Simple Thermal Image
User Manual

Please read this manual before switching the unit on.
Important safety information inside.

Contact :

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1. Quick Use Guide

1-1. General Operation Steps

1. Long Press back/power button ⮌ 3second, instrument will switched on, The screen will display the boot screen, and the thermal image will appear after the boot screen appeared.
2. Put the Thermal imager points to target area or object and check thermal image. The relative temperature is shown from hot to cold through the color table (corresponding to light to dark). The infrared temperature reading (shown above the thermal image) indicates the temperature of the target measuring point aimed at the cross cursor on the display screen.
3. Press the up button ▲ or press the down button ▼ the fusion ratio of infrared and visible light can be adjusted.
4. Press the trigger button and the display screen stops, showing the thermal image at the moment, and the thermal image will be surrounded by white boxes .
5. After image capture, press OK button **OK** can save the captured thermal image. The thermal image is stored in the internal storage of the instrument in the form of pictures.The thermal image can be viewed through USB. Press the return button to continue to scan the target area or object.
6. In the process of scanning the area or object at which the lens is aligned, press OK button **OK** can enter menu options,In menu options can set various parameters and view meter information (see 8. Setting menu). Press back/power button ⮌ can exit the men.

1-2. Instrument power supply

The instrument power supply mode is AAA(no.7) alkaline batteries, use three alkaline dry cells to make the instrument work. Long press back/power button ⮌ 3s starting up,power off is also long press back/power ⮌ button 3s。

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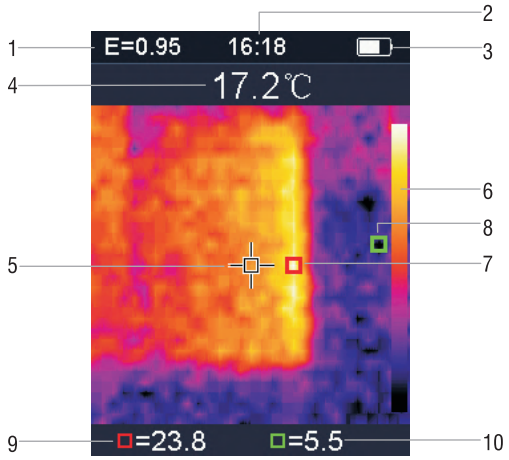
1-3. Infrared thermal imaging display information.

1. Emissivity
2. Time
3. Battery capacity
4. Centre temperature
5. Target center
6. Color bar
7. Maximum temperature position
8. Minimum temperature position
9. Maximum temperature
10. Minimum temperature



2. Abstract

The device is a professional thermometer. the instrument adopts 32 * 32 pixels of thermal imaging sensors and a 30 w pixels of photoelectric sensors, in addition with a 2.0 "TFT LCD color display. Combined with infrared thermal imaging and temperature sensor and optical sensor images of auxiliary, able to provide a rapid, simple and accurate for most of the surface temperature of detection, the location of the specific and clear understanding of the object surface temperature. At the same time, the instrument can also store the thermal image images at a certain time, and the image information can be viewed through the computer connection, so as to facilitate the analysis of thermal images in the later period.

3. Characteristic

1. 2.0 inch 240*320 TFT LCD display.
2. 32*32 pixel infrared sensor.
3. Image capture frequency 7Hz.
4. Thermal sensitive (NETD) ≦347mK
5. Cold hot spot automatic capture.
6. Visible camera and image storage. (BMP)
7. Internal memory stores images and can store more than 100pcs
8. Set the time and date and adjust the emissivity.
9. 3x“AAA” alkaline battery power supply
10. USB interface connect the computer to check the photo
11. IP54waterproof level
12. 3Dacceleration sensor

