R2150

REED INSTRUMENTS

Thermal Imaging Camera



WARRANTY 1 YEAR WARRANTY

Instruction Manual

REED Instruments
1-877-849-2127 | info@reedinstruments.com | www.reedinstruments.com

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Introduction

Thank you for purchasing your REED R2150 Thermal Imaging Camera. Please read the following instructions carefully before using your instrument. By following the steps outlined in this manual your meter will provide years of reliable service.

Product Quality

This product has been manufactured in an ISO9001 facility and has been calibrated during the manufacturing process to meet stated product specifications. If a certificate of calibration is required please contact the nearest authorized REED distributor or authorized Service Center. Please note an additional fee for this service will apply.

Safety



- Never attempt to repair or modify your instrument. Dismantling your product may cause damage that will not be covered under the manufacturer's warranty. Servicing should only be provided by an authorized service center.
- Do not point the thermal imager (with or without the lens cover) at intensive energy sources as this can damage the thermal imager.
- Do not use the thermal imager in a temperature higher than 122°F (50°C).
- Always charge the battery between 32 to 122°F (0 to 50°C).
- Clean the case with a damp cloth and a diluted soap solution.
- Do not use abrasives, isopropyl alcohol, or solvents to clean the instrument, lens or screen.
- Do not clean the infrared lens too vigorously, this can damage the anti-reflective coating.
- Store the thermal imager in cool and dry environment.
- Please use the correct emissivity to obtain accurate temperature measurements.

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- To ensure accuracy, please let the instrument warm up for 10 minutes before taking a measurement if it has not been used for a long time.
- When being charged, the internal temperature of the product will rise, which will lead to inaccurate temperature measurement, it is not recommended to take measurements during or right after charging the instrument.

Features

- 120 x 90 infrared resolution (10,800 pixels)
- 240 x 180 super resolution
- 2.4" color TFT display
- Built-in laser and LED flashlight
- Choice of 7 color palettes
- High and low-temperature alarm indicators
- IP54 and 6.5' (2m) drop tested
- Rechargeable Li-ion battery
- Tripod mountable for continuous long-term monitoring
- Low battery indication and auto shut-off

Included

- Thermal Imaging Camera
- USB Cable
- Lanyard

Specifications

Imaging and Optical Specifications

Field of View (FOV):	50 x 38°
Focal Length:	1.64' (50cm)
Spatial Resolution:	(IFOV) 7.5mrad
Thermal Sensitivity (NETD):	<0.06°C (60mK)
Image Capture Frequency:	25Hz
Focus:	Fixed

Measurement

Temperature Range:	-4 to 1022°F (-20 to 550°C)
Accuracy:	±3.6°F (2°C) or ±2% of reading
Resolution:	0.1°F/°C

Detector Specifications

Detector Type:	Uncooled microbolometer, Focal plane array (UFPA)
Spectral Range:	8 to 14µm
IR Resolution:	120 x 90 (10,800 pixels)
Super Resolution:	240 x 180 (43,200 pixels)

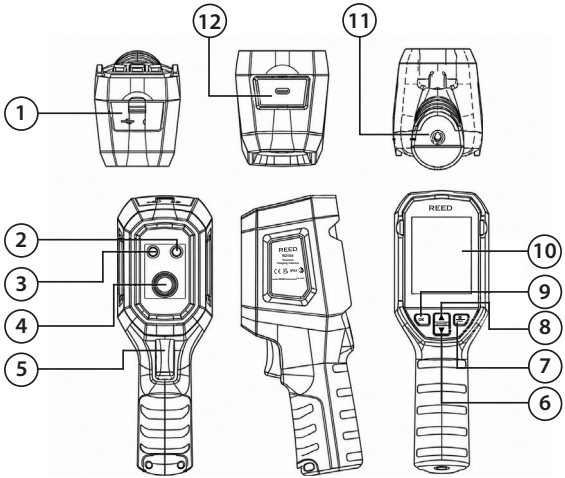
Image Presentation and Measurement Analysis

Display:	2.4" color TFT
Color Palettes:	7 (Ironbow/Rainbow/Rainbow(HC)/Lava White-Hot/Black-Hot/Red-Hot)
Image Modes:	Thermal
On-Screen Temperature Markers:	3 (Center/High Temp/Low Temp)
Image Measurement Tools:	With Software
Emissivity:	Adjustable (0.01 to 0.99)
Temperature Alarm Indicators:	High/Low (user adjustable)

