

UNI-T®



UTi220B **Professional Thermal Imager**

P/N:110401111052X
2022.03 REV.0

Preface

Thank you for purchasing the new UTi220B 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

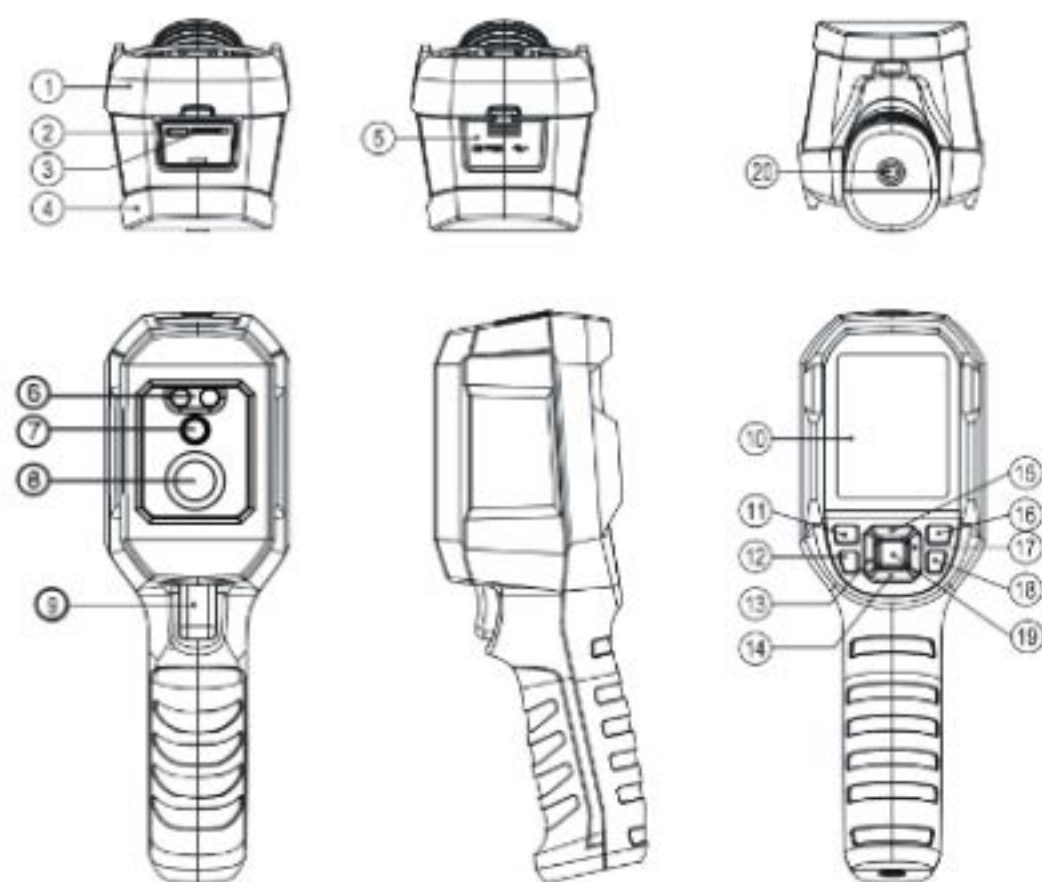
Uni-Trend guarantees that the product is free from any defect in material and workmanship within one year from the purchase date. This warranty does not apply to damage caused by accident, negligence, misuse, modification, contamination or improper handling. The dealer shall not be entitled to give any 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.

