MESTEK IR05B

MESTEK IR05B Infrared Thermometer User Manual

Model: IR05B

1. Introduction

The MESTEK IR05B is a professional high-temperature infrared thermometer designed for accurate non-contact temperature measurement. It also features a K-type probe for contact measurements, offering versatility for various industrial and domestic applications. This device is equipped with dual laser pointers for precise targeting, adjustable emissivity, and multiple measurement modes including MIN, MAX, AVG, and DIF. It is ideal for use in environments such as high-end ovens, pizza ovens, smelting, casting, metal melting, alloy processing, ceramics, welding, and asphalt applications. Please note, this device is not suitable for measuring human or animal body temperature.

Safety Information: Always exercise caution when using the laser function. Do not point the laser directly at eyes or reflective surfaces. Keep the device away from children.

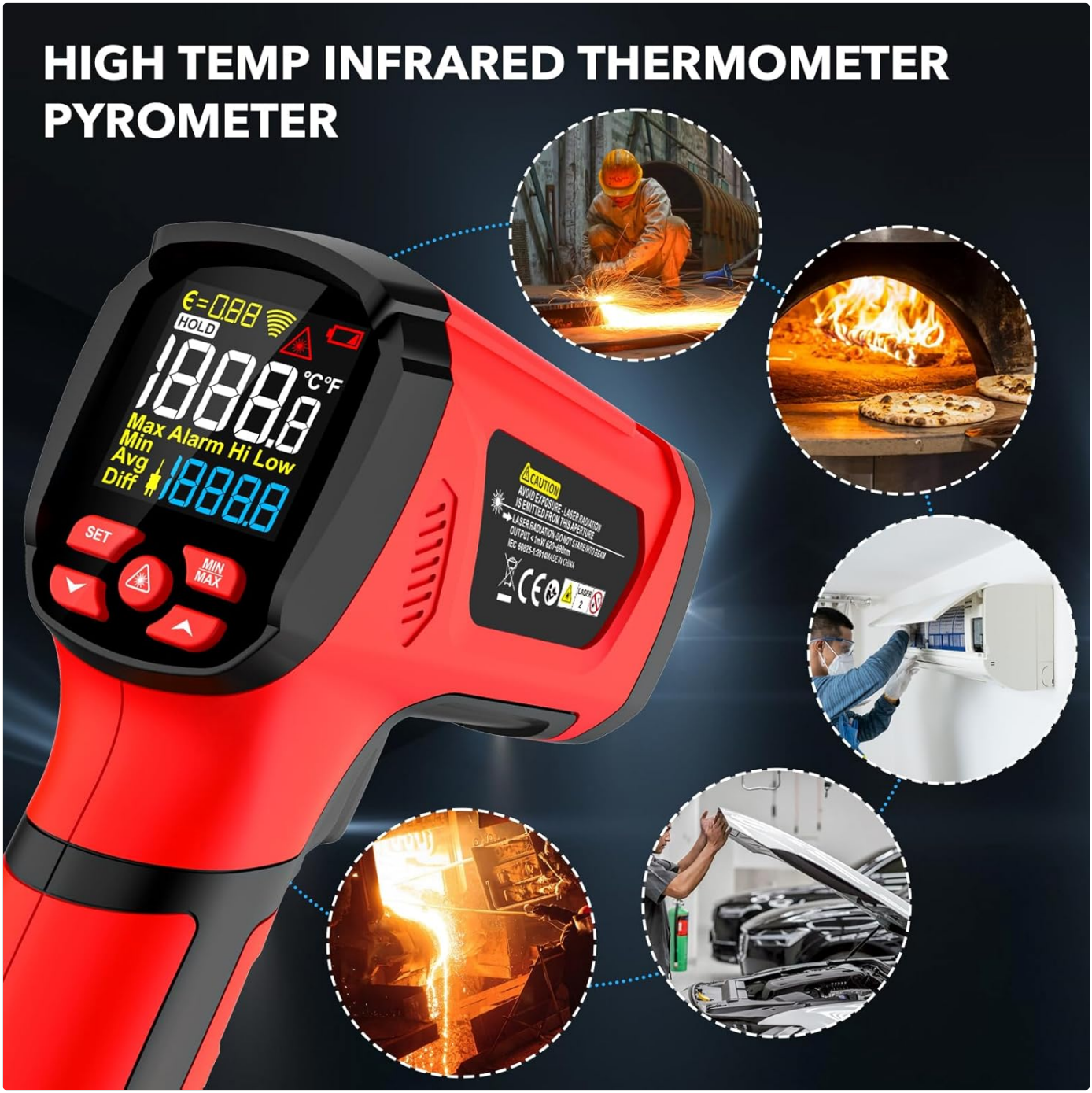


Image: The MESTEK IR05B thermometer being used in various high-temperature industrial settings, including smelting, ovens, and HVAC systems.

2. Package Contents

Verify that all items listed below are included in your package:

- 1 x MESTEK IR05B Infrared Thermometer
- 1 x K-Type Probe
- 2 x AA 1.5V Batteries
- 1 x User Manual
- 1 x Storage Bag