General Specifications:

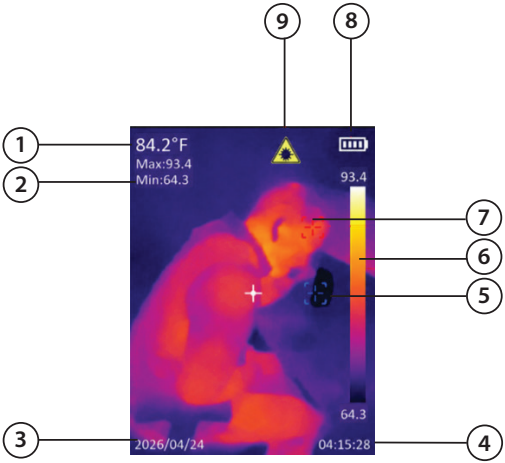
Image Capture Mode(s):	Single
Display Resolution:	320 x 240 pixels
Image Format:	JPG
LED Flashlight:	Yes
Memory:	Internal (approx. 2300 images)
Auto Shut-off:	Yes (user adjustable 5/10/30 minutes)
Tripod Mountable:	Yes
Low Battery Indicator:	Yes
Power Supply:	3.7V/2600mAh rechargeable Li-ion battery
Battery Life:	Approximately 13 hours
Charge System:	In camera
Charge Time:	Approx. 2.5 hours
PC Connectivity:	USB Cable (Type-C)
Software:	Yes (download from website)
Software Functionality:	Image Analysis/Report Generation
Software OS Compatability:	Windows 7/8/10/11
Supported Languages:	English, French, German, Spanish and Italian
Product Certifications:	CE, IP54, 6.5' (2m) drop test
Operating Temperature:	32 to 122°F (0 to 50°C)
Storage Temperature:	-4 to 140°F (-20 to 60°C)
Operating/Storage Humidity Range:	10 to 95%
Maximum Operating Altitude:	6561' (2000m)
Dimensions:	7.8 x 2.8 x 2.4" (197 x 72 x 60mm)
Weight:	11oz (313g)

Instrument Description



1. Interface Protective Cover
2. Laser
3. LED Light
4. Infrared camera lens
5. Trigger
6. Down Button
7. Power/Back Button
8. Up Button
9. OK Button
10. LCD Display
11. Tripod Mounting Hole
12. USB-C Port

Display Description



1. Center Spot Temperature
2. Maximum/Minimum Spot Temperatures
3. Date Stamp
4. Time Stamp
5. Minimum Spot Indicator
6. Temperature Bar
7. Maximum Spot Indicator
8. Battery Status Indicator
9. Laser Enabled Indicator

Emissivity

This thermal imager measures infrared energy from the surface of the object and uses this data to calculate an estimated temperature value. Surfaces that are good at radiating energy (high emissivity), the emissivity factor is ≥0.90. Shiny surfaces or unpainted metals are not good at radiating energy (low emissivity) have an emissivity of <0.6. To more accurately measure materials with a low emissivity, an emissivity correction is necessary. Emissivity is set directly as a value or from a list of emissivity values for some common materials.
The following table gives typical emissivity of some materials:

Material	Emissivity
Asphalt	0.95
Concrete	0.95
Hard plaster	0.90
Wood (natural)	0.93
Lime Stone	0.98
Ballast chipping	0.95
Paper (every color)	0.95
Plastics non film	0.95
Tissue (fabric)	0.95
Sand	0.90
Glass wool	0.90
Melted asphalt	0.93
Screed/pavement	0.93
Foamed polystyrene	0.94

Material	Emissivity
Drywall	0.95
Render	0.94
Smoothing cement	0.90
Lacquer	0.92
Latex paint	0.97
Wallpaper	0.93
Tilling	0.93
Parquet floor	0.90
Laminate	0.90
PVC-Floor	0.92
Brick	0.93
Cliff	0.97
Roofing cardboard	0.93
Stucco	0.91

Software Installation

Visit www.REEDInstruments.com/software to download the R2150 software.

Full specifications and Operating System compatibility can be found on the product page at www.REEDInstruments.com.

If you have specific questions related to your application and/or questions related to software setup and functionality please contact the nearest authorized distributor or Customer Service at info@reedinstruments.com or 1-877-849-2127.

