

Wahl

WAHL INSTRUMENTS, INC.

Digital Infrared Thermometer

DHS115XEL



**Instruction
Manual**

CE

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1. Introduction

Thank you for purchasing the Wahl model DHS115XEL, non-contact infrared thermometer. To measure a temperature, simply point the unit at the object, pull the trigger and read the display. Releasing the trigger will put the unit into hold mode, which will display the captured reading for approximately six seconds and then power off. Make sure the target area is larger than the unit's spot size. For large target objects assure you are within target distance.

1-1 Features

DHS115XEL features wide temperature range and high D:S ratio. These allow the user to measure high temperature objects from a safe distance.

- High D:S ratio.
- Adjustable emissivity from 0.1 to 1.00 in 0.01 steps.
- Ultra low power consumption in shutdown mode.
- Extended long time measuring reliability.
- User selectable laser sighting.
- Backlit Liquid Crystal Display (LCD).
- °C or °F selectable.
- Electronic trigger lock.
- 10 point memory.
- Max / Min / Ave / ΔT

1-2 Applications

- Electrical troubleshooting.
- Automotive & transportation repair and maintenance.
- HVAC repair and audits.
- Science experiments.
- Manufacturing processes.
- Plant / Facility maintenance.
- Food safety and processing.

2.Safety Information


2-1 Warning

- 2-1.1 Do not point laser directly at eye.
Use caution around reflective surfaces.
Keep out of reach of children.

2-2 Cautions

- 2-2.1 DO NOT submerge the instrument in water.
- 2-2.2 This product is not designed for use in medical evaluations.
This product is intended for use in industrial, scientific and educational purposes only.

2-3 Safety symbols

- 2-3.1  Dangerous, refer to this manual before using the meter.

- 2-3.2  CE Certification.

- 2-3.3 This instrument conforms to the following standards:

EN61326 : Electrical equipment for measurement, control and laboratory use.

IEC61000-4-2 : Electrostatic discharge immunity test.

IEC61000-4-3 : Radiated , radio-frequency, electromagnetic field immunity test.

IEC61000-4-8 : Power frequency magnetic field immunity test.

Tests were conducted using a frequency range of 80-1000MHz with the instrument in three orientations. The average error for the three orientations is $\pm 0.5^{\circ}\text{C}$ ($\pm 1.0^{\circ}\text{F}$) at 3V/m throughout the spectrum. However, between 781-1000MHz at 3V/m, the instrument may not meet its stated accuracy.

3. Specifications

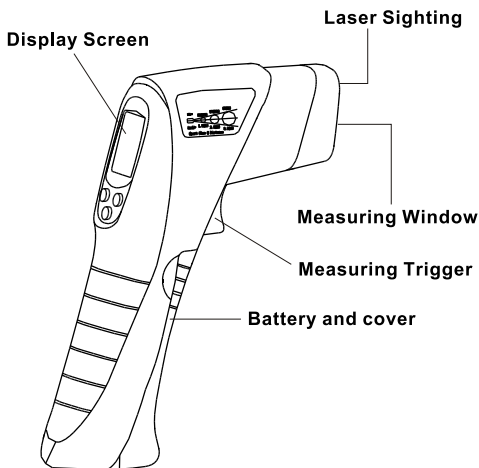
Items	DHS115XEL
Temperature Range	-25~999°F (-32~535°C)
Accuracy	±54°F(±3°C) From -25~-4°F (-32~-20°C) ±3°F (±2°C) From -4~212°F (-20~100°C) ±2% From 212~999°F (100~535°C)
Spectral Range	5~14 μm
Repeatability	±2°F (1°C)
Resolution	0.1°F (0.1°C)
Response Time	500 ms.
Emissivity	Adjustable 0.1~1.0
Distance/Spot Ratio	12:1
Battery Type / Life	9V (NEDA1604, IEC6F22, 006P) / approx. 15 hours w/o laser
Operating Temp.	32~122°F (0~50°C), 10~90%RH
Storage Temp.	14~140°F (-10~60°C)
°C/°F Switchable	YES
Auto Power Off	Automatically after approx 6sec.
Backlight	YES
Laser Sight Switchable	YES
Max/Min/Avg	YES
10 Point Memory	YES
Audio Alarm	YES
Trigger Lock	YES
Size	6.8×3.6×1.8 inch (173×93×45mm)
Weight	7.8 oz. (220g) w/battery

4. Operation Instructions

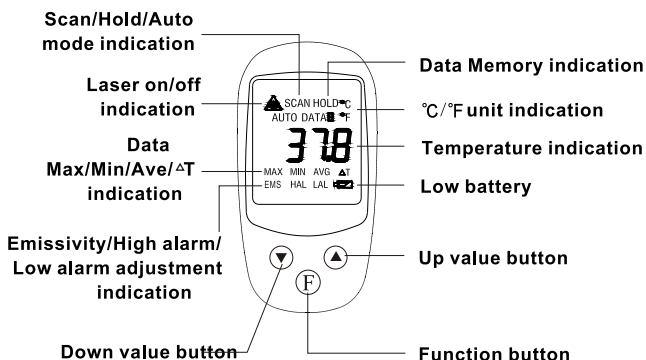
4-1 Quick Start

To measure a temperature, point the unit at the target you want to measure, pull the trigger and hold. Be sure to consider the target area inside the angle of vision of this instrument. The laser spot is used for aiming purposes only.

