THERMAL IMAGING CAMERA

MODEL NO: **VS912.V2**

Thank you for purchasing a Sealey product. Manufactured to a high standard, this product will, if used according to these instructions, and properly maintained, give you years of trouble free performance.

IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS & CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. KEEP THESE INSTRUCTIONS SAFE FOR FUTURE USE.

Refer to Instruction Manual

1. SAFETY

- ❑ **WARNING!** Ensure that Health & Safety, local authority and general workshop practice regulations are adhered to when using this equipment.
- ✓ Familiarise yourself with the applications, limitations, and potential hazards of the Thermal Camera.
- ✓ Keep the Thermal Camera clean and in good condition.
- ✓ Protect the Thermal Camera from the following:
- ✓ - Thermal shock caused by large and/or rapid ambient temperature change.
  - High temperatures.
- × **DO NOT** get the Thermal Camera wet or use in damp or wet locations or areas where there is condensation.
- × **DO NOT** use the Thermal Camera for any purpose other than that for which it is designed.
- × **DO NOT** allow untrained persons (particularly children) to operate the Thermal Camera.
- × **DO NOT** operate the Thermal Camera when you are tired or under the influence of alcohol, drugs or intoxicating medication.
- ❑ **WARNING!** The warnings, cautions and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood that common sense and caution are factors which cannot be built into this product, but must be applied by the operator.

2. INTRODUCTION

Identify hotspots and cold zones in systems and surfaces. On-screen cursor highlights precise temperature variations. 70mm screen delivers sharp visual feedback. Combines traditional imaging with thermal overlays at adjustable intensities. 26×19° field of view. Focal distance from 3.2mm, adjustable between 200–400mm. Rechargeable 2000mAh battery. Identify faults in heated seats, power windows, and wiring resistance with precision. Locate electrical overheating faults in fixings and connections. Highlight damp areas and potential water ingress. Inspect radiators, plumbing lines and underfloor heating performance. Reveal insulation gaps around seals, frames and windows. Supplied in a storage case.

3. CONTENTS

1) One Type-C USB Cable
2) One adaptor
3) One User's Manual

4. SPECIFICATION

Model No	VS912.V2
Battery Run Time	3hrs
Colour Palette	Rainbow, Iron Oxide Red, Cold Color, Black & White, White & Black
Emissivity	0.1 to 1 Adjustable
Field of Vision	26°×19°
Focal Distance	3.2mm, adjustable between 200–400mm
Image Mix (Camera to Thermal)	0%, 25%, 50%, 75%, 100%
Memory Capacity	Internal Memory 3GB
Nett Weight	0.66kg
Plug Type	3-Pin BS
Power Source	2000mAh
Resolution	Infrared Image 120 x 90 (10800 Pixels)-Camera Image 3 Mega Pixels
Screen Size	70mm
Temperature Range	-20°C to +550°C (-4°F - 1022°F

