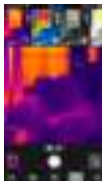


| NO. | Description               |
|-----|---------------------------|
| 1   | Point                     |
| 2   | Line                      |
| 3   | Rectangle                 |
| 4   | Circle                    |
| 5   | Delete                    |
| 6   | Temperature analysis area |

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#### 5.4 Palettes

In the main interface, tap , and the optional palettes will show on the top of the screen, including Ironbow, Rainbow, White Hot, Red Hot, Black Hot, Lava, Rainbow HC.



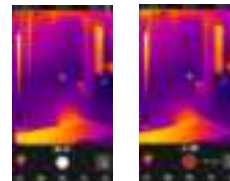
#### 5.5 PIP

Tap , and the APP will turn on the smartphone camera and display a small PIP window. Tap the icon again to turn it off.

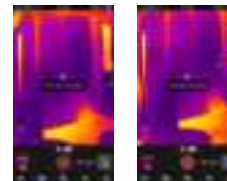


#### 5.6 Image Capture/Video Recording

Slide the camera icon left/right to switch between Image Capture and Video Recording modes. Both photos and videos will be automatically saved in "Gallery" (NO.5 in Screen Indicators/Icons).



Slide the camera icon left/right to enter the video mode. Tap video icon to record videos, and the recording duration will be displayed in the lower right corner. Tap the video icon again to end the recording.



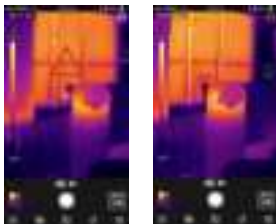


### 5.7 Shutter Calibration

- When the device is on, Shutter will automatically activate for calibration according to ambient changes or the different temperature of measured target.
- Tap the cross cursor to activate Shutter manually.

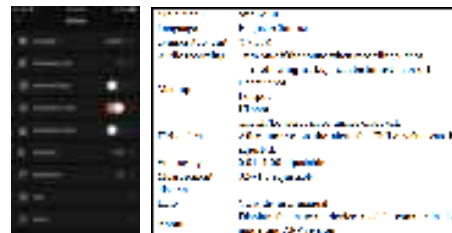
## 6. Super Resolution

Tap the icon  on the top right side to open the super-resolution function; When the function is ON, the real-time images will be more clear.



## 7. Settings

Tap  to enter the setting interface. Users can perform the following functions.



## 8. Temperature measurement parameters

**Emissivity:** The ratio of the measured object to the black body with the same temperature, which is an essential indicator to measure the radiant energy of the object. Its value ranges from 0.01 to 1.00.

**Ambient Temperature:** The ambient temperature at which the thermal camera and the measured object are located.

**Measurement Distance:** The distance between the thermal camera and the measured object.

**Relative Humidity:** The percentage of water vapor content in the air during the transmission of radiant energy from the measured object.

Note:

1.The accurate setting of the above parameters has varying degrees of influence on the final temperature measurement results.

2.Recommended Values: In case of uncertainty regarding these parameter values, the following

|                   |       |
|-------------------|-------|
| Emissivity        | 0.95  |
| Ambient Temp.     | 25℃   |
| Relative Humidity | 55%RH |
| Distance          | 0.6m  |

3.Accuracy:  $\pm 2^{\circ}\text{C}/\pm 2\%$  (whichever is greater,  $-10^{\circ}\text{C}\sim 400^{\circ}\text{C}$ , Room temperature:  $25^{\circ}\text{C}$ ) recommended

## 9. Cautions

- Do not use soluble liquids on the device, as it may cause damage.
- When using the device, please try to keep it stable and avoid violent shaking.
- Please do not violently disassemble the product to avoid irreversible damage.
- Please avoid hard objects contacting the device lens.
- Please do not point the product lens at high-intensity energy sources (including the sun, laser emission equipment and the reflection sources of these equipment), otherwise, it may affect the measurement accuracy, and damage the infrared detector of the product.

- Please put the product into the carrying box when it is not used.
- Due to different batches, the materials and details of actual products may be slightly different from the graphic information. Please refer to the goods received.
- The experimental data in the manual are theoretical values and all from Uni-Trend's internal laboratories, for reference only. Customers cannot use them as bases for placing orders. If users have any questions, please contact customer service.

## 10.Compatible Models

iPhone 14 Pro Max, iPhone 14 Pro, iPhone 14,  
iPhone 13 Pro Max, iPhone 13 Pro, iPhone 13,  
iPhone 13 mini, iPhone 12 Pro Max, iPhone 12 Pro,  
iPhone 12, iPhone 12 mini, iPhone 11 Pro Max,  
iPhone 11 Pro, iPhone 11, iPhone XS Max,  
iPhone XS, iPhone XR, iPhone X, iPhone 8 Plus,  
iPhone 8, iPhone 7 Plus, iPhone 7, iPhone 6s Plus,  
iPhone SE (2nd generation), iPhone 6s,  
iPhone 6 Plus, iPhone 6

Instructions are subject to change without prior notice.

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