



OMEGA OS836-Series High Performance Infrared Thermometer User Guide

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OMEGA OS836-Series High Performance Infrared Thermometer



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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains and reserves the right to alter specifications without notice.

Introduction

The OS836-Series high-performance infrared thermometer boasts 30 to 1 field of view and -50 to 1550°C (-58 to 2822°F) temperature range. This high-performance easy to use device is great for non-contact measurement of surfaces that are far away and very high temperatures. Just aim, line up the laser, push the button and read the surface temperature in less than a second. The OS836-Series is great for situations where the temperatures are so hot that being too close can become a hazard or the location that needs measuring is hard to reach.

Applications such as food preparation, safety and fire inspection, plastic molding, molten metals, asphalt, oil, rubber, concrete and many more. The 30:1 field of view, or distance to spot ratio, allows for precise measurement even from a larger distance.

How it works

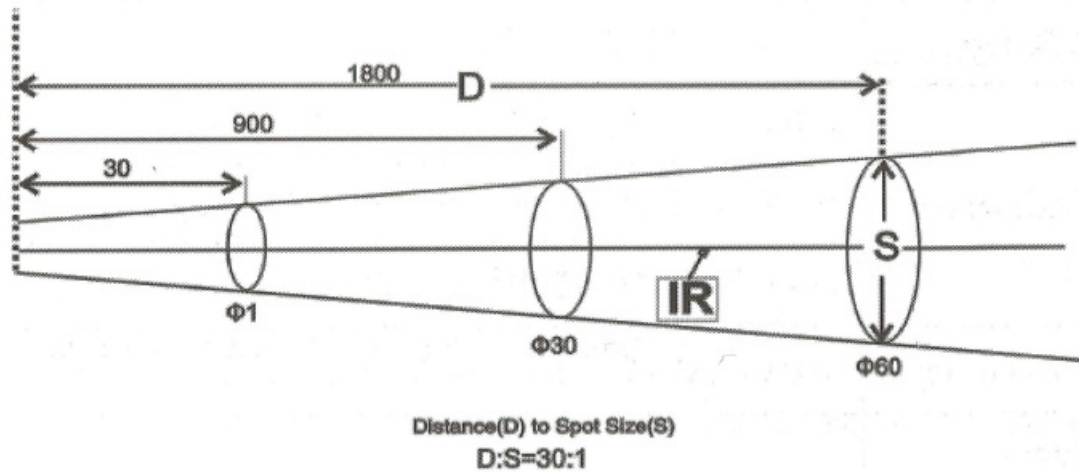
The sensor determines temperature by focusing the infrared energy that is radiated from an object. The focused energy is converted into an electrical signal proportional to the energy emitted. A clean line of sight free of dust or mist is needed between the sensor and the object. For increased ease and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

Measurement:

When taking measurement, point the thermometer toward the object to be measured and hold the black 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 field of view diagram for the OS836-Series below.



Units in mm

Emissivity:

Most organic materials and painted or oxidized surfaces have an emissivity of 0.95 (pre-set in the unit). 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.

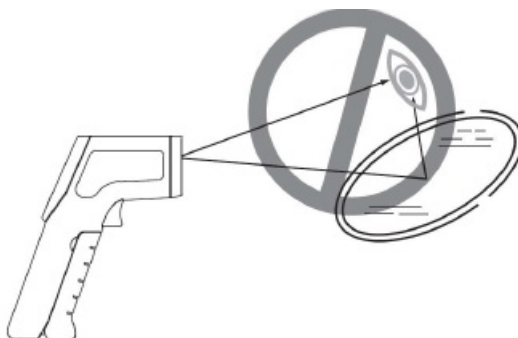
Emissivity Table:

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 (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!