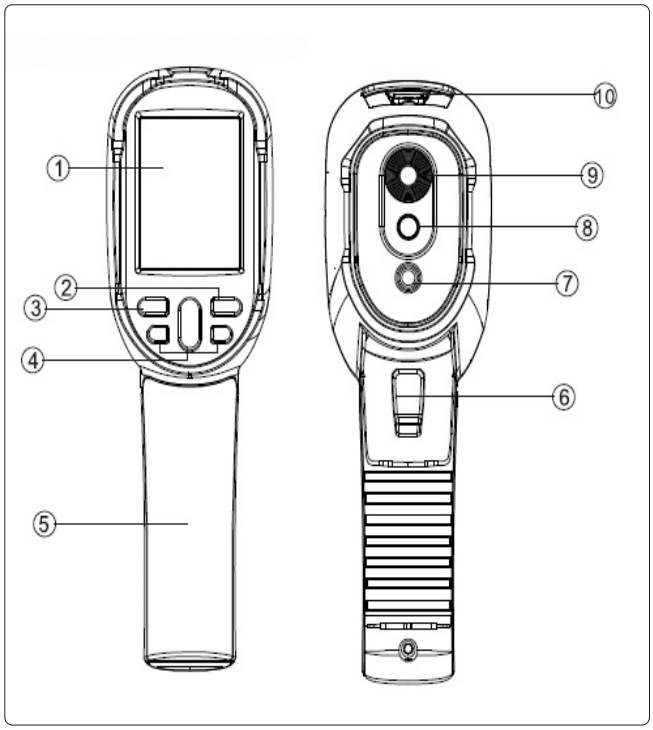
Original Language Version

5. CHARGING

5.1. The product has built-in chargeable 18650 lithium batteries.
5.2. When the battery level is low, the top right of the screen will display. Please charge in time through Type- C interface.
5.3. The top right of the screen will display when charging.
5.4. The icon displays when the battery is fully charged.
5.5. Disconnect the Type-C cable after the device is fully charged to ensure the lithium-ion battery performs at its best.
5.6. Avoid keeping the battery on the charger for longer than 24 hours.
5.7. To prolong battery lifespan, the thermal imaging device should be charged for a minimum of two hours every three months.
× **DO NOT** attempt to charge the battery in extremely cold conditions.

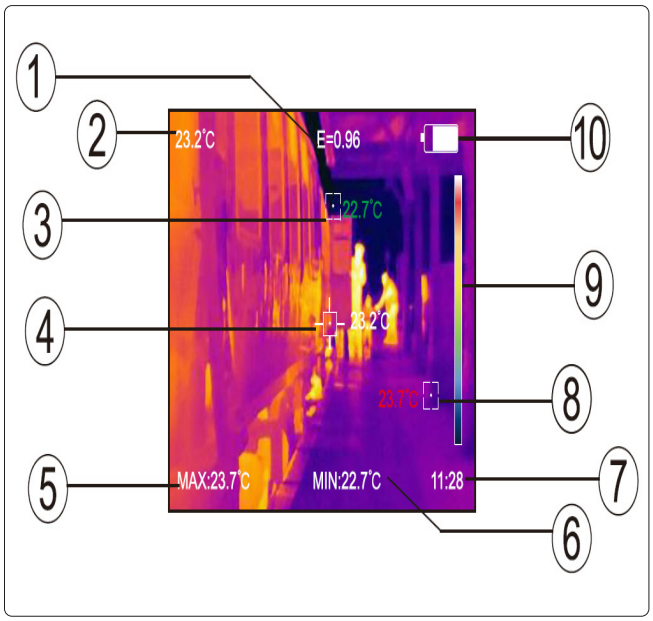
6. OPERATION

6.1. FUNCTIONS



1	TFT display screen
2	Select the key / entry key
3	Power / Menu Key
4	Up/Down/Left/Right Key
5	Battery cover
6	Trigger (Image / video capture key)
7	LED lighting
8	Visible light camera
9	Infrared thermal image sensor
10	Type-C charging point

6.2. DISPLAY



1	Current emissivity
2	Central point temperature
3	The lowest temperature cursor
4	Temperature cursor at central point
5	Maximum value
6	Minimum value
7	Time
8	The highest temperature cursor
9	Color code
10	Battery icon

6.3. **TEMPERATURE RANGE:** the range of measuring temperature.
6.3.1. Color code (9): used to mark the color corresponding to the relative temperature from low to high in the field of vision.
6.3.2. The central point (2) temperature cursor: used to indicate the central position in the screen area. The cursor color displays white.The temperature value is displayed top left corner of the screen.
6.3.3. The highest temperature cursor (8): used to indicate the highest temperature position in the screen area.It will move with the movement of the highest temperature.The cursor displays red.The temperature value is displayed at the bottom of left screen.

6.3.4. The lowest temperature cursor: used to indicate the lowest temperature position in the screen area.It will move with the movement of the lowest temperature.The cursor displays green.The temperature value is displayed at the center of bottom screen.

6.4. **POWER ON/OFF**

6.4.1. Keep pressing MENU for more than 3 seconds to power on or off the meter.

6.5. LCD SCREEN DISPLAY

6.5.1. After turning on the power,the screen shows the thermal imaging status.

6.5.2. **NOTE:** Time adjustment may be required when you move the camera between environments with widely varying ambient temperatures.

6.5.3. LED LIGHTING FUNCTION

6.5.4. Press “Select/Entry” key for 3 seconds to turn the LED lighting on/off.

6.5.5. SWITCHING BETWEEN INFRARED THERMAL IMAGE AND VISIBLE IMAGE

6.5.6. Press ◄ or ► key to switch the degree of fusion between inferred thermal images and visible images (the degree of fusion is 0%, 25%, 50%, 75% and 100%).

