

# User's Manual Mini Infrared Thermometer

## 1. Introduction

Congratulations on your purchase of our professional non-contact infrared thermometers.

These units can provide fast, easy and accurate temperature readings. With the non-contact (infrared) technology, they can be used to measure the surface temperature of hard-to-reach objects like electrified equipment or moving objects without any damage or pollution to them.

## 2. Features

- Fast and easy measurement
- The built-in laser pointer increases the target accuracy
- Max/Min record
- Automatic trigger off
- Automatic measurement range selection with resolution 0.1°C/0.1°F < 1000 1°C/1°F≥1000
- Precise non-contact measurement
- Adjustable emissivity: 0.1 ~ 1.0
- Backlight LCD display
- Auto power off


## 3. Application

These units are widely used in Food preparation, Safety and Fire inspection, Plastic molding, Asphalt, Marine, Printing ink and dryer temperature, Diesel and Fleet maintenance, etc.

## 4. Safety

- Use extreme caution when the laser beam is turned on.
- Do not point the beam toward anyone or any animals.
- Do not allow the beam to strike the eye from a reflective surface.
- Do not use the laser near explosive gases.

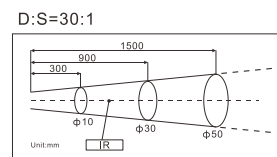
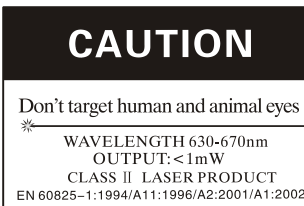
## Safety Symbol

 Comply with EMC

## 5. Field of View

The meter's field of view is 30:1, for example, if the meter is 30 inches from the target spot, the diameter of the target must be at least 1 inch.

Other distance ratios are shown below in the field of view diagram.

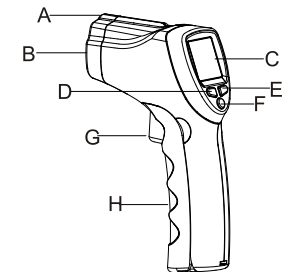


## 6. Specifications

|                           |  |                          |                           |
|---------------------------|--|--------------------------|---------------------------|
|                           | ○  | ○                        | ○                         |
| <b>Range</b>              | -50°C~-650°C;-58°F~1202°F  | -50°C~850°C;-58°F~1562°F | -50°C~1050°C;-58°F~1922°F |
| <b>Accuracy</b>           | -50°C~0°C/-58°F~32°F: ±4°C/9°F; Above 0°C/32°F:1.5%±2°C/4°F        |                          |                           |
| <b>Optical Resolution</b> | D:S=30:1   |                          |                           |
| <b>Emissivity</b>         | Adjustable: 0.10~1.0   |                          |                           |
| <b>Resolution</b>         | 0.1°C/0.1°F < 1000 1°C/1°F≥1000                                    |                          |                           |
| <b>Response Time</b>      | < 250 ms   |                          |                           |
| <b>Spectral Response</b>  | 8~14um   |                          |                           |
| <b>Operating Temp.</b>    | 0°C to 50°C / 32°F to 122°F  |                          |                           |
| <b>Storage Temp.</b>      | -20°C to 60°C / -4°F to 140°F                                      |                          |                           |
| <b>Relative Humidity</b>  | Operating:10 to 95%RH Storage:<80%RH                               |                          |                           |
| <b>Auto Power Off</b>     | Auto shuts off after 20Sec. of inactivity                          |                          |                           |
| <b>Polarity Display</b>   | Auto display, "-" indicates negative, while positive with no sign. |                          |                           |
| <b>Diode Laser</b>        | Output<1mW, 630~670nm, class 2(II)                                 |                          |                           |
| <b>Power Supply</b>       | 9V battery   |                          |                           |
| <b>Weight</b>             | 171g   |                          |                           |
| <b>Dimensions(L*W*H)</b>  | 155.5*98.8*27.5mm  |                          |                           |

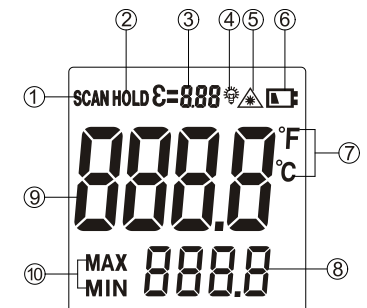
## 7. Meter Description

- A. Laser Pointer Beam
- C. LCD Display
- E. Laser pointer/Backlit Button
- G. Measurement Trigger
- B. IR Sensor
- D. °C/°F Switch Button
- F. MODE Button
- H. Battery Compartment Cover