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4. Technical indicators

Temperature	
Temperature range	-20°c to +600°c(-4°F to 1112°F)
Temperature measurement accuracy	±3%±3℃(±37.4℉) as tested at 25°c(77°F)
Screen shot rate correction	Yes
Image performance	
Image capture frequency.	7Hz
Sensor type	Non-refrigerating heat release point.
Thermal sensitive(netd)	≦347mk
Infrared band	6.5μm to 14μm
Visible camera	307200 pixel
Field of view	33º*33
The focal length	Fixed focal length
Image display mode	
Color table	
Molten metal, iron red, color red, grayscale (white heat), grayscale (black heat)	
Level and span	Automatic
Fusion information	
Visible and infrared fusion distance	0.5m, 1.0m, 2.0m
View options	50% step
Hot spot and cold spot tracking.	Yes
Image capture and storage.	
Tacking pictures	Yes
Storage medium	Internal flash storage can store over 100 pieces.
Document format	BMP
Memoryviewing	View or delete stored photos from the menu.
Operating temperature	0°C to +50°C(32°F to 122°F)
Storage temperature	-20°C to +60°C(-4°F to 140°F)
Relative humidity	10% to 90% non-dewfall
Display screen	2.0 inch, 240*320 tft lcd
Waterproofing grade	Ip54
Gravitational acceleration.	Yes

5. Sketch map

1 LCD display screen
2 Up button
3 Confirm/menu button
4 Back/power button
5 Down button
6 Battery cover
7 Visible light
8 Infrared sensor
9 Trigger button
10 Micro USB interface

6.Power supply

Long press back/power button 3sto open or turn off the Thermal Image device. This device is powered by 3pcs no 7dry batterie,When the battery is full,the battery status icon in the upper right corner of the display shows full white full size .As the battery charge decreases, the white portion of the battery icon also drops. When the battery symbol is displayed in red, the battery level is low, you should replace the new one immediately. If the battery with insufficient battery is not replaced in time, the measured temperature reading may be inaccurate. APO- automatic shutdown. The Thermal Image device will automatically shut down after a period of inactivity,and the meter default APO time is 10 minutes.

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7. Button operation

Except HOLD button,the Thermal Image device has four control buttons on the button of the display screen. Tip: use the thumb button to control the trigger with the index finger.

7-1. Back/power button ⮌

Long press: repeatedly open - turn off the meter power.
Short press: exit menu option or drop storage photos.

7-2. Confirm/menu button. OK

Short press: enter menu options, determine change parameters, confirm to save photos or delete images (preview photos).

7-3 Up and down buttons ▲▼

Short press: Scroll through the options in the setup menu and scroll through the saved photos in image review mode. In measurement mode, scroll up and down the navigation buttons to see a blend of visible and infrared thermal images in different proportions.

Long press: In the settings menu option, long press the up and down navigation buttons can add or subtract values continuously, for example, when adjusting the emissivity, press and hold for a long time, the emissivity value will increase continuously, and the same goes down.

7-4. HLOD button

Pressing the trigger key (also called the HOLD key) the displays still motion, holding the infrared thermal image or visible light image at this moment. Press the trigger key again, the display will show the area or object that the infrared scans at this time. This cycle repeats.

7-5 Taking Pictures and Saving Pictures

This meter can hold at least 100 photos in internal memory.

1. the instrument is aimed at the area or target object to be measured
2. press the trigger key (HOLD button), the screen image is still.
3. press confirm / menu button **OK** ,to save the current photo, a progress bar below the picture shows the progress of the picture saved
4. press the return / power button ⮌ ,to cancel the save photo, return to continue scanning the target object

8. Settings menu

In scan measurement mode, press the confirm/menu button **OK**,to enter the settings menu overview, as shown below:

The yellow highlight bar in the menu option corresponds to the selectedoption, press up ▲ press down ▼ Button scroll highlight bar, press confirm/menu button **OK** Enter the corresponding options, each option is described in detail as follows:

8-1. Emissivity Adjustment EMS

For the definition of emissivity, please refer to Appendix 11 for details. After entering the emissivity option, the interface is as shown below:

Press the up button ▲ ,the emissivity will increase; long press will increase continuously.