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1. Structure

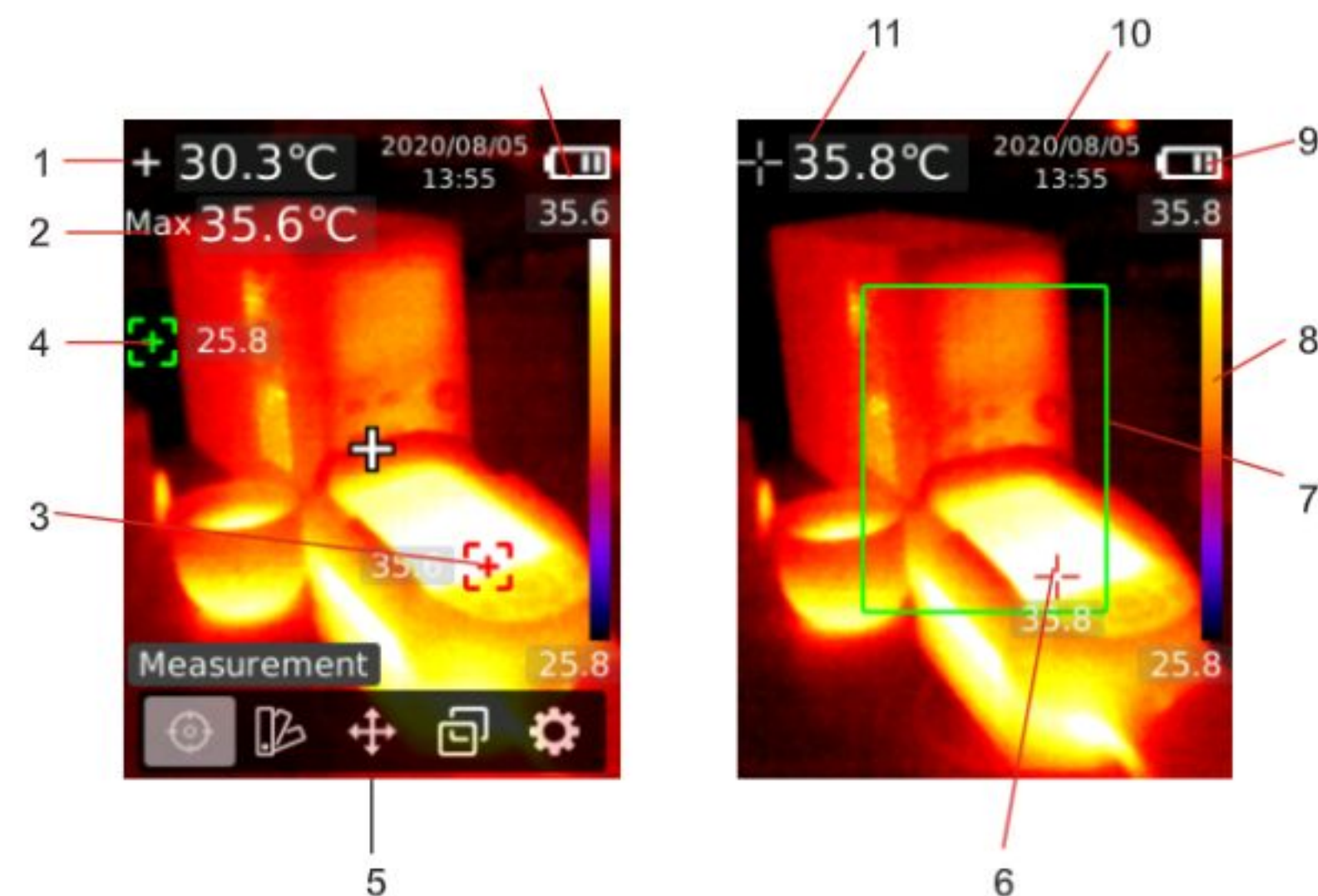


Item	Description	Item	Description
1	Interface cover	11	Power button
2	USB (Type-C) interface	12	Flashlight button
3	SD card slot	13	Left button
4	Bottom cover	14	Down button
5	Silica cover	15	Up button
6	LED light	16	Replay button
7	Visual light camera lens	17	Right button
8	Infrared camera lens	18	Back button
9	Trigger	19	SET button
10	LCD display	20	Tripod mounting hole

2. Display

Display size: 2.8"

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



Item	Description	Item	Description
1	Center point temperature	7	Region of interest (ROI)
2	Maximum temperature	8	Temperature bar
3	Maximum temperature point	9	Battery status
4	Minimum temperature point	10	Date and time
5	Main menu	11	Maximum temperature in ROI
6	Maximum temperature point in ROI		