Specifications

- Temperature Range -50°C – 1550°C (-122°F – 2822°F)

- Thermocouple Range -50°C – 1370°C (-58°F – 2498°F)
- Accuracy $\pm 4.0^{\circ}\text{C}$ (7.2°F): -50°C – 0°C (-58°F – 32°F)
 $\pm 1.5\% \pm 2.0^{\circ}\text{C}$ (3.6°F): 0°C – 500°C (32°F – 932°F)
 $\pm 2.0\% \pm 2.0^{\circ}\text{C}$ (3.6°F): >500°C (932°F)
- Thermocouple Accuracy $\pm 1.5\%$ or 2.0°C (3.6°F), whichever is greater
- Field of View 30:1
- Repeatability 1% of reading or 1°C
- Response Time <250 ms (95% response)
- Spectral Response 8 – 14 μm
- Emissivity Adjustable emissivity 0.10 – 1.00
- Operating Temperature Range 0 – 50°C (32 – 120°F)
- Relative Humidity 10 -90% RH, Storage <80% RH
- Storage Temperature -20 – 60°C (-4 – 140°F)
- Weight 286g
- Dimensions 7.80 x 4.72 x 2.32 in (198 x 120 x 59 mm)
- Record Memory 99 records
- Diode Laser Output < 1mW, 630-670nm, class 2 (II)
- Power 9V Battery
- Automatic Power Shutoff Automatic shutoff after 25 seconds
- Estimated Battery Life 16 Hours

Operating Instructions

Battery Installation:

Pull open the battery compartment (1), connect 9V battery to the correct positive and negative terminals (2), place connected battery into battery compartment and close cover (3).



Product Layout:

1. Laser Pointer
2. IR Sensor
3. Laser Pointer
4. Measurement Trigger

5. Battery Cover
6. Tripod Mounting Hole (bottom of unit)
7. Up/Down Button
8. Laser On/Off
9. Set Button
10. LCD Display
11. K-type Probe Connection



Button Layout



1. Measurement Icon, Data Hold Icon
2. Current Temperature Values
3. Icon for MAX, MIN, DIF, AVG
4. Data Record Icon

5. Type-K Temperature Icon
6. High Alarm Icon
7. Low Alarm Icon
8. Temperature values for the MAX, MIN, DIF, AVG, HAL, LAL and REC
9. Trigger Lock Icon
10. Celsius (°C)/ Fahrenheit (°F) Icon
11. Low Battery Icon
12. Backlit Icon
13. Laser Icon
14. Emissivity

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 and blink when measurement starts.
3. The surface temperature being measured will be displayed on the LCD screen.
4. Release the trigger, the "HOLD" icon will appear and the reading will stay on the display screen.
5. The thermometer will automatically shut off 25 seconds after the trigger is released.

Note: If the thermometer is to be used in ambient temperature after a large temperature change wait 30 minutes for the thermometer to adjust to ambient temperature.

The laser is designed for aiming only, it can be shut off while operating in shorter distances to save battery (Section 3.5.3).

Button function

Setting Mode

1. Press the "SET" key to cycle through the different modes.
2. In REC mode, press the "UP/DOWN" button to review the latest 99 records

Changing temperature units

1. In all other modes, press the "UP/DOWN" button to change temperature units. "UP" is Celsius and "DOWN" is Fahrenheit.

Adjusting Laser

- While holding the trigger and activating "SCAN" mode, press the "LASER ON/OFF" button to toggle the dual laser pointer on and

Activating "SCAN LOCK" Mode

- While holding the trigger and activating "SCAN" mode, hold the "LASER ON/OFF" button for 3 seconds

to activate "LOCK" mode. This will lock the thermometer in "SCAN"

- Hold the "LASER ON/OFF" button for 3 seconds to deactivate "LOCK"

Adjusting Emissivity

- After turning on the unit, press and hold the "SET" button to access the "E" emissivity mode. Use the "UP/DOWN" button to adjust emissivity to desired
- Press and hold "SET" button until the "E" stops blinking to exit emissivity

Adjusting High/Low Alarm

- Enter emissivity mode, press "SET" button to cycle to desired alarm. Once on desired alarm setting use "UP/DOWN" arrow to adjust alarm
- Press and hold "SET" button to exit emissivity/alarm setting mode

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. (please turn on the laser for accurate measuring)

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.

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 information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects.

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Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, 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 affords our customers the latest in technology and engineering.

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Documents / Resources

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