Press the down button ▼,the emissivity will decrease; long press will continuously decrease Press the confirm/menu button ,Confirm to change current emissivity and exit emissivity adjustment interface.

Press the return/power button ⮌ ,to exit the emissivity setting interface,the emissivity value is not modified.

8-2. Unit Settings UNIT

Unit settings can be set to different unit displays. After entering the unit options, the interface is as shown below:

Press the up button ▲ ,the yellow highlight bar moves to another option.

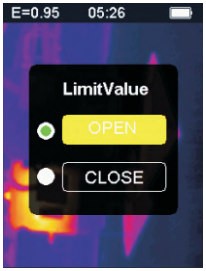
Press the down button ▼,the yellow highlight bar moves to another option.

Press the confirm/menu button **OK** ,to confirm to change current temperature unit and exit unit setting interface.

Press return/power button ⮌ ,to exit the unit setting interface and the unit will not be modified.

8-3. Extreme Settings LimitValue

After entering the extremum option, the interface is as shown below:



Press the Up button ▲, the yellow highlight bar moves to another option.

Press the down button ▼,and the yellow highlight bar moves to another option.

Press the Confirm/Menu button **OK** ,confirm the change of the current extrema to turn on the light and exit the extremum setting interface.

Press the return/power button ⮌,to exit the extremum switch setting interface. The extremum switch is not modified.

8-4. Color Table Options ColorTabel

After entering the color table option, the interface is as shown below:

Press the up button ▲,and the yellow highlight bar moves up.

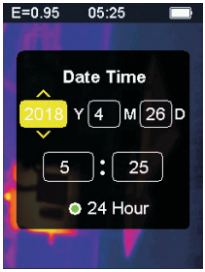
Press the down button ▼,and the yellow highlight bar moves down.

Press the Confirm/Menu button **OK**,to confirm changing the current color bar and exit the color table setting screen.

Press return/power button ⮌,to exit the color table setting interface, the color table display will not be modified.

8-5.Date and time 

After entering the date and time option, the interface is as shown below:



The yellow highlight bar corresponds to that option, and correspondingly changes the value in that option.

Press the up button ▲ and the corresponding number will increase.

Press the down button ▼,and the corresponding number will decrease.

Press the Confirm/Menu button **OK** the yellow highlight bar will jump to different items in sequence.

Press the Back/Power button ⮌ ,to exit the date and time setting interface and save the current set time and date

8-6. storage Memory

After entering the storage options, the interface is as shown below:

The white box shows the picture stored in the internal memory of the meter.

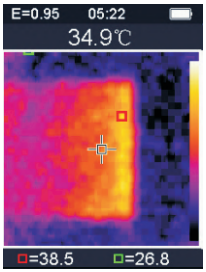
Press the up button ▲, the blue highlight bar will move up.

Press the down button ▼ ,and the blue highlight bar moves down.

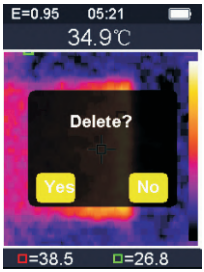
Press the return/power button ⮌ ,to exit the storage interface.

Press the Confirm/Menu button **OK** ,to enter the picture preview interface, displaying the current blue.

Highlight the selected picture, as shown below:



Press the up button ▲,to display the previous picture
Press the down button ▼,to display the next picture
Press the Back/Power button ⮌,to return to the storage interface
Press the Confirm/Menu button **OK**, to pop up the confirmation window to delete the picture, as shown in the following figure:



Press the Confirm/Menu button **OK** ,select “Yes” to confirm the deletion of the picture, and that the window is closed automatically and the next saved picture is displayed.
Press the Back/Power button ⮌,and select "No" to cancel deleting the picture. Confirm that the window is automatically closed.

8-7. Alarm Warning

After entering the alarm options, the interface is as shown below:

Press the Up button ▲,the yellow highlight bar moves to another option.

