

**UNI-T®**



**UTi120B**  
**Professional Thermal Imager**

P/N:110401110123X

## Preface

Thank you for purchasing the new UTi120B thermal imager. In order to use this product safely and correctly, please read this manual thoroughly, especially the *Safety Instructions* part.

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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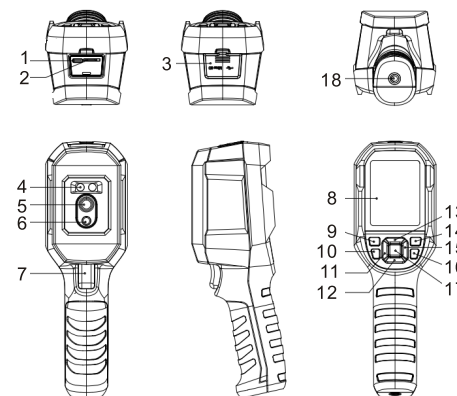
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## 1. Specifications

|                                 |                                                                              |
|---------------------------------|------------------------------------------------------------------------------|
| Sensor                          | UFPA                                                                         |
| Temperature range               | -20°C~400°C                                                                  |
| Basic accuracy                  | ±2.0°C or ±2% (-10°C~400°C);<br>whichever is greater (room temperature 25°C) |
| Measurement resolution          | 0.1°C                                                                        |
| Mode                            | Auto gain                                                                    |
| Measuring distance              | 50cm                                                                         |
| Response time                   | ≤500ms                                                                       |
| Emissivity                      | 0.01~0.99 adjustable (default: 0.95)                                         |
| IR resolution                   | 10,800 pixels (120°90°)                                                      |
| Pixel size                      | 17μm                                                                         |
| Color palette                   | Iron red, Rainbow, White Hot, Red HOT, Black HOT                             |
| Wavelength range                | 8μm~14μm                                                                     |
| Field of view (FOV)             | 50° (H) × 38° (V)                                                            |
| Spatial resolution (IFOV)       | 7.3mrad                                                                      |
| Thermal sensitivity (NETD)      | ≤60mK                                                                        |
| Frame rate                      | ≤25Hz                                                                        |
| Temperature measurement display | ROI, center point temperature,<br>high temperature tracking (default)        |
| Image format                    | BMP                                                                          |
| Visual light camera             | Yes                                                                          |
| Visual light resolution         | 640 x 480 pixels                                                             |
| Field of view (FOV)             | 81°                                                                          |

|                              |                                                                 |
|------------------------------|-----------------------------------------------------------------|
| Image modes                  | Thermal, Digital (visual light image)<br>Fusion(image blending) |
| Temperature Alarm            | Icon alarm/LED alarm/Audio alarm                                |
| PC software                  | Yes                                                             |
| Real-time image transmission | Yes (real-time image projection through PC software)            |
| Data transmission            | Type-C USB interface                                            |
| Product size (L x W x H)     | 236mm x 75.5mm x 86mm                                           |
| Display type                 | 2.8" TFT LCD                                                    |
| Display resolution           | 320 × 240 pixels                                                |
| Battery                      | 3.7V/5000mAh rechargeable Li-ion battery                        |
| Auto power off               | 5 minutes, 10 minutes, 30 minutes,<br>off (default: 30 minutes) |
| Battery life                 | ≥6 hours                                                        |
| Charging time                | ≤5 hours                                                        |
| Charging voltage/current     | 5V/2A                                                           |
| Image storage                | Micro SD card                                                   |
| Drop test                    | 2m                                                              |
| IP rating                    | IP65                                                            |
| Certification                | CE                                                              |
| Storage temperature          | -20°C~60°C (-4°F~140°F)                                         |
| Operating temperature        | 0°C~50°C (32°F~122°F)                                           |
| Operating humidity           | <90%RH (non-condensing)                                         |
| Altitude                     | ≤2000m                                                          |
| Standard accessories         | User manual, USB cable, 16GB Micro SD card                      |