6.6. IMAGE CAPTURE

6.6.1. Press the trigger button one time, when the capture is Successful, the screen will display “Save photo”.

6.6.2. If “yes” is selected,please press MENU key or capture key to save the image.

6.6.3. If “no” is selected, press SELECT ENTER key determine not to save the image.

6.7. **VIDEO RECORDING**

6.7.1. In the normal startup and operation interface, long press the Trigger, the screen will display”Start recording?”

6.7.2. If “yes” is selected,please press MENU key or capture key to start the recording.

6.7.3. If “no” is selected, press SELECT ENTER key to cancel recording. After recording, press and hold the capture key again to end the recording.

6.8. THE FUNCTION TO HIDE HIGHEST/LOWEST TEMPERATURE/TIME COLUMN AT THE SCREEN BOTTOM

6.8.1. Under the operation after normal start up, press ▲ key and the screen bottom will display highest/lowest temperature /time column. Press ▲ can also hide it.

6.9. IMAGE OUTPUT

6.9.1. The saved images through capture may be checked and output by connecting with a computer through Type C USB.

6.10. READ IMAGES

6.10.1. Power the meter on, open the USB protective cover, use USB line to connect the USB port and the computer to read the images or save it onto computers.The supported operating system through verification includes: winxp, win7, win 8, win10, Apple system. It is suggested to use the USB cable comes with the meter or USB cable with a high quality.
NOTE: When connecting with a computer, pull off the data line after selecting “pop out device safely” to avoid causing file system damage and other problems. If “unable to save” and other problems occur, you may save to the hard disk.

6.11. **INTRODUCTION OF THE MENU**

6.11.1. Press MENU button the menu bar appears on the left, they are“Image registration ” “Images” “Video” “Color palette” “Eimissivity” “Settings”.

6.12. IMAGE REGISTRATION INTRODUCTION

6.12.1. DESCRIPTION OF IMAGE REGISTRATION

6.12.2. Image registration makes it easier for users to understand the infrared images by using aligned visible images and infrared images. The use of image overlapping can capture the visible image of every infrared image so as to display the temperature distribution in the target region correctly and share with other people more effectively.

6.12.3. APPLICATION OF IMAGE REGISTRATION

6.12.4. Press MENU button to enter the main menu, and select “(Image registration)” in the main menu.

6.12.5. Press SELECT ENTER button to enter the image registration adjustment mode. Press the navigation keys (up, down, left and right buttons) to perform the visible image shift operation.

6.12.6. Press SELECT ENTER button to exit the image blending mode.

6.12.7. NOTE: If there is no operation for more than 6 seconds, the image blending mode will be automatically exited.

6.13. INTRODUCTION TO “IMAGE” SUB-MENU

6.13.1. VIEW IMAGE

6.13.2. Press MENU button to enter the main menu, and select (Image) in the main menu.

6.13.3. As shown in the figure above, then press ► button to enter image list.

6.13.4. Press ▲ or ▼ to navigate to the image.

6.13.5. Press SELECT ENTER key to view image.

6.13.6. When viewing the images, press ◄ key to view the previous image, press ► to view the next image.

6.13.7. Press SELECT ENTER key to return.

6.13.8.

6.13.9. Press MENU key to exit from the menu.

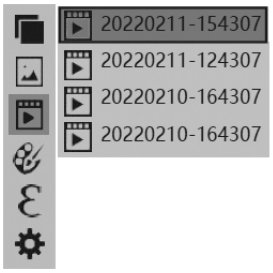
6.14. DELETE IMAGES

6.15. When viewing the images, if pressing ▲ key, the screen will show the prompt of delete photo?. If “yes” is selected at the moment, press MENU key to delete the image. If “no” is selected, press SELECT ENTER key not to delete the image.