Press the down button ▼,and the yellow highlight bar moves to another option.

Press return/power button ⮌,to exit the alarm setting interface.

Press the Confirm/Menu button **OK** ,to enter the corresponding high alarm/low alarm interface according to the highlight selection bar.

If you select the high alarm option, enter the high alarm interface as shown below:

Press the up button ▲,the high temperature alarm threshold will increase; long press can increase continuously.

Press the down button ▼ ,the high temperature alarm threshold will decrease; long press can reduce continuously.

Press the confirm/menu button **OK** ,to open or close the start button. Open this button to indicate that if the measured object is higher than the set maximum temperature threshold, the instrument will have an alarm sound; if it is closed, no alarm will sound.

Press the back/power button ⮌ ,to exit the high alarm interface and return to the alarm options interface.

If you select the low alarm option, enter the low alarm interface as shown below:

Press the up button ▲,to increase the threshold for low temperature alarms; press and hold to increase continuously.

Press the down button ▼ ,and the threshold for low temperature alarms will decrease; long presses will reduce them continuously.

Press the confirm/menu button **OK** ,to open or close the start button. If this button is turned on, it indicates that if the measured object is higher than the set minimum temperature threshold, the instrument will have an alarm sound; if it is closed, no alarm will sound.

8-8.Backlight Adjustment

BackLight >

After entering the backlight adjustment options, the interface is as shown below:

Press the up button ▲ ,to increase the brightness of the display backlight; long press can increase continuously.

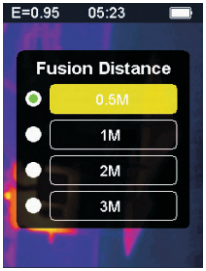
Press the down button ▼ ,the display backlight brightness will decrease; long press can continuously reduce.

Press the Confirm/Menu button **OK** ,to confirm changing the current backlight brightness and exit the backlight adjustment screen

Press the Back/Power button ⮌ ,to not change the backlight brightness and exit the backlight adjustment interface

8-9. Fusion distance FusionDist

By using aligned visible images and infrared images, image fusion makes it easier to understand infrared images. The product captures a visual image with each infrared image to accurately display the target area and share it more effectively with others. After entering the fused distance option, the interface is as shown below:



Press the up button ▲ ,and the yellow highlight bar moves up.

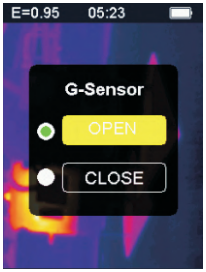
Press the down button ▼ ,and the yellow highlight bar moves down.

Press the Confirm/Menu button **OK** ,to confirm changing the fusion distance corresponding to the current color bar and exit the Fusion distance setting interface.

Press return/power button ⮌ ,to exit the fused distance setting interface and the fusion distance will not be modified.

8-10. G-SENSOR G-Sensor

G-SENSOR is a three-axis acceleration gravity sensor, which can be switched by the direction of gravity to switch between menus and to switch pictures (at the time of picture preview). The handheld instrument is facing itself, shaking it to the left, moving the menu up or switching to the previous one Picture (for picture preview); Shake right, move the menu down or switch to the next picture (when the picture is previewed). After entering the G-SENSOR option, the interface is as shown below:



Press the Up button ▲,the yellow highlight bar moves to another option.

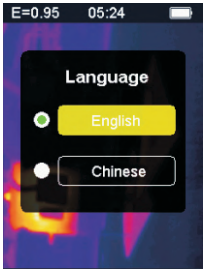
Press the down button ▼,and the yellow highlight bar moves to another option.

Press the ENTER/MENU button **OK** ,to confirm changing the current G-SENSOR to turn on the light and exit the G-SENSOR setting interface.

Press return/power button ⮌ ,to exit G-SENSOR switch setting interface, G-SENSOR switch will not be modified.

8-11.Language Selection Language

This setting can set the meter to display in different national languages, enter the language selection option, and the interface is as shown in the figure below:



Press the Up button ▲,the yellow highlight bar moves to another option.