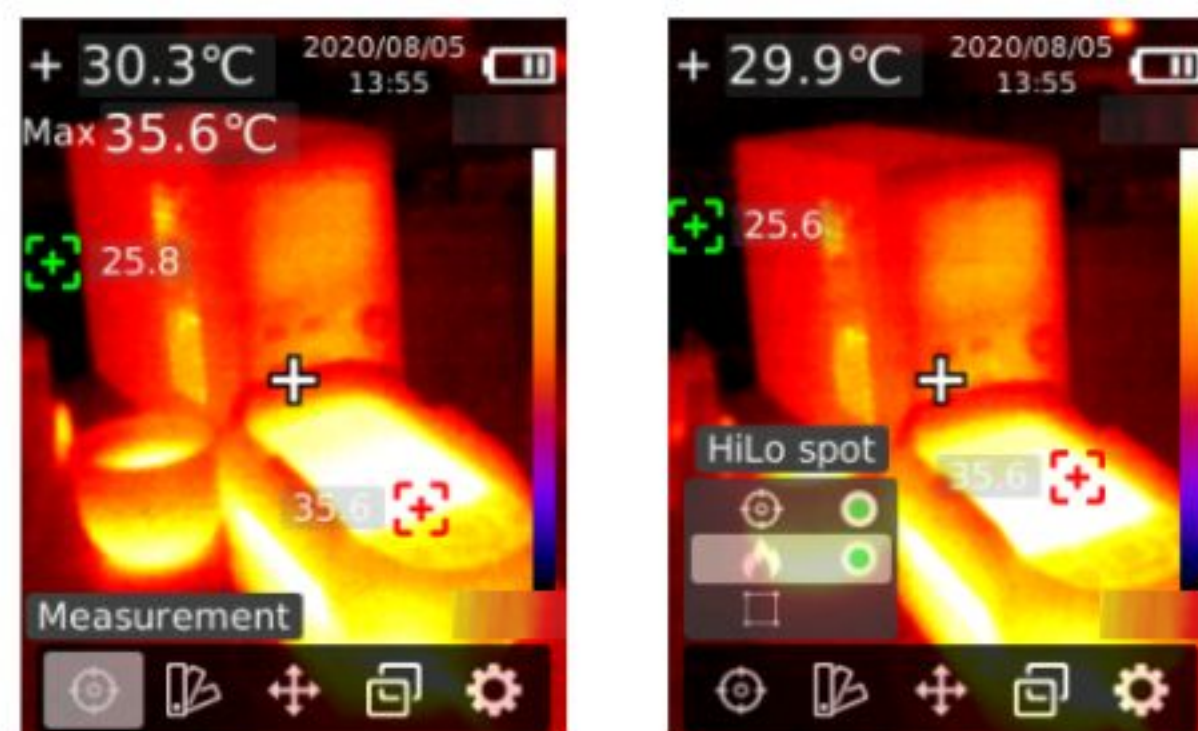
3. Power On/Off

Press and hold the power button for 3 seconds to turn on/off the product.

Note: After the product starts the shutdown procedure, it takes 5 to 6 seconds. Please try to avoid turning on and off the product continuously to avoid damage.

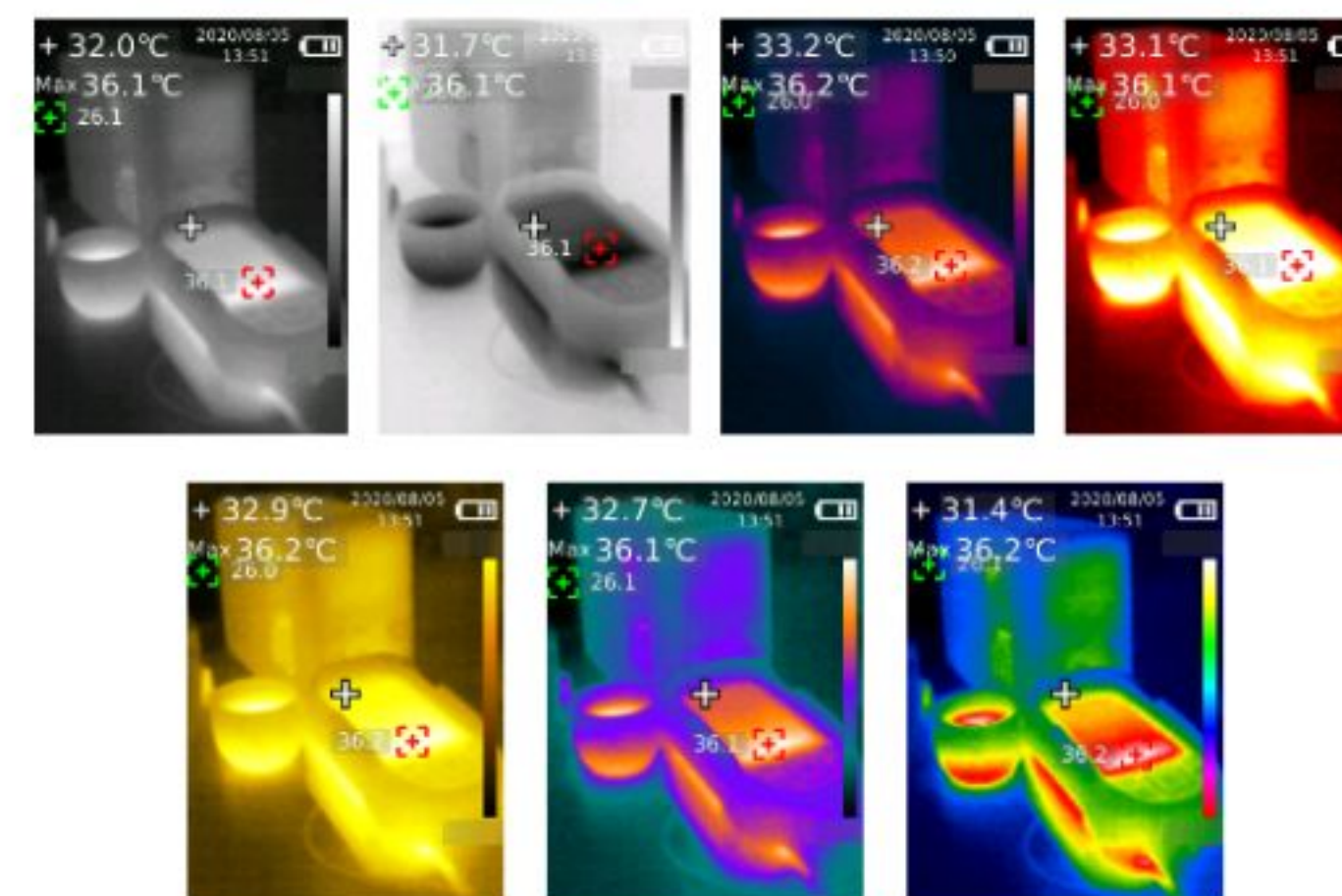
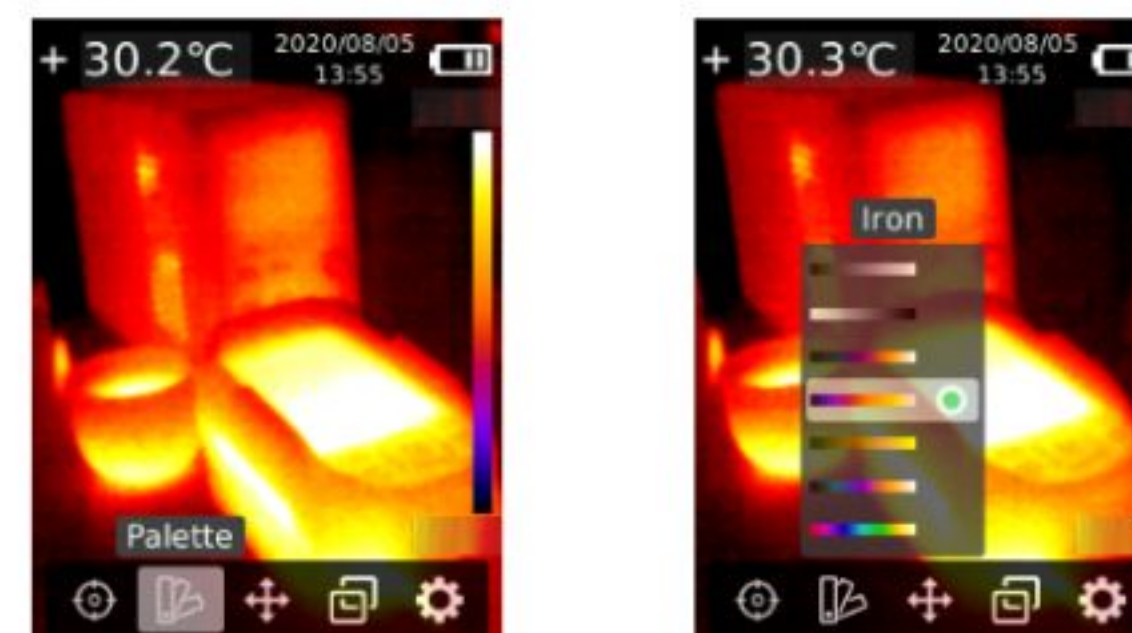
4. Menu Introduction