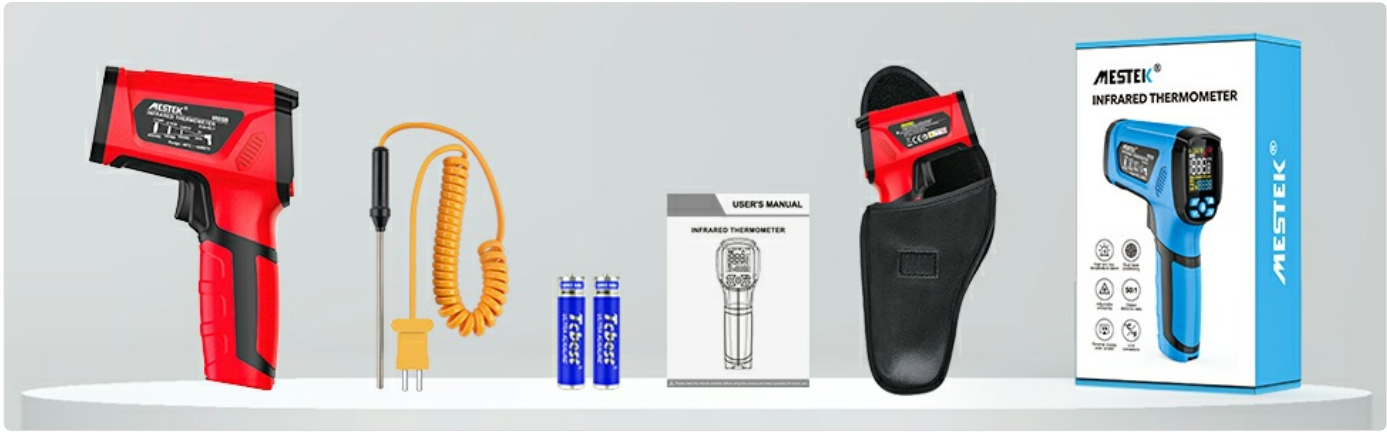


Image: A visual representation of the MESTEK IR05B thermometer, K-type probe, batteries, user manual, and storage bag included in the product package.

3. Product Overview

Familiarize yourself with the components of your MESTEK IR05B Infrared Thermometer:

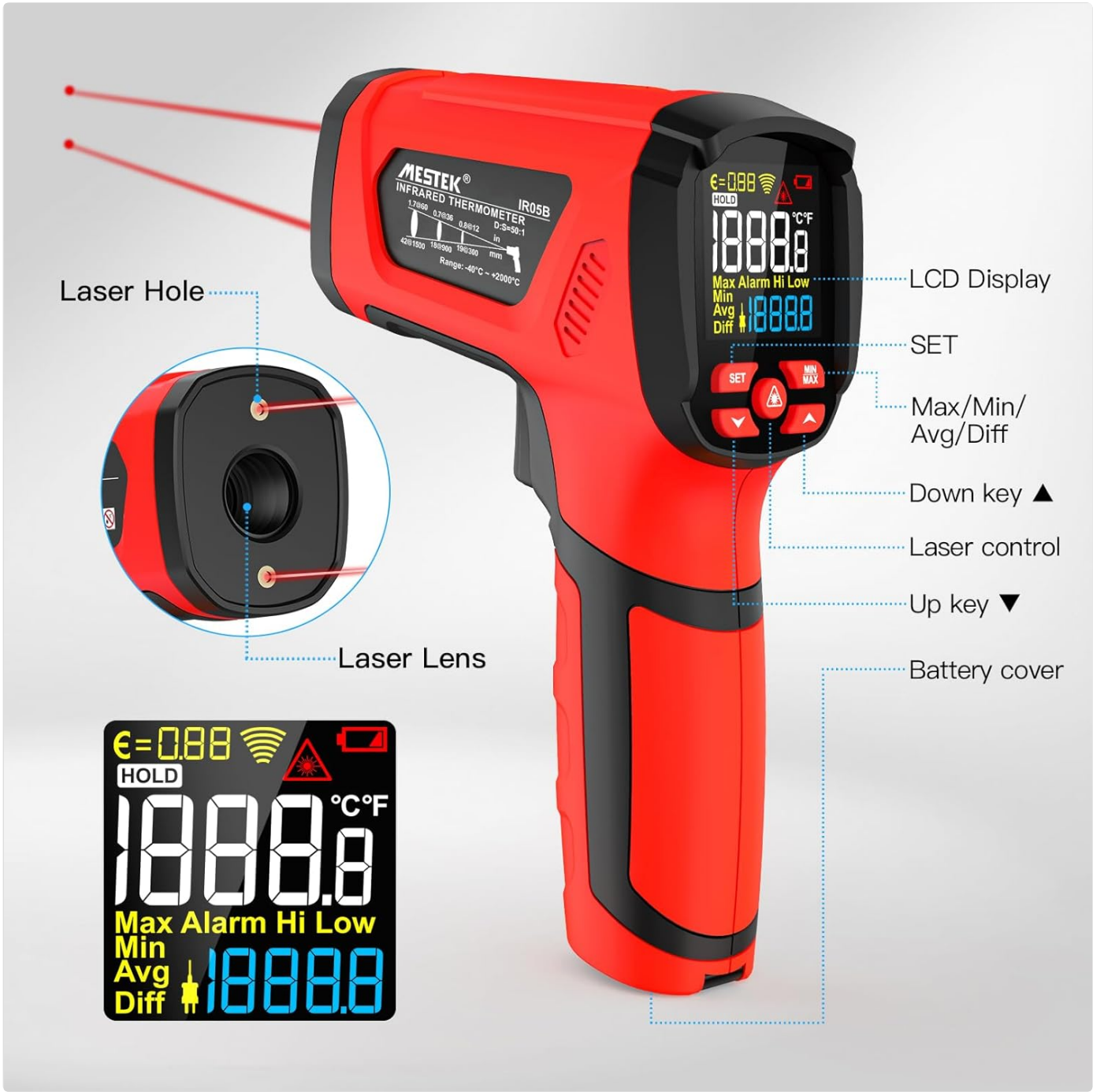


Image: A detailed diagram of the MESTEK IR05B thermometer, highlighting key components such as the Laser Hole, Laser Lens, LCD Display, SET button, Max/Min/Avg/Diff buttons, Up/Down keys, Laser control, and Battery cover.

- **Laser Hole:** Emits the laser for targeting.
- **Laser Lens:** Infrared sensor for non-contact temperature measurement.
- **LCD Display:** Shows temperature readings, modes, and settings.
- **SET Button:** Accesses settings and emissivity adjustment.
- **Max/Min/Avg/Diff Button:** Cycles through measurement modes.
- **Up/Down Keys:** Adjust values in settings or navigate menus.
- **Laser Control:** Activates/deactivates the laser pointers.
- **Battery Cover:** Access to the battery compartment.

