1 YEAR WARRANTY

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# User's Guide


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# OS425-LS-Series

## Handheld Infrared Thermometer

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# 1) Introduction

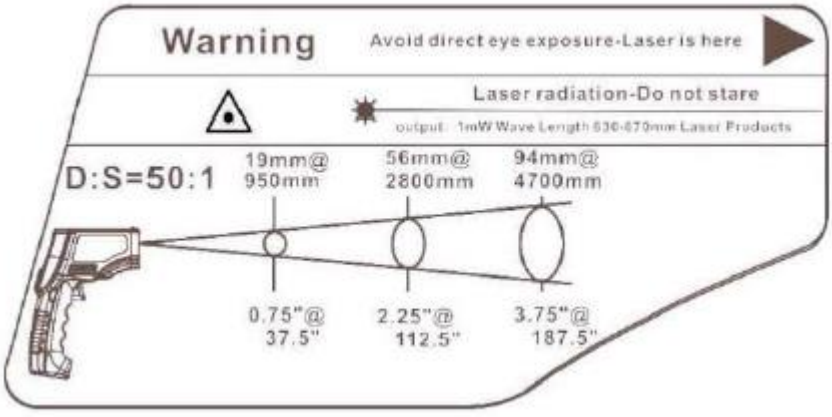
Omega's OS425-LS is a fully functional infrared non-contact temperature measuring device. The unit comes in two versions: Standard, OS425-LS: -60 to 1000°C (-76 to 1832°F), and High Temperature, OS425HT-LS: -60 to 1500°C (-76 to 2732°F). Along with a magnetic mount, the OS425-LS offers laser sighting, several mathematical modes, and adjustable emissivity. Long battery life (typically 180 hours without laser or backlight), is obtained from 2 "AAA" batteries along with automatic shut-off. The 50:1 field of view measures small and distant targets. Display backlight and built-in flashlight enables night and low light viewing. There is also a thermocouple connector on the side of the unit for contact thermocouple measurements.

## 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 right-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, 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 of flat black paint. Measure the tape or painted surface when the tape or painted surface reaches the material temperature.

**Emissivity Table:**

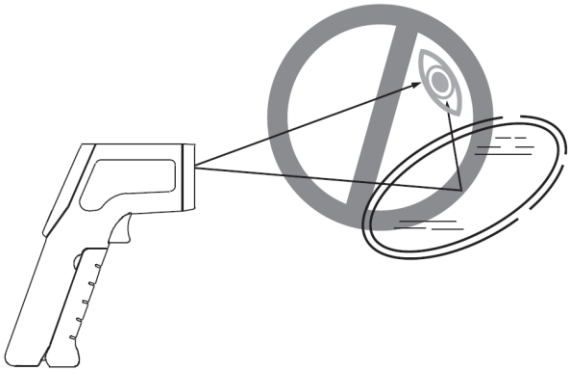
| Material | Emissivity | Material | Emissivity |
|---|---|---|---|
| Aluminum | 0.30 | Iron | 0.70 |
| Asbestos | 0.95 | Lead | 0.50 |
| Asphalt | 0.95 | Limestone | 0.98 |
| Basalt | 0.70 | Oil | 0.94 |
| Brass | 0.50 | Paint | 0.93 |
| Brick | 0.90 | Paper | 0.95 |
| Carbon | 0.85 | Plastic | 0.95 |
| 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 |

## 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!



## 2) Specifications

| | |
|---|---|
| **Temperature Range** | **OS425-LS**: -60 to 1000°C (-76 to 1832°F),<br>**OS425HT-LS**: -60 to 1500°C (-76 to 2372°F) |
| **Thermocouple Range** | -64 to 1400°C (-83 to 2552°F) |
| **Accuracy** | ±2% rdg or 2°C (3.5°F), whichever is greater |
| **Thermocouple Accuracy** | ±1% of rdg or 1°C, whichever is greater |
| **Field of View** | 50:1 |
| **Response Time** | 1 sec |
| **Spectral Response** | 8 – 14 µm |
| **Emissivity** | Adjustable emissivity 0.10 – 1.00 |
| **Operating Temperature Range** | 0 - 50°C (32 - 122°F) |
| **Relative Humidity** | 10 -90% RH, Storage <80% RH |
| **Weight** | 13.62 oz (386.1 grams) including batteries |
| **Dimensions** | 8.0 x 7.7 x 1.8 in (203.3 x 197.0 x 47.0 mm) |
| **Power** | AAA Batteries (2) |
| **Automatic Power Shutoff** | Automatic shutoff after 60 seconds |
| **Estimated Battery Life** | Typ. 180 hours, 140 hours with continuous use (without laser and backlight) |

