

1 YEAR
WARRANTY



Ω OMEGA™

User's Guide

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OS1300 Series Performance Handheld Infrared Thermometer



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1) Introduction

The OS1300-Series handheld infrared thermometer is a non-contact temperature sensing thermometer. It has a wide temperature range of -50 to 1300°C (-58 to 2372°F). This thermometer features a backlit display which is automatically illuminated when the trigger is pulled and allows working in poor or zero-lighting conditions. The single laser is also automatically active when the trigger is pulled. The laser sight can be turned on and off with the press of a button. The laser is located above the IR sensor to locate the center of the area being measured. The field of view is 16:1. The thermometer constantly updates the temperature measurement as long as the trigger is held in and will “hold” on the last temperature seen when the trigger is released. The OS1300-Series has adjustable emissivity, min, max, and averaging functions, as well as high and low alarm capability. This safely measures surface temperatures of hot, hazardous, or hard-to-reach objects without contact.

1.1 How it works

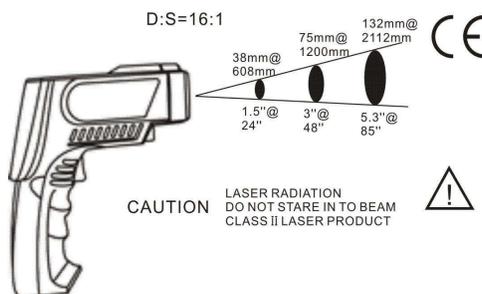
This handheld infrared thermometer measures the surface temperature of an object. The unit’s optics sense emitted, reflected, and transmitted energy which is collected and focused onto a detector. The unit’s electronics converts the energy value into a temperature in °C or °F which is displayed on the digital display. A clean line of sight free of dust or mist is needed between the sensor and the object. For increased ease of use and accuracy the laser pointer makes aiming even more precise.

Measurement:

When taking measurement, point the thermometer toward the object to be measured and hold the trigger. The temperature will be displayed and the word “SCAN” will flash on the left-hand side of the LCD screen to indicate that the temperature is continually being updated on the display. When the trigger is released, the last reading seen will be held on the display and the word “HOLD” will be visible on the left-hand side of the LCD screen. The object under test should be larger than the spot size calculated by the field of view diagram below.

Field of View:

Field of view, or distance to spot ratio, is the size of an area that can be measured from a specified distance. As the distance from the object increases, the spot size of the measuring area becomes larger. Make sure the target is larger than the unit’s spot size. When accuracy is critical, ensure that the target is at least twice as large as the spot size. Please see field of view diagram for the OS1300-Series below.



Emissivity:

Most organic materials and painted or oxidized surfaces have an emissivity of 0.95 (pre-set in the unit but adjustable). Inaccurate readings will result from measuring shiny or polished metal surfaces. To compensate, cover the measured surface with masking tape or flat black paint. Measure the tape or painted surface when the tape or painted surface reaches the material temperature. Please see the Emissivity table below for common emissivity values and adjust accordingly.

Emissivity Table:

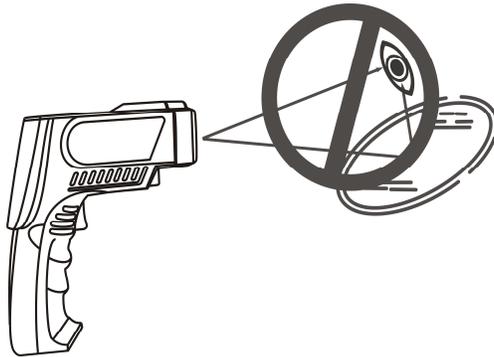
Material	Emissivity	Material	Emissivity
Aluminum	0.30	Iron	0.70
Asbestos	0.95	Lead	0.50
Asphalt	0.95	Limestone	0.98
Basalt	0.70	Oil	0.94
Brass	0.50	Paint	0.93
Brick	0.90	Paper	0.95
Carbon	0.85	Plastic	0.95
Ceramic	0.95	Rubber	0.95
Concrete	0.95	Sand	0.90
Copper	0.95	Skin	0.98
Dirt	0.94	Snow	0.90
Frozen 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

1.2 Caution

Infrared thermometer should be protected for the following:

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

Warning: Do not point laser directly at eye or indirectly off reflective surfaces (see diagram below)



2) Specifications

Temperature Range	-50 to 1300°C (-58 to 2372°F)
Accuracy	3% of reading + 3°C, -50°C to 0°C (-58 to 32°F) 2% of reading +2°C, above 0°C
Field of View	16:1
Repeatability	1% of reading or 1°C
Response Time	500 ms (95% response)
Spectral Response	8 – 14 μm
Emissivity	Adjustable from 0.1 to 1.0
Relative Humidity	10 -95% RH noncondensing
Storage Temperature	-20 - 60°C (-4 - 140°F)
Weight	130 g (4.86 oz) without battery
Dimensions	5.74 x 3.14 x 1.49 in (146 x 80 x 38 mm)
Power	9V Battery
Estimated Battery Life	12 hours (using laser)

3) Operating Instructions

3.1 Battery Installation:

Use the thumb and forefinger to pull on the finger grips on either side of the trigger of the thermometer (*Figure 1*). The battery compartment door will swing down (*Figure 2*). Insert a 9 Volt alkaline battery into the battery holder (*Figure 3*). Take care not to pinch the battery wires when closing the battery door back to its original position.