4.1 Measurement



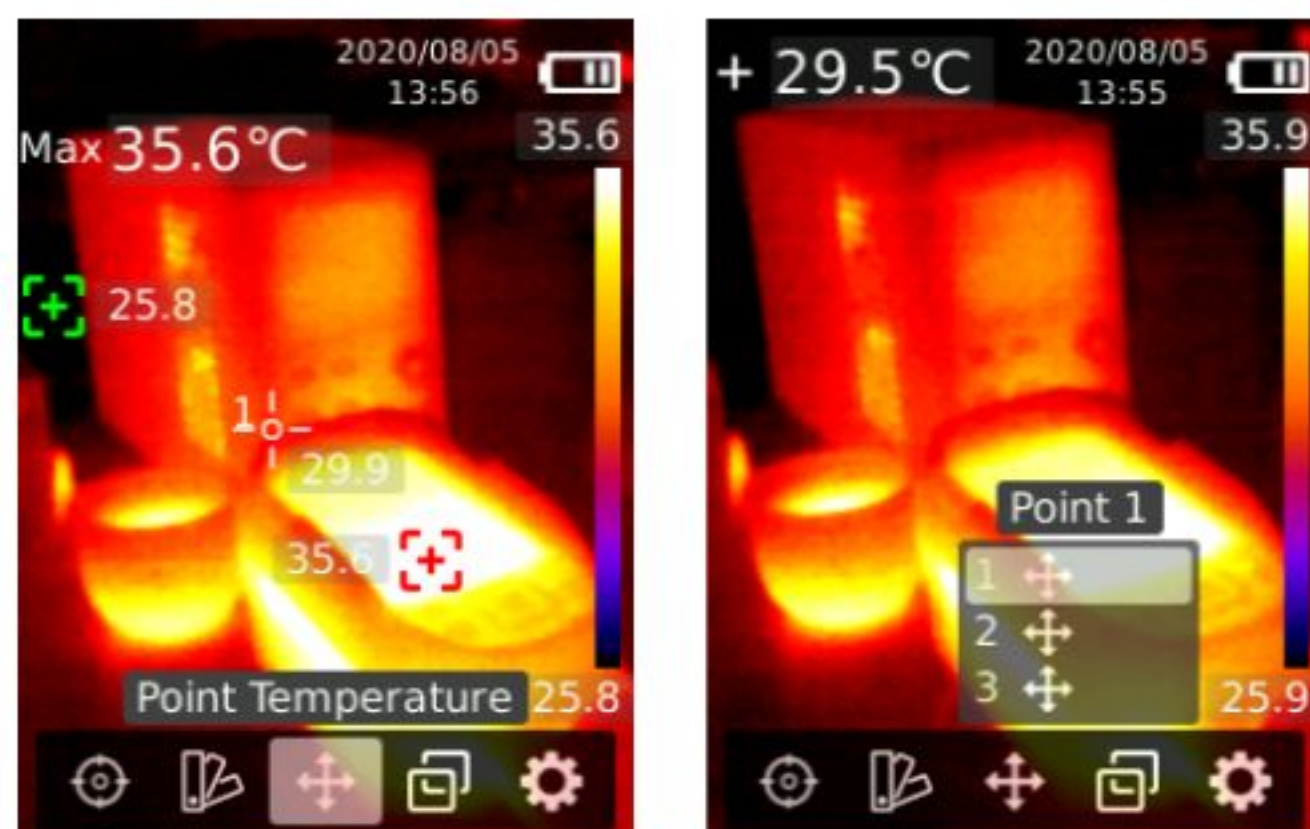
1. Press the SET button to open the main menu.
2. Press the left/right button to select the option.
3. Press the SET button to enter the Measurement menu.
4. Press the up/down button to select Center Spot (center point measurement), HiLo Spot (maximum and minimum temperature measurement) or ROI.
5. Press the SET button to turn on/off Center Spot, HiLo Spot or ROI.
6. Press the back button to exit.

