User's Manual
Infrared Thermal Imager

Please read this manual carefully
and keep it for reference before operation.

Contents

1. Safety

Before operating this instrument, please read the following instructions and use them according to the specifications.

Do not use this instrument in explosive, steam, humid or corrosive environment.

Use of environmental conditions:

1) Relative humidity less than 80% RH (non-condensation)

2) Operating temperature -5～40℃/23～104℉

Maintenance and cleaning

1) Repair or repair shall be carried out by professionals, not by instructions alone.

2) Clean the case with cloth regularly. Do not use solvent or detergent to clean this form.

Safety Symbol

CE Compliance with european CE safety standards

2. Description

This instrument is an infrared thermal imager which combines surface temperature measurement with

real-time thermal image.the traditional single-point infrared thermometer needs to measure each component one by one, while the thermal image does not need to do so, thus saving the measurement time.Potential problems can be clearly displayed on the color display screen, which helps users quickly and accurately locate the center point to measure the cursor and temperature.

In order to increase the recognition, the product is also equipped with a visual camera.according to the need, the image can be mixed from the whole thermal image to the whole visual image.hot and visible images can be saved to the memory card.callable images are used to generate reports and print.the product is easy to use and can be tested within seconds after opening.this product is an ideal choice for electricians and maintenance technicians, and can be used to quickly find the problem area.

3. Features

1. TFT full view color screen display
2. Dual MCU processors, refresh faster
3. Hot and cold point temperature markers can guide users to the areas with the highest and lowest temperature in the thermal image.
4. Selectable palette
5. Hybrid imaging of visual and infrared images
6. Images capture saved in SD card
7. Connecting PC with USB can read the image stored in instrument directly.
8. Connect USB with other power supply and meter, USB can power supply to meter directly

4. Technical Data

	□	□
Infrared Image Resolution	33X 33 (1089 pixels)	
Display resolution	240*320 pixels	
Visual Image Resolution	300000pixels	
Field Angle	32* 32 degrees	
Infrared Temp. Range	-20~380℃ /-4~716℉	

Accuracy	＞ 0 ℃, ±2% or reading ±2℃ /3.6℉ ＜ 0℃, ±3℃ /5.4℉ Note: Accuracy is measured in an environment of 18-28 degrees.	
Ambient Temp. Range	N/A	-20~70℃ /-4~158℉
Accuracy	N/A	±1.0 ℃/1.8℉
Ambient Humidity Range	N/A	0~ 100%RH
Accuracy	N/A	35~70% RH;±3.0% RH
		Others; ±4.0% RH
Dew Point Temp. Range	N/A	-30～100℃/-22～212℉
Accuracy	N/A	±1.0℃/1.8℉（25℃/77℉, 35～70%RH）
Wet Bulb Temp. Range	N/A	-30～100℃/-22～212℉
Accuracy	N/A	±1.0℃/1.8℉（25℃/77℉, 35～70%RH)
Minimum Focal Length	0.5m	
Thermal Sensitivity	0.15℃/0.27℉	
Emissivity	Adjustable 0.1-1.0	
Image Capture Frequency	9HZ	
Wavelength Range	8-14um	
Focus Mode	Fixed	

Palette	Ink color, black and white, rainbow color, ocean blue, iron red
View Options	Blending of the visual and the infrared from full infrared to full visual in 25 % steps
File Format	BMP
Storage	8GB Micro SD Card
Memory View	Scroll all saved images and view them on the screen
USB function	Connect USB cable with PC, meter works as U Disk, stored data in SD card can be download to computer directly, connected USB cable with other power supply and meter, USB can power supply to the meter directly and meter works as usual during this time
Auto Power Off	3minutes, 5 minutes, 10 minutes are optional
Working Temperature	-5～40℃/23～104℉
Storage Temp.Range	-20～55℃/-4～131℉
Relative Humidity	10~ 80%RH
Over-range Indication	OVER
Power Supply	4* LR6 AA battery and USB power supply