6.16. INTRODUCTION TO VIDEO

6.16.1. VIEW VIDEO

6.16.2. Press MENU button to enter the main menu, and select “video” in the main menu.



6.16.3. As shown in the figure, then press ▶ button to enter image list.

6.16.4. Press ▲ or ▼ key in navigation to select the video.

6.16.5. Then press SELECT ENTER key to view video.

6.16.6. When viewing the video, press ◀ key to view the previous video.

6.16.7. Press ▶ to view the next video.

6.16.8. Press SELECT ENTER key to return.

6.16.9. Press MENU key to exit from the menu.

6.16.10. DELETE VIDEO

6.16.11. When viewing the images, if pressing ▲ key, the screen will show the prompt of delete video.

6.16.12. If Yes is selected, press the MENU key to delete the video.

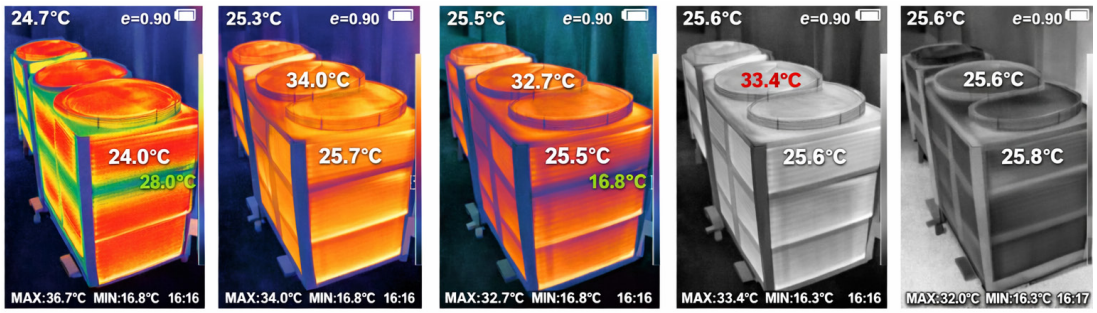
6.16.13. If No is selected, press the SELECT ENTER key to keep the video.

6.17. INTRODUCTION OF COLOR PALETTE

6.17.1. COLOR PALETTE DESCRIPTION

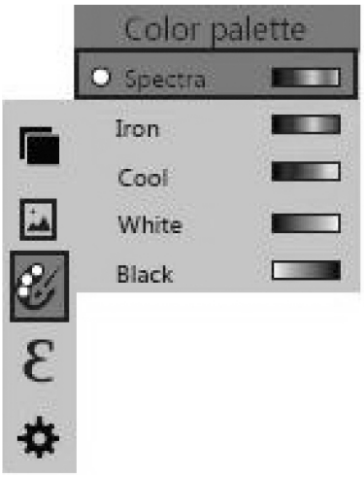
6.17.2. The menu of color can change the false color of infrared thermal image. Some color palette are better suited for specific applications and can be set as needed.

6.17.3. There are 5 color palettes : rainbow, iron red, cool, white hot and black hot. These palettes are most useful for high thermal contrast and provide additional color contrast between high and low temperatures. Suitable selection of color palette displays the details of the target objective better. Rainbow, iron oxide red and cold color palettes focus on display of color. Such color palettes are very suitable for high heat contrast and are used to improve the color contrast between high temperature and low temperature. While the black & white and white & black color palettes provide even linear color.The following is the image of the same object with selection of different color palette.



Rainbow Iron Cold White Black

6.18. CONVERTING A COLOR PALETTE INTO ANOTHER FORMAT



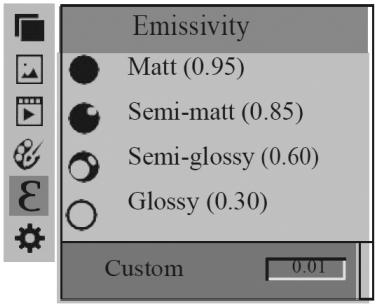
6.18.1. As shown in the figure, press MENU key to enter the main menu and select (color palette) option and press ► button to enter the color palette list. Press ▲ and ▼ keys in navigation to select the color palette. Then press SELECT ENTER key to select the color palette. Press ◄ to return. Press MENU key to exit from the menu.

6.19. EMISSIVITY

6.19.1. The emissivity of the product can be adjusted from 0.01 to 1.00 with the default value of 0.95. Many common objects and materials (such as timber, water, skin and textile fabric) can reflect the heat energy effectively. So it is easy to obtain relatively correct measurement value. The emissivity is usually set as 0.95 when the coarse objects that are easy to give out energy. For semi-matte objects that give out less energy, the emissivity is usually about 0.85 and the emissivity of semi-gloss objects is 0.6. S`hiny objects are divided into materials with low radiation coefficient. The emissivity is usually set as 0.3 at the time of measurement. Correct setting of the value of emissivity is very important for you to carry out the most correct temperature measurement. The surface emissivity will produce giant impact on surface temperature measured by the product. Understanding the surface emissivity will enable you to obtain correct temperature measurement result.