## 8. LCD Display Description

- ① Measurement Icon
- ③ Emissivity Icon
- ⑤ Laser Icon
- ⑦ Temperature Unit (°C/°F)
- ⑨ Measurement Reading
- ② Data Hold Icon
- ④ Backlit Icon
- ⑥ Low Battery Indication
- ⑧ Max/Min Record
- ⑩ Max/Min Icon



## 9. Operating Instruction











### A. Operating steps:

- ① Hold the meter by its handle grip and point it toward the surface to be measured.
- ② Pull and hold the Trigger to turn the meter on, the "SCAN" icon will appear and begin testing.
- ③ The surface temperature being tested will be displayed on the LCD screen.
- ④ Release the trigger, the "HOLD" icon will appear, and the reading will be held for several seconds.
- ⑤ The meter will automatically shut off after 20 seconds of inactivity.


**Measurement Note:** If the meter used in an ambient temperature with wide temperature change, awaiting at least 30 minutes to adjust it.

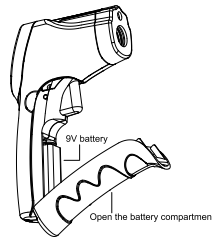
The laser is designed for aiming only; it can be shut off while operating in short distance to save the battery.

### B. Button Function

- ① °C/°F button: In Measurement Mode, press button "" to switch the temperature unit °C or °F.
- ② Laser pointer/Backlight button: In Measurement Mode, press button "" to turn on/off backlight; In "HOLD" Mode, press button "" to turn on/off laser pointer.
- ③ During measuring, press button "" to display MAX/MIN readings.  
During measuring, press button "" until "" icon flashes on the screen, then loose button "", enter into Emissivity Mode, press button "" and "" to adjust emissivity value, then keep pressing button "" return to the normal measurement mode.

### C. Battery Replacement

- ① When the low battery icon "" appears, replace the meter's battery.
- ② Open the battery compartment, replace the 9V battery and close the battery compartment



## 10. Notes

### (1) Work Principle

- The infrared thermometer is designed for measuring surface temperature of an object.
- The optical sensor can emit, reflect and transmit energy, which is collected and focused on a detector, then translate it into the temperature reading by electronics and displayed on the LCD screen.
- The laser is used for aiming the target object only.

### (2) Field of View

- The object under test should be larger than the spot size calculated by the field of view diagram.
- The smaller the target object is, the closer the meter should be to it for accurate measuring.
- When accuracy is critical, make sure the target is at least twice as large as the spot size.

### (3) Distance & Spot Size

- As distance (D) from the object increases, the spot size (S) of the area measured by the unit becomes larger.

### (4) Locating a hot spot

- To find a hot spot, first aim the thermometer to the outside of target area, then scan across in an up and down motion until the hot spot is located.

### (5) Notice

- Not recommend for measuring shiny or polished metal surfaces like stainless steel, aluminum, etc.
- Do not make measurement through transparent surface such as glass.
- If the surface of the object under test is covered with frost, oil, grime, etc., clean before taking measurement.

### (6) Maintenance

- Do not use volatile liquids to clean the unit, swipe it with dry soft cloth.
- Do not disassemble the unit, repair it by qualified personnel
- Do not immerse it in water.
- Do not store it in high temperature or humidity.

### (7) Emissivity

- Most (90%) organic materials and painted or oxidized surfaces have an emissivity of 0.95 (pre-set in the unit).

## 11. Accessories

- User's manual
- 9V Battery

**Emissivity Table**

| Substance   | Thermal emissivity | Substance    | Thermal emissivity |
|-------------|--------------------|--------------|--------------------|
| Aluminum    | 0.30               | Glass        | 0.90 to 0.95       |
| Asphalt     | 0.95               | Iron oxides  | 0.78 to 0.82       |
| Concrete    | 0.95               | Lacquer      | 0.80 to 0.95       |
| Leather     | 0.95               | Plastic      | 0.85 to 0.95       |
| Ceramic     | 0.95               | Paper        | 0.70 to 0.94       |
| Copper      | 0.50               | Sand         | 0.90               |
| Brick       | 0.90               | Rubber       | 0.95               |
| Carbon      | 0.85               | Timber       | 0.94               |
| Fat-lute    | 0.94               | Textiles     | 0.94               |
| Frozen food | 0.90               | Lead         | 0.50               |
| Hot food    | 0.93               | Marble       | 0.94               |
| Ice         | 0.98               | Cloth(black) | 0.98               |
| Snow        | 0.90               | Plaster      | 0.8 to 0.90        |
| Human skin  | 0.98               | Water        | 0.93               |