UNI-T®

UTi120T

Pocket Thermal Imager
User Manual

www.uni-trend.com

Preface

Thank you for purchasing the new UTi120T thermal imager. In order to use this product safely and correctly, please read this manual thoroughly, especially the *Precautions* 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 damage 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.

1.Precautions

**Please strictly observe the following precautions at any time.**
• When using the device, please keep it as stable as possible to avoid violent shaking.
• Do not use or store the device in an environment that exceeds the operating/storage temperature.
• Do not point the device directly at high-intensity sources of thermal radiation, such as the sun, lasers, spot welders, etc.
• Do not expose the device to dust or moisture. When using it in a humid environment, avoid splashing water on the device.
• When the device is not in use, place it and all the accessories in a special packing box.
• Do not block the holes in the device.
• Do not knock, throw or shake the device or accessories to avoid damage.
• Do not disassemble the device by yourself, as this may result in device damage and loss of warranty.
• Do not use solvents or similar liquids for the device or cable to avoid damage.
• This device is powered by a Li-ion battery. To use the battery safely, observe the following issues strictly:
  1) Do not attempt to open or disassemble the battery at any time.
  2) Do not expose the battery to high temperatures or near high temperature objects.
  3) Do not short the positive or negative pole of the battery.
  4) Do not expose the battery to moisture or water.
  5) If the battery leaks and the liquid enters the human eye, flush the eye with clean water immediately and perform medical care.

  6) Charge the battery as described in this manual, and follow the charging procedures and precautions. Incorrect charging can cause the battery to become hot, damaged or even cause injury.
• Please follow the measures below to wipe the device:
  1) Non-optical surface: Wipe the non-optical surface of the device with a clean, soft cloth if necessary.
  2) Optical surface: When using the device, please avoid smudging the optical surface of the lens. In particular, avoid touching the lens with your hand, as the sweat will leave marks on the lens glass and may corrode the optical coating on the glass surface. When the optical surface of the lens is contaminated, use professional lens paper to wipe it carefully.

Precautions for battery use:
• The battery can be recharged repeatedly, but it is a consumable product. If the standby time of the device is found to be greatly reduced, please replace it with the original battery provided by Uni-Trend.
• It is normal for the surface to get hot if the device works for a long time, especially in high temperature environments. In this case, stop charging and move the device to a cool place. Avoid prolonged contact with the hot surface.
• When charging the device, it is recommended to use only the original battery and USB cable provided by Uni-Trend.
• Battery charging time varies with temperature conditions and battery usage.
• When the battery is low, the device will pop up low battery indication.
• When the battery is too low, the device will automatically shut down.
• If the device does not respond when the power button is pressed, It indicates that the battery is exhausted. Charge the device for 10 minutes before starting it.

2. Appearance
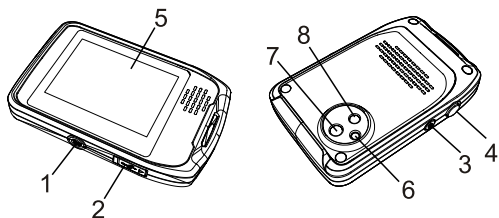
Item	Description
1	Tripod mounting hole: Standard 1/4-20 UNC
2	USB (Type-C) port: The device can be charged by a PC and power bank during use and transfer pictures or videos to a PC via the USB cable.
3	Power button: Press and hold the button for 2s to turn on/off the device. Press the button to keep the device on and turn the display off.
4	Picture capture button: Press to capture an image.
5	LCD touch screen: 3.5 inches (display resolution: 320x240 pixels; IR resolution: 120×90 pixels)
6	LED light
7	Infrared camera lens
8	Visible light camera lens

● **2.1 Charging Screen**

When the device is being charged in the power off state, the screen will display the charging status for 5s. Press the power button to display the charging status again.

● **2.2 Language Selection at First Startup**

Select the desired language and tap "OK" to confirm. Future language changes need to be made in the settings menu.

● 2.3 Screen Description

Item	Description
1	Center point temperature: The unit can be switched between °C and °F.
2	Date: Displays year, month, and day. The format can be set.
3	Time: Displays hour and minute. The format can be set.
4	Emissivity: The value can be set.
5	Wi-Fi hotspot status: It is displayed when the Wi-Fi hotspot is on.
6	Battery status: Displays the battery level.
7	Selection for adjusting level span: Auto or manual
8	T Max (maximum temperature) and T Min (minimum temperature)

3.Observation

● 3.1 Open/Close the Main Menu

Tap on any blank space on the screen to open/close the main menu.

