**Thermal Imaging Camera
220 x 160**

800201
Instruction Manual

SPER
SCIENTIFIC

Environmental Measurement Instruments

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INTRODUCTION

This Sper Scientific Thermal Imaging Camera (model 800201) combines a high precision thermal image with a standard photo for maximum clarity. With the press of a button, the thermal image can be blended in increments of 25% on a beautiful 3.5" full color display. Five available thermal color palettes and an impressive 35,200 pixel resolution ensure the images are crystal clear and can easily be placed in reports and presentations. The Minimum, Maximum, and Spot values update in real-time, allowing you to scan an area for changes without the need to switch modes. A simple intuitive keypad allows you to begin using the camera immediately, without overly complicated keystrokes.

FEATURES

- Separate IR and Visible light cameras
- Attached flip-up lens cover for protection
- User-defined crosshair pinpointing
- Minimum and Maximum values
- Adjustable emissivity
- 0.5m focal length
- Rechargeable Lithium ion battery
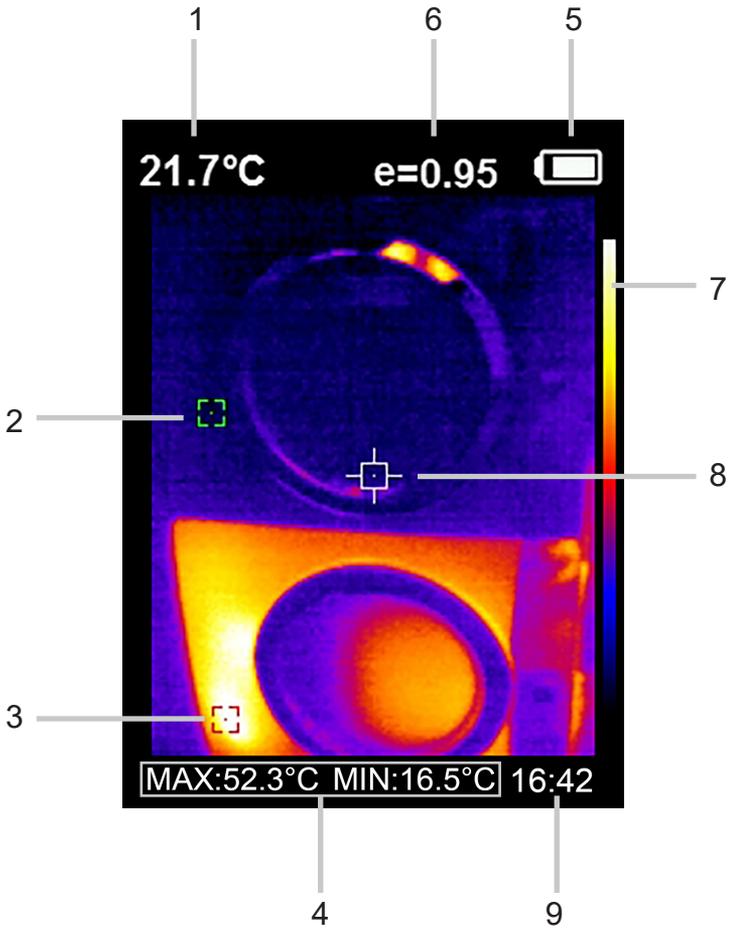
MATERIALS SUPPLIED

- Thermal Imaging Camera
- Carrying Case with Strap
- Lithium ion battery
- Micro USB cable
- Instruction manual

