OMEGA OS306-Series Performance Infrared Thermometer User Guide

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OMEGA OS306-Series Performance Infrared Thermometer

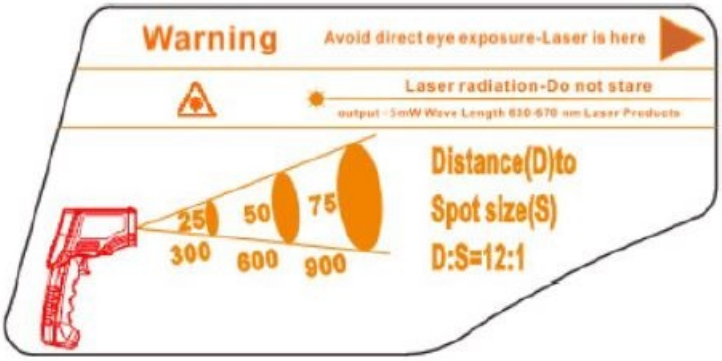
Introduction

The OS306-series handheld digital IR thermometer is used for non-contact temperature measurement of metals, ceramics, graphite, etc. in temperature ranges between -50°C (-58 °F) and 1650°C (3002°F). This portable battery-powered unit displays the current temperature as well as minimum, maximum, average, and differential temperatures. Other features include an adjustable emissivity, alarm settings, and a single laser dot to help locate the target.

How it works The sensor determines temperature by focusing the infrared energy that is radiated from an object. The focused energy is converted into an electrical signal proportional to the energy emitted. A clean line of sight free of dust or mist is needed between the sensor and the object. For increased ease and accuracy, the laser pointer makes aiming even more precise.

Measurement: When taking the measurement, point the thermometer toward the object to be measured and hold the trigger. 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, make sure the target is at least twice as large as the spot size. Please see the field of view diagram for the OS306-Series below.



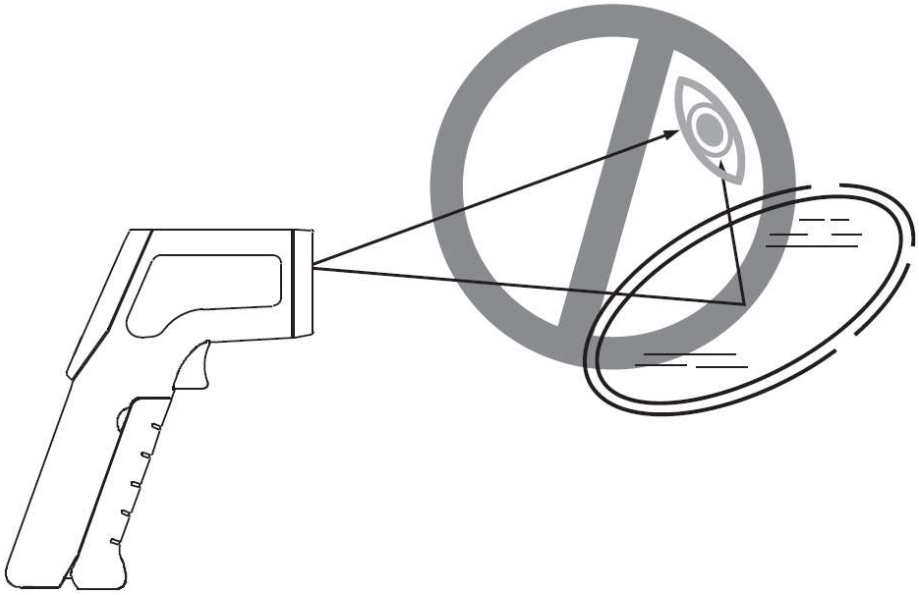
Emissivity: Most organic materials and painted or oxidized surfaces have an emissivity of 0.95. Inaccurate readings will result from measuring shiny or polished metal surfaces. To compensate adjust the emissivity setting to match the material using the emissivity table. Another option is to set the emissivity to 0.95 and cover the measured surface with masking tape or flat black paint. Then measure the tape or painted surface when it reaches the material temperature.

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

Caution Infrared thermometer should be protected for the following:

- EMF (electromagnetic fields) from arc welders and induction heaters.
- Thermal shock (caused by large or abrupt ambient temperature changes allow 30 minutes for the 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!