4. Setup

4.1 Battery Installation

1. Locate the battery cover at the bottom of the handle.
2. Open the battery cover.
3. Insert two 1.5V AA batteries, ensuring correct polarity (+/-).
4. Close the battery cover securely.

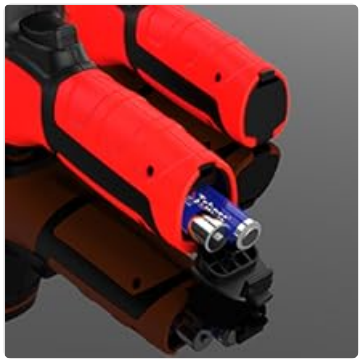


Image: A close-up view of the MESTEK IR05B thermometer's handle, showing the battery compartment with two AA batteries inserted.

5. Operating Instructions

5.1 Power On/Off

Press the trigger to power on the device. The thermometer will automatically power off after approximately 35 seconds of inactivity to conserve battery life.

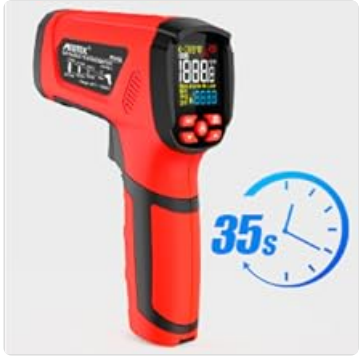


Image: The MESTEK IR05B thermometer display with an indicator for the 35-second auto-off feature, demonstrating power-saving functionality.

5.2 Non-Contact (Infrared) Measurement

1. Point the thermometer's laser lens towards the target object.
2. Press and hold the trigger. The dual laser pointers will indicate the measurement area.
3. The temperature reading will appear on the LCD display within 0.5 seconds.
4. Release the trigger to hold the reading on the display.

The device has a Distance to Spot Ratio (D:S) of 50:1, meaning it can accurately measure a 1-inch spot from 50 inches away. This allows for safe measurement of high-temperature or hard-to-reach objects.

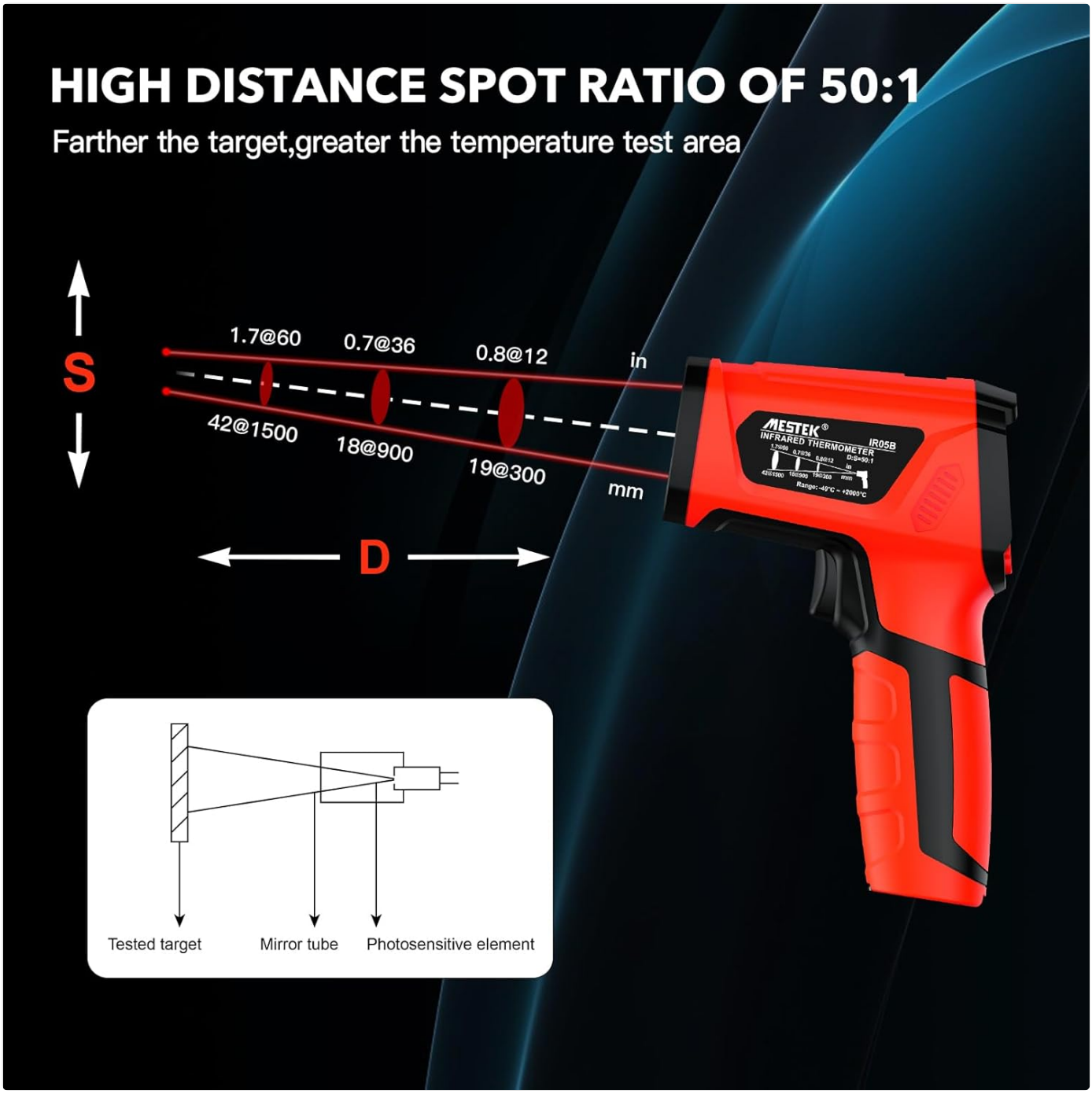


Image: A diagram showing the MESTEK IR05B thermometer and its 50:1 Distance to Spot Ratio, illustrating how the measurement spot size increases with distance from the target.