USB Communication and PC Analysis Software

1. Download and install the PC software from the REED Instruments website.
2. Connect the device to a computer using the USB data cable.
3. Open the PC software to view images and perform data analysis.
4. Refer to the software user Manual for detailed operating instructions.
5. To disconnect the device, use the operating system's "Safely Remove Hardware" function before unplugging the USB cable.

Warning: Do not disconnect the USB cable during active data transfer. This may result in data loss or file corruption.

Operating Instructions

Power ON/OFF

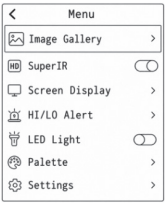
To power on the thermal imager, press and hold the button for approximately 3 seconds. The display will activate and the device will begin initializing.
To turn the device off, press and hold the button.

Power Save Mode with Quick Press

To save battery life, press the button to enter sleep mode. Press it again to wake the meter.

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Main Menu



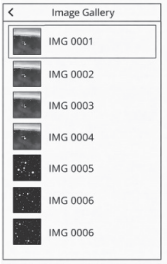
1. Press the OK button to enter the main menu.
2. Use the ▲/▼ buttons to scroll through the available menu options.
3. Follow the instructions below to adjust each parameter.

Saving, Viewing & Deleting Images (Image Gallery)

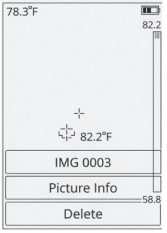
While in normal operation, multiple images can be saved to internal memory.

1. To save an image, pull the trigger and use the OK and ⏻ buttons to discard (X) or save the image.

Note: While in Auto Save Mode, the image will automatically be saved to internal memory.

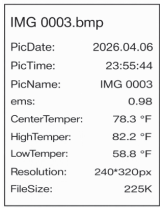


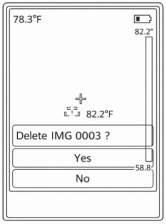
2. To display a saved image, press the OK button when "Image Gallery" is highlighted while in main menu.
3. Use the ▲/▼ button to scroll through the saved images.
4. Press the OK button to open the selected image in full screen view.
5. Press the OK button again to enter the saved picture toolbar.
6. Use the ▲/▼ button to select between "Picture Info" to view all relevant information on the saved image or "Delete" to erase the saved image.
7. Press the OK button to confirm the selection.



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8. If "Picture Info" is selected, the display will appear as shown.
9. Press the BACK button to return to the saved image screen.
10. If "Delete" is selected, use the ▲/▼ buttons to select between "Yes" or "No".
11. Press the OK button to confirm the selection.
12. Press the BACK button to exit the "Image Gallery" function and return to the main menu.





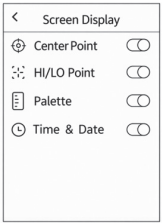
Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

Turning the SuperIR ON/OFF

1. Press the OK button when "SuperIR" is highlighted to toggle the setting on or off.
2. Press the BACK button to exit the main menu and resume normal operation.

Enabling Center, High, Low Temperature Tracking and Date/Time Display (Screen Display)

1. Press the OK button when "Screen Display" is highlighted.
2. Use the ▲/▼ buttons to select the desired parameter:
3. Press the OK button to enable or disable the selected parameter.
4. Repeat steps 3 and 4 as required for additional parameters.
5. Press the BACK button to exit the "Screen Display" function and return to the main menu.



Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

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Setting the High/Low Alarm Values (HI/LO Alert)

1. Press the OK button when "HI/LO Alert" is highlighted.
2. Use the △▽ buttons to highlight the desired option:
3. To enable or disable temperature alarms, press the OK button when Temp Alert is highlighted.
4. To enable or disable the audible alarm, press the OK button when Buzzer is highlighted.
5. To adjust the high temperature alarm value:
   a. Highlight HI Alert and press the OK button.
   b. Use the △▽ buttons to adjust the temperature value.
   c. Press the OK button to confirm the selection.
6. To adjust the low temperature alarm value:
   a. Highlight LO Alert and press the OK button.
   b. Use the △▽ buttons to adjust the temperature value.
   c. Press the OK button to confirm the selection.
7. Press the BACK button to exit the "HI/LO Alert" function and return to the main menu.



Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

Note: When enabled, visual alarm indicators will appear on the display when the configured thresholds are exceeded. If the Buzzer is enabled, an audible alert will also be triggered.

