

## MIT 550E Infrared Thermometer

### User Manual



Part Number: 7603111  
GTIN: 6298043998178

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### A. Introduction

This infrared thermometer measures surface temperature safely and quickly, making it suitable for hot, hazardous, or hard-to-reach objects without contact.

The unit consists of precision optics, an infrared temperature sensor, a signal amplifier, a processing circuit, and an LCD display. The optics collect infrared energy emitted by the target and focus it onto the sensor, which converts it into an electrical signal. After amplification and processing, the signal is digitized and displayed on the LCD.

### B. Warnings & Cautions

#### 1. Warnings

To prevent injury or damage, observe the following:

- Do not point the laser directly at eyes or at reflective surfaces.
- The instrument cannot measure through transparent materials such as glass or plastic; it will display the surface temperature of those materials instead.
- Steam, dust, smoke, or other airborne particles may obstruct the optics and reduce measurement accuracy.

#### 2. Cautions

The infrared thermometer must be protected against the following:

- Strong electromagnetic fields from arc welders or induction heaters.
- Avoid thermal shock from sudden ambient temperature changes; allow 30 minutes for the unit to stabilize before use.
- Avoid prolonged exposure to, or placement near, high-temperature objects.

### C. Distance to Spot size

**1. D to S Ratio:** When measuring, note the Distance-to-Spot (D:S) ratio—As the distance increases, the spot size becomes larger.

This unit offers a 12:1 D:S ratio with an integrated laser for precise targeting.

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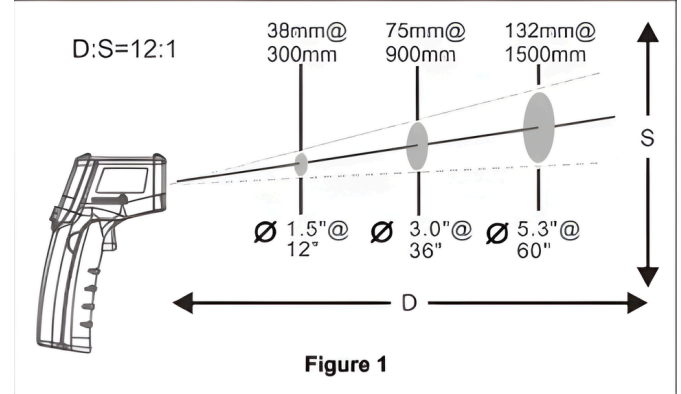


Figure 1

**2. Field of View:** Ensure that the target area is larger than the instrument's spot size. For smaller targets, reduce the measuring distance to maintain accuracy. When precise measurement is required, the target area should be at least twice the diameter of the spot.

### D. Emissivity

Most organic, painted, or oxidized surfaces have an emissivity of 0.95, preset in the unit for accurate measurement. Shiny metals may give errors; adjust the emissivity or cover with tape/black paint and measure once it has reached the temperature of the material.

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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### E. Operation

#### 1. Operating the unit

1. Open the battery compartment and insert one 9 V battery. Ensure correct polarity.
2. Pull the trigger to power on.
3. Aim at the target surface and press the trigger; the temperature will appear on the LCD. The laser pointer is for aiming only and does not affect the temperature reading.

#### 2. Locating a Hot Spot

To locate a hot spot, aim outside the area first, then scan slowly up and down across the surface until the highest temperature point is found.

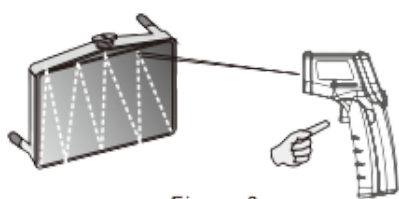
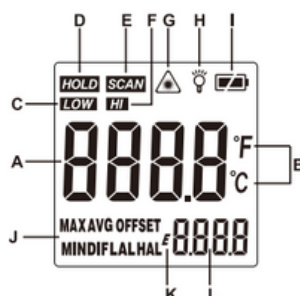


Figure 3

### F. LCD Display & Buttons

#### 1. LCD Display

- A) Measuring Reading
- B) Measuring Unit
- C) Low-Temperature Alarm Icon
- D) Data Hold Icon
- E) Scanning Icon
- F) High-Temperature Alarm Icon
- G) Laser On Icon
- H) Backlight On Icon
- I) Battery Power Indicator
- J) Mode Display
- K) Emissivity Indicator
- L) Functional Value



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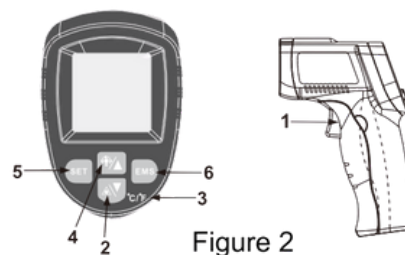


Figure 2

1. **Trigger:** Press to measure; the LCD shows temperature with the SCAN icon. Release to enter HOLD mode for automatic data storage. The unit powers off automatically if inactive.
2. **Laser Positioning:** While holding the trigger, press Key 2 to toggle the laser pointer. Status icon appears on the LCD.
3. **Temperature Unit Shift:** Press Key 2 to switch between Celsius (°C) and Fahrenheit (°F).
4. **Backlight:** While holding the trigger, press Key 4 to toggle the LCD backlight. Icon indicates status.
5. **SET Key Functions:** Cycles repeatedly through MAX → MIN → DIF → AVG → HAL → LAL → OFFSET → E. Press again to select the desired mode. Last used mode is stored in memory.
  - MAX – Maximum temperature
  - MIN – Minimum temperature
  - DIF – Difference between MAX and MIN
  - AVG – Average temperature
  - HAL – High-temperature alarm; press Keys 4 and 2 to set trigger, confirm with Key 5. When exceeded, LCD shows HI with audible alarm.
  - LAL – Low-temperature alarm; press Keys 4 and 2 to set trigger, confirm with Key 5. When exceeded, LCD shows LOW with audible alarm.
  - OFFSET – Zero offset adjustment
  - Emissivity Setting – Press the EMS key, then adjust with Keys 4 and 2. Confirm by pressing EMS again.
6. **Celsius/Fahrenheit Switch:** Open the battery compartment and use the slide switch to change units.

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### G. Maintenance

#### 1. Lens Cleaning

Blow off loose particles with clean compressed air. Remove any remaining debris with a soft cotton swab slightly moistened with water.

#### 2. Case Cleaning

Wipe the case with a damp sponge or cloth and mild soap.

#### Notes

1. Do not use solvents on the plastic lens.
2. Do not immerse the unit in water.

### H. Specification

Temperature range	-50~550°C (-58~1022°F)
Accuracy	0~550°C(32~1022°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	5-14 um
Emissivity	0.10~1.00 Adjustable (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	147.5g
Dimension	153*101*43mm

#### Disclaimer

The manufacturer assumes no responsibility for any consequences resulting from the use or misuse of this product. Product specifications and manual content are subject to change without prior notice.

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