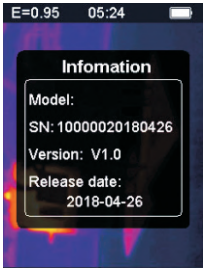
Press the down button ▼,and the yellow highlight bar moves to another option.

Press the Confirm/Menu button **OK**,and confirm to change the language of the current highlight bar and exit the language setting interface.

Press the Back/Power button ⮌,to exit the language selection setting interface. The language selection is not modified.

8-12. Information ⓘ Infomation 〉

This option shows the factory information, version number, etc. of the instrument. Enter the information options, the interface is as shown below:



Model: Model of the instrument
SN: serial number of the instrument
Version: Version number
Release date: Factory date
Press return/power button ⮌ ,to exit the information display interface.

9. Precautions

1. Before using this product, ensuring the battery is installed and the battery is fully charged.
2. When using this product, ensure that the temperature is close to room temperature.
3. Micro USB on the device can be connected to a computer via a USB cable. The computer can view the photos which is saved in the meter. If a rechargeable battery is used, the Micro USB will not charge the battery.
4. For instrument temperature calibration, the instrument has been factory calibrated before the shipment. If you need to calibrate, please contact your local after-sales dealer.
5. Pay attention to the cleanliness of the surface of the instrument. Wipe the case with a damp cloth if necessary. Use a high-quality lens wipe to remove dust or stains from the meter's lens and display window. Do not use abrasives or solvents to clean the case, lens, or display window.

10.System Upgrade and After Sales Support

Concerned about the company's dynamic information, the first time you can understand the latest upgrade information about firmware. If there is firmware's update information, contact your local after-sales dealer to upgrade the firmware.

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11. Addendum

11-1. Emissivity

The emissivity indicates the energy radiation characteristics of the material. The emissivity of most organic materials and painted or oxidized surfaces is approximately 0.95, which is the default setting of the thermometer.

All objects radiate infrared energy. The amount of energy radiation is based on the actual surface temperature of the object and the surface emissivity. The product perceives the infrared energy at the surface of the object and uses this data to calculate the estimated temperature value. Many common objects and materials (such as painted metal, wood, water, skin, fabrics, etc.) can effectively emit energy, so it is easy to obtain relatively accurate measurements.

For surfaces that emit energy easily (high emissivity), the emissivity is more than 90% (0.90). This simplified approach does not apply to glossy surfaces or painted metals because their emissivity is less than 60% (0.60). These materials are not easy to emit energy and are classified as low emissivity materials. In order to measure materials with lower emissivity more accurately, emissivity corrections are required. Adjusting the emission value usually allows the product to more accurately calculate the actual temperature estimate.

Notice:

It is difficult to determine the actual temperature of the surface with an emissivity below 0.60 accurately and consistently. Even if the emissivity and the reflection background are adjusted correctly, the lower the emissivity, the greater the possible error in the product's calculation of temperature measurement results.

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11-2.Emissivity table

Substance	Emissivity	Substance	Emissivity
pitch	0.90 to 0.98	Cloth (black)	0.98
concrete	0.94	human skin	0.98
cement	0.96	Soap bubble	0.75 to 0.80
sand	0.90	Charcoal (powder)	0.96
soil	0.92 to 0.96	lacquerware	0.80 to 0.95
water	0.92 to 0.96	Lacquerware (Matte)	0.97
ice	0.96 to 0.98	Rubber (black)	0.94
snow	0.83	plastic	0.85 to 0.95
glass	0.90 to 0.95	wood	0.90
ceramics	0.90 to 0.94	paper	0.70 to 0.94
marble	0.94	Chromium oxide	0.81
plaster	0.80 to 0.90	Copper oxide	0.78
Stucco	0.89 to 0.91	Iron oxide	0.78 to 0.82
brick	0.93 to 0.96	textile	0.90

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