UNI-T®

UTi640Q
红外热成像仪
Professional Thermal Imager

P/N:110401111816X

PREFACE

Thank you for purchasing the new UTi640Q 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.

Table of Contents

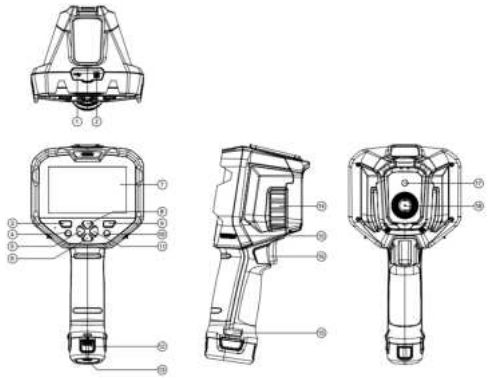
1. Specifications

Model	UTi640Q
Infrared parameters	
Detector type	Uncooled infrared focal plane array (UFPA)
IR resolution	640×512
Spectral range	8~14μm
Pixel size	12μm
Frame rate	50Hz
Thermal sensitivity (NETD)	<60mK @25℃
Focus	Manual
Lens focal length	13.0mm
Field of view (FOV)	32.9°(H) x 26.6°(V)
Temperature measurement functions	
Temperature measurement range	-30℃~650℃ (-22°F~1202°F)
Accuracy	-10℃~650℃, room temperature 25℃, ±2℃/±2% whichever is greater
Resolution	0.1℃
Temperature unit	℃/℉/K
Temperature measuring distance	1m
Temperature mark	3 spots (center spot, Hi/Lo spot)
On screen analyzer	Point, Line. Rectangle, Circle (Max. 10 tools)
Isotherm	Manual/Auto
Auto tracking for Hi/Lo spot	√
Hi/Lo temperature alert	LCD animation, buzzer
AI function	AI human recognition - Auto track human and generate temperature measurement box
Image display	
Display screen	4.3" LCD touch screen

Display resolution	800 x 480
Digital camera resolution	5MP
Color palettes	Red Hot, Rainbow HC, Rainbow, Lava, I ronbow, Black Hot, White Hot
Image modes	Thermal, Visual image, Fusion, PIP
Digital zoom	1X, 2X, 4X, 6X
Image format	JPG
Video format	MP4
System functions	
Data interface	Type-C USB
Photo capturing	√
Video recording	√
Text annotation	√
Audio annotation	√
Touch screen	Multi-Touch
Audio	Built-in speaker, microphone
Languages	English/Chinese
Smartphone APP	√ (real-time image, photo download and analysis)
PC analysis software	√ (real-time image, photo download and analysis)
Voice recording	√
Power supply parameters	
Battery	Detachable battery pack with 5200mAh (UT-M17)
Operating time	About 4h
Charging system	Type-C USB
Charging time	< 4h

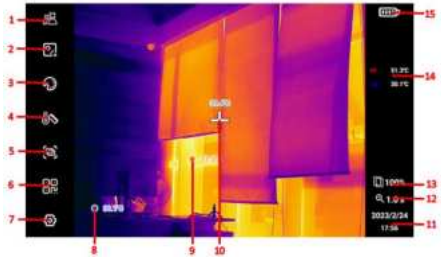
General characteristics	
Operating temperature	-10℃~50℃ (14℉~ 122℉)
Storage temperature	-20℃~60℃ (-4℉~ 140℉)
Operating humidity	10%~95%RH, non-condensing
Operating altitude	<2000m
Pollution degree	2
Indoor	√
Drop proof	2m
Certificates	CE, FCC, RoHS

2. Structure



1	Type-C USB interface	7	LCD	13	Bracket screw hole
2	SD card slot	8	Up	14	Focusing ring of infrared camera lens
3	Power	9	Gallery	15	Hand strap hole
4	OK	10	Return	16	Trigger
5	Left	11	Right	17	Visual light camera lens
6	Down	12	Battery pack	18	Infrared camera lens