6.20. SETTING THE EMISSIVITY

6.20.1. The product is provided with four types of object measurement modes:
6.20.2. Coarse object (0.95)
6.20.3. Semi-matte object (0.85)
6.20.4. Semi-shiny object (0.60)
6.20.5. Shiny object (0.30)
6.20.6. According to the characteristics of the measured objects, users may set the emissivity value through the “self-define” option (please refer to the table of “emissivity of common materials” section 6.21).
6.20.7. The operating step is as in the following:



6.20.8. As shown in the figure, press MENU key to enter the main menu and select ε (emissivity) option and press ► button to enter the emissivity list. Press ▲ and ▼ keys in navigation key to select the emissivity.
Then press SELECT ENTER key ω determine selection of the emissivity. Press ◄ key again to return.

If you select “self-defined” emissivity, press the SELECT ENTER button to enter the editing state. Press ◄ / ► keys to select the number to be changed, press ▲ ▼ keys to change the value. After the modification is completed, press SELECT ENTER to confirm, then press ◄ to return. Press MENU button to exit the menu.

6.21. THE EMISSIVITY VALUE OF COMMON MATERIALS

6.21.1. Set the corresponding emissivity value before measuring the object.

Substance	Thermal Radiation	Substance	Thermal Radiation
Bitumen	0.90 – 0.98	Black cloth	0.98
Concrete	0.94	Human skin	0.98
Cement	0.96	Foam	0.75 – 0.80
Sand	0.90	Charcoal dust	0.96
Earth	0.92 – 0.96	Paint	0.80 – 0.95
Water	0.92 – 0.96	Matte paint	0.97
Ice	0.96 – 0.98	Black rubber	0.94
Snow	0.83	Plastic	0.85 – 0.95
Glass	0.90 – 0.95	Timber	0.90
Ceramics	0.90 – 0.94	Paper	0.70 – 0.94
Marble	0.94	Chromium hemioxide	0.81
Gypsum	0.80 – 0.90	Copper oxide	0.78
Mortar	0.89 – 0.91	Ferric oxide	0.78 – 0.82
Brick	0.93 – 0.96	Textile	0.90

6.22. SETTINGS SUBMENU

6.22.1. Setting option in the main (MENU), select the ⚙ in the main menu, then press ▶ button to enter the “setting” sub-menu.

Settings	
Auto Shutdown	No 5 min 20 min
Intensity	Low Medium High
Language	English Chinese Italian German Russian Japanese
℃ Unit	Celsius Fahrenheit
Temperature Range	Low: -20℃ to 120℃ High: 120℃ to 550℃
Time Format	24-hour 12-hour
Set Time	Year: [YYYY] Month: [MM] Day: [DD] Hour: [HH] Minute: [MM] Second: [SS]
Spot	On Off

6.23. AUTO SHUTDOWN SETTING

6.23.1. After entering the “Settings” sub-menu, select ⏻ (automatic shutdown), press navigation ▶ button enters the auto power off setting. Can be set not to automatically shut down or 5 minutes or 20 minutes to turn off automatically. The instrument does not automatically when off is selected.

6.24. BRIGHTNESS SETTING

6.24.1. After selecting ☀ (brightness), press the ▶ button to enter the brightness setting. Press ▲ ▼ to set low or medium or bright.

6.25. LANGUAGE SETTINGS

6.25.1. After selecting (language), press the button in the navigation key to enter the language setting. Press to set English, Chinese, Italian, German,Russian, Japanese.

6.26. UNIT SETTING

6.26.1. After selecting º C (Unit), press the button in the navigation key to enter the unit setting. Press to set Celsius and Farenheit.