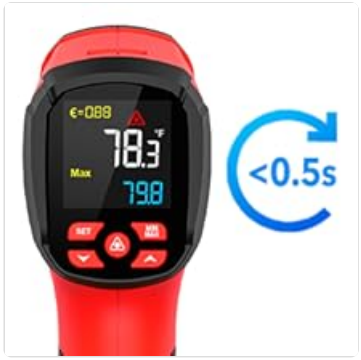
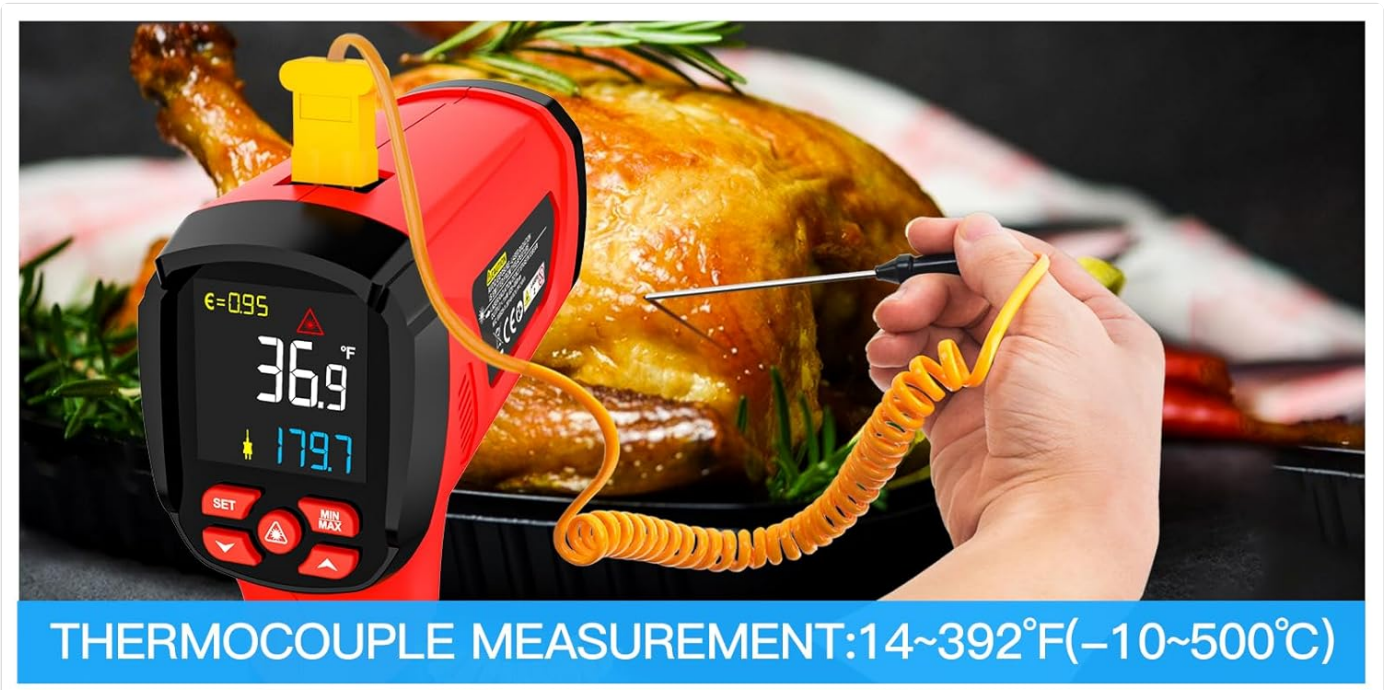


Image: The MESTEK IR05B thermometer's display indicating a measurement speed of less than 0.5 seconds, highlighting its rapid response time.

5.3 Contact (K-Type Probe) Measurement

1. Insert the K-type probe into the designated port on the thermometer.
2. Place the tip of the K-type probe in direct contact with the object whose temperature you wish to measure.
3. The temperature reading from the probe will be displayed on the screen.



