



*Infrared Thermometer*

***ZUTEMER 307B***

*User Manual*

[www.zutemer.cz](http://www.zutemer.cz)

## Infrared thermometer Instruction manual

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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 on 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 may cause harm or damage to people, please pay attention to the following items:

- 1) Do not point laser directly at eye or indirectly off reflective surfaces.
- 2) The unit cannot measure through transparent surfaces such as glass or plastic. It will measure the surface temperature of these materials instead.
- 3) Steam, dust, smoke, or other particles can prevent accurate measurement by obstructing the unit's optics.

#### 2. Cautions:

Infrared thermometer should be protected for the following:

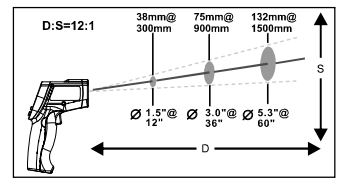
- 1) EMF (electro-magnetic fields) from arc welders, induction heaters.
- 2) Thermal shock (cause by large or abrupt ambient temperature changes allow 30 minutes for unit to stabilize before use).
- 3) Do not leave the unit on or near objects of high temperature.

### 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.

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#### 2. Field of view:

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

### D. EMISSIVITY

Emissivity: Most organic materials and painted or oxidized surfaces have an emissivity of 0.95 (preset in the unit). Inaccurate readings will result from measuring shiny or polished metal surfaces. To compensate for adjust the unit's emissivity reading or cover the surface be measured with masking tape or flat black paint. Measure the tape or painted surface when the tape or paint reaches the same temperature as the material underneath.

Material	Emissivity	Material	Emissivity
Aluminum	0.30	Iron	0.70
Asbestos	0.95	Lead	0.50
Asphalt	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
Ceramic	0.95	Rubber	0.95
Concrete	0.95	Sand	0.90
Copper	0.95	Skin	0.98
Dirt	0.94	Snow	0.90
Frozen food	0.90	Steel	0.80
Hot food	0.93	Textiles	0.94
Glass(plate)	0.85	Water	0.93
Ice	0.98	Wood	0.94

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### Operation

#### Operating the unit:

Open the battery door and insert a 9V battery properly. Pull the trigger to turn on the unit. Aim at the target surface and pull the trigger, then temperature will be shown on the LCD. This unit is equipped with a laser, which is only used for aiming.

#### Locating a Hot Spot:

To find a hot spot, aim the thermometer outside of interest, scan across with an up and down motion until you locate the hot spot. (Figure 1)

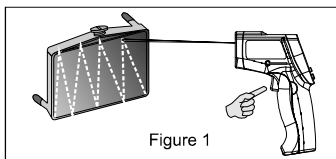


Figure 1

### LCD display & buttons

#### LCD display:

measuring reading  
measuring unit  
laser on icon  
back light on icon  
battery power icon  
scanning icon  
data hold icon  
mode/emissivity indicator  
data storage / read icon  
low temperature alarm icon  
high temperature alarm icon

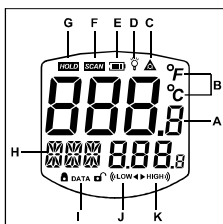
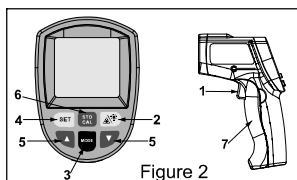


Diagram description:  
figure 2)



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- (1) Trigger: When turn on LCD display VERXX software version for 1 sec. And turn to display reading with SCAN icon. Release the trigger, display reading with HOLD icon. Built in auto power off in 30sec.

- (2) Laser / back light button: when back light turn on, any operations will remain back light for 10 sec. LCD indicate on/off status.

- (3)---(6) key functions: press 3 key, LCD subdisplay blinks MAX-MIN-DIF-AVG-HAL-LAL-STO-EMS segment (only main display means normal measuring mode) press 4 key to enter.

a. MAX: measuring maximum temperature

b. MIN: measuring minimum temperature

c. DIF: Basic on the reading before press 4 key, compute the difference of current reading.

d. AVG: measuring average temperature

e. HAL: high temperature alarm--when selected HAL, press 5 keys to set high temperature alarm trigger and confirmed by pressing 4 key. When reading over trigger, LCD display HI icon with BiBi audio sounds.

f. LAL: low temperature alarm--when selected LAL, press 5 keys to set low temperature alarm trigger and confirmed by pressing 4 key. When reading over trigger, LCD display LOW icon with BiBi audio sounds

g. STO: data storage--when selected STO, lock & DATA & 1---indicator will shown when press 4 key. After temperature read out press 6 key to store, then 2---memory unit will be shown. There 100 groups memory unit available. To recall the stored data in normal measuring mode by pressing 6 key, remove all data by pressing 6 keys for 3 seconds.

H. EMS: Emissivity setup-- press 5 key for emissivity settings, press 4 key to save setup and back to normal status.

- (7) Celsius / Fahrenheit switch: Please open battery and push the slide switch for conversion.

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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	-50~900°C (-58~1652°F)
Accuracy	0~900°C (32~1652°F): ±1.5°C (±2.7°F) or ±1.5% -50~0°C (-58~32°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
Distance to Spot size	12:1
Operating Temperature	0~40°C (32~104°F)
Operating Humidity	10~95%RH non-condensing, up to 30°C (86°F)
Storage Temperature	-20~60°C (-4~140°F)
Power	9V Alkaline or NiCd battery
Typical battery life (Alkaline)	Non-laser mode: 22 hrs; Laser Models: 12 hrs
Weight	220g
Dimension	175*100*49mm

CE

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