

# Infrared thermometer Instruction manual



Version 400-EN-01

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## A. Introduction

This infrared thermometer is used for measuring the temperature of the object's surface, which is applicable for various hot, hazardous or hard-to-reach objects without contact safely and quickly.

This unit consists of Optics, Temperature Sensor, Signal amplifier, Processing circuit and LCD Display. The Optics collect the infrared energy emitted by the object and focus it onto the Sensor. Then the sensor translates the energy into an electricity signal. This signal will be turned out to be digital shown on the LCD after the signal amplifier and processing circuit.

## B. Warning & Cautions

### 1. Warning:

To avoid the potential situation that may cause harm or damage to people, please pay attention to the following items:

- 1) Before you use this unit, check on the plastic housing carefully. If there is any damage, do not use it.
- 2) Do not point laser directly at eye or indirectly off reflective surfaces.
- 3) Do not use this unit in the environment of explosive gas, steam or dusty.

### 2. Caution

To avoid the damage of the unit or the target, please protect from the following situations:

- 1). EMF (electro-magnetic fields) from arc welders, induction heaters.

- 2). Thermal shock (caused by large or abrupt ambient temperature changes) - allow 30 minutes for unit to stabilize before use.
- 3). Do not leave the unit on or near objects of high temperature.

## C. Distance to Spot size

1. When take measurement, pay attention to the Distance to Spot Size. As the Distance (D) from the target surface increases, the spot size (S) of the area measured by the unit becomes larger. The Distance to Spot size of the unit is 12:1. \*\*\*This unit is equipped with a laser, which is used for aiming.

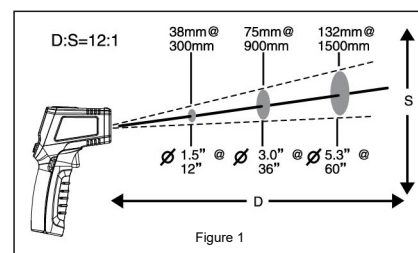


Figure 1

### 2. Field of view:

Make sure the target is larger than the unit's spot size. The smaller the target the closer the measurement distance. When accuracy is critical, make sure the target is at least twice as large as the spot size.

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## D. Emissivity

Most organic materials and painted or oxidized surfaces have an emissivity 0.95. Inaccurate readings will result from measuring different emissivity. This kind of infrared thermometer has an adjustable emissivity, please choose the right emissivity when measuring.

(Emissivity parallel table)

Material	Emissivity	Material	Emissivity	Material	Emissivity	Material	Emissivity
Aluminum	0.30	Iron	0.70	Asbestos	0.95	Lead	0.50
Bituminous	0.95	Limestone	0.98	Basalt	0.70	Oil	0.94
Brass	0.50	Paint	0.93	Brick	0.90	Paper	0.95
Carbon	0.85	Plastic	0.95	Porcelain	0.95	Rubber	0.95
Concrete	0.95	Sand	0.91	Copper	0.95	Skin	0.98
Plasticene	0.94	Snow	0.91	Frozen items	0.91	Steel	0.80
Hot food	0.93	Textile	0.94	Glass	0.85	Water	0.93
Ice	0.98	Wood	0.94				

## E. Operation

### 1. Operating the unit

- 1). Open the battery door and insert 2\*1.5V AAA batteries properly.
- 2). Pull the trigger to turn on the unit;
- 3). Aim at the target surface and pull the trigger, then the temperature will be shown on the LCD. This unit is equipped with a laser, which is only used for aiming.

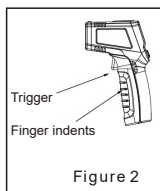


Figure 2

### 2. Locating a Hot Spot

To find a hot spot, aim the thermometer outside of interest, then scan across with an up and down motion until you locate the hot spot. (Figure 3)

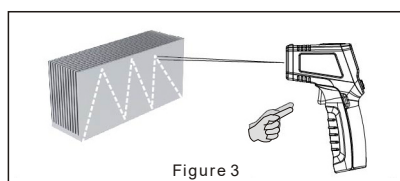


Figure 3

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## F. LCD Display & Buttons

### 1. LCD display: Figure 4

- a. Data hold icon
- b. Scanning icon
- c. Laser on icon
- d. Backlight on icon
- e. Low battery icon
- f. Temperature unit
- g. Temperature display
- h. Emissivity icon
- i. Max temperature icon
- j. Emissivity and max temperature display

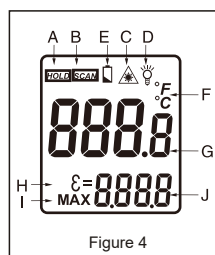


Figure 4

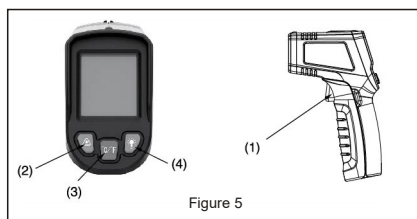


Figure 5

### 2. Buttons: Figure 5

- (1) Trigger: When pull the trigger, LCD display reading with SCAN icon. Release the trigger, display reading with HOLD icon for 12 sec (approx). Built-in 12 sec auto power off function.
- (2) Laser on/off button
- (3) Short-time press this button to switch Celsius/Fahrenheit. Long-time press this button to switch Emissivity/Max temperature. Max temperature is pre-set when long-time pressing this button first time, the value will twinkle when long-time pressing this button again, pressing (2) and (4) to adjust emissivity.
- (4) Backlight will be powered off without any operation after 12 seconds

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## G. Maintenance

1. Lens Cleaning: Blow off loose particles using clean compressed air. Gently brush remaining debris away with a moist cotton swab. The swab may be moistened with water.
2. Case cleaning: Clean the case with a damp sponge/cloth and mild soap.

Note:

- 1) Do not use solvent to clean plastic lens.
- 2) Do not submerge the unit in water.

## H. Specification

Temperature range	-50°C ~ 400°C (-58°F ~ 752°F) -50°C ~ 600°C (-58°F ~ 1112°F)
Accuracy	0°C ~ 400°C (32°F ~ 752°F) 0°C ~ 600°C (32°F ~ 1112°F) ±1.5°C (±2.7°F) or ±1.5% -50°C ~ 0°C (-58°F ~ 32°F) ±3°C (±5°F) Whichever is greater
Resolution	0.1°C or 0.1°F
Repeatability	1% of reading or 1°C
Response time	500 mSec, 95% response
Spectral response	8-14 um
Emissivity	0.95 Preset
Emissivity	0.10-1.00 adjustable
Max temperature display	yes
Distance to Spot size	12:1
Operating Temperature	0 ~ 40°C (32 ~ 104°F)
Operating Humidity	10~90%RH non-condensing up to 30°C (86°F)
Storage Temperature	-20 ~ 60°C (-4 ~ 140°F)
Power	1.5V AAA*2 battery
Typical battery life	Laser off: 12 hrs



MADE IN CHINA

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