4.2 Palette



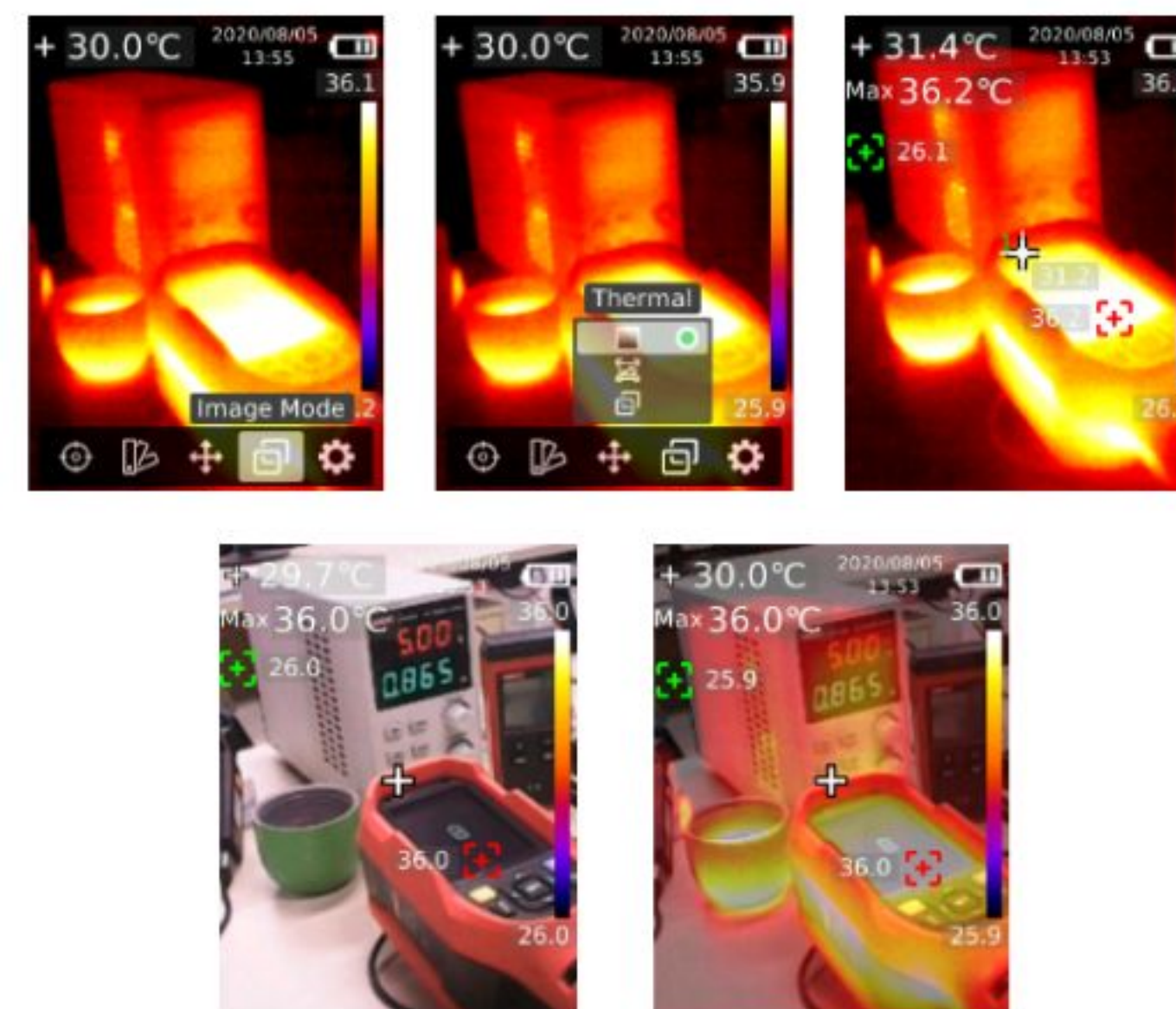
1. Press the SET button to open the main menu.
2. Press the left/right button to select the option.
3. Press the SET button to enter the Palette menu.
4. Press the up/down button to select the desired palette.
5. Press the SET button to apply the palette.
6. Press the back button to exit.