Specifications

- **Temperature Range** -50 to 700°C (-58 to 1292°F)
- **Accuracy** ±1.5% rdg or ±1.5°C (2.7°F), whichever is greater
- **Field of View** 12:1
- **Resolution** 0.1°C or 0.1°F
- **Response Time** 500 ms
- **Spectral Response** 8 – 14 µm
- **Emissivity Adjustable** 0.10 to 1.00
- **Operating Temperature** 0 – 40°C (32 – 104°F)
- **Weight** 270 g (9.5 oz) including battery
- **Dimensions** 141 x 200 x 60 mm (5.5 x 7.9 x 2.4 inch)
- **Power** 9V Battery
- **Estimated Battery Life** 12 Hours

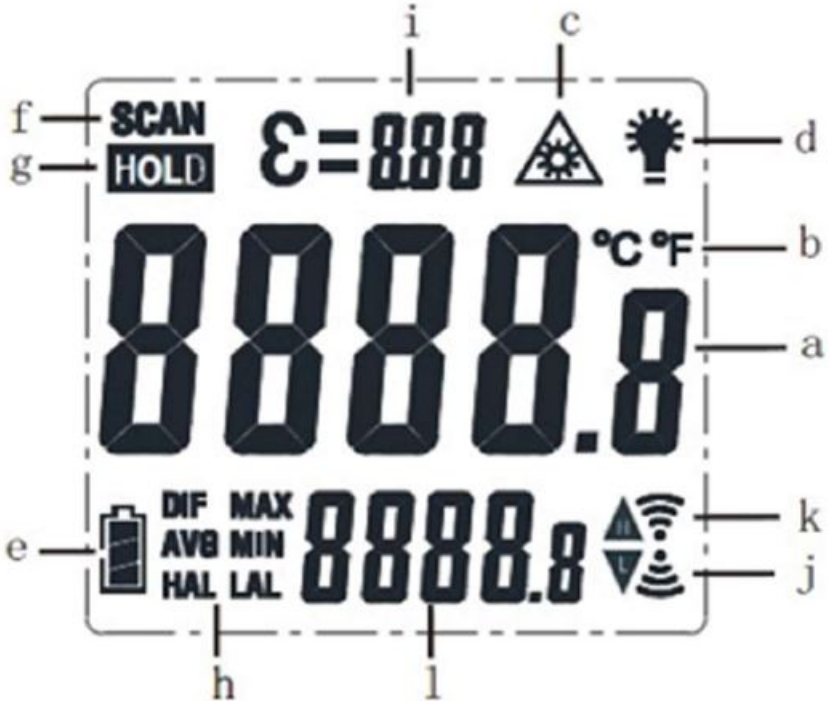
Operating Instructions

Battery Installation and Basic Operation Locate the notches on the side of the unit's handle and pull the front of the handle forwards as shown below (1,2). Attach a 9V battery (provided) to the black connector inside, be sure to connect the positive and negative sides to the corresponding terminals (3). Swing the front of the handle back upwards to close the unit (4).

Pull the trigger and the LCD display will turn on and display reading. Release the trigger to hold the last measured temperature reading. The display will shut off after 30 seconds of inactivity.

1. **Changing units**
    1. Press the C/F key to toggle between Celsius and Fahrenheit
2. **Backlighting**
    1. Press backlight key to toggle the backlight on and off
3. **Adjusting Laser**
    1. Press the laser key to toggle the laser dot on and off
4. **Adjusting the temperature assistant**
    1. Press the MODE key to scroll through Minimum, Maximum, Average, and Differential temperatures as well as Low Alarm and High Alarm values.
5. **Changing Emissivity and Alarm values**
    1. Press and hold the MODE key for 3 seconds to change emissivity and alarm values
    2. Press the MODE key once to change emissivity, twice to change the low alarm value, and three key presses to change the high alarm value
    3. Press the ▲key to increase the value and ▼key to decrease the value
    4. Press the MODE key to store the new value
    5. Press and hold the MODE key for 3 seconds to return

LCD Display



- temperature measuring reading
- measuring unit
- laser on icon
- the backlight on an icon
- battery power icon
- scanning icon
- data hold icon
- mode indicator
- emissivity indicator
- low-temperature alarm icon
- high-temperature alarm icon
- temperature assistant

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. (turn on the laser for accurate measuring)

1. Trigger
2. Back light key
3. Mode key
4. Laser light key
5. Function keys
6. Celsius / Fahrenheit key
7. Display
8. Laser
9. Model Identification
10. Battery Cover

Maintenance

1. **Lens cleaning:** blow off loose particles using clean compressed air. Gently brush the remaining debris away with a moist cotton cloth.
2. **Case cleaning:** clean the case with a damp sponge/cloth and mild soap.
3. **Note:** Do not use solvent to clean the 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.
OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with the information provided by OMEGA, either verbal or written.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, THE PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence. 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

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- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments

Documents / Resources

	OMEGA OS306-Series Performance Infrared Thermometer [pdf] User Guide OS306-Series, Performance Infrared Thermometer