FRONT PANEL DESCRIPTION
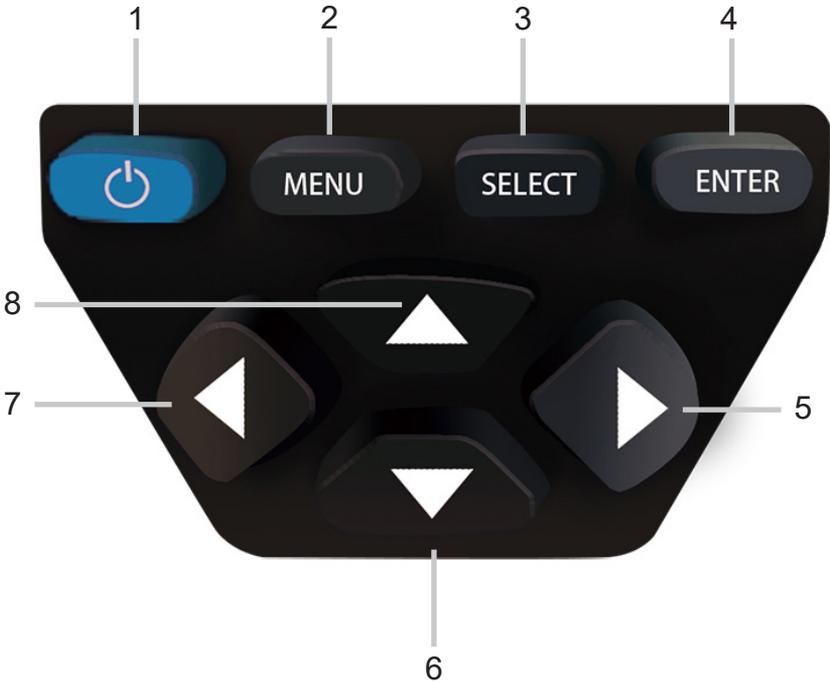
1. POWER Button
2. MENU Button
3. SELECT Button
4. ENTER Button
5. RIGHT Arrow/ Visual Image Toggle
6. DOWN Arrow
7. LEFT Arrow
8. UP Arrow/ MIN/MAX Toggle

LCD DISPLAY SETUP

1. Current Temperature of Crosshair
2. Minimum Temperature Location (Green Square)
3. Maximum Temperature Location (Red Square)
4. Current Maximum and Minimum Values
5. Battery Level Indicator
6. Emissivity Indicator
7. Color Palette Indicator
8. Crosshair Location
9. Time

Battery Installation

This camera comes with a Lithium ion battery already installed inside the handle. The battery does not need to be removed for charging.

TO CHARGE THE BATTERY

1. Flip open the door on the Left Hand side of the camera to expose the Micro USB port.
2. Plug in the included micro USB Cable, ensuring the cable seats fully.
3. Attach the USB end of the cord to a computer or any USB wall charger.
4. Power cubes typically used to charge cell phones are safe to use with this camera.
5. The charging icon will appear in the upper right corner of the screen.

TO REPLACE THE BATTERY

Note…
Before replacing the battery, turn the camera **off**.

1. Ensure the replacement battery is a direct replacement from Sper Scientific. This battery is custom made and substitutions can damage the camera.
2. Hold the camera firmly in your palm with the trigger facing up and away from your body.
3. Using steady pressure, press the rubber portion of the handle straight down. The rubber portion is the removable battery cover.
4. While pressing down, slide the battery cover away from the handle. The cover will click once.
5. Push the battery cover again and it will easily come off with a second click.

6. Remove the battery body and gently pull the four-wire plug from the circuit board.

7. Plug the new battery into the pins of the exposed circuit board. Ensure the black wires align with the negative (-) pins and the red wires align with the positive (+) pins.

8. Slide the rubber piece back onto the handle until it clicks twice.

9. Charge the camera for a minimum of two hours.

Power On and Off

1. Press and hold **POWER** to turn the camera **on**.

2. The camera may take up to 5 seconds to turn on. This is normal.

3. Press and hold **POWER** until "Power off" displays on the screen. The camera will turn off after a five second count-down.

SETTING THE DATE AND TIME

1. Turn the camera **on**.

2. Press **MENU**.

3. Press the **DOWN** arrow to highlight **Settings**.

4. Press the **RIGHT** arrow to expand **Settings**.

5. Press **DOWN** to highlight **Time format**.

6. Press the **RIGHT** arrow to expand the **Time format**.

7. Use the **UP** and **DOWN** arrows to highlight your preferred time format. The camera supports military (24 hr) or AM/PM.