5. Structure description

(1) Infrared imaging lens (2) Visible light camera

(3) LED lighting (4) Image capture key

(5) Installation nuts for battery cover and tripod

(6) Up button

(7) Menu key/confirmation key

(8) Down button

(9) Power key/return key

(10) TFT high definition color screen

(11) SD card, USB interface

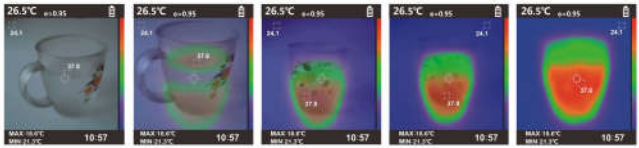
6. Key Function Description

6.1"  " Function: hold down"  " button about 3 seconds, and the instrument can be controlled to turn on and off. In setting mode, press"  " button to exit the function.

6.2"  "Function: press"  "button one time, the instrument enters the setting menu interface.In menu setting mode, press"  "button to determine the function.

6.3 "  " Function: in measuring mode, press this key to turn on and off the LED lighting.In the main menu mode, press the key to go up.In secondary menu mode, to increase the value

6.3 "  " Function; in measuring mode, press this key to adjust the mixed image from 0% to 100%, step size 25%.In the main menu mode, press the key down. In secondary menu mode, to reduce the value



6.4 Image capture function of trigger key;

When the trigger key is pressed, YES and NO symbols will be displayed on the screen, the image will be saved by pressing "▲", and the captured image will be cancelled by pressing "▼" if "SD card error! please check!" is displayed, it indicates that the SD card is not installed.if "FULL" is displayed in the lower left corner of the display screen, it indicates that the SD card is full. Note: SD card with 8GB memory.

7. Main Menu Description

	Time setting
	Number of image storage

	Backlight intensity regulation
	Temperature unit settings
	Automatic shutdown settings
	Memory card capacity
	Palette setting
	Emissivity settings
	Hot and cold markers

8. Secondary Menu Description

8.1 Time Settings

Power on the meter, press "MODE" to enter the time setting mode as figure below, press the "▲"key or "▼" key to select the desired value. Press the "MODE" key to switch the setting of year, month, day, hour and minute in turn.Pressing the power button to saves the time

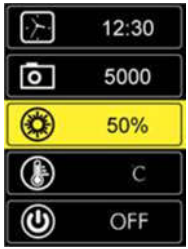
settings and return to main menu.

8.2 Storage Image

Power on the meter, press the "MODE" key to enter into menu setting mode, select the image list as below by pressing "▼" key and "MODE" key to view the saved image. After selecting the corresponding image by the "▲" key or the "▼" key, press the "MODE" key to view the specific image, press the "▲" key or the "▼" key to switch the image, press the "MODE" key again to delete the image.press the "MODE" key to exit the specific image view and return to the image list.

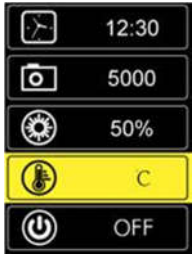
8.3 Backlight Settings

Power on the meter, press the "MODE" key to enter into menu setting mode, select the backlight settings icon by pressing "▼" key as shown in the figure below.after pressing the "MODE" key, the brightness of the screen is set by pressing the "▲" key or the "▼" key. The bigger the value, the brighter the screen.Select the appropriate brightness, press the "power" button to save and return to the menu.



8.4 Temperature Settings

Power on the meter, press the "MODE" key to enter into menu setting mode, select the temperature units settings mode by pressing "▼" key as shown in the figure below. Press the "MODE" button to switch the temperature unit, celsius and Fahrenheit to switch. press the "power" button to save and return to the menu.



8.5 Memory Card Capacity

Power on the meter, press the "MODE" key to enter into menu setting mode, select the memory card capacity by pressing "▼" key to view the remaining capacity of the existing memory card.

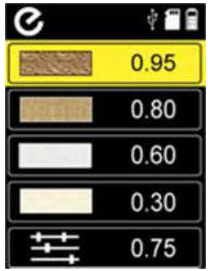
8.6 palette settings

Power on the meter, press the "MODE" key to enter into menu setting mode, select the palette settings Icon mode by pressing pressing "▼" key, press the "MODE" key,

as shown in the figure below.The five modes of palette can be switched in turn: ink color, black and white, rainbow color, ocean blue and iron red.

