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MESTEK IR02C-1

MESTEK IR02C-1 Infrared Laser Thermometer

User Manual

1. Introduction

Thank you for choosing the MESTEK IR02C-1 Infrared Laser Thermometer. This device is designed for safe, non-contact temperature measurement of various surfaces, offering a wide temperature range and high accuracy. It also includes a K-type thermocouple probe for contact temperature measurements and features for ambient temperature, humidity, and dew point detection. This manual provides detailed instructions for proper use, maintenance, and troubleshooting to ensure optimal performance and longevity of your device.



Figure 1: MESTEK IR02C-1 Infrared Laser Thermometer and included accessories (K-type probe, batteries, carrying pouch).

2. Product Overview and Features

The MESTEK IR02C-1 combines advanced technology for precise temperature readings in various environments.

Key Features:

- **Dual Measurement Modes:** Non-contact infrared temperature measurement (-50°C to 800°C) and K-type thermocouple probe measurement (-10°C to 500°C).
- **Environmental Sensing:** Built-in sensors for ambient temperature, humidity, and dew point calculation, aiding in mold and condensation detection.
- **Adjustable Emissivity:** Emissivity adjustable from 0.1 to 1.0, allowing accurate temperature measurement on different surface materials.
- **High/Low Temperature Alarm:** User-definable temperature thresholds with visual alarms for quick identification of abnormal temperatures.

- **Color LCD Display:** Clear, backlit color screen for easy data readability.
- **Data Functions:** MAX/HOLD data functions for capturing peak readings or freezing current display.
- **Unit Conversion:** Easily switch between Celsius (°C) and Fahrenheit (°F).
- **Automatic Shutdown:** Powers off automatically after 30 seconds of inactivity to conserve battery life.
- **12-Point Laser Positioning:** Provides precise targeting for infrared measurements.



Figure 2: Key components and display indicators of the MESTEK IR02C-1.

3. Setup

3.1 Battery Installation

1. Locate the battery compartment cover on the handle of the device.
2. Slide the cover open.
3. Insert two (2) AAA batteries, ensuring correct polarity (+/-) as indicated inside the compartment.

4. Close the battery compartment cover securely.

The device will power on automatically once batteries are correctly installed, or you can press the trigger to activate it.

3.2 K-Type Probe Connection

To use the K-type thermocouple probe, insert its jack into the dedicated probe interface port located on the side of the thermometer (refer to Figure 2).

4. Operating Instructions

4.1 Power On/Off

Press the measurement trigger to power on the device. The device will automatically power off after 30 seconds of inactivity.

4.2 Infrared (Non-Contact) Temperature Measurement

1. Point the infrared sensor (located at the front of the device) towards the target surface.
2. Ensure the laser pointer (if enabled) is aimed at the desired measurement spot.
3. Press and hold the measurement trigger. The temperature reading will appear on the display.
4. Release the trigger to hold the reading on the screen (MAX/HOLD function).

Note: The distance-to-spot ratio (D:S) for this device is 12:1. This means that at a distance of 12 units, the measurement area will be 1 unit in diameter. For accurate readings, ensure the target is larger than the spot size.



Figure 3: Understanding the Distance to Spot (D:S) ratio for accurate infrared measurements.

4.3 K-Type Probe Measurement

1. Connect the K-type probe as described in Section 3.2.
2. Press the "MODE" button twice to activate the temperature probe function. The display will show the probe reading.
3. Place the tip of the K-type probe in direct contact with the object or substance you wish to measure.
4. Read the temperature displayed on the screen.



Figure 4: Using the K-type thermocouple probe for contact temperature measurement.

4.4 Mode Selection and Display Functions

Press the **MODE** button to cycle through different display modes and functions:

- **Short press once:** Displays environment surface temperature.
- **Short press twice:** Activates temperature probe function.
- **Short press three times:** Enters adjustable emissivity function.
- **Short press four times:** Switches between Fahrenheit (°F) and Celsius (°C) units.

Figure 5: Navigating display modes and functions using the MODE button.

4.5 Adjusting Emissivity

Emissivity (ε) is a measure of an object's ability to emit infrared energy. Different materials have different emissivities. For

accurate readings, adjust the emissivity setting to match the material being measured.

1. Press the "MODE" button three times to enter the emissivity adjustment mode.
2. Use the "Turn up key" (▲) and "Turn down key" (▼) to adjust the emissivity value from 0.1 to 1.0.
3. Refer to common emissivity tables for typical materials (e.g., polished metals have low emissivity, painted surfaces have high emissivity).



Figure 6: Adjusting the emissivity setting for accurate measurements on various materials.

4.6 Setting High/Low Temperature Alarms

The device can alert you when measured temperatures exceed or fall below set thresholds.

1. While in measurement mode, press and hold the "MODE" button to enter alarm setting.
2. Use the "Turn up key" (▲) and "Turn down key" (▼) to set the desired high or low temperature alarm value.
3. A red alarm indicator will illuminate on the display if the measured temperature is outside the set range.



Figure 7: Visual indication of high and low temperature alarms.

5. Maintenance

5.1 Cleaning

To ensure accurate readings and prolong the life of your thermometer, keep the lens and sensor clean. Use a soft, damp cloth to wipe the exterior of the device. Do not use abrasive cleaners or immerse the device in water.

5.2 Battery Replacement

When the low battery indicator appears on the display, replace the AAA batteries as described in Section 3.1.

5.3 Storage

Store the device in a cool, dry place, away from direct sunlight and extreme temperatures. If storing for extended periods, remove the batteries to prevent leakage.

6. Troubleshooting

Problem	Possible Cause	Solution
Device does not power on.	Dead or incorrectly installed batteries.	Check battery polarity or replace with new AAA batteries.
Inaccurate infrared readings.	Incorrect emissivity setting; sensor lens is dirty; target too small or too far.	Adjust emissivity (Section 4.5); clean sensor lens; ensure target is within D:S ratio (Section 4.2).
K-type probe not working.	Probe not fully inserted; incorrect mode selected.	Ensure probe is securely connected; press MODE button twice to select probe function (Section 4.3).
Display is dim or flickering.	Low battery.	Replace batteries.
Cannot switch units (°C/°F).	Incorrect button press sequence.	Press the MODE button four times to toggle units (Section 4.4).

If the problem persists after attempting these solutions, please contact MESTEK customer support.

7. Specifications

Parameter	Value
Model Number	IR02C-1
Infrared Temperature Range	-50°C to 800°C (-58°F to 1472°F)
K-Type Probe Temperature Range	-10°C to 500°C (14°F to 932°F)
Distance to Spot Ratio (D:S)	12:1
Emissivity	Adjustable 0.1 - 1.0
Response Time	≤0.5s
Power Supply	2 x AAA batteries (included)
Dimensions (L x W x H)	13.99 x 9.39 x 3.2 cm
Weight	290 grams
Special Features	MAX/HOLD, Low Battery Indication, Auto Shutdown, Ambient Temperature/Humidity/Dew Point, Color LCD with Backlight, Temperature Alarm.
Certifications	CE, FCC, EMC, RoHS, EN61010-1, EN60825

8. Warranty and Support

MESTEK provides a lifetime warranty for this product, ensuring quality and reliability. Our dedicated 7x24 customer support team is available to assist you with any questions or issues you may encounter.
For technical support, troubleshooting, or warranty claims, please contact MESTEK customer service through the retailer's platform or visit the official MESTEK website for contact information.

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