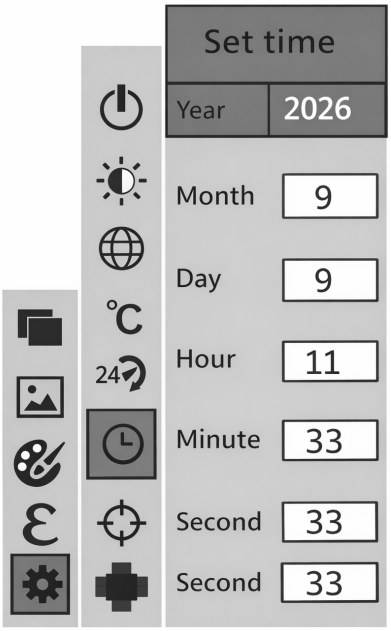
6.27. TEMPERATURE RANGE SETTING

6.27.1. After selecting “Temperature Range”, press the key in the navigation key to enter the temperature range setting.

6.27.2. It can be set to low temperature (- 20 ºC to 120 ºC) or high temperature (120 ºC to 550 ºC).

6.28. TIME FORMAT SETTING

6.28.1. After selecting (Time Format), press the button in the navigation key to enter the time format setting.



6.28.2. Press to set 24 hours or 12 hours (AM/PM). Press to confirm, then press to return. Press button to exit the menu.

6.29. SET TIME

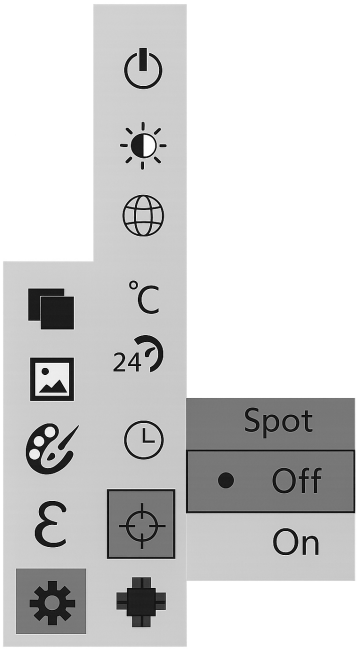
6.29.1. As shown in the figure, after selecting (set time), press in the navigation key to enter the setting time. Press “ ”/“ ” to select year/ month/day/hour/minute. After selecting, press “ ” key to enter the edit state.

6.29.2. Press and keys to select the figure to be changed. Press / key to change the value. After completing the change, press to enter. After the time setting is completed, press key to return. Press exit from the menu.

6.30. ENABLE / DISABLE OF THE HIGHEST AND LOWEST TEMPERATURE CURSOR

6.30.1. As shown in the figure, after selecting (cold hotspot), press the button in the navigation key to enter the cold hotspot setting.

6.30.2. Press / key to select “on” or “off” the option.



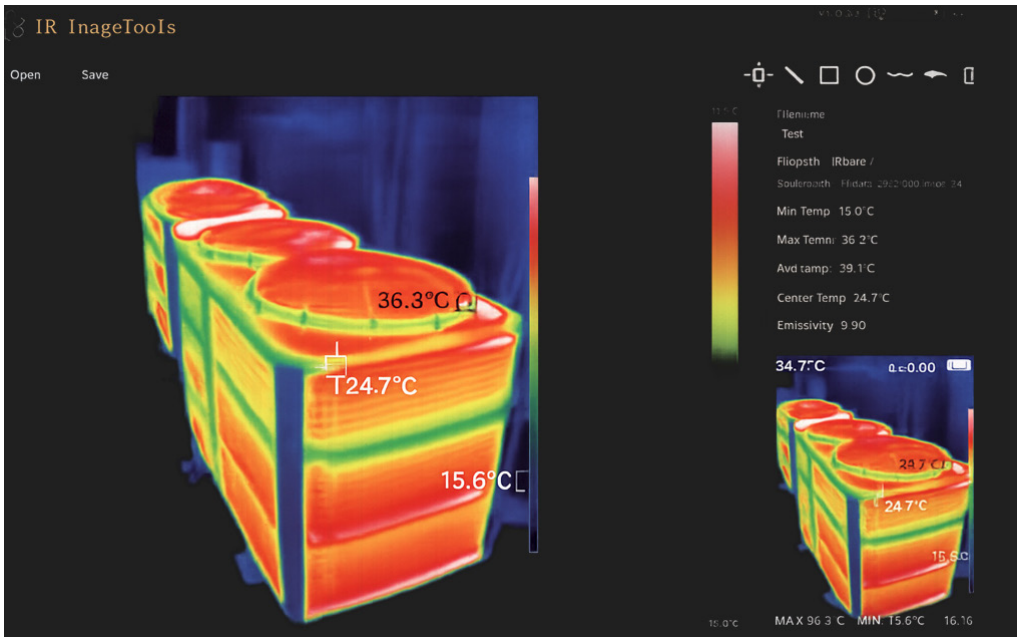
Then press SELECT ENTER key to determine selection. After the setting is completed, press ◀ key to return. Press MENU key to exit from the menu.