● 3.2 Capture Image

Press the picture capture button or double click on the screen to capture the current image, and the image will be saved automatically.

● **3.3 View Image**

The device can store 500 images at least. The images are organized by the date they were captured with the newest images at the top. The scroll bar on the side of the gallery indicates if there are more images. If it is not displayed, the number of saved images is less than 4. When the memory is full, the device will automatically remind users to delete.
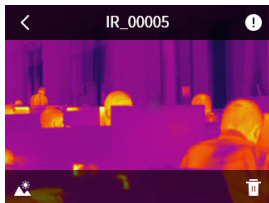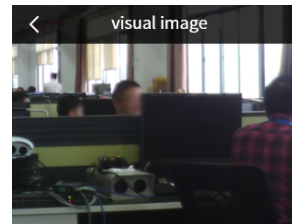
To open an image in full screen mode:
1. Open the main menu.
2. Tap the 🔲 icon to enter the gallery interface.
3. If needed, touch the screen and slide up or down to view all the images.
4. Tap on a thumbnail to view the image in full screen mode. The 🔲 , 🔺 and 🔳 icons briefly appear on the screen. Tap on the image to make them appear or disappear.

3.3.1 View Information of an Image
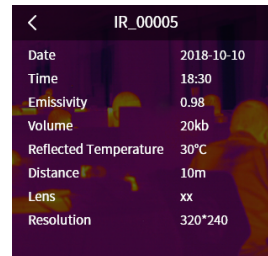
1. Open an image in full screen mode.
2. Tap 🔲 to view detailed information of the image.
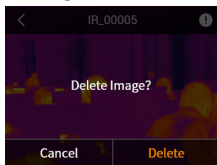3. Tap ◀ to return to the previous directory.

3.3.2 View an Image in Visible Light Mode

1. Open an image in full screen mode.
2. Tap 🔺 to view the image in visible light mode.
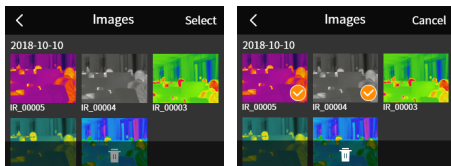3. Tap on the image to return to the full screen mode.

● **3.4 Delete Images**

3.4.1 Delete an Image

1. Open an image in full screen mode.
2. Tap 🗑 and "Delete Image?" will pop up on the screen.
3. Tap "Delete" to delete the image.
4. Tap "Cancel" to rerurn to the full screen mode.

3.4.2 Delete Multiple Images

1. Enter the gallery interface.
2. Tap "Select" and the "Select" becomes "Cancel".
3. 🗑 pops up at the bottom of the screen.
4. Tap the images to select them and the selected images has a check mark.
5. If needed, tap an image again to clear the selection.
6. Tap 🗑 and the dialog box asking whether to delete the images will pop up.
7. Tap "Delete" to delete the images.
8. Tap "Cancel" to rerurn to the selection interface.

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4.Temperature Measurement Method

● **4.1 Image Blending Slider**
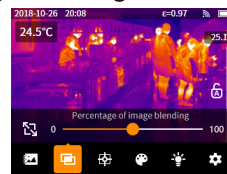
1. Open the main menu.
2. Tap the 🖼 icon to enter the image blending slider interface.
3. Move the slider left or right to adjust the percentage of image blending (100% by default).

Note:
When the percentage of image blending is 0%, pure visible light image is displayed.
When the percentage of image blending is 100%, pure infrared image is displayed.
When the percentage of image blending is 50%, the device enters the blending mode.
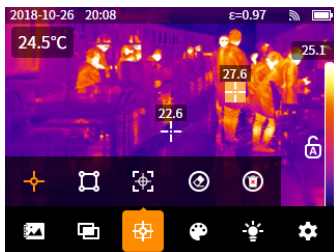
● **4.2 Picture in Picture Mode**

Tap the 🖼 icon and the device will enter the picture in picture mode.

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5. Analysis Object

Open the main menu and tap the ⊕ icon to bring up the analysis object menu.