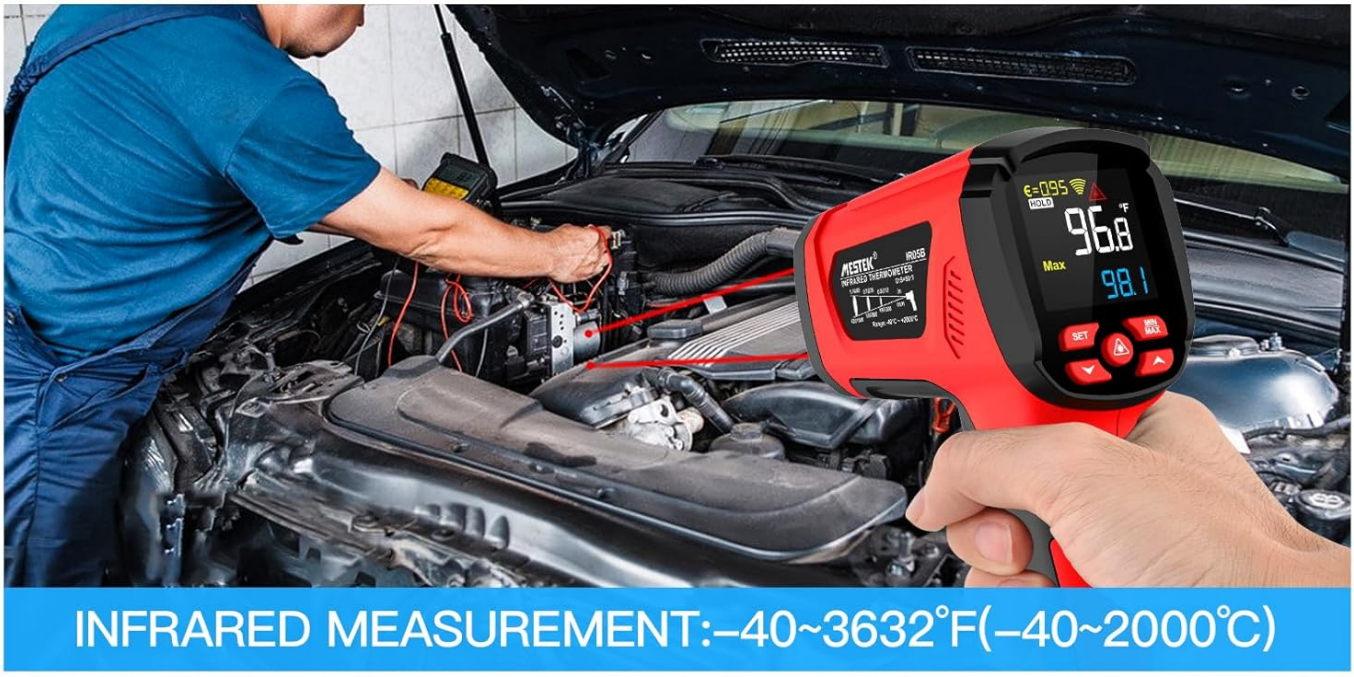
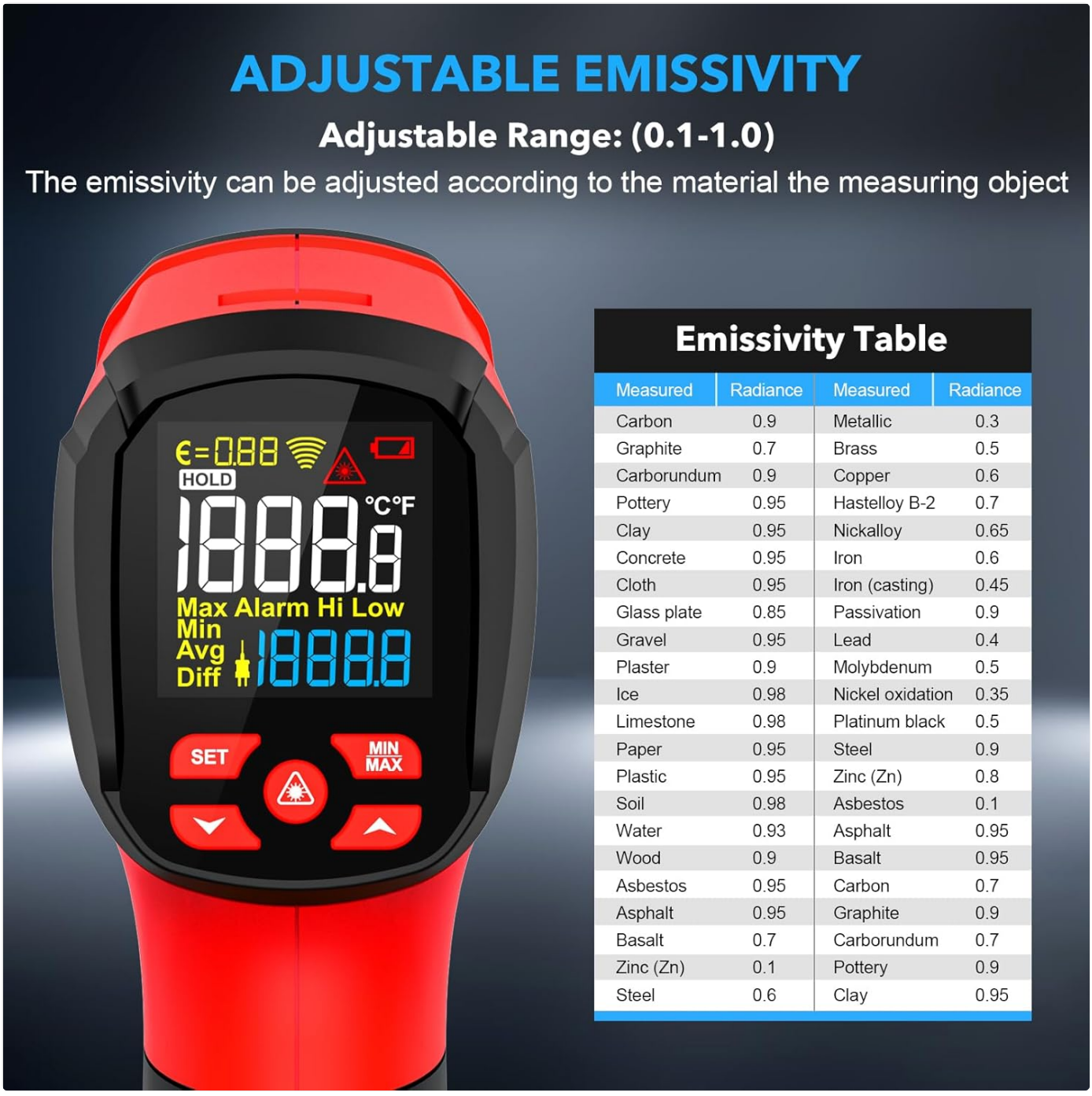


Image: The MESTEK IR05B thermometer demonstrating both non-contact infrared measurement and contact measurement using the K-type thermocouple probe, showing its dual functionality.

5.4 Emissivity Adjustment

Emissivity (ε) is crucial for accurate infrared temperature measurement. Different materials have different emissivity values. The MESTEK IR05B allows adjustment from 0.1 to 1.0.

1. Press the 'SET' button to enter the settings menu.
2. Use the Up/Down keys to navigate to the emissivity setting (ε).
3. Adjust the value using the Up/Down keys according to the material being measured. Refer to the emissivity table for common materials.
4. Press 'SET' again to confirm and exit.



