SURPEER K2-K500-1500

SURPEER K2-K500-1500 Infrared Thermometer with Thermocouple Probe User Manual

Model: K2-K500-1500

1. Introduction

This manual provides detailed instructions for the safe and effective operation of your SURPEER K2-K500-1500 Infrared Thermometer. This device is designed for non-contact surface temperature measurement and includes a K-type thermocouple for internal temperature readings, along with ambient temperature and humidity detection. It is suitable for a wide range of industrial and domestic applications.

Note: This product is not intended for measuring human body temperature.

2. Safety Information

- Do not point the laser directly at eyes or indirectly off reflective surfaces.

- Do not use the device in environments with explosive gas, vapor, or dust.
- Avoid exposing the device to electromagnetic fields from arc welders or induction heaters.
- Do not immerse the unit in water.
- Keep the device away from children.

3. Package Contents

Verify that all items are present in your package:

- SURPEER K2-K500-1500 Infrared Thermometer
- K-type Thermocouple Probe
- Toolbox / Storage Bag
- 2 x AAA Batteries
- User Manual (this document)

Figure 3.1: Items included in the SURPEER K2-K500-1500 package.

This image displays the complete contents of the product package. It includes the main infrared thermometer

unit, an orange K-type thermocouple probe with a coiled cable, a black zippered storage case, and two AAA batteries. The thermometer itself is orange and black, featuring a digital display and control buttons. The K-type thermocouple is shown with its metal probe and yellow connector. The storage case is designed to hold the thermometer and accessories.

4. Product Features

The SURPEER K2-K500-1500 offers a comprehensive set of features for accurate temperature and humidity measurement:

- **Dual Temperature Modes:** Measures surface temperatures from -58°F to 2732°F (-50°C to 1500°C) using infrared, and internal temperatures from -4°F to 932°F (-20°C to 500°C) with the K-type thermocouple.
- **Ambient Monitoring:** Accurately monitors ambient temperature and humidity.
- **Extended Measuring Distance:** Features a 50:1 distance-to-spot ratio for safe and accurate measurements from a distance.
- **Fast Response Time:** Provides readings in 0.5 seconds.
- **Adjustable Emissivity:** Ensures accurate results on various surfaces.
- **Bright LCD Display:** Clear readings with a backlit display.
- **Advanced Functionalities:** High/low temperature alarms, 13-point laser for precise targeting, low battery alerts, and a 15-second auto-shutdown feature.

Figure 4.1: Overview of the thermometer's multiple functions.

This image illustrates the various functions of the infrared thermometer. Icons represent features such as Max/Min/Avg temperature display, 50:1 distance-to-spot ratio, high/low alarm settings, Fahrenheit/Celsius switching, 0.5-second fast measurement, high-precision probe compatibility, auto shut-off, low battery reminder, laser aiming, sound on/off, backlit color screen, data hold, adjustable emissivity, and humidity measurement. These features are designed to enhance the device's versatility and user experience.

Figure 4.2: Detailed view of the display and controls.

This image provides a detailed breakdown of the thermometer's display and control buttons. Key elements labeled include the data hold indicator, laser indicator, buzzer symbol, battery under voltage warning, high temperature alarm (HAL), low temperature alarm (LAL), and emissivity setting (default 0.95). The display shows temperature measurements for both probe mode and infrared mode, as well as humidity. Buttons for laser indication, buzzer control, and Celsius/Fahrenheit conversion are also clearly marked.

5. Setup

5.1 Battery Installation

The device requires 2 AAA batteries (included). To install or replace batteries:

1. Locate the battery compartment on the handle of the thermometer.
2. Open the compartment cover.
3. Insert the 2 AAA batteries, ensuring correct polarity (+/-).
4. Close the battery compartment cover securely.

5.2 Attaching the K-type Thermocouple

For internal temperature measurements, attach the K-type thermocouple probe:

1. Locate the K-type thermocouple input port on the side of the thermometer.
2. Align the two prongs of the K-type thermocouple connector with the input port.
3. Gently push the connector into the port until it is securely seated.

6. Operating Instructions

6.1 Power On/Off and Basic Measurement

To power on the device, press the trigger. The display will illuminate. To take a measurement, aim the laser at the target surface and press and hold the trigger. The temperature reading will appear on the display. Release the trigger to hold the reading.

Figure 6.1: Understanding the 50:1 Distance to Spot Ratio.

