OPERATION MANUAL
INFRARED THERMOMETER

Model:SH9110

1.Description of parts

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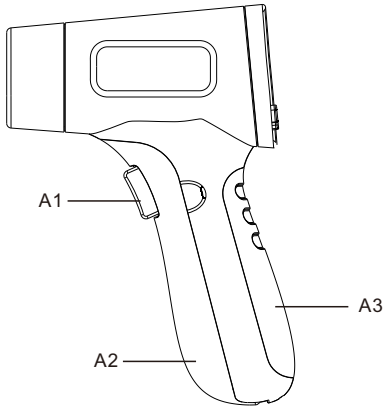

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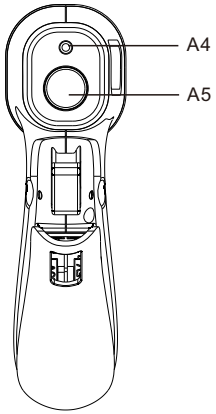

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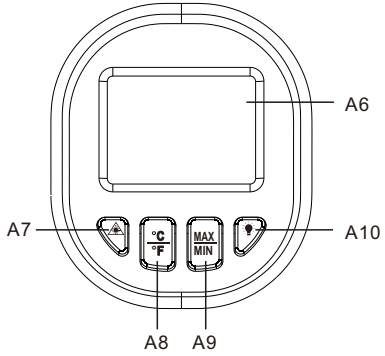


A1: Measurement Trigger
A2: Bsttery Cover
A3: Handle Grip
A4: Laser Pointer Beam
A5: IR Sensor
A6: LCD Display
A7: Laser point open
A8: ℃/℉ Switch
A9: MAX/MIN Temperature
A10: Backlight

Features:

- Precise non-contact measurements
- Built-in laser pointer
- ºC/ºF switchable button
- Automatic Data Hold & Auto Power Off
- The thermometer at 12 inches away measures 1 inch target
- Backlit LCD display

Useful Applications

This thermometer is perfect for checking the temperature of pizza stones to know when you are ready to cook. You can also use it to scan your grill surface and identify hot and cold spots for better grilling.

Field of View

The thermometer's field of view is 12:1, meaning that if the thermometer is 12 inches from the target, the diameter of the object under test must be at least 1 inch wide. Other distances are shown below in the field of view diagram Refer to the chart printed on the thermometer for more information.

2. SAFETY

- Be careful when the laser beam is turned on.
- Do not let the beam enter your eye, another person's eye or the eye of an animal.
- Be careful not to let the beam on a reflective surface in case of reflecting the beam to eyes.
- Do not allow the laser light beam impinge on any gas or area which can explode.

3. SPECIFICATIONS

- **General specifications**

DISPLAY	LCD with Backlight
Temperature Range	-50ºC to 500ºC (-58ºF to 932ºF)
POLARITY	Automatic (no indication for positive polarity); Minus (-) sign for negative polarity
EMISSIVITY	0.95 fixed value
FIELD OF VIEW	D/S-Approx 12:1 ration (D=Distance, S=Spot) (Has 90% encircled energy at the focal point)
DIODE LASER	Output<1mW, Wavelength 630~670nm, class 2 (II) Laser product
SPECTRAL RESPONSE	6~14um
POWER OFF	Automatic shut off after 7 seconds, approx.
OPERATING TEMP	0ºC to 50ºC (32ºF to 122ºF)
STORAGE TEMP	-20ºC to 60ºC (-4ºF to 140ºF)
RELATIVE HUMIDITY	10% - 90% RH operating, <80% RH storage
POWER SUPPLY	2 AAA batteries
WEIGHT	160 g
SIZE	155*105*55mm

