PREFACE

Thank you for purchasing the new UTi320V+ thermal imager. In order to use this product safely and correctly, please read this manual thoroughly, especially the cautions 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 and 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.

This warranty is the only compensation you can obtain. Uni-Trend will not be responsible for any special, indirect, incidental or subsequent damage or loss caused by any reason or speculation. As some areas or countries do not allow limitations on implied warranties and incidental or subsequent damage, the above limitation of liability and stipulation may not apply to you.

Cautions

1. Use or store the product at specified operating or storage temperatures. Otherwise, the device may be damaged.
2. Do not direct the product at high intensity thermal radiation sources, such as the sun, laser device, spot-welder, etc.
3. Do not knock, toss, or shake the product and accessories.
4. Do not place the battery in a high temperature environment or near high temperature objects. Do not short-circuit the positive and negative electrodes of the battery. Do not place the battery in a humid environment or water.
5. Do not expose the device to dusty or damp environment. When used in an environment with water, avoid water splashing on the product.
6. Do not use dissolved or similar liquids on the product or cables, as it may cause device damage.
7. Please follow the following instructions when wiping the device:
   Non-optical surface: If necessary, use a clean and soft cloth to wipe the non-optical surface of the thermal imager.
   Optical surface: Do not stain the optical surface of the lens when using the thermal imager. Be especially careful not to touch the lens with hands, as sweat from hands will leave marks on the lens glass and may erode the optical coating layer on the glass surface. When the optical surface is stained, carefully wipe it with a special lens paper.
8. When using the device, please try to keep it stable and avoid violent shaking.
9. Please close the lens cover and put the product and its accessories into the carrying box when it is not used.
10. Please do not disassemble the device to avoid product damage and loss of warranty rights.
11. 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.
12. 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.
13. When the temperature is close to the scale switching critical point (about 150℃), due to the sensor's own factors, the temperature measurement accuracy may exceed +/-2%, which is normal.

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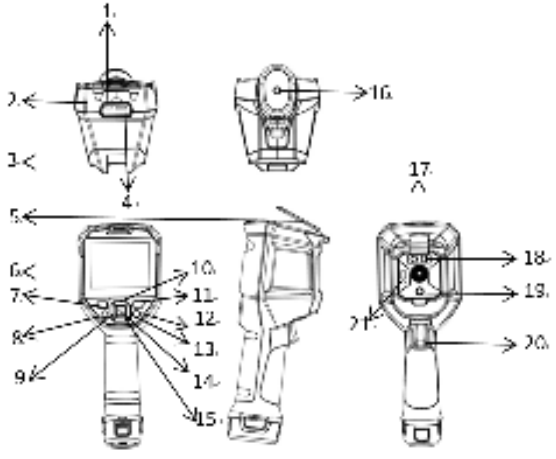
1. Specifications

Sensor	Uncooled vanadium oxide
Emissivity	0.95 (default) 0.01~1.00 adjustable
Digital camera resolution	5million
Pixel size	12μm
IR resolution	320 x 240
IFOV	3mrad
NETD	<65mK
Frame rate	9Hz
Accuracy	-10℃~400℃ accuracy ±2℃/±2% (whichever is greater, room temperature 25℃)
Temperature measurement range	-40℃~400℃ (-40℉~752℉)
Distance measurement range	0.3~30m (Class 2 Laser, Red)
Palettes	Ironbow, Rainbow, Black Hot, White Hot, Red Hot, Lava, Rainbow HC
Spectral range	8~14μm
Field of view	56.0° (H) x 42.0° (V)
Focus	Focus free
Digital zoom	1x,2x,4x
On screen analyzer	5 points, 3 circles, 3rectangles, 1 line
Isotherm	Auto/Manual
Temperature display	Center spot, Hi/Lo spot tracking
Temperature units	℃, ℉, K
Hi/Lo temperature alert	√ (LED/LCD/audible alert)
USB communication	Type-C USB (real-time image and USB disk storage)
Wi-Fi	√
PC screen projection	√

PC analysis software	√ (real-time image, photo download, real-time control and analysis)
Smartphone APP	iOS, Android
LED flashlight	√ (two LEDs, white light)
Image modes	Thermal, digital, T-Mix fusion,PIP
Image capture mode	Photo capture, time-lapse photography, video recording
Image saving format	JPG
QR code scanning	√
Audio	Built-in speaker and microphone
Touch screen	√
Certificates	CE,FCC,UKCA,ROHS
Operating temperature	-10℃~50℃ (14℉~122℉)
Storage temperature	-20℃~60℃ (-4℉~140℉)
Operating humidity	10%~95%RH (non-condensing)
Battery	Detachable Li-ion battery pack with 5200mAh (UT-M17)
Auto power off	OFF,5min,10min,20min,30min.45min,60min.90min
Operating time	> 4h
Charging time	< 5h
Charging voltage/current	5V/2A
Image storage	Micro SD card
IP rating	IP54
Drop proof	2m
Altitude	< 2000m (indoor use)