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Turning the LED Flashlight ON/OFF (LED light)

1. Press the OK button when "LED Light" is highlighted to toggle the setting on or off.
2. Press the BACK button to exit the main menu and resume normal operation.

Color Palette Selection (Palette)

1. Press the OK button when "Palette" is highlighted.
2. Use the ▲/▼ buttons to scroll through the list of color palettes.

- Rainbow
- Red Hot
- Lava
- Rainbow HC
- Black Hot
- White Hot
- Ironbow

3. Press the OK button to confirm the selection and return to the main menu.

Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

Taking Measurements

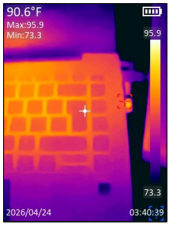
Basic Measurement Procedure

1. Press and hold the BACK button for approximately 3 seconds to turn on the device.
2. Allow the device to stabilize for several minutes if it has not been used recently.
3. Aim the Infrared Camera Lens at the target surface.
4. Ensure the target fills the measurement area on the display.
5. Pull the trigger to capture and display the thermal image.

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6. Observe the temperature readings shown on the display:

- Center spot temperature
- Maximum temperature
- Minimum temperature



The displayed values represent the surface temperature of the measured area.

Measurement Best Practices

- Ensure the target fully occupies the measurement area for improved accuracy
- Avoid measuring reflective or polished surfaces without emissivity adjustment
- Maintain a steady position during measurement
- Do not take measurements immediately after charging
- Allow the device to acclimate to ambient conditions before use

Warning: Measurement accuracy may be affected by ambient temperature, air humidity, airborne particles such as dust or steam, and reflections from surrounding objects. Stable environmental conditions will improve measurement reliability.

Understanding Measurement Accuracy

1. Temperature accuracy depends on several factors:

- Emissivity of the target surface
- Distance between the device and the target
- Ambient temperature and environmental conditions
- Reflected temperature from surrounding objects

2. Low emissivity surfaces (such as polished metals) may produce inaccurate readings unless corrected.

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Emissivity Considerations

1. High emissivity materials (≥0.90) provide more accurate readings.
2. Low emissivity materials (<0.60), such as shiny metals, may reflect infrared energy and require emissivity adjustment.
3. Refer to the emissivity table for typical material values.

Distance and Field of View (FOV)

1. The measurement area increases as the distance from the target increases.
2. To ensure accurate readings:

- Position the device close enough so the target fills the measurement area
- Avoid measuring small objects from long distances

Advanced Settings Menu

1. Press the OK button when "Settings" is highlighted to enter the sub-menu.
2. Use the △ ▽ buttons to toggle between the features listed.
3. Once the appropriate parameter has been selected follow the associated instructions below.



Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

Setting the Language (Language)

1. Press the OK button when "Language" is highlighted.
2. Use the △ ▽ buttons to scroll through the list of languages.
3. Press the OK button to confirm the selection.
4. Press the ⏻ button to exit the "Language" function and return to advanced settings.

Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

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Switching the Unit of Measure (°F/°C) (Temp Unit)

1. Press the OK button when "Temp Unit" is highlighted.
2. Use the △/▽ buttons to select between °C or °F.
3. Press the OK button to confirm the selection.
4. Press the BACK button to exit the "Temp Unit" function and return to advanced settings.

Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

Adjusting Emissivity and Temperature Compensation (Parameters)

1. Press the OK button when "Parameters" is highlighted.
2. Use the △/▽ buttons to select the desired parameter:
3. Press the OK button to enter the selected parameter.
4. Use the △/▽ buttons to adjust the value.

Parameters	
ε	0.95
+/-	0.0

Note: Temperature Compensation (+/–):
Applies an offset to the measured temperature to improve accuracy. This is useful when calibrating the meter against a known standard or compensating for measurement conditions.

5. Press the OK button to confirm the selection.
6. Press the BACK button to exit the "Parameters" function and return to advanced settings.
7. The updated parameter values will be applied to temperature measurements.

Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

Turning Laser ON/OFF (Laser)

1. Press the OK button when "Laser" is highlighted to toggle the setting on or off.

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2. Press the BACK button twice to exit and resume normal operation.

Note: When enabled, the laser will activate when the trigger is pulled and will project a red reference point onto the target surface.

