

Non-contact Infrared Thermometer Operation Instructions

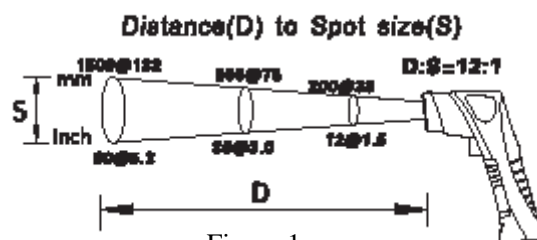
Thank you for choosing our product. Before using this product, please read these Operation Instructions carefully. They will provide you with guidance on how to use the product correctly and how to examine it and solve common problems to best exploit its excellent performance. You will find many advantages of this portable infrared thermometer, including its small size, admirable endurance and user-friendliness. Just point it at the object and pull the trigger. Within less than a second, you will be able to get the reading of the surface temperature of any object that is too hot, too dangerous or too difficult to contact safely without the need of physical contact.

WARNING

Do not point the light beam of the instrument at or have it reflected into the eyes of people or animals to avoid injury.

I. Performance

- Non-contact accurate temperature measuring
- Built-in laser aiming
- White backlight liquid crystal display
- Distance spot ratio 12:1 (see Figure 1)
- °C/°F optional
- MAX, MIN, AVG and storage functions
- Extensive usage, including food, security inspection, train, diesel engine and injection molding applications



II. Technology Specification:

Resolution: 0.2°C or 0.5°F

Temperature range: -25°C~600°C(-13°F~1040°F)

Sample rate: about 0.5 seconds

Spectrum reaction: 6~14um

Emissivity: optional, 0.99, 0.95, 0.89, 0.85, 0.79 or 0.75

Power: one 9v battery

Accuracy: -25°C ~ -10°C): ±3°C
 (-13°F ~ 14°F): ±5°F
 (-10°C ~ 30°C): ±2°C
 (-14°F ~ 86°F): ±4°F
 (30°C ~ 560°C): 1% ± 1°C
 (-86°F ~ 1040°F): 2% ± 2°F

Operating environment: temperature: 0°C~50°C (32°F~122°F)

Relative humidity: 10~80%RH

Weight: about 195g (including battery)

Dimension: 180x48x96mm

III. Panel Description (see Figure 2)

- A: infrared sensor
- B: laser sight
- C: liquid crystal display
- D: backlight selection button
- E: emissivity selection button
- F: MAX, MIN and AVG selection button
- G: Scan trigger
- H: °C/°F switch button
- I: laser selection switch

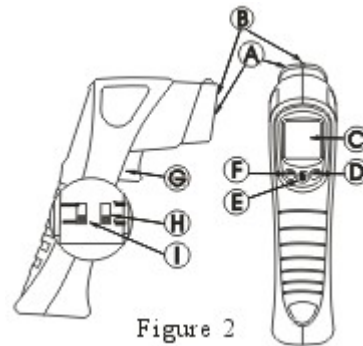


Figure 2

IV Display (see Figure3)

1. Scan mode symbol
2. Low voltage symbol
3. Backlight symbol
4. Laser on symbol
5. Emissivity (6 options)
6. °C/°F symbol
7. Data storage symbol
8. MAX symbol
9. MIN symbol
10. AVG symbol

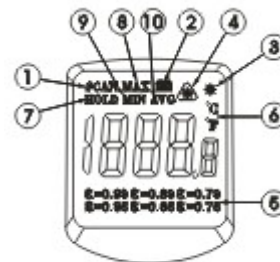


Figure 3

IV. How it works

Infrared thermometers measure the surface temperature of an object. An optical component of the unit collects energy emitted, reflected and transmitted and focuses it onto a detector. Then an electronic component translates the information into a temperature reading which is displayed on the unit. The laser is used for aiming purpose only.

VI. Operating Instructions:

1. Install a 9v battery and pull the “Scan Trigger” to turn the power on. If the backlight is needed but it's not on, press the “Backlight Button” (Button L) at the bottom right corner to turn on the backlight. Press the button again to turn it off.

2. To provide the user with more options, this unit offers 6 emissivity modes, including 0.99, 0.95, 0.89, 0.85, 0.79 and 0.75. Press the “Emissivity Selection” Button (Button in the middle of the panel) to select the mode sequentially. Each press results in a change in the emissivity mode. As different objects have different emissivities, it is necessary to select the right emissivity setup to ensure accurate measurement.
3. To use °C/°F switch mode, open the cover of the battery holder and use the built-in switch (which is at the upper part of the battery holder and visible as soon as the cover is removed) to select the mode needed; to activate the laser aiming function, open the cover of the battery holder and use the built-in switch to select the function needed (the laser is used for aiming purpose only).
4. To measure a temperature, point the unit at an object and pull the Scan Trigger. (Be sure to consider distance-to-spot ration and field of view.) The temperature reading will appear on the display. When the trigger is released, the unit will automatically store the last temperature reading and turn off in about 15 seconds. Pressing the Scan Trigger again will restart the scanning process.
5. The unit provides MAX, MIN and AVG reading display functions. Press the button at the left of the panel (Button M) to get the maximum, minimum and average readings measured.