## 2. Structure

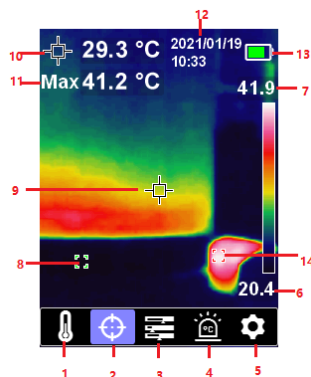


| Item | Description              | Item | Description          |
|------|--------------------------|------|----------------------|
| 1    | USB (Type-C) interface   | 10   | Flashlight button    |
| 2    | SD card slot             | 11   | Left button          |
| 3    | Interface cover          | 12   | Down button          |
| 4    | LED light                | 13   | Up button            |
| 5    | Infrared camera lens     | 14   | Replay button        |
| 6    | Visual light camera lens | 15   | Right button         |
| 7    | Trigger                  | 16   | Back button          |
| 8    | LCD display              | 17   | SET button           |
| 9    | Power button             | 18   | Tripod mounting hole |

### 3. Display

Display size: 2.8"

Display resolution: 320 (vertical) x 240 (horizontal) pixels

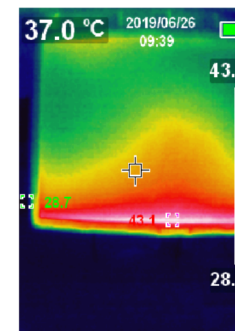


| Item | Description                       | Item | Description               |
|------|-----------------------------------|------|---------------------------|
| 1    | Temperature unit option           | 8    | Minimum temperature point |
| 2    | Cursor option                     | 9    | Center point              |
| 3    | Color palette option              | 10   | Center point temperature  |
| 4    | High/Low temperature alarm option | 11   | Maximum temperature       |
| 5    | Settings option                   | 12   | Date & time               |
| 6    | Minimum temperature               | 13   | Battery status            |
| 7    | Maximum temperature               | 14   | Maximum temperature point |

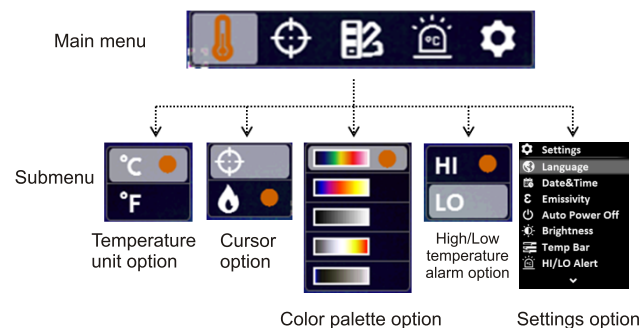
### 4. Power On/Off

Press the power button for 3s to power on, and press the power button for 1s to power off.

### 5. Menu Introduction



Thermal imaging page



### 6. Image fusion

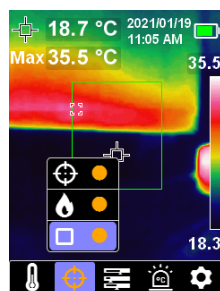
This product can capture real-time IR image and display the measured temperature. Press left/right button to select fusion rate from 0% (pure visual light image), 25%, 50%, 75%, 100% (pure infrared image), the best fusion distance is  $\geq 1\text{M}$ .

## 7. Temperature Unit Selection



1. Press the SET button to open the main menu.
2. Press the left/right button to select the  option.
3. Press the SET button to enter the temperature unit submenu.
4. Press the up/down button to select °C or °F.
5. Press the back button to exit the current menu.

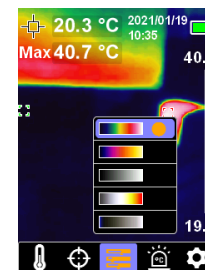
## 8. Center Point and High/Low Temperature Tracking



**Press SET to enter main menu, select  and press SET to enter submenu:**

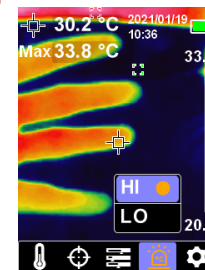
1. Select  and press SET to measure center point temperature.
2. Select  and press SET to track HI/LO temperature.
3. Select  and press SET to measure ROI temperature.

