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MESTEK IR05B-Orange

MESTEK Infrared Thermometer Temperature Gun

Model: IR05B-Orange

Instruction Manual

1. Introduction and Overview

The MESTEK IR05B-Orange Infrared Thermometer is a high-precision, non-contact temperature measurement device designed for a wide range of industrial and high-temperature applications. It features dual laser points for accurate targeting, adjustable emissivity, and multiple measurement modes including MIN/MAX/AVG/DIF. This manual provides detailed instructions for the safe and effective use of your thermometer.



Figure 1: MESTEK IR05B-Orange Infrared Thermometer and included accessories.

2. What's in the Box

- 1 x MESTEK IR05B-Orange Infrared Thermometer
- 1 x Thermocouple Probe
- 2 x 1.5V AA Batteries
- 1 x Temperature Gun Case
- 1 x User Manual (this document)



Figure 2: All items included in the MESTEK IR05B-Orange package.

3. Setup

3.1 Battery Installation

1. Locate the battery compartment cover on the handle of the thermometer.
2. Slide or open the cover to reveal the battery slots.
3. Insert the two 1.5V AA batteries, ensuring correct polarity (+/-) as indicated inside the compartment.
4. Close the battery compartment cover securely.

3.2 Thermocouple Probe Connection (Optional)

For contact temperature measurements, connect the K-type thermocouple probe to the designated input ports on the thermometer. Ensure the connectors are fully inserted.



Figure 3: The thermometer supports both non-contact infrared measurement and contact measurement via the thermocouple probe.

4. Operating Instructions

4.1 Power On/Off

To power on the device, simply pull the trigger. The display will illuminate. The device features an auto-power-off function to conserve battery life after a period of inactivity.

4.2 Non-Contact Infrared Measurement

1. Point the thermometer at the target object.
2. Pull and hold the trigger. The dual laser pointers will indicate the measurement area.
3. The temperature reading will be displayed on the screen within 0.5 seconds.
4. Release the trigger to hold the current reading on the display.



Figure 4: Key components and controls of the MESTEK IR05B-Orange.

4.3 Distance to Spot Ratio (D:S)

The IR05B-Orange has a D:S ratio of 50:1, meaning it can accurately measure temperature from a safe distance. For example, at 50 inches away, the measurement spot diameter is 1 inch. Ensure the target object fills the laser-indicated spot for accurate readings.