• Infrared thermometer specifications

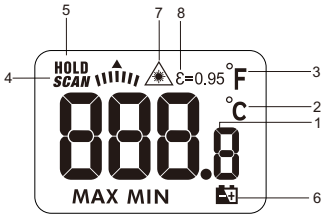
Range		Accuracy
-50.0°C to 500°C	-50.0°C to -20.0°C	± 5°C
	-20.0°C to 500°C	± 2% of reading or ± 2°C
-58°F to 932°F	-58°F to -4.0°F	± 9°F
	-4.0°F to 932°F	± 2% of reading or ± 5°F

Note:

Accuracy is given at 18°C to 28°C (64°F to 82°F), less than 80% RH.
Field of View:
Make sure that the target is larger than the unit's spot size. The smaller the target, the closer you should be to it. When accuracy is critical, make sure the target is at least twice as large as the spot size.
Emissivity: 0.95 fixed value

4. INDICATOR

① Digital Readout
② Temperature C (Celsius)
③ Temperature F (Fahrenheit)
④ Measuring Indicator
⑤ Data Hold
⑥ LOW Battery Indicator
⑦ Laser Point
⑧ Fixed Emissivity (0.95)



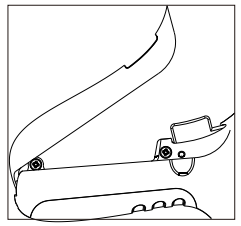
5. MEASUREMENT OPERATION

① Hold the thermometer by its Handle Grip and point it toward the surface to be measured.
② Pull and hold the Trigger to turn the meter on and begin testing. The display will light if the battery is good. Replace the battery if the display does not light.
③ While measuring, the SCAN display icon will appear in the upper left hand corner of the LCD.
④ Push the Laser button to turn on the laser pointer. When the laser turns on, the laser icon [ ] will appear on the LCD over the temperature. Aim at the red beam approximately a half inch above the point of test (pressing the laser button again turns the laser off).
⑤ Select the temperature units (°C or °F) using the °C and °F buttons.
⑥ Push the Backlight key to turn on the LCD backlight function.
⑦ Press "Mode" button to change Max/Min Value.
⑧ The thermometer will automatically power down approximately 7 seconds after the trigger is released.

Note: Measurement considerations
Holding the thermometer by its handle, point the IR Sensor toward the object whose temperature is to be measured.The thermometer automatically compensates for the temperature deviations from ambient temperatures. Keep in mind that it will take up to 30 minutes to adjust if wide ambient temperature is to be measured following high temperature measurements. Several minutes are required after the low (and before the high) temperature measurements are made. This is a result of the cooling process which must take place for the IR sensor.

6. BATTERY REPLACEMENT

① When the battery is low, the LCD will display [ ].
② Open battery cover and replace with 2 new AAA batteries.



7. NOTES

• How it Works

Infrared thermometers measure the surface temperature of an object. The unit's optics sense emits, reflects, and transmits energy, which is collected and focused onto a detector. The unit's electronics translate the information into a temperature reading which displays on the unit. In units with a laser is used for aiming purposes only.

• Field of View

Make sure that the target is larger than the unit's spot size. The smaller the target, the closer you should be to it. When accuracy is critical, make sure the target is at least twice as large as the spot size.

• Distance & Spot Size

As the distance (D) from the object increases, the spot size (S) of the area measured by the unit becomes larger. See: Fig 1.

• Locating a Hot Spot

To find a hot spot aim the thermometer outside the area of interest, then scan across with an up and down motion until you locate a hot spot.

• Reminders

① Not recommended for use in measuring shiny or polished metal surfaces (stainless steel, aluminum, etc.). See Emissivity
② The unit cannon measure through transparent surfaces. It will measure the surface temperature of the glass instead.
③ Steam, dust, smoke, etc., can prevent accurate measurement by obstructing the unit's optics.

• Emissivity

Most (90% of typical applications) 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 surface to be measured with masking tape or flat black paint. Allow time for the tape to reach the same temperature as the material underneath it. Measure the temperature of the tape or painted surface.