Emissivity Table

Measured	Radiance	Measured	Radiance
Carbon	0.9	Metallic	0.3
Graphite	0.7	Brass	0.5
Carborundum	0.9	Copper	0.6
Pottery	0.95	Hastelloy B-2	0.7
Clay	0.95	Nickalloy	0.65
Concrete	0.95	Iron	0.6
Cloth	0.95	Iron (casting)	0.45
Glass plate	0.85	Passivation	0.9
Gravel	0.95	Lead	0.4
Plaster	0.9	Molybdenum	0.5
Ice	0.98	Nickel oxidation	0.35
Limestone	0.98	Platinum black	0.5
Paper	0.95	Steel	0.9
Plastic	0.95	Zinc (Zn)	0.8
Soil	0.98	Asbestos	0.1
Water	0.93	Asphalt	0.95
Wood	0.9	Basalt	0.95
Asbestos	0.95	Carbon	0.7
Asphalt	0.95	Graphite	0.9
Basalt	0.7	Carborundum	0.7
Zinc (Zn)	0.1	Pottery	0.9
Steel	0.6	Clay	0.95

Image: The MESTEK IR05B thermometer's display showing the emissivity setting and an accompanying table listing emissivity values for various materials like carbon, brass, iron, and wood.

5.5 Measurement Modes (MIN/MAX/AVG/DIF)

Press the 'MAX/MIN/AVG/DIF' button to cycle through the following measurement modes:

- **MAX:** Displays the maximum temperature recorded during a continuous measurement.
- **MIN:** Displays the minimum temperature recorded during a continuous measurement.
- **AVG:** Displays the average temperature recorded during a continuous measurement.
- **DIF:** Displays the difference between the maximum and minimum temperatures recorded.

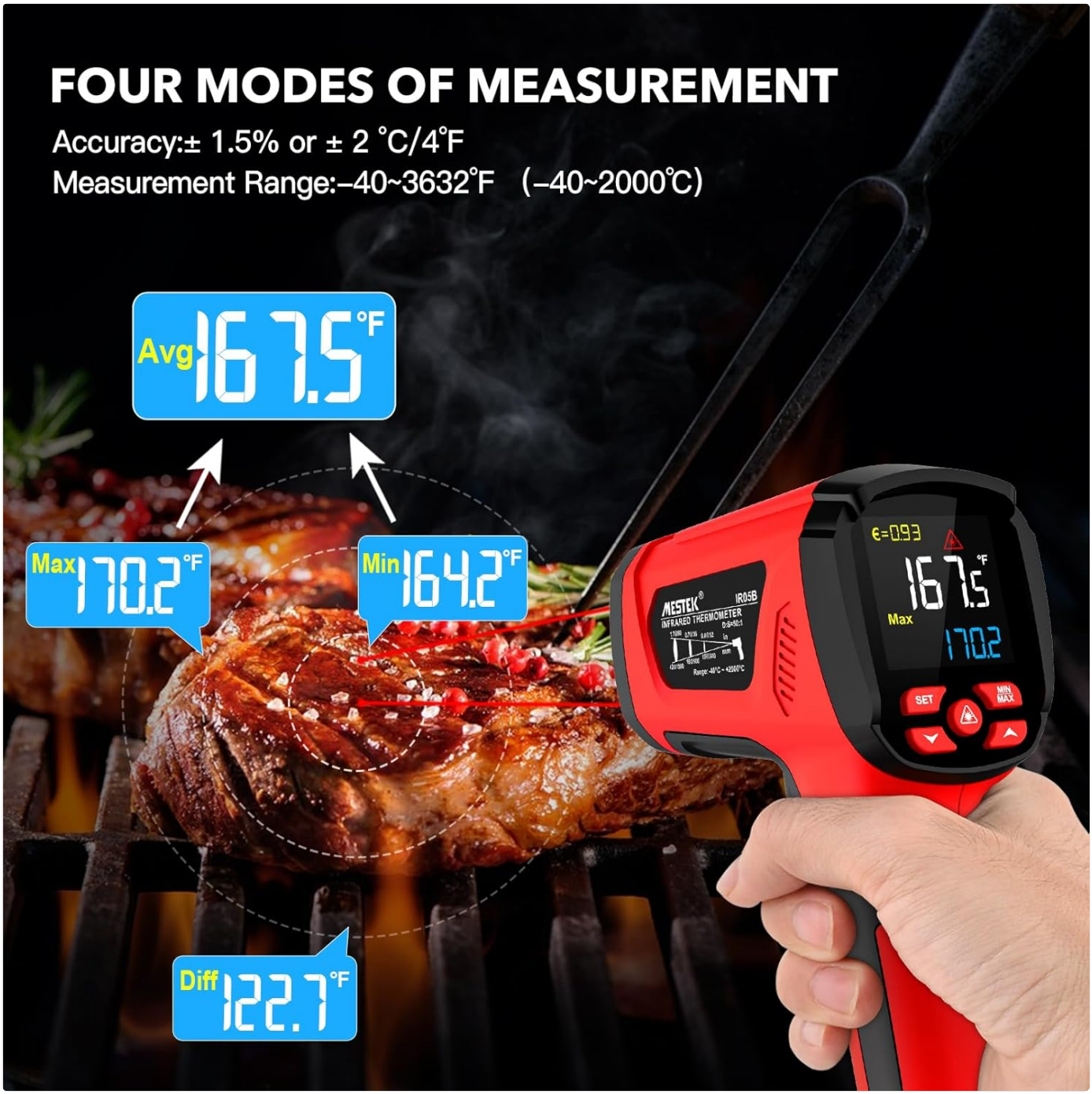


Image: The MESTEK IR05B thermometer displaying readings for Max, Min, Avg, and Diff modes, illustrating its multi-functional measurement capabilities, shown while measuring a grilled steak.

5.6 High/Low Temperature Alarms

The thermometer can be set to alert you if the measured temperature exceeds or falls below a specified threshold.

1. Press the 'SET' button to enter the settings menu.
2. Use the Up/Down keys to navigate to the High Alarm (HAL) or Low Alarm (LAL) settings.
3. Adjust the desired temperature threshold using the Up/Down keys.
4. Press 'SET' to confirm and exit. An audible and/or visual alarm will activate if the temperature goes outside the set

range.