3. LCD Indicators/Icons



No.	Description	No.	Description
1	AI	9	Hi spot
2	On screen analyzer	10	Center spot
3	Palette	11	Date/Time
4	Isotherm	12	Magnification
5	Image modes	13	Fusion ratio
6	QR code	14	Hi/Lo spot temperature
7	Settings	15	Battery status
8	Lo spot		

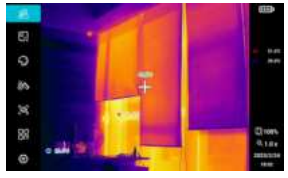
Note:

1. AI human recognition: Auto track human and generate temperature measurement box.
2. After an analysis object is added, it can be deleted by double tapping the screen. All analysis objects can be cleared by performing the Delete function in the menu.
3. The temperature parameters can be modified in the submenu of the On Screen Analyzer menu. Please refer to the emissivity table. Emissivity and reflected temperature are two important parameters that need to be set correctly. If in doubt, use default values (emissivity: 0.95, target distance: 1.0m, ambient temperature: 25℃, reflected temperature: 25℃, relative humidity: 45%RH).
4. The temperature scale includes auto switching (-30℃-650℃) and manual switching (high gain: -30℃-120℃, low gain: -30℃-650℃).
5. Users can manually input or scan the QR code after selecting the QR Code function in the menu. Select "Cancel" to return to the main interface. After a QR code is input or scanned, it can be saved to a classified folder. The QR code is added to classify the photos and find the required one more quickly. If the added QR code is saved in the existing folders including QR1, QR2, QR3, QR4 and QR5, the photos marked with this QR code can be viewed in the corresponding folder. QR codes saved in the "Other" folder are temporary and will not be saved to the existing QR code classified folders.

4. Power on/off

Press Power button to power on the thermal imager (it needs 30 minutes warm-up time when the device is just powered on or not used for a long time, or the measurement environment changes). Long press Power button 3s to power off/reboot the thermal imager. When thermal imager is in low battery mode, a prompt window will pop-up, which indicates that the thermal imager should be powered off for power replenishment.

5. Operation



1. Press the buttons to operate: Press the OK button, the first option in the left menu will be highlighted, and press the Return button to cancel. When an option is highlighted, press the direction buttons to highlight other options, and press the OK button to select the functions.
2. Users can also tap the screen to select the functions.
3. When no option is highlighted, press the Up/Down button to zoom in/out the screen. The current magnification is displayed in the lower right corner of the screen. The magnification steps through 1X, 2X, 4X, 6X and 1X.
4. When no option is highlighted, press the Left/Right button to adjust the fusion ratio of infrared light and visible light (0%~100%).

6. Settings

Time-lapse	Lapse time selection: 3s, 5s, 10s
Temperature unit	Temperature unit selection: ℃, K, ℉
Temperature alarm	Enable/disable Hi/Lo temperature alarm and set the alarm value (When the measured temperature exceeds the Hi value, a red triangle will show on the screen. When the measured temperature is lower than the Lo value, a green triangle will pop up.)

Temperature display	Show/hide the cursor of Center/Hi/Lo spot
Wi-Fi setting	Enable/disable Wi-Fi
Wi-Fi hotspot	Turn on/off the Wi-Fi hotspot (modify the device name and hotspot password when Wi-Fi is disabled, connect with the smartphone and use the smartphone APP when Wi-Fi is on), APP data transmission (for image transmission of the smartphone APP), PC data transmission (for image transmission of the PC software), stream (for the screen projection function of the smartphone APP and the PC software)
Bluetooth setting	Turn on/off the Bluetooth (modify Bluetooth name when Bluetooth is off), connect the Bluetooth earphones when Bluetooth is on
QR code	Change the name of classified folders and the corresponding OR codes
Brightness	Adjust brightness intensity from 0% to 100%
Volume	Adjust volume intensity from 0% to 100%
Auto power off	Auto power off time selection
Language	Language selection
Date & Time	Turn on/off the 24-hour format , modify date and time
Storage info	Display SD card status, format SD card
Clear all data	Restore factory settings
Software update	When update package is available on SD card, firmware can be upgraded manually
Device info	Check Device model, Display resolution, Firmware & Software version, SD card storage status, and Device ID

7. 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 0.00 to 1.00.