4.3 Point Temperature



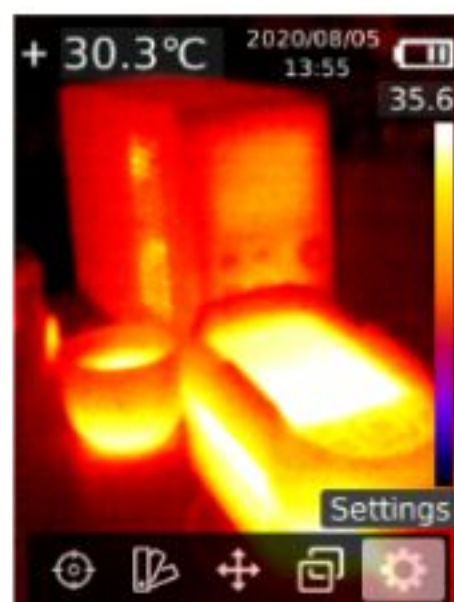
1. Press the SET button to open the main menu.
2. Press the left/right button to select the option.
3. Press the SET button to enter the Point Temperature menu.
4. Press the up/down button to select the desired point.
 - A. Press the SET button to turn on the point and enter the thermal imaging page.
Press the left/right/up/down button to move the point.
Press the SET button to confirm and read the temperature of the current point.
 - B. Press the SET button to turn off the point.
Press the back button to exit.

4.4 Image Mode



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 Image Mode menu.
4. Press the up/down button to select the desired mode from Thermal (infrared image), Digital (visual light image) and Fusion(image blending).
5. Press the SET button to apply the current mode.
6. Press the back button to exit.

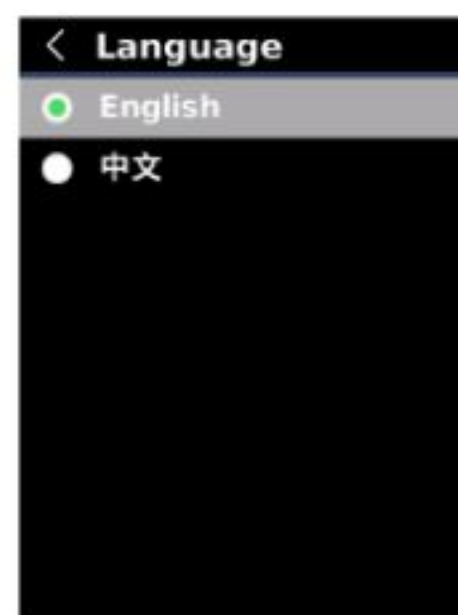
4.5 Settings



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 enter the Settings menu.

4.4.1 Language



To set language:

1. Press the up/down button to select the Language option in the Settings menu.
2. Press the SET button to enter the Language submenu.
3. Press the up/down button to select Chinese or English.
4. Press the SET button to confirm.
5. Press the back button to exit.

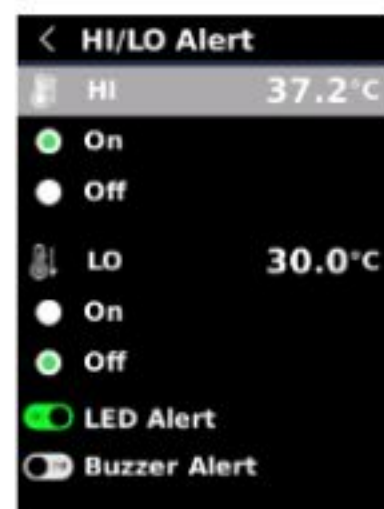
4.4.2 Date and Time



To set date and time:

1. Press the up/down button to select the Date and Time option in the settings menu.
2. Press the SET button to enter the Date and 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.

