

# REED

## Model R2007

### Dual Laser Infrared Thermometer



## Instruction Manual

**www reedinstruments com**

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## Safety

- Use extreme caution when the laser beam is turned on
- Do not let the beam enter your eye, another person's eye or the eye of an animal
- Be careful not to point the beam off a reflective surface & into your eye
- Do not allow the laser light beam to impinge on any gas which can explode



## Features

- Dual lasers assist with target area identification
- 50:1 distance to spot size ratio
- Digitally adjustable emissivity
- High and low alarms
- Max, Min, Avg and Differential readings
- Internal memory saves last 9 data points automatically
- Backlit display
- User selectable °F or °C
- Built-in dual laser pointers identify target area
- Low battery indicaton and auto shut off

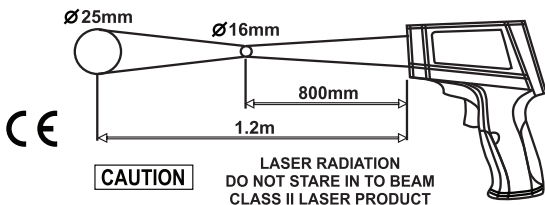
## Specifications

Temperature Range	-58 to 2012°F (-50°C to 1100°C)
Accuracy	±2% of reading or 4°F (2°C)
Resolution	0.1°C or 0.1°F
Optical Resolution	50:1
Laser Target Selection	Dual Laser
Spectral Response	8-14 µm
Emissivity	0.1 to 1.0 (Adjustable)
Response Time	500ms
Power Supply	9V Battery
Operating Temp. Range	32 to 122 °F (0 to 50 °C)
Operating Humidity Range	10-90%
Dimensions	4.8 x 17.6 x 10.3cm (1.89 x 6.93 x 4.06")
Weight	197g (7.0oz)
Included	Soft carrying case and battery

## Notes

- Do not use solvent to clean lens
- Do not submerge the unit in water
- Not recommended for measuring shiny or polished metal surfaces (stainless steel, aluminum, etc)
- This meter cannot measure through transparent surfaces, it will measure the surface temperature
- Steam, dust, and smoke can prevent accurate measurement by obstructing the unit's optics

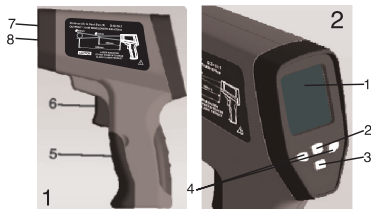
## Distance & Spot Size



As the distance (D) from the object increases, the spot size (S) of the area measured by the unit becomes larger. The relationship between distance and spot size for each unit is listed above.

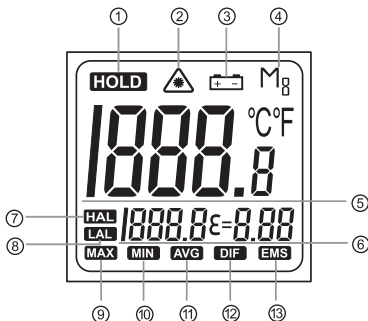
# Instrument Description

1. LCD display
2. Laser/Backlight/°C/°F button
3. Mode button
4. ▲▼ buttons
5. Battery cover
6. Trigger
7. Dual lasers
8. Infrared lens



## Display Description

1. Data hold
2. Laser signal
3. Low battery indicator
4. Data recall
5. Current temperature reading
6. Setting display
7. High temperature alarm
8. Low temperature alarm
9. Maximum measurement
10. Minimum measurement
11. Average measurement
12. Difference measurement
13. Emissivity setting



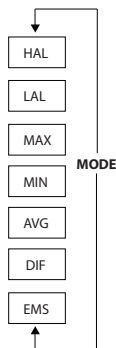
## Operating Instructions

1. Hold the meter and point it toward the surface to be measured.
2. Pull and hold the Trigger to turn the meter on and begin measuring,

- the temperature reading will automatically show on the LCD screen.
3. Release the Trigger and the HOLD display icon will appear on the LCD indicating that the current measurement is being held on the screen. For continuous testing hold the button down.
  4. The meter will automatically power down after approximately 15 seconds of inactivity.