8. Press **SELECT** to confirm your choice.

9. Press **LEFT** to exit to the previous screen.

10. Press **DOWN** to highlight **Set Time**.

11. Press the **RIGHT** arrow to expand **Set Time**.

12. Press **SELECT** in the first box to change the **Year**.

13. Use the **ARROWs** to change the **Year**.

14. Press **ENTER** to accept the **Year**.

15. Use the **DOWN** arrow to scroll to the **Month**.

16. Press **SELECT** to expand **Month**.

17. Use the **ARROWS** to change the **Month**.

18. Press **ENTER** to accept the **Month**.

19. **Repeat** steps 15 - 18 for the Day, Hour, Minute, and Seconds.

20. The camera will return to the previous settings mode after the Seconds have been entered.

21. Press **MENU** to return to normal Camera Mode.

Note…

The Date and Time must be entered in military format, regardless of the time format setting you select (For example, 6pm must be entered as 18:00:00). Once in measuring mode, AM/PM will populate if it was the time format you selected.

SETTING THE TEMPERATURE UNITS

1. Turn the camera **on**.

2. Press **MENU**.

3. Press the **DOWN** arrow to highlight **Settings**.

4. Press the **RIGHT** arrow to expand **Settings**.

5. Press **DOWN** to highlight "**°C Unit**."

6. Press **RIGHT** arrow to expand **Unit**.

7. Use **UP** and **DOWN** to highlight your preferred choice.

8. Press **SELECT** to confirm your choice.

9. Press **ENTER** to exit to the previous screen.

10. Press **MENU** to exit to normal Camera Mode.

SETTING THE EMISSIVITY

1. Turn the camera **on**.
2. Press **MENU**.
3. Press the **DOWN** arrow to highlight **Emissivity**.
4. Press the **RIGHT** arrow to expand **Emissivity**.
5. Press the **DOWN** arrow to highlight your choice.
6. Press **ENTER** to confirm your choice or **SELECT** to enter a custom value.
7. The camera will return to the previous settings page.
8. Press **MENU** to return to normal Camera Mode.

CHOOSING THE COLOR PALETTE

1. Turn the camera **on**.
2. Press **MENU**.
3. Press the **DOWN** arrow to highlight **Color Palett**e.
4. Press the **RIGHT** arrow to expand **Color Palette**.
5. Use the **UP** and **DOWN** arrows to highlight your choice.
6. Press **ENTER** to confirm your choice.
7. The camera will return to the previous settings page.
8. Press **MENU** to return to normal Camera Mode.

MEASUREMENT PROCEDURES

Before using your Thermal Imaging Camera, there are some important things to be aware of. The following is true for ALL Thermal Imaging Cameras:

• Thermal Imaging Cameras provide only the surface temperature. While the thermal image may appear as if it shows objects behind others, such as through a wall. However, it is not measuring the actual temperature of those objects. The image reveals how the surface you're viewing is reacting to the heat or cold from the object that is behind it.

• The Thermal Imaging Camera will always provide temperature data for the entire image on the screen. It cannot differentiate between the objects within the image. Therefore, you must pay attention to where the square markers are within the image at all times. For example, you may want to be measuring the temperature of a baseboard, but if someone's coffee cup is in the picture, the camera will incorporate that data.

• Always be aware of your surroundings. When scanning with a Thermal Imaging Camera for possible temperature changes, it can be very easy to lose perspective on surrounding areas which could be hazardous. Make sure that when using the camera while walking, you also watch where you're going to avoid trip hazards or other threats.

TO BLEND VISUAL AND THERMAL IMAGES

1. Turn the Camera **ON** and Flip open the **Lens cap**.

2. Point the camera at the area of interest to be measured.

3. Note that the temperature of the square containing the crosshairs is the temperature displayed in the upper left-hand corner of the screen. This crosshair will always appear in the center of the screen. To measure a specific object's temperature, make sure the crosshair is on top of that object.

4. Press **LEFT** once to obtain a 100% visual image. The temperatures will still display accurately in 100% visual mode. It is only the image that appears as a photograph. The thermal readings are still functioning.