4.4.3 HI/LO Alert



To set high/low temperature alert:

1. Press the up/down button to select the HI/LO Alert option 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.
4. Select HI or LO to adjust the temperature parameter.
5. Select other options to turn the alert on or off.
6. Press the back button to exit.

4.4.4 Measurements

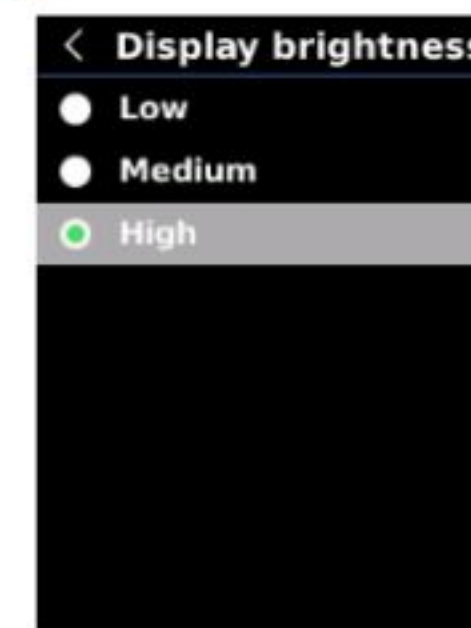


To set measurement parameters:

1. Press the up/down button to select the Measurements option in the Settings menu.
2. Press the SET button to enter the Measurements submenu.
3. Press the up/down button to select Emissivity.
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 current setting.
7. Press the back button to exit.

Note: For emissivity values of common materials, please refer to the Common Emissivity.

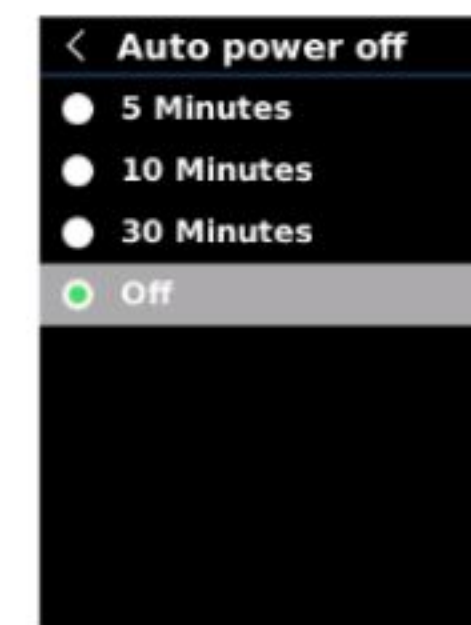
4.4.5 Display Brightness



To set display brightness:

1. Press the up/down button to select the Display Brightness option in the Settings menu.
2. Press the SET button to enter the Display Brightness submenu.
3. Press the up/down button to select the desired brightness level from Low, Medium, and High.
4. Press the SET button to confirm.
5. Press the back button to exit.

4.4.6 Auto Power Off



To set auto power off:

1. Press the up/down button to select the Auto Power Off option 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 Minutes, 10 Minutes, 30 Minutes, and Off.
4. Press the SET button to confirm.
5. Press the back button to exit.

4.4.7 USB Mode



To set USB mode:

1. Press the up/down button to select the USB Mode option 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 SET button to confirm.
5. Press the back button to exit.

Note: USB disk mode allows users to browse pictures and analyze data on a PC, while USB camera mode allows users to realize real-time image projection after connecting to a PC.

4.4.8 Auto Save



To set auto save:

1. Press the up/down button to select the Auto Save option in the Settings menu.
2. Press the SET button to enter the Auto Save submenu.
3. Press the up/down button to select Yes or No.
4. Press the SET button to confirm.
5. Press the back button to exit.

Note: Do not remove or insert the SD card in saving pictures. It is recommended to save no more than 1000 pictures, so as not to affect the response speed of the product. When the number of pictures exceeds 1,000, please clean up the SD card in time.

4.4.9 System Settings



To enter System Settings submenu:

1. Press the up/down button to select the System Settings option in the Settings menu.
2. Press the SET button to enter the System Settings submenu.

Device Information



To view the device information:

1. Press the up/down button to select the Device Information option in the System Settings submenu.
2. Press the SET button to view the detail information of the device.
3. Press the back button to exit.

Note: Capacity is the storage capacity of the SD card in use currently.

Factory Reset

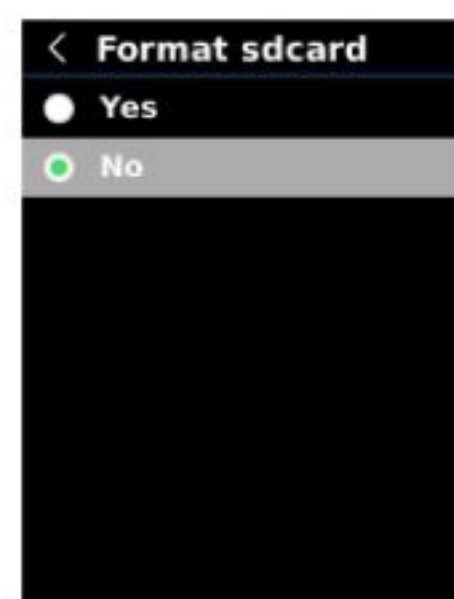


To restore factory settings:

1. Press the up/down button to select the Factory Reset option in the System Settings submenu.
2. Press the SET button to enter.
3. Press the up/down button to select Yes.
4. Press the SET button to confirm.
5. Press the back button to exit.