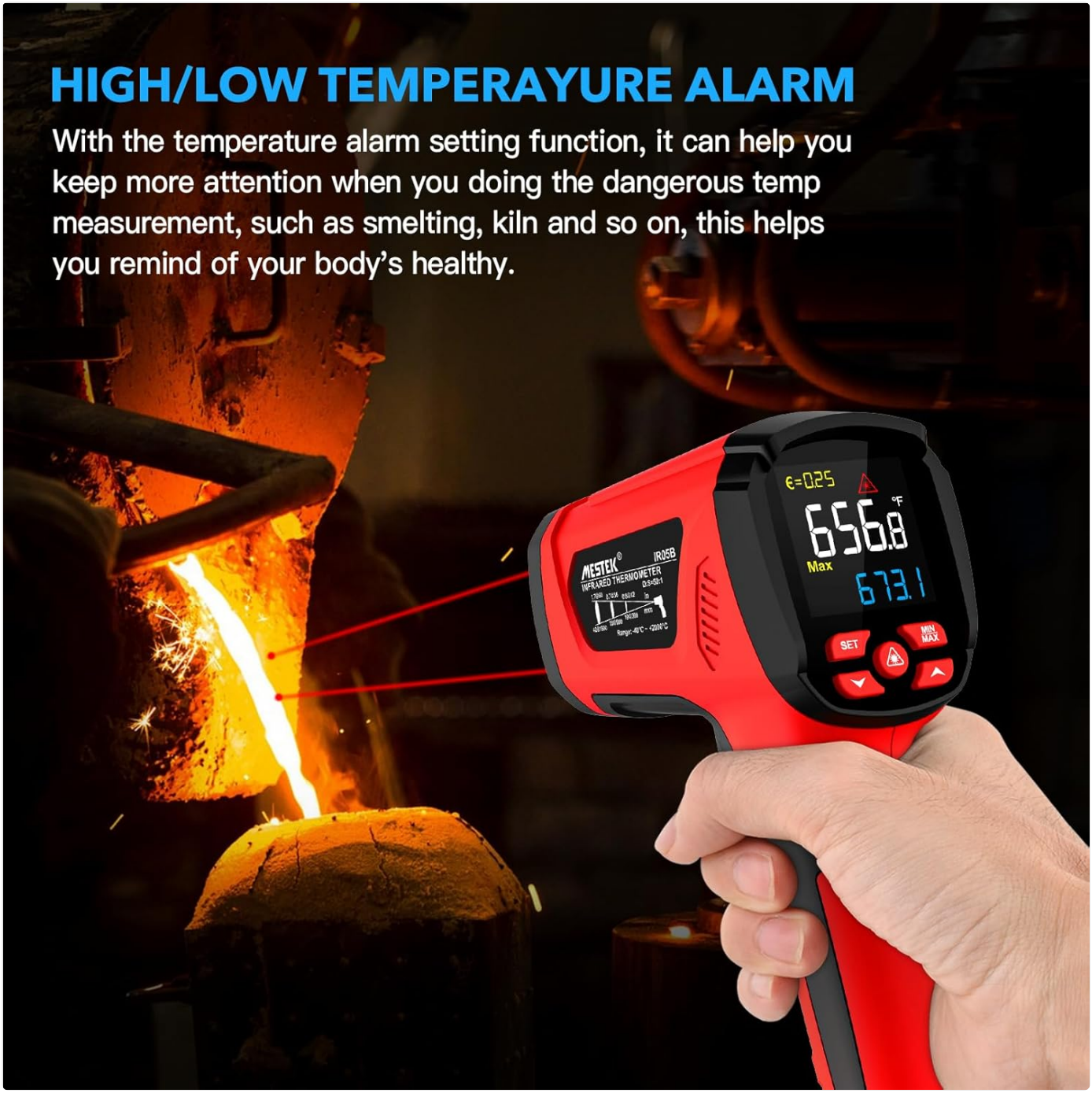


Image: The MESTEK IR05B thermometer displaying a high temperature reading with an alarm indicator, demonstrating its high/low temperature alarm function in a smelting application.

5.7 Unit Conversion (°C/°F)

To switch between Celsius and Fahrenheit:

1. With the device powered on, press the 'SET' button.
2. Use the Up/Down keys to find the unit setting.
3. Press 'SET' to toggle between °C and °F.

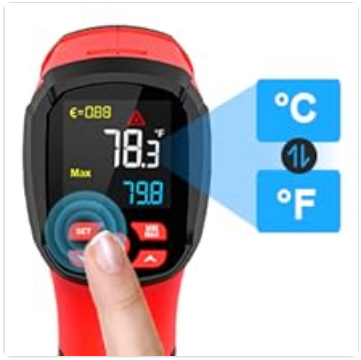


Image: A close-up of the MESTEK IR05B thermometer's display, illustrating the unit conversion function between Celsius (°C) and Fahrenheit (°F) by pressing the SET button.

6. Maintenance

6.1 Cleaning

- Clean the device casing with a damp cloth and mild soap. Do not use abrasive cleaners or solvents.
- Carefully clean the infrared lens with a soft, clean cloth or cotton swab. Avoid scratching the lens.
- Ensure the device is dry before storage.

6.2 Storage

- Store the thermometer in its protective bag when not in use.
- Remove batteries if the device will not be used for an extended period to prevent leakage.
- Store in a cool, dry place, away from direct sunlight and extreme temperatures.

7. Troubleshooting

Problem	Possible Cause	Solution
Device does not power on	Low or dead batteries; incorrect battery installation.	Replace batteries; ensure correct polarity.
Inaccurate readings	Incorrect emissivity setting; dirty lens; target too far or too small; ambient temperature fluctuations.	Adjust emissivity for the material; clean the lens; ensure D:S ratio is appropriate; allow device to stabilize in new environment.
Laser not working	Laser function deactivated; device malfunction.	Activate laser via control button; if problem persists, contact support.
Display shows 'ERR'	Measurement out of range; sensor error.	Ensure target temperature is within specified range; restart device. If error persists, contact support.