● 5.1 Point Analysis Object

1. Tap the ✦ icon in the analysis object menu and the center point marker will pop up.
2. If needed, tap ✦ again to to add another point.
   Hold down the point to drag its position at will.
   Tap the ⊕ icon to center the point.
   Tap the ⊙ icon to clear the analysis object.

● 5.2 Rectangular Analysis Object

1. Tap the ▣ icon in the analysis object menu to add a rectangular analysis object.
2. Tap on the rectangular area without release to turn on/off the maximum/minimum temperature indicator for the rectangular analysis object.

   Hold down the rectangular area to drag its position at will.
   Tap on the rectangular area and tap ⊕ to center the rectangular analysis object.
   Tap ⊙ to clear the analysis object.

● 5.3 Clear All Analysis Objects

1. Tap the ⊙ icon in the analysis object menu and the dialog box asking whether to clear all analysis objects will pop up.
2. Tap "Clear" to clear all analysis objects.
3. Tap "Cancel" to rerurn to the previous interface.

6. Palette

1. Open the main menu.
2. Tap the ⬡ icon to bring up the palette menu.
3. Tap on a palette thumbnail to change the palette of the image (iron red by default).
4. Tap on the blank area of the screen to exit.

7. Light

Open the main menu and tap the 💡 icon to bring up the light menu.

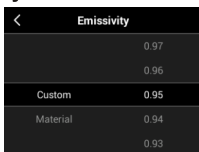Tap the ⚡ icon in the light menu to turn on/off the flash (off by default).

Tap the 🔦 icon in the light menu to turn on/off the lamp (off by default).

8. Settings

Open the main menu and tap the ▦ icon to bring up the Settings menu.

● 8.1 Measurement Parameters

8.1.1 Emissivity

1. Tap the Emissivity option in the Settings menu to enter its setting interface. The Custom and Material options are provided.
2. When Custom is selected, slide the value on the right up or down with your finger to increase or decrease the emissivity (step: 0.01; range: 0.01~1.00; default: 0.95).
3. Tap ◄ to return to the previous directory.

8.1.2 Reflected Temperature
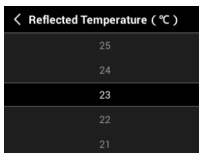
1. Tap the Reflected Temperature option in the Settings menu to enter its setting interface.
2. Slide the value up or down with your finger to increase or decrease the reflected temperature
   (step: 1°C; range: -20°C~400°C; default: 23°C).
3. Tap ◄ to return to the previous directory.

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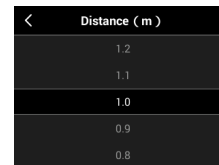
8.1.3 Distance

1. Tap the Distance option in the Settings menu to enter its setting interface.
2. Slide the value up or down with your finger to increase or decrease the distance (step: 0.1m; range: 0.5m~3m; default:1m).
3. Tap ◄ to return to the previous directory.

● 8.2 Device Settings

8.2.1 Measurement Range
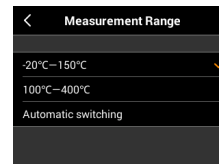
1. Tap the Measurement Range option in the Settings menu to enter its setting interface.
2. Tap to select the desired option from -20°C~150°C, 100°C~400°C and Automatic Switching.
3. When Automatic Switching is selected, the device will select the temperature range according to the target temperature.
4. Tap ◄ to return to the previous directory.

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8.2.2 Save Visible Light Image

<	Save Visual Pic
640x480	
320x240	✓

1. Tap the Save Visual Pic option in the Settings menu to enter its setting interface.
2. Tap to select the desired option from 640×480 and 320×240 (default: 320×240).
3. Tap ◁ to return to the previous directory.

8.2.3 Auto Power Off

<	Auto Off
Never	✓
5 Minutes	
20 Minutes	

1. Tap the Auto Off option in the Settings menu to enter its setting interface.
2. Tap to select the desired option from Never, 5 Minutes and 20 Minutes (default: Never).
3. Tap ◁ to return to the previous directory.