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

Reflected Temperature:
The radiant energy influence from other heat sources surrounding the measured object.

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 recommended values are generally suggested:

Emissivity	0.95
Ambient Temp.	25℃
Reflected Temp.	25℃
Relative Humidity	45%RH
Distance	1m

8. Image Browsing and Editing

In the main interface, press the Gallery button to enter the multimedia browsing interface. Users can press the buttons or tap the screen to select the folder and file to be browsed. When browsing photos/videos, users can view their information, and delete or edit them.

Lock	Photos/videos can be edited after the lock function is disabled, including AI, On screen analyzer, Palette, Isotherm, Image modes, QR code, display and hide center/Hi/Lo spot (videos can only modify the QR code information)
Info	View the QR code info, capture time, location, measurement parameters, notes (text/voice, for photos only) (when the lock function is disabled, the notes can be edited)
QR code	Change the classified folder of the QR code, view the image with the QR code added in the corresponding folder, and delete the existing QR code of the current image

9. 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.

10. Notes

To ensure accurate measurements, please read the instructions carefully. Use the product only as specified in this manual. Otherwise the product damage will not be free warranty. Do not use this product in an inflammable, explosive, steamy, damp or corrosive environment. Do not use the product after it is damaged, broken or corrected to avoid wrong measurement results. Please refer to the radiation coefficient to get the actual temperature. Otherwise, the measured temperature may be inaccurate.

The product can be charged with a USB cable. However, to improve the charging efficiency, it is recommended that users take out the battery pack and charge it separately.

11. FCC Compliance statement

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.

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.

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.

12. Troubleshooting

Problem	Reason	Solution
Device cannot be powered on	Insufficient battery power	Charge the battery
	Poor battery contact	Remove the battery, and install it properly
	External power supply plugged improperly	Unplug the power plug and reinsert it properly
Battery power deviation existing	Exhausted battery power	Replace a fully charged battery
	Exhausted battery life	Replace a new battery
Blurred infrared images	Out of focus	Manual focus until images be clear
	Lens is covered by steam or dirt	Clean lens with professional equipment

Blurred visual images	Dark environment	Take proper lighting measures
	Lens is covered by steam or dirt	Clean lens with professional equipment
Inaccurate temperature measurement	Out of focus	Manual focus first, then read the temperature
	Incorrect parameters settings	Reset the parameters or restore to the default values
	Measuring temperature immediately after product is just turned on	To ensure measurement accuracy, it is recommended to measure after the device is powered on 5~10 minutes later.
	Not calibrated for a long time	It is recommended to send the device back every year for calibration.

13. 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
Aluminum plate	0. 09	Rust	0. 8
Copper plate	0. 06	Gypsum	0. 75
Black aluminum	0. 95	Paint	0. 9
Human skin	0. 98	Rubber	0. 95
Asphalt	0. 96	Soil	0. 93
PVC	0. 93		

The contents of this manual are subject to change without notice.

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

彩盒 菲林做货要求

序号	项目	内容	备注
1	尺寸	110*150mm	
2	材质	封面128双铜+内页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 设 计	宣浩	MODEL 机型： UTi640Q	Part NO. 物料编号： 110401111816X
CHK 审核		UNI-T® 优利德科技(中国)股份有限公司 UNI-TREND TECHNOLOGY (CHINA) CO., LTD.	
APPRO. 批准			