8. Specifications

Feature	Specification
Model	IR05B

Feature	Specification
Infrared Temperature Range	-40°C to 2000°C (-40°F to 3632°F)
K-Type Probe Temperature Range	-10°C to 500°C (14°F to 932°F)
Infrared Accuracy	±2% or ±2°C/4°F (whichever is greater)
K-Type Probe Accuracy	±1.5% or ±1.5°C/3°F (whichever is greater)
Distance to Spot Ratio (D:S)	50:1
Emissivity	Adjustable 0.1 to 1.0
Response Time	< 0.5 seconds
Spectral Response	8-14µm
Laser Type	Class II, <1mW, 620-690nm
Display	Color LCD with backlight
Measurement Modes	MAX/MIN/AVG/DIF
Alarm Function	High/Low Temperature Alarm
Unit Conversion	°C / °F
Auto Power Off	Approx. 35 seconds
Power Supply	2 x 1.5V AA Batteries
Dimensions	Approx. 180mm x 120mm x 60mm (7.1 x 4.7 x 2.3 inches)
Weight	Approx. 272g
Certifications	CE, EMC, FCC, RoHS

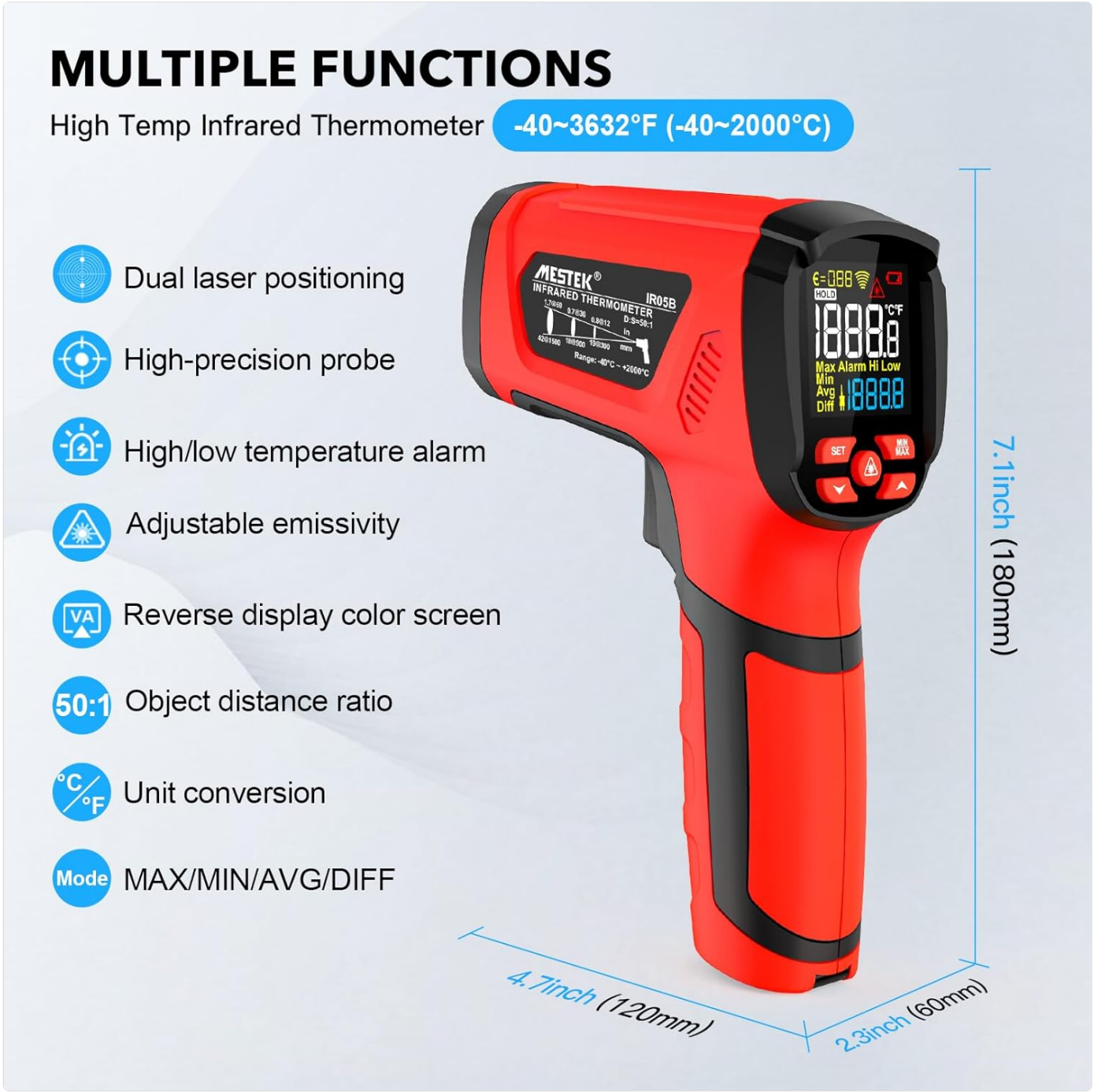


Image: The MESTEK IR05B thermometer displaying its key features and physical dimensions, including dual laser positioning, high-precision probe, and adjustable emissivity.

9. Warranty and Support

9.1 Warranty Information

MESTEK products are manufactured to high-quality standards. This product is covered by a standard manufacturer's warranty against defects in materials and workmanship. Please refer to the warranty card included in your package for specific terms and conditions, including the warranty period and coverage details.

9.2 Customer Support

If you encounter any technical issues, have questions about the product's operation, or require assistance, please contact MESTEK customer support. Contact information can typically be found on the MESTEK official website or through the retailer where the product was purchased. You may also visit the MESTEK Brand Store for more information.