Figure 1

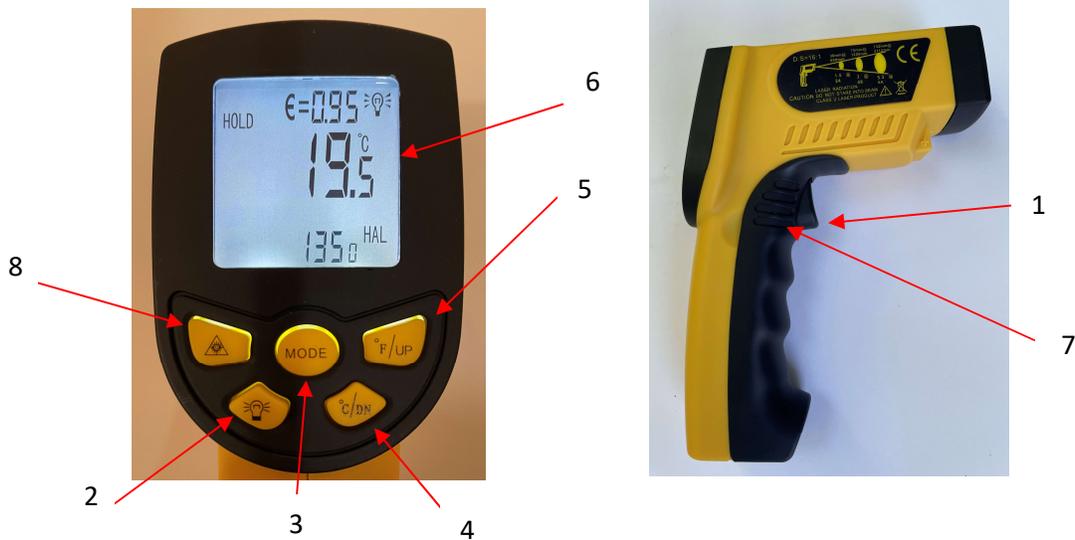


Figure 2



Figure 3

3.2 Button and key Layout:



3.3 Operating Steps

- 1) Hold the thermometer by the handle grip and point it towards the surface to be measured.
- 2) Pull and hold the trigger to turn the thermometer on. The “SCAN” icon will appear on the top line of the display.
- 3) The surface temperature being measured will be displayed on the LCD screen.
- 4) When the trigger is released, the “HOLD” icon will appear and the last reading seen will remain on the display screen.
- 5) The thermometer will automatically turn off after 7 seconds of inactivity.

3.4 Button function

3.4.1 Mode Selection

- 1) With trigger held, press the “MODE” button [3] to cycle through the different modes.
 - a. “AVG” displays average temperature reading seen during the session.
 - b. “MAX” displays maximum temperature reading seen during session.
 - c. “MIN” displays minimum temperature reading seen during session.
 - d. “HAL” shows High Alarm value (use UP and DN buttons to adjust up or down).
 - e. “LAL” shows Low Alarm value (use UP and DN buttons to adjust up or down).
 - f. “DIF” shows realtime difference between current reading and original starting value.

3.4.2 Changing Temperature Units

- 1) With trigger [1] held and “SCAN” flashing on display, press “°C/DN” [4] to select temperature units in Celsius. Press “F/UP” [5] to select temperature units in Fahrenheit.

3.4.3 Adjusting Laser

- 1) While holding the trigger and “SCAN” activated on display, press the “Laser” button [8] to toggle the single laser dot on and off.

3.4.4 Adjusting Emissivity

- 1) With unit turned “on”, press the “MODE” button [3] a few times to get to the “ε” annunciator which will show the current Emissivity value.
- 2) Press the Backlight/UP button [2] to increase value and the “T/DN” button [4] to decrease value.
- 3) When desired value is reached, press “SET” again to lock in the value.

3.4.5 Adjusting High/Low Alarm

- 1) With trigger held and “SCAN” activated on the display, press the “Mode” button [3] one press a time to get to “LAL” (low alarm) or “HAL” (high alarm) annunciator.
- 2) Press the Backlight/UP button [2] to increase value and the “T/DN” button [4] to decrease value.

3.5 Locating a Hotspot:

To find a hot spot, aim the thermometer outside the area of interest, then scan across with up and down motions until you locate the hot spot. Turning on the laser will make for more precise targeting.

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4) Maintenance

- 1) Lens cleaning : blow off loose particles using clean compressed air. Gently brush remaining debris away with a moist cotton cloth.
- 2) Case cleaning: clean the case with a damp sponge/cloth and mild soap.

Note: Do not use solvent to clean lens and do not submerge the unit into water or any other liquid.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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