## 9. Color Palette Selection



1. Press the SET button to open the main menu.
2. Press the left/right button to select the  option.
3. Press the SET button to enter the color palette submenu.
4. Press the up/down button to select the desired color from Iron Red, Rainbow, White Hot, Red Hot, Black Hot.
5. Press the back button to exit the current menu.

## 10. High/Low Temperature Alarm

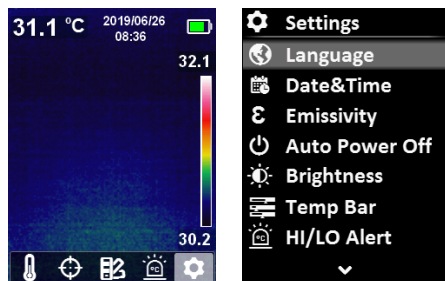


**To enable high/low temperature alarm:**

1. Press the SET button to open the main menu.
2. Press the left/right button to select the  option.
3. Press the SET button to enter the high/low temperature alarm submenu.
4. Press the up/down button to select HI (High) or LO (Low).
5. Press the SET button to confirm.
6. Press the back button to exit the current menu.

**Note:** High temperature alarm and low temperature alarm can be enabled simultaneously or separately.

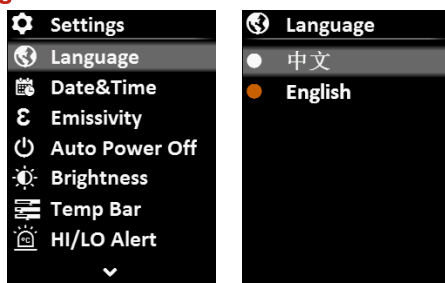
## 11. Settings



To enter Settings menu:

1. Press the SET button to open the main menu.
2. Press the left/right button to select the  option.
3. Press the SET button to confirm.

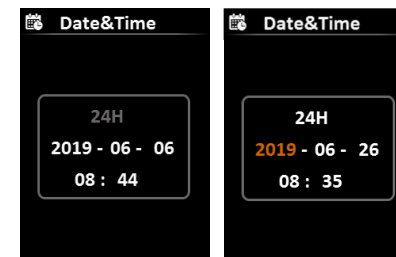
### 11.1 Language



To set language:

1. Select the Language option (up/down button) in the Settings menu.
2. Press the SET button to enter the Language submenu.
3. Press the up/down button to select the desired language from Chinese and English.
4. Press the SET button to confirm.
5. Press the back button to exit the current menu.

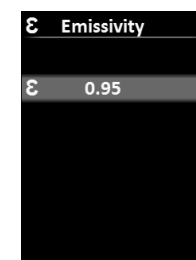
## 11.2 Date & Time



To set date & time:

1. Select the Date & Time option (up/down button) in the settings menu.
2. Press the SET button to enter the Date & Time submenu.
3. Press the left/right button to select the parameter to be adjusted.
4. Press the SET button to enter the parameter adjustment state.
5. Press the up/down button to increase or decrease the value.
6. Press the SET button to save the settings and return to set other parameters.
7. Press the back button to exit the current menu.

### 11.3 Emissivity



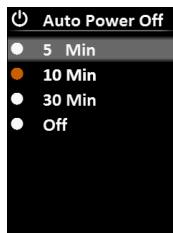
To set emissivity:

1. Select the Emissivity option (up/down button) in the Settings menu.
2. Press the SET button to enter the Emissivity submenu.
3. Press the SET button again.
4. Press the up/down button to adjust the emissivity (step: 0.01; range: 0.01~0.99; default: 0.95)
5. Press the SET button to save the settings.
6. Press the back button to exit the current menu.

**Note:** Selecting correct emissivity is very important for accuracy of temperature measurement, as emissivity has a significant impact on the measured surface temperature.

For emissivity values of common materials, please refer to the common emissivity table in the appendix.

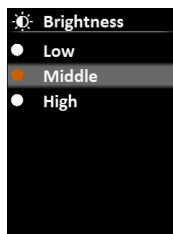
### 11.4 Auto Power Off



#### To set auto power off:

1. Select the Auto Power Off option (up/down button) in the settings menu.
2. Press the SET button to enter the Auto Power Off submenu.
3. Press the up/down button to select the desired option from 5 Min, 10 Min, 30 Min, and Off.
4. Press the SET button to confirm.
5. Press the back button to exit the current menu.