2. Structure



No.	Description	No.	Description
1	Type-C USB interface	12	Return
2	Upper housing	13	Right
3	Lower housing	14	SET
4	SD card slot	15	Down/Flashlight
5	Interface protection cover	16	Bracket screw hole
6	LCD	17	Infrared camera lens
7	Power	18	Flashlight
8	Laser distance measure	19	Visual light camera lens
9	Left	20	Trigger
10	Up	21	Laser
11	Image browsing		

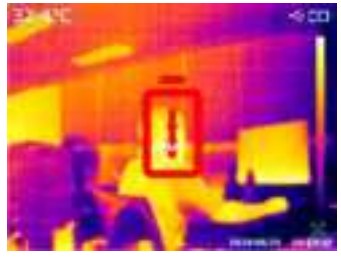
3. LCD Indicators/Icons

No.	Description	No.	Description
1	Markup	7	Hi spot
2	Image (image mode)	8	Range bar
3	Palette	9	Battery status
4	Measure (on screen analyzer)	10	Center spot temperature
5	Isotherm	11	Lo spot
6	Settings	12	Center spot

4. Power on/off

Long press the Power button for 5s to turn on the thermal imager (it needs 30 minutes warm-up time when the device is just turned on or not used for a long time, or the measurement environment changes). Long press the Power button for 3s, "Shutdown?" will show on the screen. Select "OK" to turn off the thermal imager. Long press the Power button for 8s to power off directly.

When the battery is low, a low battery indicator will show on the screen, which means the thermal imager should be turned off and the battery should be charged. When the thermal imager is in low battery status for a long time, it will automatically shut down.



5. Menu Bar

1. Press the SET button in the main interface or tap the menu bar icon to open the main menu.
2. Press the Left/Right and SET buttons or tap a submenu icon to open the selected submenu.
3. In the submenu, press the Left/Right button or tap its icon to select an option.
4. Press the SET button or tap the icon to confirm and save the selection. The thermal imager returns to the main interface.

6. Submenu

Markup	Display/hide the center spot, Hi/Lo spot and the value
Image	Select the thermal, digital, fusion or PIP mode or add the QR code
Palette	Switch between Ironbow, Rainbow, Black Hot, White Hot, Red Hot, Lava, Rainbow HC
Measure	Add point, line, rectangle or circle for temperature analysis
Isotherm	Switch between Auto, Ratio, Below, Above, Section or Manual
Settings	System settings

6.1 PIP

After the PIP mode is enabled, users can press the Left/Right and SET buttons or tap the screen to select Move, Stretch or Mix to change the PIP position and size and to adjust the fusion ratio.

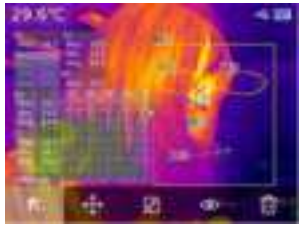
6.2 QR Code

Users can manually input or scan the QR code. Select "Cancel" to return to the main interface. After a QR code is input or scanned, it can be saved to a classified folder. After saving, a QR code symbol will be displayed in the upper right corner of the main interface. At this time, all the photos/videos taken will be marked with this OR code and these photos/ videos will be saved to the corresponding classified folder. Enter the QR code interface again to cancel the current QR code.

6.3 Measure (On Screen Analyzer)

In the "Measure" submenu, press the Left/Right and SET buttons or tap the screen to add an analysis object (point, line, rectangle or circle), choose an object (this function can only be used if an object is added), clear or preset.

After adding an analysis object, a submenu will appear. The optional functions in the submenu are choose, move, stretch (this function cannot be applied to point objects), difference (point objects can only be compared with point objects; the comparison information will be displayed on the right side), delete (delete the selected object). The temperature information of the added object will be displayed on the left. When a line object is selected, its temperature change graph will be displayed in the lower left corner.

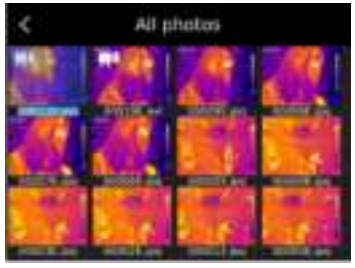


When the "Clear" function is enabled, all the added analysis objects will be cleared. When the "Preset" function is enabled, a prompt "Save tool" will pop up. Select "OK" to save the current object. The preset tool can be used directly next time. If there is no analysis object in the main interface, enable the "Preset" function, and a prompt "Read tool" will pop up. Select "OK", and the preset tool saved last time will be added to the main interface.

Note: The maximum number of point objects that can be added is 5 (line: 1; rectangle: 3; circle: 3). The total number of objects added cannot exceed 6. When it exceeds the specified number, a prompt "XX outnumber" will pop up.

7. Image Browsing and Editing

In the main interface, press the Image browsing button to enter the multimedia browsing interface. Press the Up/Down and SET buttons or tap the screen to open All photos/videos or other folders. Press the direction and SET buttons or tap to browse a photo or video. Press the Left/Right button or slide the screen to switch between photos/videos.