4-2 Instrument Diagram



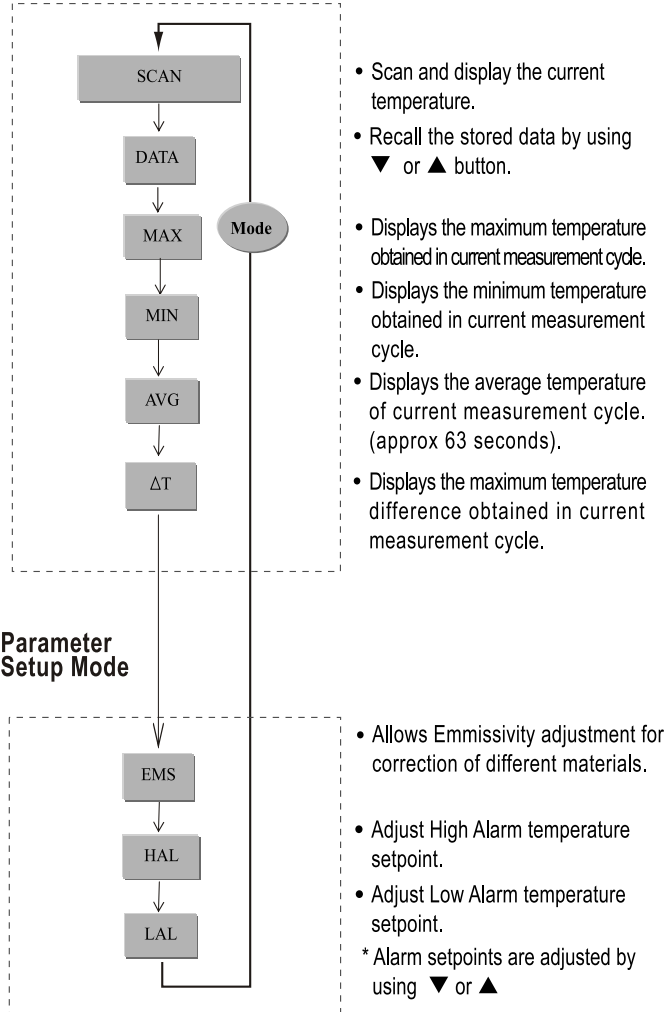
LCD & Control Panel



4-3 Advanced Functions

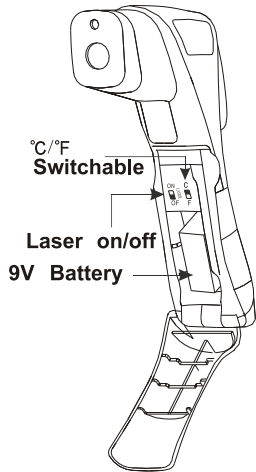
To operate advanced functions, use the **MODE** button to select the desired function. All other data is displayed on the Secondary Display. The sequential operations and their explanations are shown in the following flow-chart.

4-3.1 Operation Mode



4-4 Displays and Controls

4-4.1 Modes of Operation - In **SCAN** mode, the instrument displays the current temperature, in Celsius or Fahrenheit, on the Liquid Crystal Display. When the trigger is released and unit is not in Auto mode, the unit will switch to **HOLD** mode and display the last reading for approximately 6 seconds.



4-4.2 AUTO - Auto mode allows measurements without holding the trigger in. To activate, pull trigger and press "F" key until "AUTO" is displayed. "SCAN" will flash indicating unit is taking measurements. Unit will stay powered up and continue to make measurements when trigger is released. To exit Auto mode, press "F" key.

4-4.3 °C/°F Switch - The °C/°F switch is located in the battery compartment located in the handle of the instrument.



4-4.4 Laser On/Off Switch - The Laser On/Off Switch is located in the battery compartment located in the handle of the instrument.

4-4.5 Battery - Battery is located in the battery compartment located in the handle of the instrument. It is suggested to replace the battery upon indication of the low battery symbol on the LCD.

4-5 Memory

4-5.1 Memory Read - Pull and release the trigger, putting the unit in HOLD mode. While unit is in HOLD mode, press "**F**" key until DATA (0-9) is displayed. Data for selected memory location will be displayed on LCD. To change memory locations, press the arrow keys. Unit will power off if no keys are pressed after 6 seconds.