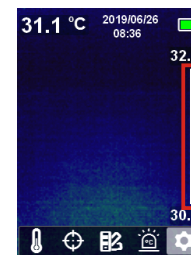
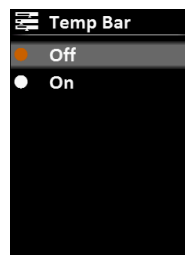
### 11.5 Display Brightness



#### To set display brightness:

1. Select the Brightness option (up/down button) in the settings menu.
2. Press the SET button to enter the Brightness submenu.
3. Press the up/down button to select the desired option from Low, Middle, and High.
4. Press the SET button to confirm.
5. Press the back button to exit the current menu.

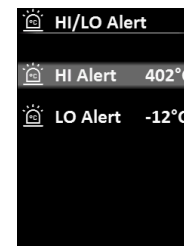
### 11.6 Temperature Bar



#### To turn on/off temperature bar:

1. Select the Temp Bar option (up/down button) in the settings menu.
2. Press the SET button to enter the Temp Bar submenu.
3. Press the up/down button to select On or Off.
4. Press the SET button to confirm.
5. Press the back button to exit the current menu.

### 11.7 Alarm Temperatures



#### To set alarm temperatures:

1. Select the HI/LO Alert option (up/down button) in the settings menu.
2. Press the SET button to enter the HI/LO Alert submenu.
3. Press the up/down button to select the desired option from HI Alert and LO Alert.
4. Press the SET button to enter the temperature adjustment state.
5. Press the up/down button to adjust the temperature.
6. Press the SET button to save the settings and return to set another temperature.
7. Press the back button to exit the current menu.

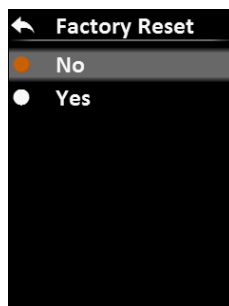
## 11.8 Device Information



### To view the device information:

1. Select the Device Info option (up/down button) in the settings menu.
2. Press the SET button to view the detail information of the device.
3. Press the back button to exit the current menu.

## 11.9 Factory Reset



### To restore settings:

1. Select the Factory Reset option (up/down button) in the settings menu.
2. Press the SET button to enter the Factory Reset submenu.
3. Press the up/down button to select Yes.
4. Press the SET button to confirm.
5. Press the back button to exit the current menu.

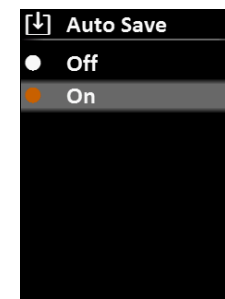
## 11.10 Format SD Card



### To format SD card:

1. Select the Format SD option (up/down button) in the settings menu.
2. Press the SET button to enter the Format SD submenu.
3. Press the up/down button to select Yes.
4. Press the SET button to confirm.
5. Press the back button to exit the current menu.

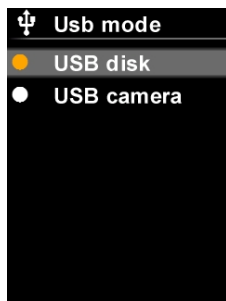
## 11.11 Auto Save



### To turn on/off auto save:

1. Select the Auto Save option (up/down button) in the settings menu.
2. Press the SET button to enter the Auto Save submenu.
3. Press the up/down button to select On or Off.
4. Press the SET button to confirm.
5. Press the back button to exit the current menu.

## 11.12 USB mode



### To set USB mode:

1. Select the USB mode option (up/down button) in the settings menu.
2. Press the SET button to enter the USB mode submenu.
3. Press the up/down button to select USB disk or USB Camera.
4. Press the back button to exit the current menu.

## 12. USB Communication

1. Download and install the PC software (refer to UNI-T Documents Download Operation Guide).
2. Connect the USB cable to the PC.
3. Set the USB mode to USB disk to browse pictures and analyze data through the PC software; set the USB mode to USB camera to realize real-time image projection through the PC software.
4. Regarding its usage, retrieve the Software User Manual from the Help option of the operation interface.

