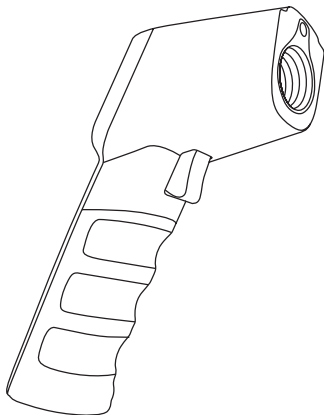


Digital Laser Thermometer

Instruction Manual



Specifications

Product	Infrared Thermometer
Accuracy	$\geq 100^{\circ}\text{C}, \pm 2\%$ / $\leq 100^{\circ}\text{C}, \pm 2^{\circ}\text{C}$
Response time	0.55 seconds
Emissivity	Adjustable, 0.1 to 1.0
Distance to spot ratio	12 : 1
Storage temperature	-20°C to 50°C (-4 - 122°F)
Operating Temperature	0°C to 50°C (32 - 122°F)
Power/Power life	2 x AAA batteries - about 9 hours

Warning

Do not point laser directly or indirectly (through reflective surfaces) at eye.

Operation

Turn on

Once the batteries are placed into the battery compartment, press the measurement trigger. The thermometer will then turn on and show the temperature readings.

LCD display

The LCD screen displays the functions and temperature readings (as shown in diagram 2).

Measurement

Point the laser at the required target and press the measurement trigger. The current temperature reading will display after the button is held for at least half a second.

Turn off

The thermometer will turn off automatically after 15 seconds without any operation.

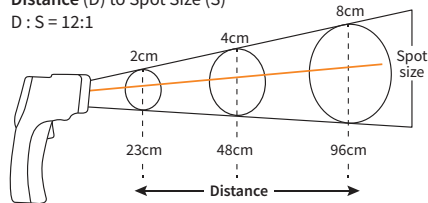
Distance to Spot Ratio

The further the thermometer is from the target, the larger the measurement spot area. That means: As the distance from thermometer to the object increases, the spot size of the measuring area becomes larger, (as Diagram 1). This is called "D:S" (Distance to Spot Ratio). For example, the diameter of the target spot area will be 3cm when you test from distance 36cm, and the thermometer will show the average temperature of target spot area within a diameter of 3cm.

Diagram 1

Distance (D) to Spot Size (S)

D : S = 12:1



Emissivity

EMS (Emissivity) is a measure of a material's ability to emit infrared energy. Since not all surfaces are the same, you may get variations in emitted infrared energy. Emissivity is measured on a scale from 0.00 to just below 1.00. Inaccurate readings will result from measuring shiny or polished metal surfaces (for example, stainless steel or aluminium).

Please note: Thermometer can not test the temperature of target objects through glass, steam, dust or smog.

Function Diagram

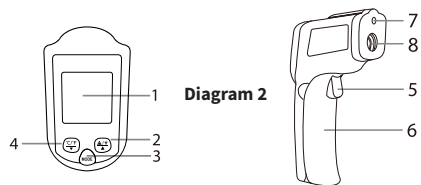
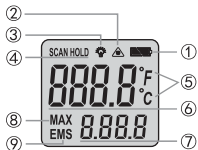


Diagram 2

1. LCD screen
2. Laser (up button)
3. Function button
4. °C/°F (down button)

5. Measurement trigger
6. Battery compartment
7. Laser hole
8. Infrared Sensor



- ① Battery symbol
- ② Laser signal on/off
- ③ Backlight sign on/off
- ④ Scan
- ⑤ °C/°F symbol
- ⑥ Current temperature
- ⑦ Max temperature emissivity reading
- ⑧ Max temperature sign
- ⑨ Adjustable emissivity sign

Function

1. To toggle between °C and °F, press button 4
2. To alternate laser between on or off, press button 2.
3. Press button 3 to get into the emissivity adjustments. Press button 2 or button 4 to adjust the emissivity.
4. To turn the backlight on or off, press and hold button 5 and then at the same time press button 2.

Caution

This infrared thermometer should be protected from the following:

- EMF (electro-magnetic fields) from arc welders, 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 heat temperatures.

Maintenance

Lens cleaning: Use clean compressed air to blow off loose particles, use the soft brush to dust debris away. If required, clean with a damp cloth.

NOTES

1. Do not use solvent to clean lens.
2. Do not submerge the unit in water.

Emissivity of Surfaces			
Material	Emissivity	Material	Emissivity
Aluminium	0.20-0.40	Human skin	0.98
	0.02-0.04	Graphite	0.20-0.60
Brass	0.40-0.80	Plastic	0.95
	0.02-0.05	Rubber	0.95
Gold	0.01-0.10	Plastic	0.85-0.95
Iron	0.70-0.90	Concrete	0.95
Steel	0.70-0.90	Cement	0.96
Asbestos	0.95	Soil	0.90-0.98
Plaster	0.80-0.90	Mortar	0.89-0.91
Asphalt	0.95	Brick	0.90-0.96
Rock	0.70	Marble	0.94
Wood	0.90-0.95	Textile	0.90
Charcoal	0.96	Paper	0.95
Carbon	0.85	Sand	0.90
Lacquerwork	0.97	Clay	0.92-0.96
Carbon cement	0.90	Gravel	0.95
Soap bubble	0.75-0.80	Glass	0.85-0.92
Water	0.93	Textile	0.95
Snow	0.83-0.90	Heated food	0.95
Ice	0.96-0.98	Plastic	0.95
Frozen foods	0.95	Oil	0.94
Ceramics	0.95	Steel and iron	0.80
Limestone	0.98	Wool	0.94
Paint	0.93	Lead	0.50