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8.2.4 Date and Time

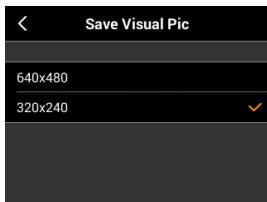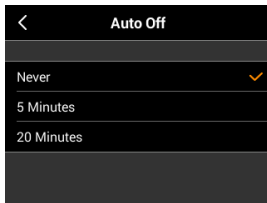| <	Date & Time
Time	
12 Hour	
24 Hour	✓
Date	
YYYY-MM-DD	✓
MM-DD-YYYY	

1. Tap the Date & Time option in the Settings menu to enter its setting interface.
2. Tap to select the desired time format from 12 Hour and 24 Hour (default: 24 Hour).
3. Tap to select the desired date format from YYYY-MM-DD, MM-DD-YYYY and DD-MM-YYYY (default: YYYY-MM-DD).
4. Tap the Set Time line to adjust the date and time.
5. Slide the values up or down with your finger to increase or decrease them by 1.
6. Tap ◁ to return to the previous directory.

8.2.5 Full Image Temperature Marking

<Full Image Temperature Marking
T Max
T Min

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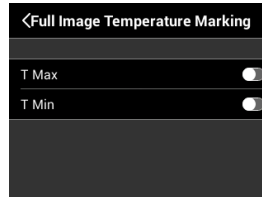
1. Tap the Full Image Temperature Marking option in the Settings menu to enter its setting interface.
2. Tap the T Max/T Min line to turn on/off the maximum/minimum temperature indicator for the full image (default: off).
3. Tap ◀ to return to the previous directory.

8.2.6 Alarm Setting

1. Tap the Alarm Setting option in the Settings menu to enter its setting interface.
2. Tap the High/Low Temperature Alarm line to turn on/off the high/low temperature alarm (default: off).
3. Tap the corresponding Temeperature Alarm line after turning on the alarm to set the alarm temperature.
4. Slide the value up or down with your finger to increase or decrease the temperature by 1°C.
5. Tap ◀ to return to the previous directory.

8.2.7 Display Brightness
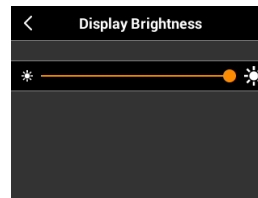
1. Tap the Display Brightness option in the Settings menu to enter its setting interface.
2. Move the slider left (low) or right (high) to adjust the display brightness (default: 50%).
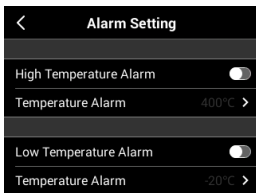3. Tap ◀ to return to the previous directory.

8.2.8 Language

1. Tap the Language option in the Settings menu to enter its setting interface.
2. Tap to select the desired language (default: Simplified Chinese).
3. Tap ◀ to return to the previous directory.

8.2.9 Temperature Unit
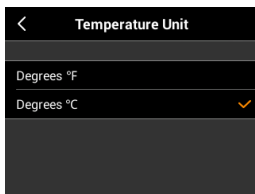
1. Tap the Temperature Unit option in the Settings menu to enter its setting interface.
2. Tap to select °C or °F (default: °C).
3. Tap ‹ to return to the previous directory.

8.2.10 Distance Unit

1. Tap the Distance Unit option in the Settings menu to enter its setting interface.
2. Tap to select Meters or Feet (default: Meters).
3. Tap ‹ to return to the previous directory.

8.2.11 Wi-Fi Hotspot
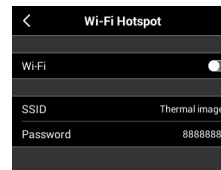
1. Tap the Wi-Fi Hotspot option in the Settings menu to enter its setting interface. The SSID (Thermal imager) and Password (88888888) are displayed.
2. Tap the Wi-Fi line to turn on/off the Wi-Fi hotspot (default: off).
3. Tap ‹ to return to the previous directory.

● 8.3 System
8.3.1 Upgrade
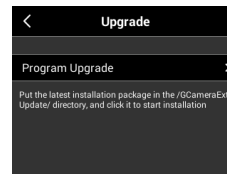
1. Tap the Upgrade option in the Settings menu to enter the upgrade interface.
2. Tap the Program Upgrade line and the dialog box asking whether to upgrade the program will pop up.
3. Tap "OK" to perform the upgrade.

Note: Put the latest installation package in the /GCameraExt/ Update/ directory, and click on it to start installation.

8.3.2 Reset the Thermal Imager
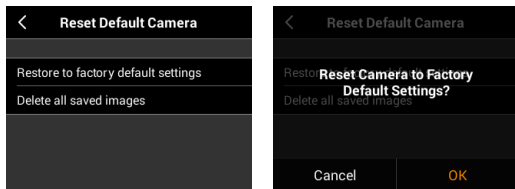
1. Tap the Reset Default Camera option in the Settings menu to enter its setting interface. The Restore to factory default settings and Delete all saved images options are provided.
2. When Restore to factory default settings is selected, the dialog box asking whether to restore factory settings will pop up.
3. Tap "OK" to perform the restore.