Setting the Date and Date Format (Time & Date)



1. Press the OK button when "Time & Date" is highlighted.
2. Use the ▲▼ buttons to select the parameter to be adjusted.
3. Press the OK button followed by the ▲▼ buttons to adjust the selected value.
4. Press the OK button again to confirm the selection.
5. Repeat steps 2 through 4 for each required parameter.
6. Press the BACK button to exit the "Time & Date" menu when complete and return to advanced settings.

Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

Setting the LCD Brightness



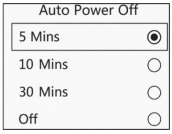
1. Press the OK button when "LCD Brightness" is highlighted.
2. Use the ▲▼ buttons to select the desired brightness level between "Low", "Medium" or "High".
3. Press the OK button to confirm the selection.
4. Press the BACK button to exit the "LCD Brightness" menu when complete and return to advanced settings.

Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

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Enabling/Disabling Auto Power OFF

1. Press the OK button when "Auto Power Off" is highlighted.
2. Press the △▽ buttons to select the desired Auto Power Off option between "Off", "5 Mins", "10 Mins" or "30 Mins".
3. Press the BACK button to exit the "Auto Power Off" menu when complete and return to advanced settings.



Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

Enable/Disable Auto Save

1. Press the OK button when "Auto Save" is highlighted to toggle the setting on or off.
2. Press the BACK button twice to exit and resume normal operation.

Note: When enabled, images will be saved automatically when trigger is pulled.

Clearing Data

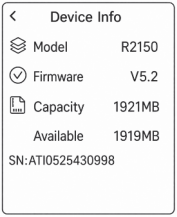
1. Press the OK button when "Clear Data" is highlighted.
2. Use the △▽ buttons to select between "Yes" or "No".
3. Press the OK button to confirm the selection.
4. Press the BACK button to exit the "Clear Data" menu when complete and return to advanced settings.

Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

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Device Information

1. Press the OK button when "Device Info" is highlighted to view the detailed information of the device.
2. Press the BACK button to exit the "Device Info" menu when complete and return to advanced settings.



Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

Factory Reset

1. Press the OK button when "Factory Reset" is highlighted.
2. Use the ▲▼ buttons to select between "Yes" or "No".
3. Press the OK button to confirm the selection.
4. Press the BACK button to exit the "Factory Reset" menu when complete and return to advanced settings.



Note: At any time, press the BACK button twice to exit the menu and resume normal operation.

Charging the Battery

1. Connect the R2150 via the included cable to a USB port on your PC or into a wall outlet using a USB Power Adapter (not included) to charge the Li-ion battery.
2. Charge the meter until the battery indicator appears full and remove the charging cable when done.

Applications

- Home and building inspection
- Plant and general maintenance
- Electrical and mechanical inspection
- Predictive maintenance
- HVAC/R and plumbing

Accessories and Replacement Parts

R8888 Medium Hard Carrying Case

R1500 Tripod

Don't see your part listed here? For a complete list of all accessories and replacement parts visit your product page on www.REEDInstruments.com.

Product Care

To keep your instrument in good working order we recommend the following:

- Store your product in a clean, dry place
- Change the battery as needed
- If your instrument isn't being used for a period of one month or longer please remove the battery
- Clean your product and accessories with biodegradable cleaner. Do not spray the cleaner directly on the instrument. Use on external parts only

Product Warranty

REED Instruments guarantees this instrument to be free of defects in material or workmanship for a period of one (1) year from date of shipment. During the warranty period, REED Instruments will repair or replace, at no charge, products or parts of a product that proves to be defective because of improper material or workmanship, under normal use and maintenance. REED Instruments total liability is limited to repair or replacement of the product. REED Instruments shall not be liable for damages to goods, property, or persons due to improper use or through attempts to utilize the instrument under conditions which exceed the designed capabilities. In order to begin the warranty service process, please contact us by email at 1-877-849-2127 or info@reedinstruments.com to discuss the claim and determine the appropriate steps to process the warranty.

Product Disposal and Recycling



Please follow local laws and regulations when disposing or recycling your instrument. Your product contains electronic components and must be disposed of separately from standard waste products.

Product Support

If you have any questions on your product, please contact your authorized REED distributor or REED Instruments Customer Service by phone at 1-877-849-2127 or by email at info@reedinstruments.com.

Please visit **www.REEDInstruments.com** for the most up-to-date manuals, datasheets, product guides and software.

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TEST & MEASURE WITH CONFIDENCE



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