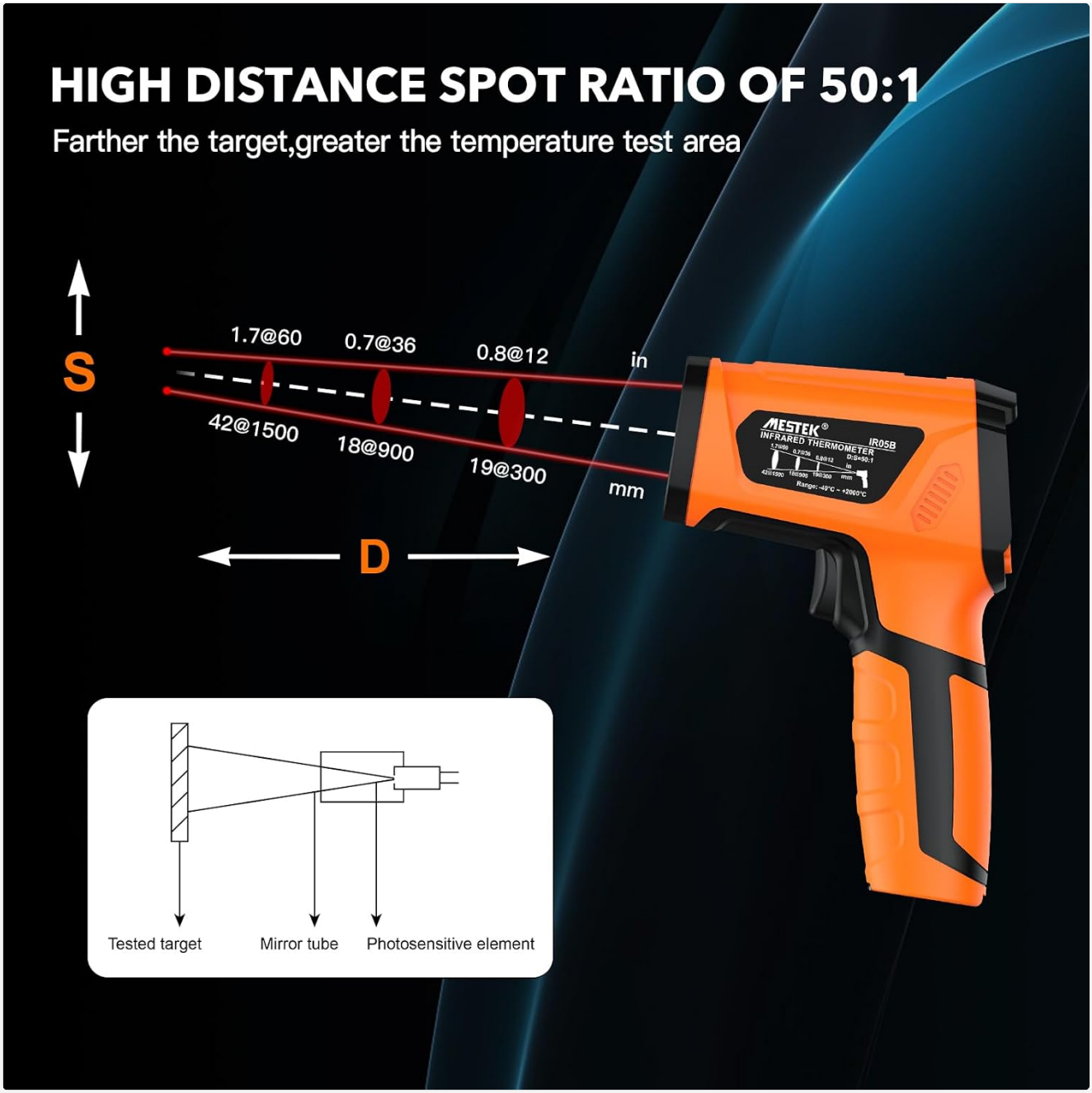
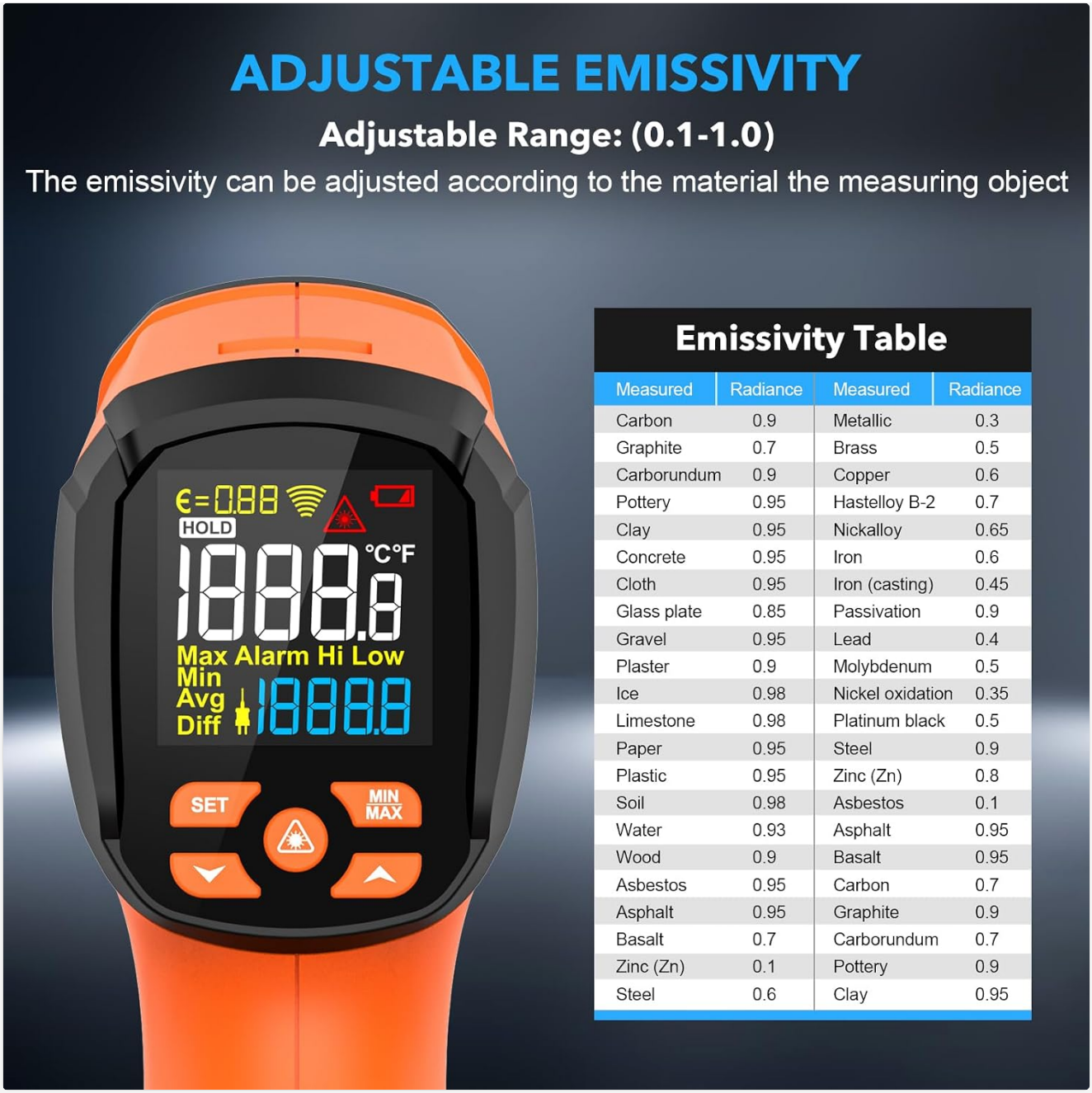