Note: If the unit is in the DATA mode when powered up with the trigger pulled, you must press the "**F**" button to deselect the DATA mode before releasing the trigger. Failure to do this will result in the current temperature being written into memory upon trigger release.

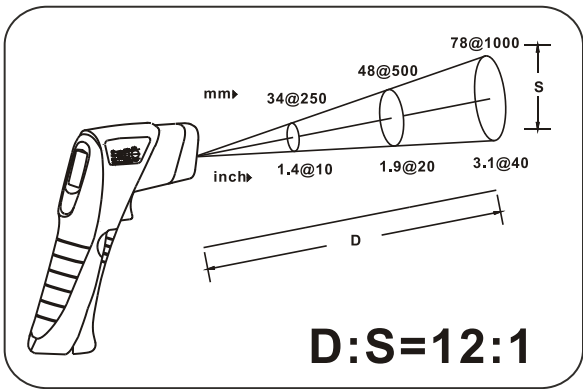
4-5.2 Memory Erase - There is no memory erase feature in this model. It will however write new data over any existing data when in the record mode.

4-5.3 Memory Record - Actual temperatures only may be recorded into memory. Max, Min, Ave and Delta T temperatures cannot be recorded into memory. To Record, pull the trigger and press the "**F**" key until DATA (0-9) is displayed. Press the arrow buttons to select the memory location prior to the one you want to record to, for example if the unit is displaying "**DATA3**", upon release of the trigger Data will be saved into DATA4 location. To complete recording, release the trigger and the unit will beep 1 time indicating data has been recorded. The DATA# will also increment.

5. Technical Information

5-1 Distance to Spot Ratio

The D:S Ratio is the ratio of the distance from the target to the target diameter. This is determined by the optics of the unit. The smaller the target, the closer you should be to it. For an accurate measurement, the target must completely fill the spot. Failure to fill the spot will result in an inaccurate measurement, due to the averaging of the target with the surrounding areas.



5-2 Emissivity

Emissivity is the ability of an object to emit or absorb energy. Perfect emitters have an emissivity of 1.00, absorbing 100% of incident energy. An object with an emissivity of 0.80 will absorb 80% and reflect 20% of the incident energy. Emissivity is defined as the ratio of the energy radiated by an object at a given temperature to the energy emitted by a perfect radiator at the same temperature. All values of emissivity fall between 0.00 and 1.00.

Emissivity Table

Material	Temp °C / °F	Emissivity
Gold(pure highly polished)	227/440	0.02
Aluminum foil	27/81	0.04
Aluminum disc	27/81	0.18
Aluminum household(flat)	23/73	0.01
Aluminum (polished plate 98.3%)	227/400	0.04
	577/1070	0.06
Aluminum (rough plate)	26/78	0.06
Aluminum (oxidized @599C)°	199/390	0.11
	599/1110	0.19
Aluminum surfaced roofing	38/100	0.22
Tin(bright tinned iron sheet)	25/77	0.04
Nickel wire	187/368	0.1
Lead(pure 99.95-unoxidized)	127/260	0.06
Copper	199/390	0.18
	599/1110	0.19
Steel	199/390	0.52
	599/1110	0.57
Zinc galvanized sheet iron(bright)	28/82	0.23
Brass(highly polished):	247/476	0.03
Brass(hard rolled-polished w/lines):	21/70	0.04
Iron galvanized(bright)	-	0.13
Iron plate(completely)	20/68	0.69
Rolled sheet steel	21/71	0.66
Oxidized iron	100/212	0.74
Wrought iron	21/70	0.94
Molten iron	1299-1399/3270-2550	0.29
Copper(polished)	21-117/70-242	0.02
Copper(scraped shiny not mirrored)	22/72	0.07
Copper(Plate heavily oxidized)	25/77	0.78
Enamel(white fused on iron)	19/66	0.9
Formica	27/81	0.94
Frozen soil	-	0.93
Brick(red-rough)	21/70	0.93
Brick(silica-unglazed rough)	1000/1832	0.8
Carbon(T-carbon 0.9% ash)	127/260	0.81
Concrete	-	0.94
Glass(smooth)	22/72	0.94
Granite(polished)	21/70	0.85
Ice	0/32	0.97
Marble(light gray polished)	22/72	0.93
Asbestos board	23/74	0.96
Asbestos paper	38/100	0.93
	371/700	0.95
Asphalt(paving)	4/39	0.97

6.Maintenance

6-1Lens - Clean the lens by blowing off loose particles using clean compressed air. Gently brush remaining debris away with a camelhair brush. Use a cotton swab moistened with distilled water to carefully wipe the lens surface.

NOTE:

DO NOT use solvents to clean the lens.

6-2Housing - Clean by wiping with a damp soft cloth. Mild detergent may be used as needed.



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