5. Press the **RIGHT** arrow to begin blending the thermal image with the visual.

6. Continue to press **RIGHT** up to 4 more times to continue blending the visual image with the thermal. The final image will be 100% Thermal.

TO VIEW THE MINIMUM AND MAXIMUM VALUES

1. Press the **UP** arrow to display the Minimum and Maximum values within the image.

2. Note that the green square is the Minimum value while the red square is the Maximum value.

3. Press the **UP** arrow again to hide the Minimum and Maximum values within the image.

Note…
The Min/Max feature is not a memory mode. While it actively updates the Minimum and Maximum as you scan an area, it will not remember the previous image. In other words, it is the Minimum and Maximum of an image, not a timeframe.

TO SAVE IMAGES

1. In normal Camera Mode, press the **TRIGGER**.

2. A box appears and asks if you want to save the image.

3. Press the **TRIGGER** again to save the image or **SELECT** to delete the image.

4. If you choose to delete the image, "no" will briefly highlight in the box before it disappears.

TO VIEW IMAGES ON THE LCD

1. In normal Camera Mode, press **MENU**.

2. Use the **UP** and **DOWN** arrows to select **Images**.

3. Press the **RIGHT** arrow to expand **Images**.

4. Use the **UP** and **DOWN** arrows to choose the image you want to view.

5. Press **SELECT** to open the chosen image on the screen.

6. Once an image is open, use the **LEFT** and **RIGHT** arrows to scroll through all available images in the camera's memory.

TO DELETE IMAGES DIRECTLY FROM THE CAMERA

1. Open the image on the LCD.

2. Press the **UP** arrow. "Delete Photo" appears on the screen.

3. Press **MENU** to delete the image or **SELECT** to cancel the image deletion.

TO DOWNLOAD IMAGES

1. Flip open the door on the left-hand side of the camera to expose the micro USB port.

2. Plug in the included micro USB Cable, ensuring the cable seats fully.

3. Attach the USB end of the cord to a computer.

4. The computer will automatically recognize the camera as a storage device.

5. Click "open folder to view files."

6. You can now rename, save, delete, copy, and share all images within the camera.

CARE AND MAINTENANCE

- Store the camera in its protective case with the lens cover closed to prevent debris from entering the lens area.

- Use only the recommended battery when replacement is needed.

- Periodically wipe the camera with a dry, lint-free antistatic cloth.

- Do not use abrasives, solvents or cleaning agents containing carbon, alcohol or benzenes on the meter.

- Repairs or services not covered in this manual should be performed by qualified personnel only. Please contact Sper Scientific to speak with a technician.

SPECIFICATIONS

Infrared Image Resolution	220 x 160
Visible Image Resolution	35,200
Thermal Sensitivity	±0.07ºC (1.0ºF)
Temperature Accuracy	±2.5°C (4ºF) or ±2.5%, whichever is greater
Emissivity Range	0.1 – 0.99
Available Color Palettes	Spectral rainbow, iron oxide, cool color, black and white, white and black
Capture Frequency	8Hz
Focal Length	0.5 meters
Temperature Range	-20°C – 300°C (-4°F – 572°F)
Internal Storage Capacity	8G
Available File Formats	JPG
Battery Type	Lithium ion 18650
Screen Size/Type	3.5 inch Thin Film Transistor (TFT)
Operating Temperature and Humidity	0-40°C (32 - 104ºF) Relative humidity: <85% RH

WARRANTY

Sper Scientific warrants this product against defects in materials and workmanship for a period of **two (2) year** from the date of purchase, and agrees to repair or replace any defective unit without charge. If your model has since been discontinued, an equivalent Sper Scientific product will be substituted if available. This warranty does not cover batteries, battery leakage, or damage resulting from accident, tampering, misuse, or abuse of the product. Opening the meter to expose its electronics will void the warranty. To obtain warranty service, ship the unit postage prepaid to:

SPER SCIENTIFIC LTD.
8281 E. Evans Rd., Suite #103
Scottsdale, AZ 85260
(480) 948-4448

The defective unit must be accompanied by a description of the problem and your return address. Register your product online at www.sperwarranty.com within 10 days of purchase.

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