8.3.3 Version Information

1. Tap the Software Version option in the Settings menu to view the software/kernel/firmware version and storage information of the device.
2. Tap ◄ to return to the previous directory.

8.3.4 Help
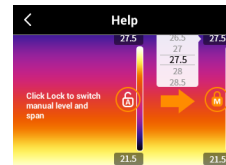
Tap the Help option in the Settings menu to view the help information about the analysis object menu and level span setting.

9. Specifications

Model	UTi120T
Image and optics	
IR resolution	120×90 pixels
Field of view (FOV)	50°×38°
Minimum imaging distance	0.5m
Focal distance	2.28mm
Spatial resolution (IFOV)	7.6 mrad

Aperture	F1.13
Infrared image frame rate	25Hz
Focus	Focus free
Detector	
Detector type	UFPA
Wavelength range	7.5μm~14μm
Pixel size	17μm
Image display	
Display type	LCD
Display resolution	320x240 pixels
Screen size	3.5"
Touch screen	Capacitive touch screen
Image mode	
Infrared image	Yes
Visible light image	Yes
Full image blending	Yes
Picture in picture	Yes
Measurement	
Temperature range	−20°C~150°C, 100°C~400°C (automatic switching)
Accuracy	≥0°C: ±2°C or ±2% of reading, whichever is greater <0°C: ±5°C or ±5% of reading, whichever is greater (operating temperature: 5°C~30°C; distance: 0.5m~3m)

| Measurement analysis		
Measurement point	In addition to the center point, another point can be added, moved and cleared.	
Measurement area	A rectangular area can be added, moved and cleared.	
Auto tracking of high/ low temperature	1. Maximum/minimum temperature tracking for the full image	
	2. Maximum/minimum temperature tracking for the rectangular analysis object (area)	
Digital zoom	1~8 continuous zoom	
Emissivity correction	Yes, Material and Custom (0.01~1.00)	
Alarm		
High temperature alarm for the full image	Yes	
Low temperature alarm for the full image	Yes	
Settings		
Standard palettes	6	
Image adjustment	Auto/Manual (level span)	
Parameters correction	Emissivity, reflected temperature, distance	
Alarm setting	Yes	
Image saving, viewing and deleting	Yes (internal storage)	

Date and time setting	Yes
Full screen mode	Yes
Date and time formats	Yes
Display brightness	Manually adjustable
Factory reset	Yes
Delete all saved images	Yes
Help information	Yes
Distance unit	m/ft
Temperature unit	°C/°F
Language	Simplified Chinese, English
Auto power off	Never, 5 minutes, 20 minutes
Picture storage	
Storage medium	Internal storage for 500 images minimum
Picture format	Standard JPG with temperature data
Visible light image saving	At 640×480/320×240 pixels
Visible light	
Resolution	640×480 pixels
Field of view (FOV)	68°×52°
Focus	Fixed focus
Light	Yes (on, off, photoflash)
Communication interface and buttons	
Data transmission	Type-C port used to transfer image to PC
Wi-Fi	Yes (used to transfer image to mobile terminal)

Buttons	Power button, picture capture button
Battery	
Battery type	Internal rechargeable Li-ion battery (non-removable)
Battery life	$\geqslant$ 2 hours (without Wi-Fi)
Charging mode	Charged by DC 5V power adapter/USB interface of PC
Charging time	$\leqslant$1.5 hours
Environmental parameters	
Operating temperature	−10°C~50°C
Storage temperature	-40°C~70°C
Humidity	95%
Enclosure rating	IP54
Drop	1m
Shock	30g 11ms (IEC 60068-2-27)
Vibration	10Hz~150Hz~10Hz 0.15mm (IEC 60068-2-6)
Certification	CE, FCC, ROHS
Accessories	
Standard accessories	Soft case, gift box, hand strap, user manual, USB cable, data download card

10. Accessories
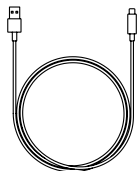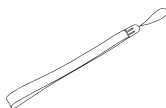
USB cable Hand strap User manual

Soft case Data download card

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