Note: During the factory reset process, please do not force other operation to avoid program errors.

Format SD Card



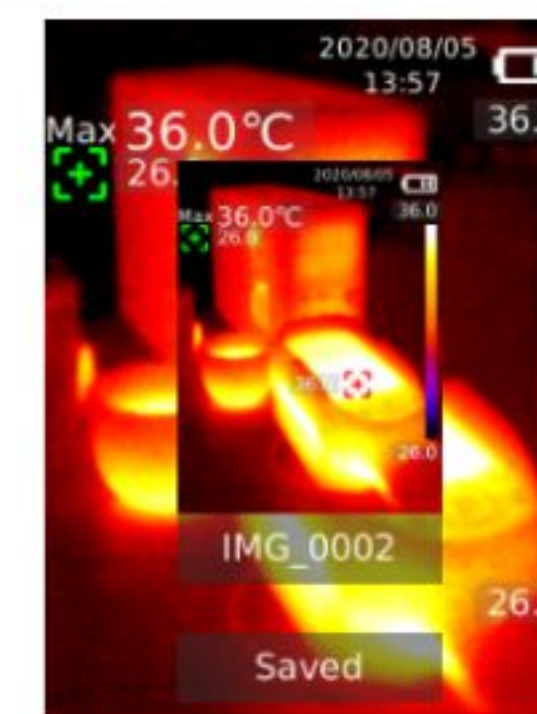
To format SD card:

1. Press the up/down button to select the Format SD Card option in the System Settings submenu.
2. Press the SET button to enter.
3. Press the up/down button to select Yes.
4. Press the SET button to confirm.
5. Press the back button to exit.

Note: When formatting the SD card, please do not remove it or perform other operation to avoid program errors.

5. Operating Instructions

5.1 Image Capture



1. Pull and release the trigger to capture an image.
2. In the manual save mode, press the left/right button to discard or save the image, and press the SET button to confirm or the back button to return.
3. In the auto save mode, the image will be saved automatically.

Note: Images can only be saved if an SD card is installed.

5.2 Image Viewing



1. Press the replay button to enter the gallery interface.
2. Use the up/down/left/right button to select the desired image.
3. Press the SET button to view the image in full screen mode.
4. Press the SET button in full screen mode to delete the image or view its information.

Note: Do not remove or insert the SD card in viewing images.

5.3 LED Light

Press and hold the flashlight button for 3 seconds to turn on/off the LED light. When the temperature alert is on and the measured temperature exceeds the set temperature range, the LED light will flash.

Note: When the LED light is on, please do not point to the eyes of people or animals.

5.4 USB Communication and Image Projection

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.

5.5 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.

5.6 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.

6. Specifications

Sensor	UFPA
Temperature range	-10°C~400°C
Measurement resolution	0.1°C
Accuracy	$\pm 2^{\circ}\text{C}/\pm 2\%$ (at 25°C ambient temperature)
Optimal measuring distance	1 meter
Response time	$\leq 500\text{ms}$
IR resolution	30000 pixels (200 × 150)
Pixel size	12 μm
Color palette	Iron, White Hot, Black Hot, Tyrian, Amber, Cool, Rainbow
Infrared spectral band	8 μm ~14 μm
Field of view (FOV)	35° (H) × 26° (V)
Spatial resolution (IFOV)	3.1mrad
Thermal sensitivity (NETD)	<100mK
Frame rate	< 9Hz
Temperature measurement display	ROI, center point temperature, high temperature tracking (default)
Image format	BMP
Image mode	Thermal, Digital (visual light image) Fusion(image blending)
Point temperature measurement	In addition to the center point, 3 points can be added.
Temperature Alarm	Icon alarm/LED alarm/Audio alarm
Visual light camera	Yes
Visual light resolution	640 x 480 pixels

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	3.6V/5000mAh rechargeable Li-ion battery
Auto power off	5 minutes, 10 minutes, 30 minutes, off (default: 30 minutes)
Battery life	≥ 6 hours
Charging time	≤ 5 hours
Charging voltage/current	5V/2A
Image storage	Micro SD card
IP rating	IP65
Drop test	2m
Transportation/Storage environment	-20°C~60°C <85% RH (non-condensing)
Operating environment	0°C~50°C <85% RH (non-condensing)
Operating altitude	$\leq 2000\text{m}$
Standard accessories	User manual, USB cable, Micro SD card

7. 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.

8. Common Emissivity

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		

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

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