When browsing a photo or video:

1. Press the SET button or tap the screen to open the submenu.
2. Press the Left/Right and SET buttons or tap to select Info/Notes/Edit/QR code/ Delete.

Info	Create date, modified date, emissivity, HVGA (infrared resolution), QR code (the classified folder where the photo/video is saved), distance (photos only), notes (text/voice)
Notes	Add text and voice notes to photos/videos (displayed in Info)
Edit (photos only)	Perform Markup/Image/ Palette/Measure/ Isotherm/Graffiti function on photos
Play (videos only)	Play or pause videos
QR code	Add QR code to classify photos/videos
Delete	Delete the current photo/video

7.1 Edit

After editing a photo, press the direction and SET buttons or tap to restore the photo to its initial state (graffiti cannot be cleared in this way).

Press the Return button after editing a photo, and a prompt "Exit?" will pop up. Select "Exit" to exit the editing interface. Select "Save" and a prompt "Cover?" will pop up. Select "Cover", the original photo will be changed and saved. Select "New", the original photo will not be changed and a new photo will be saved.

7.2 QR Code

When the QR code function is enabled, users can add existing QR code to classify photos/videos, delete the QR code of photos/videos or add a new QR code. QR codes added here are temporary and will not be saved to the existing QR code classified folders. The classified folders can only be modified in the Settings.

8. Digital Zoom

In the main interface, press the Up button to zoom in the screen. The current magnification is displayed in the upper right corner of the screen. The magnification steps through 1X, 2X, 4X and 1X.

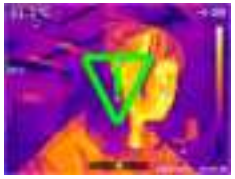
9. Settings

After entering the Settings interface, press the Up/Down and SET buttons or tap the screen to select a setting item.

Camera mode	Single shot/Video/Time-lapse (10s-1000s)
Units	Temperature: ℃, K, ℉; Distance: m, ft
Parameter	Adjust the emissivity (refer to the emissivity table) and object distance (manual/auto)
Hi/Lo alert	Hi/Lo/LED/audible alert
QR code	Change the name of classified folders and reset OR codes
Language	Switch between English/Chinese
Date & Time	Modify time-format/date/time
Wi-Fi	Turn on/off the hotspot, modify hotspot information when it is on
USB mode	USB storage/USB projection
Brightness	Adjust the brightness (1-100)
Volume	Adjust the volume (1-100)
Laser distance measure	Laser distance measure mode: single/continue measurement
Shutdown (auto power off)	Off/5 min/10 min/20 min/30 min/45 min/60 min/90 min
Factory reset	Restore the factory settings
Format	Format the SD Card
About	Display product model, HVGA (infrared resolution), SWV (software version), HWV (hardware version), SYSV (system version), SD card capacity

9.1 Hi/Lo alert

After entering the settings interface, press the Up/Down and SET buttons or tap the screen to select "Hi/Lo alert". In the submenu, users can select Hi/Lo/LED/audible alert. When Hi/Lo alert is enabled, press the Up/Down and SET buttons or slide the screen to adjust the Hi/Lo value. When the measured temperature exceeds the Hi value, a red triangle will pop up in the main interface. When the measured temperature is lower than the Lo value, a green inverted triangle will pop up. (If the LED alert is enabled, the alerts will be accompanied by flashing lights. If the audible alert is enabled, a sound will be emitted.)



9.2 Wi-Fi

After entering the settings interface, press the Up/Down and SET buttons or tap the screen to select "Wi-Fi". Press the SET button or tap the screen to turn on the Wi-Fi Hotspot. Press the Up/Down and SET buttons or tap to change the AP bands, ID or password.

9.3 Laser Distance Measure

In the main interface, press the "Laser distance measure" button to take measurements. If "Single" is selected in the settings interface, press and hold the "Laser distance measure" button until the distance value appears. Release the button to exit. If "Continue" is selected in the settings interface, long press the "Laser distance measure" button until the distance value appears. Release the button and move the thermal imager to take continuous measurements. Press the button again to exit the measurement.

10. SD Card

The device can be inserted into a Micro SD card to store images. To avoid affecting the device operating speed, please copy the backup data regularly and clean up the SD card in time. Do not insert or remove the SD card repeatedly; otherwise the data in it may be abnormal. If the SD card is removed when users are viewing or editing images, a prompt "SD lost" will pop up.

11. Maintenance

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

12. Notes

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received,including interference that may cause undesired operation.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

13. Product label

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14. Emissivity Table

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
Aluminium plate	0.09	Rust	0.8
Copper plate	0.06	Gypsum	0.75
Black aluminium	0.95	Oil paint	0.9
Human skin	0.98	Rubber	0.95
Asphalt	0.96	Soil	0.93
PVC plastic	0.93		

UNI-T
UNI-TREND TECHNOLOGY (CHINA) CO., LTD.
No.6, Gong Ye Bei 1st Road,
Songshan Lake National High-Tech Industrial
Development Zone, Dongguan City,
Guangdong Province, China