6.31. THERMAL IMAGING SOFTWARE OPERATION GUIDE

6.31.1. SOFTWARE INSTALLATION AND OPERATION

6.31.2. Connect the product with a USB cable, and then connect the computer. Open the removable disk in the computer, locate the "Installation PACKAGE" folder, and open it. Click to install the software.

6.31.3. After installation, open and enter the image analysis software interface, click "Open File", and select the image to analyze, as shown in the figure:



6.32. INTERFACE SCOPE AND OVERVIEW

6.32.1. Select the language in the upper right corner of the interface, you can select Chinese, English, and switch between two languages.

6.32.2. The right side displays the fusion rate, color palette, temperature unit, and image information.

6.32.3. **Fusion rate:** Moving the slider can achieve the fusion of visible light images and infrared thermal images. The left end is a visible light image, and the right end is an infrared thermal image.

6.32.4. **Palette:** In the palette, click the ▼ icon to select five color palettes: Rainbow, Iron Red, Cool, White Heat, Black Heat.

6.32.5. Temperature unit: In the temperature unit, click the ▼ icon to select three temperature units: Celsius, Fahrenheit, and Kelvin.

6.32.6. **Image information:** display file name, emissivity, capture time, maximum temperature, minimum temperature, center point temperature, and raw thermal imaging map.

Click "Open File" in the upper left corner of the interface to open the thermal imaging image to be read. When the operation is completed and the image needs to be saved, click "Save" (Note: Modifying saved images cannot be opened using this software).

Icon, take the point temperature on the thermal imaging map.

Icon, straight lines select the maximum temperature and minimum temperature.

Icon, box select the temperature imaging map to take the maximum temperature and the minimum temperature.

Icon, circle selection heat imaging map takes the maximum temperature and the minimum temperature.

Icon, take the maximum temperature and minimum temperature.

Return icon. When the operation fails, click the icon to return to the previous operation.

Delete icon, select multiple temperature values, and cancel all, click Delete.

7. TROUBLESHOOTING

If you encounter with any problem when using the thermal image device, please use the following table for repair. If the problems are are not solved, please cut off the power supply and contact your Sealey stockist.

Failure behaviour	Failure cause	Solution
The thermal imaging device fails to power on.	The battery is not charged.	Charge battery.
	The battery has no remaining charge.	
The thermal imaging Device powers off Automatically	The battery is fully discharged.	
	The time set for Automatic power Off is due.	Restart or change The time for auto Power off after Restarting.

8. END OF LIFE

When the product is no longer in service, it should be safely dismantled. Components must be carefully removed and sorted for recycling, reuse, or disposal in accordance with safety and environmental regulations, ensuring that all parts are handled responsibly and any hazardous materials are managed appropriately.

BATTERY REMOVAL
Under the Waste Batteries and Accumulators Regulations 2009, Jack Sealey Ltd are required to inform potential purchasers of products containing batteries (as defined within these regulations), that they are registered with Valpak's registered compliance scheme. Jack Sealey Ltd's Batteries Producer Registration Number (BPRN) is BPRN00705.

WEEE REGULATIONS
Dispose of this product at the end of its working life in compliance with the EU Directive on Waste Electrical and Electronic Equipment (WEEE). When the product is no longer required, it must be disposed of in an environmentally protective way. Contact your local solid waste authority for recycling information.

ENVIRONMENT PROTECTION
Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. When the product becomes completely unserviceable and requires disposal, drain any fluids (if applicable) into approved containers and dispose of the product and fluids according to local regulations.

BATTERY REMOVAL
Under the Waste Batteries and Accumulators Regulations 2009, Jack Sealey Ltd are required to inform potential purchasers of products containing batteries (as defined within these regulations), that they are registered with Valpak's registered compliance scheme. Jack Sealey Ltd Batteries Producer Registration Number (BPRN) is BPRN00705.

Note: It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.
Important: No Liability is accepted for incorrect use of this product.
Warranty: Guarantee is 12 months from purchase date, proof of which is required for any claim.

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