VII. How to accurately measure the temperatures

1. The unit gets temperature compensation automatically from the ambient temperature. After measuring a high-temperature object, the unit needs at least 15 minutes to adapt to the ambient temperature of the next object to be measured. In addition, it needs a few minutes of preparation after measuring a low-temperature object and before measuring a high-temperature object too.
2. Locating a hot or cold spot: To find a hot or cold spot, aim the thermometer at the area of interest. Then slowly scan across the area with up and down motions until you locate the hot or cold spot.
3. 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. In cases where accuracy is of particular importance, make sure that the target is at least twice as large as the spot size. When the laser aiming function is activated, the laser spot indicates the area to be measured.
4. How to use the AVG function: scan a number of spots in the measurement area of the object; press the button at the left (Button M) and select AVG. The reading obtained is the average value of the measurement, which is closer to the real temperature of the object.

VIII. Reminders

This product is designed for the measurement of surface temperatures of objects. If it is used to measure body temperatures, the results are for reference only. Any forehead temperature reading within the range of 33°C~35°C is normal. The readings should be used for temperature comparisons among individuals only, instead of as the basis of any medical activity. In the event of any abnormal forehead temperature, please use a clinical thermometer to measure again. Make sure that the laser function is turned off when using the product to measure the temperature of a human body.

1. Do not point the laser directly at the eyes of any people or animal, or at the surface of a polished metal (e.g., stainless steel, aluminum) object.
2. This thermometer cannot measure the temperature of an object through a transparent object, e.g.,

a piece of glass. Otherwise the reading obtained would be the temperature of the glass.

3. Steam, dust and smoke could block the infrared from the object being measured and affect the result of measurement.
4. When using the infrared thermometer, try to avoid the following:
 - (1) static electricity;
 - (2) electromagnetic field generated by welding operation or induction heating;
 - (3) thermal shock (due to drastic or abrupt changes in ambient temperatures, in which case, the product would need 15 minutes of preparation before being used for temperature measurement.)
 - (4) Please keep the thermometer away from the objects with high temperature.
 - (5) This is a sophisticated optical device for temperature measurement. Please keep it clear of water or any corrosive liquid.
5. If the product is not to be used for a long period of time, please remove the battery to avoid a battery leak and damage to the product.

IX. How to replace the battery

1. When the voltage of the battery is below the rated voltage, the Low Voltage Symbol will appear on the screen. In this case, the voltage is too low for normal operation. Please replace the battery.
2. Open the cover of the battery holder and take out the battery. Wait for 3 seconds and then install the button battery. Make sure the anode and the cathode of the battery are installed at the right positions.

X. Applications of the infrared thermometer

General Fields of application includes electricity, petrochemicals, metallurgy, automobiles, electronics, tobacco, pharmaceuticals, hotels, machinery, plastics and moulds. Notably, it could be used in the following fields:

1. Industrial electronics: to measure the loose/hot spots of electronic panels, fuse units, engines /gearboxes, bearings/bearing boxes, power distribution cabinets and electronic components.
2. Heating or cooling systems: to examine or monitor the status of gas supply, air conditioning or ventilation pipe systems.
3. Automobiles: to examine the status of motors, cylinder heads, heating/cooling systems, or to scan the temperatures of jammed radiators, power trains, or bearings/bearing shells, etc.
4. Food safety: to monitor or control food temperature in acceptance, storage, transportation and production processes, for example in supermarkets (cold storage), hotels and kitchens.

XI. Emissivity

The emissivities of most organic materials and painted/oxidized surfaces are 0.95. Use of the product on bright or polished surfaces will lead to inaccurate readings. The right way is to cover the surface with black tape or paint it with black paint. Wait for a period of time sufficient for the black tape to reach the same temperature as the material covered before measuring the surface temperature.

Emissivities of Some Objects

Object	Emissivity	Object	Emissivity
Bitumen	0.90~0.98	Clothing (black)	0.98
Concrete	0.94	Human skin	0.98
Cement	0.96	Soap bubble	0.75~0.80
Sand	0.90	Charcoal	0.96
Soil	0.92~0.96	Paint	0.80~0.95
Water	0.92~0.96	Textile	0.90
Ice	0.96~0.98	Rubber (black)	0.94
Snow	0.83	Plastics	0.85~0.95
Glass	0.90~0.95	Wood	0.90
China	0.90~0.94	Paper	0.70~0.94
Marble	0.94	Chromium oxide	0.81
Gesso	0.80~0.90	Copper oxide	0.78
Mortar	0.89~0.91	Iron oxide	0.78~0.82
Brick	0.93~0.96		