## Applications

Applications for this product include food preparation, safety and fire inspectors, plastic molding, asphalt, marine and screen printing, measure ink and dryer temperature, HVAC/R, diesel, fleet maintenance and much more.



## MODE Button Function

This infrared thermometer measures Maximum (MAX), Minimum (MIN), Differential (DIF), and Average (AVG) Temperatures. Each time you take a reading, the last nine (9) readings are stored and can be recalled by pressing and holding the MODE button. When the trigger is pulled again, the unit will begin measuring in the last mode selected. Pressing the MODE button also allows you to access the High Alarm (HAL), Low Alarm (LAL) & Emissivity (EMS). Each time you press MODE, you advance through the mode cycle. The diagram on the left shows the sequence of functions in the MODE cycle.

## Switching Settings

Select the temperature units ( $^{\circ}\text{C}$  or  $^{\circ}\text{F}$ ) by pressing and holding down the backlight / laser /  $^{\circ}\text{C}$  /  $^{\circ}\text{F}$  (button #2 on instrument diagram).

To set values for the High Alarm (**HAL**), Low Alarm (**LAL**) and Emissivity (**EMS**), firstly activate the display by pulling the trigger or pressing the **MODE** button, then press the **MODE** button until the appropriate selection appears in the lower left corner of the display, press the **UP** and **DOWN** buttons to adjust the desired values.

## Cleaning

Periodically wipe the case with a dry cloth. Don't use abrasives or solvents on this instrument

## Notes

### *How it Works*

This REED Infrared Thermometer measures the surface temperature of an object. The unit's optics sense emitted, reflected, and transmitted energy which is collected and focused onto a detector. The unit's electronics translate the information into a temperature reading which is displayed on the unit. In units with a laser, the laser is used for aiming purposes only.

### *Field of View*

Make sure that the target is larger than the unit's spot size. The smaller the target, the closer you should be to it. When accuracy is critical, make sure the target is at least twice as large as the spot size.

### *Distance & Spot Size*

As the distance (D) from the object increases, the spot size (S) of the area measured by the unit becomes larger. See Graphic on Page 4.

### *Locating a Hot Spot*

To find a hot spot aim the thermometer outside the area of interest, then scan across with an up and down motion until you locate hot spot.


### *Emissivity*

Emissivity is a term used to describe the energy-emitting characteristics of materials. Most (90% of typical applications) organic materials and painted or oxidized surfaces have an emissivity of 0.95 (pre-set in the unit). Inaccurate readings will result from measuring shiny or polished metal surfaces. To compensate, cover the surface to be measured with masking tape or flat black paint. Allow time for the tape to reach the same temperature as the material underneath it. Measure the temperature of the tape or painted surface.

## Emissivity Values

Substance	Thermal Emissivity	Substance	Thermal Emissivity
Asphalt	0.90 to 0.98	Cloth (black)	0.98
Concrete	0.94	Human skin	0.98
Cement	0.96	Lather	0.75 to 0.80
Sand	0.90	Charcoal (powder)	0.96
Earth	0.92 to 0.96	Lacquer	0.80 to 0.95
Water	0.92 to 0.96	Lacquer (matt)	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	Timber	0.90
Ceramic	0.90 to 0.94	Paper	0.70 to 0.94
Marble	0.94	Chromium oxides	0.81
Plaster	0.80 to 0.90	Copper oxides	0.78
Mortar	0.89 to 0.91	Iron oxides	0.78 to 0.82
Brick	0.93 to 0.96	Textiles	0.90

## Battery Replacement

1. When battery power is not sufficient, LCD will display “ ” and replacement with one new 9V battery is required
2. Open battery cover, take out the battery from the instrument and replace with a new 9V battery and place the battery cover back into place

For service on this or any other REED product or information on other REED products, contact REED Instruments at [info@reedinstruments.com](mailto:info@reedinstruments.com)