Figure 5: Understanding the 50:1 Distance to Spot Ratio for precise measurements.

4.4 Adjustable Emissivity

Emissivity (ε) is the efficiency with which an object emits thermal energy. Different materials have different emissivity values. For accurate measurements, adjust the emissivity setting (0.1-1.0) on the thermometer to match the material being measured. Refer to the table below for common emissivity values.



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

Figure 6: Emissivity Table for common materials. Adjust the thermometer's emissivity setting for optimal accuracy.

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

The thermometer offers various measurement modes accessible via the 'MODE' button:

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



Figure 7: The thermometer's display showing various measurement modes for comprehensive temperature analysis.

4.6 High/Low Temperature Alarm

Set high and low temperature alarm thresholds. The device will alert you if the measured temperature falls outside these set limits, which is useful for quick anomaly detection in industrial processes or specific applications like kilns or forging.



Figure 8: The thermometer's display indicating a high/low temperature alarm, alerting users to temperatures outside predefined safe ranges.

4.7 Unit Conversion (°C/°F)

Easily switch between Celsius (°C) and Fahrenheit (°F) temperature units using the dedicated unit switch button.

5. Applications

The MESTEK IR05B-Orange is ideal for professional high-temperature testing in various fields:

- HVAC Electrical Mechanical Industrial Applications
- Predictive Maintenance
- Hazardous Locations and Processes
- High-end Broilers and Pizza Ovens
- Furnace, Kiln, Forge, Foundry, Metal Casting, Smelting
- Aluminum Alloy, Ceramic, Welding, and Asphalt

Note: This industrial thermometer is specifically designed for inanimate objects. Temperature measurements for

humans or animals may be lower and are not recommended for medical purposes.



Figure 9: Examples of industrial and high-temperature environments where the MESTEK IR05B-Orange can be effectively used.

6. Maintenance

- **Cleaning:** Wipe the device clean with a soft, dry cloth. Do not use abrasive cleaners or immerse the device in water.
- **Storage:** Store the thermometer in its provided case in a cool, dry place when not in use. Remove batteries if storing for extended periods to prevent leakage.
- **Battery Replacement:** Replace batteries when the low power indicator appears on the display.
- **Laser Safety:** This is a Class II laser product. Do not stare directly into the laser beam or point it at people or animals. Optical power is less than 1mW, wavelength 620~690 um.

7. Troubleshooting

- **No Display/Power:** Check battery installation and ensure batteries are not depleted. Replace if necessary.

- **Inaccurate Readings:**
  - Ensure the emissivity setting matches the target material.
  - Verify the distance to spot ratio is appropriate for the target size.
  - Clean the optical lens if it appears dirty.
  - Avoid measuring through glass or other transparent surfaces, as these can affect readings.
- **Laser Not Working:** Check if the laser function is enabled in the settings. If not, refer to the operating instructions to activate it.

8. Specifications

Feature	Detail
Product Dimensions	7 x 4.7 x 2.4 inches; 9.28 ounces
Item Model Number	MESTEK IR05B ORANGE
Batteries	2 AA batteries required (included)
Manufacturer	MESTEK
Country of Origin	China
Special Feature	Large Display, Alarm, Ultra Clear Screen, Fast Reading System, High Accuracy
Color	IR05B-Orange
Included Components	1*high temp infrared thermometer; 2*1.5V AA batteries; 1*temp gun case;
Outer Material	ABS+TPE
Display Type	Digital Color LCD
Temperature Range (IR)	-40°F to 3632°F (-40°C to 2000°C)
Temperature Range (K-Probe)	14°F to 932°F (-10°C to 500°C)
Accuracy (IR)	± 2% at average
Accuracy (K-Probe)	± 1.5% at average
Distance to Spot Ratio	50:1
Response Time	0.5 seconds
Emissivity	Adjustable (0.1-1.0)

9. Warranty and Support

MESTEK provides a standard warranty for this product. For detailed warranty information, technical support, or any quality issues, please contact MESTEK customer service. Contact information can typically be found on the product packaging or the official MESTEK website. We aim to respond within 24 hours for any technical or quality issues.
Please retain your purchase receipt for warranty claims.

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