## 13. SD Card

This device supports Micro SD card (TF card) to store images. To avoid affecting the operating speed of the device, please copy the backup data regularly and clean up the SD card in time. To avoid causing abnormal data on the SD card, do not insert or remove the SD card repeatedly. Try to remove and insert the SD card when the device is turned off.

## 14. Charging

Please use a safety-certified 5V/1A or 5V/2A power adapter for charging. Do not turn off the product easily during charging. If shutdown or restart is needed, please unplug the Type-C power cord and disconnect the power supply first.

## 15. Maintenance

Use a wet cloth or weak soap solution to clean the outer shell of the device. Do not use abrasives, isopropyl alcohol or solvents to clean the outer shell, lens or window.

## 16. Safety Instructions

To ensure accurate measurement results, please read the instructions carefully.

- Please use this product in accordance with the user manual, otherwise the free warranty will be voided if the product is damaged.
- Please do not use this product in flammable, explosive, steamy, wet or corrosive environments.
- Please stop using the product if it is damaged or modified to avoid inaccurate measurement results.
- Please use the correct emissivity to obtain accurate temperature readouts.
- To ensure the accuracy of the product, please warm it up for 20 minutes before measuring if it has not been used for a long time.
- When being charged, the internal temperature of the product will rise, which will lead to inaccurate temperature measurement. So, it is not recommended to take measurements during or right after charging the product.
- The inherent temperature drift of the sensor will occasionally cause inaccurate measurement. In this case, press the down button under the temperature measurement interface to bring out "Calibrating" and automatically calibrate the temperature.

## 17. Appendix

### Emissivity of common objects

| Material        | Emissivity | Material      | Emissivity |
|-----------------|------------|---------------|------------|
| Wood            | 0.85       | Black paper   | 0.86       |
| Water           | 0.96       | Polycarbonate | 0.8        |
| Brick           | 0.75       | Concrete      | 0.97       |
| Stainless steel | 0.14       | Copper oxide  | 0.78       |
| Tape            | 0.96       | Cast iron     | 0.81       |
| Adhesive tape   | 0.09       | Rust          | 0.8        |
| Copper plate    | 0.06       | Gypsum        | 0.75       |
| Dark aluminum   | 0.95       | Paint         | 0.9        |
| Human skin      | 0.98       | Rubber        | 0.95       |
| Asphalt         | 0.96       | Soil          | 0.93       |
| PVC material    | 0.93       |               |            |

**Note:** This manual can be downloaded from the official website of Uni-Trend (refer to UNI-T Documents Download Operation Guide).

**UNI-T®****UNI-TREND TECHNOLOGY (CHINA) CO., LTD.**

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Songshan Lake National High-Tech Industrial  
Development Zone, Dongguan City,  
Guangdong Province, China



彩盒 菲林做货要求

| 序号           | 项目   | 内容                                                                                                | 备注                              |
|--------------|------|---------------------------------------------------------------------------------------------------|---------------------------------|
| 1            | 尺寸   | 110*150mm                                                                                         |                                 |
| 2            | 材质   | 128双铜+80g双铜                                                                                       |                                 |
| 3            | 颜色   | 四色                                                                                                |                                 |
| 4            | 外观要求 | 完整清晰、版面整洁，无斑墨、残损、毛边、刀线错位等缺陷。                                                                      |                                 |
| 5            | 装订方式 | 骑马钉                                                                                               |                                 |
| 6            | 表面处理 |                                                                                                   |                                 |
| 7            | 其它   | 无                                                                                                 |                                 |
| 版本           |      | REV. 1                                                                                            |                                 |
| DWH<br>设计    | 宣浩   | MODEL<br>机型: Uti120B                                                                              | Part NO.<br>物料编号: 110401110123X |
| CHK<br>审核    |      | <div><div>UNI-T®</div><div>优利德科技(中国)股份有限公司<br/>UNI-TREND TECHNOLOGY (CHINA) CO., LTD.</div></div> |                                 |
| APPRO.<br>批准 |      |                                                                                                   |                                 |