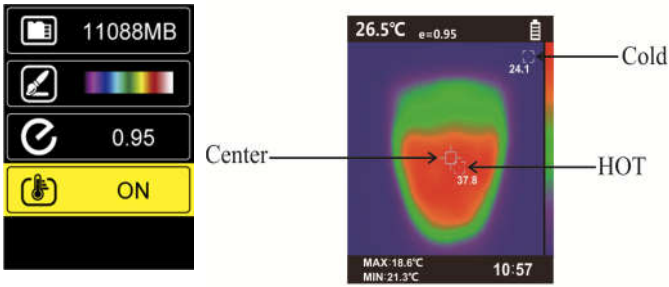
8.7 Emissivity Settings

Power on the meter, press the "MODE" key to enter into menu setting mode, select the emissivity setting mode by pressing pressing "▼" key, press the "MODE" key to enter into emissivity setting as below. By pressing the "▲" key or the "▼"key, you can select the preset emissivity of 0.95, 0.8, 0.6, 0.3 and custom emissivity. After selecting the custom emissivity icon and pressing the "MODE" key, adjust the appropriate emissivity value by pressing the "▲" key or the "▼"key, and press the "power" key to save the setting and return to main menu.



8.8 MAX/MIN Point Temperature Marker

Power on the meter, press the "MODE" key to enter into menu setting mode, select the emissivity setting mode by pressing pressing "▼" key, press the "MODE" key to switch the point temperature label switch as below: ON: enable the MAX/MIN point temperature label, OFF: disable the MAX/MIN point temperature label.



8.9 Timing Automatic Shutdown

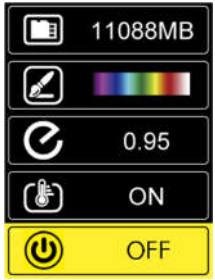
Power on the meter, press the "MODE" key to enter into menu setting mode, select the timing automatic shutdown mode by pressing pressing "▼" key,select the timed automatic shutdown bar, as shown in the figure below, press the "MODE" key to switch off the function of automatic shutdown timing, which can be set in four modes:

1) OFF: None timed shutdown

2) 3MIN: Turn off after 3 minutes without operating the instrument.

3) 5MIN: Turn off after 5 minutes without operating the instrument.

4) 10MIN: Turn off in 10 minutes without operating the instrument.



9. Attention

All objects radiate infrared energy, which is based on the actual surface temperature and surface radiation coefficient of the object.The product perceives the infrared energy on the surface of the object and uses the data to calculate the estimated temperature.many common objects and materials (such as painted metal, wood, water, skin and fabric) can radiate energy effectively, so it is easy to obtain relatively accurate measurements.for the surface which is easy to radiate energy (high radiation coefficient), the radiation coefficient is greater than 90% (0.90).this simplification does not apply to glossy surfaces or painted metals because their radiation coefficients are less than 60% (0.60).these materials are not easy to radiate energy and are classified as low radiation coefficient materials.In order to measure the material with lower radiation coefficient more accurately, it is necessary to correct the radiation coefficient.adjusting the radiation value usually enables the product to calculate the actual temperature more accurately.

10. Emissivity Value of Common Material

Material	Emissivity	Material	Emissivity
Aluminum	0.30	Glass	0.90 to 0.95
Bitumen	0.90~ 0.98	Iron Oxides	0.78 to 0.82
Concrete	0.95	Paint	0.80 to 0.95
Asbestos	0.95	Plastic Cement	0.85 to 0.95
Ceramics	0.90~ 0.95	Paper	0.70 to 0.94
Brass	0.50	Sand	0.90
Brick	0.90	Rubber	0.95
Carbon	0.85	Wood	0.94
Oil Sludge	0.94	Textile	0.94
Frozen Food	0.90	Lead	0.50
Hot Food	0.93	Marble	0.94
Ice	0.96~ 0.98	Cloth (Black)	0.98
Snow	0.83	Gypsum	0.8 0to 0.90
Human Skin	0.98	Water	0.92 ~ 0.96

11.Accessories

① User's manual
② Canvas bag
③ SD card
④ SD card reader
⑤ USB cable