# 3) Operating Instructions

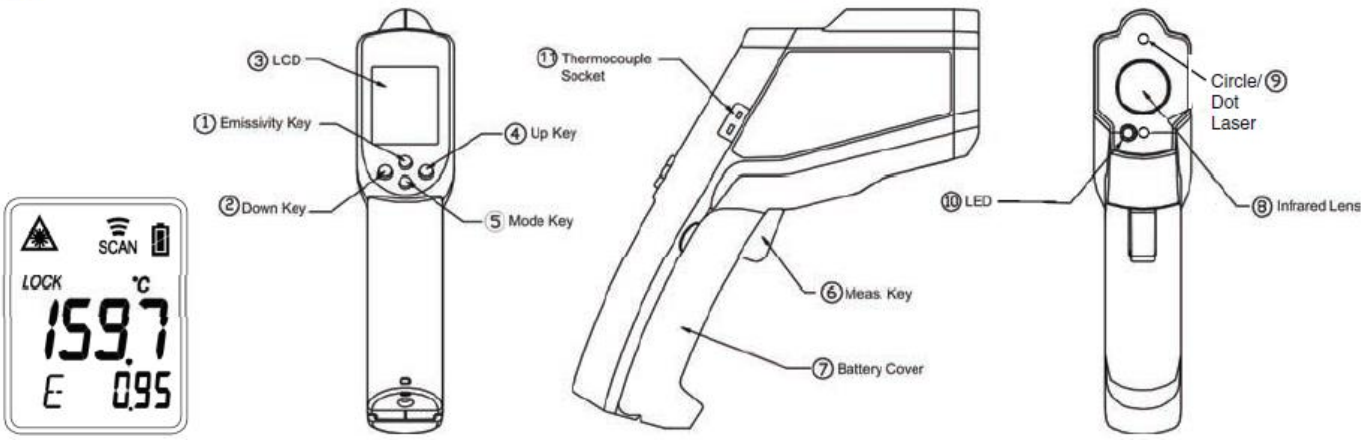
## 3.1 Battery Installation:

Open the battery compartment (1) on the front of the device by pulling in the direction of the arrow (2). Insert two “AA” batteries (3) into the battery compartment, and then close battery compartment.

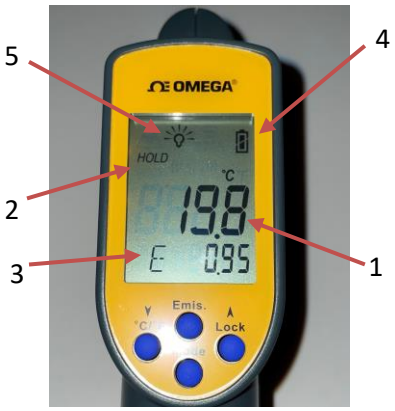



## 3.2 Product Layout:

1) Emissivity Key
2) “Down” (C/F) Key
3) LCD
4) “UP” (Lock) Key
5) Mode Key
6) Measurement Key
7) Battery Cover
8) Infrared Lens
9) Circle Dot Laser
10) Flashlight LED
11) Thermocouple Socket



## 3.3 Button Layout:




**LCD Display:**

1) Current Temperature Values
2) HOLD/SCAN Indicator
3) Icon for MAX, MIN, DIF, AVG, PROBE, ALARM and Emissivity
4) Low Battery Indicator
5) Backlit Display Indicator

## 3.4 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 60 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).

## 3.5 Button function

### 3.5.1 Setting Mode

1) Press the "MODE" key to cycle through the different modes.

### 3.5.2 Changing temperature units

1) While unit is any mode (without pressing the Measurement Key, press the "DOWN (C/F)" button to change temperature units.

### 3.5.3 Adjusting Laser

1) While holding the trigger and activating "SCAN" mode, press the "DOWN (C/F)" button to toggle the circle-dot laser pointer on and off. The outer perimeter of the dots indicates actual target size.

3.5.4 **Activating "SCAN LOCK" Mode**

1) To lock unit on "SCAN" to see continual changes in temperature without the unit shutting off, press and release the "Measurement" key (trigger). The display will show "HOLD" in the left-hand corner. Press the "LOCK" key once to lock in "SCAN" mode. To get out of the locked mode, press the "LOCK" key for 2 seconds.
2) To get out of LOCK mode, press the "LOCK" key for 2 seconds. The word "HOLD" will appear again.

3.5.5 **Adjusting Emissivity**

1) After turning on the unit, press the "Emissivity" key a few times to access the "Є" emissivity mode. Use the "UP/DOWN" buttons to adjust emissivity to desired value.
2) To exit "Emissivity Adjust" mode, press the "Mode" key one time.

3.5.6 **Adjusting High/Low Alarm**

1) Press the "MODE" key until "LAL (low alarm) or "HAL" (high alarm) is shown on the lower part of the display along with the current value. Use the "Up/Down" arrows to adjust to the desired value.
2) Press and hold "MODE" key to exit Alarm setting mode.

3.5.7 **Contact Temperature Measurement**

1) With unit turned on, press the "MODE" key until lower display shows "PRB" (probe).
2) Insert a thermocouple into the thermocouple socket (11) to obtain temperature reading on bottom portion of display. *Note, if there is no thermocouple connected, lower part of display will show "noP" to indicate "no probe attached."*

3.5.8 **Turning on "Backlight"**

1) To turn on Backlight, while holding "Measurement key," press the "Lock" key to turn Backlight on.
2) While holding "Measurement key," press "Lock" key again to turn backlight off.

3.5.9 **Displaying Mathematical Values**

1) To display mathematical values such as Min, Max, etc, press and release the "Measurement" key.
2) Press the "MODE" key to display (in this order): MAX (Maximum value seen during session); MIN (minimum value seen during session; DIF (difference (in °C or °F) seen during session; and AVG (average reading seen during session). All values will be shown in the lower part of the digital display.

3.6 **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)

## 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

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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 contactingOMEGA:

1. Purchase Order number under which the productwas 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.

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