This image explains the 50:1 distance-to-spot ratio. It visually demonstrates that as the distance (D) from the thermometer to the target increases, the spot size (S) of the measurement area also increases proportionally. The red laser dot helps in aiming at the center of the desired measurement spot. The diagram highlights the infrared temperature range of -58°F to 2732°F (-50°C to 1500°C).

6.2 K-type Thermocouple Measurement

When the K-type thermocouple is plugged in, the device automatically switches to probe mode. Insert the metal probe into the substance or area you wish to measure. The internal temperature reading will be displayed. The infrared function can still be used simultaneously to measure surface temperature.

Figure 6.2: Dual temperature measurement methods.

This image illustrates the two primary temperature measurement methods of the device. The top panel shows the infrared temperature gun being used to measure the surface temperature of molten metal in a furnace, highlighting its capability for high-temperature industrial applications (range: -58°F to 2732°F). The bottom panel depicts the K-type thermocouple probe inserted into fish on ice, demonstrating its use for internal temperature measurement, suitable for food or HVAC systems (range: -4°F to 932°F).

6.3 Mode Selection and Settings

Use the **MODE** button to cycle through different display modes, which may include ambient temperature, humidity, dew point, and various alarm settings. The **°C/°F** button allows you to switch between Celsius and Fahrenheit units.

6.4 Adjustable Emissivity

Emissivity (E) is the ability of a material to emit energy. Different materials have different emissivity values. To

adjust emissivity, press the **EMS** button and use the up/down arrows to set the appropriate value (default is 0.95). Refer to common emissivity tables for specific materials.

6.5 High/Low Temperature Alarms (HAL/LAL)

Set high (HAL) and low (LAL) temperature alarm thresholds. If a measured temperature exceeds the HAL or falls below the LAL, an audible and/or visual alert will activate.

6.6 Auto-Shutdown

The device features a 15-second auto-shutdown to conserve battery life when not in use.

6.7 Video Demonstration

Your browser does not support the video tag.

Video 6.1: Demonstration of the Infrared Thermometer Gun's features and usage, including K-type probe functionality and various display modes.

This video provides a comprehensive demonstration of the SURPEER Infrared Thermometer. It showcases the device's handheld design, multiple measurement modes, and the ability to display surface temperature, dew point, and humidity levels. The video also illustrates how to attach and use the K-type thermocouple probe for internal temperature measurements, including a practical example with ice water. Furthermore, it highlights the laser targeting feature and how the device indicates significant temperature differences with a color-changing LED. This visual guide helps users understand the full capabilities and operation of the thermometer.

7. Applications

The SURPEER K2-K500-1500 is suitable for a variety of applications:

- **Industrial:** Pizza ovens, furnaces, kilns, welding, forging, engine diagnostics.
- **Food:** Internal temperature checks with the K-type probe (e.g., BBQ, cooking).
- **HVAC:** Monitoring AC systems, checking for drafts or insulation issues.
- **Home:** Detecting temperature variations in walls, windows, and appliances; monitoring humidity in wood or living spaces.

Figure 7.1: Diverse applications of the thermometer.

This image showcases four different applications of the SURPEER thermometer. The top-left panel shows the infrared function being used to check the temperature of an AC vent, indicating its utility in HVAC systems. The top-right panel illustrates its use for engine diagnostics, measuring the temperature of engine components. The bottom-left panel demonstrates the K-type thermocouple probe inserted into oil in a fryer, highlighting its suitability for food temperature monitoring. Finally, the bottom-right panel displays the device measuring ambient humidity in a room, emphasizing its environmental monitoring capabilities.

8. Maintenance

8.1 Cleaning

To clean the device, wipe it with a soft, damp cloth. Do not use abrasive cleaners or solvents. Ensure the lens is clean for accurate infrared readings.

8.2 Storage

Store the thermometer in its provided toolbox/storage bag in a cool, dry place when not in use. Remove batteries if storing for extended periods to prevent leakage.

9. Troubleshooting

- **No Power:** Check battery installation and ensure batteries are not depleted. Replace if necessary.
- **Inaccurate Readings:**
  - Ensure the lens is clean.
  - Verify the emissivity setting matches the target material.
  - Ensure the distance-to-spot ratio is appropriate for your measurement.
  - For K-type probe, ensure it is fully inserted and making good contact.
- **Laser Not Visible:** Check if the laser aiming feature is enabled in the settings.
- **Display Issues:** If the display is dim or flickering, replace the batteries.

10. Specifications

Feature	Specification
Infrared Temperature Range	-58°F to 2732°F (-50°C to 1500°C)
K-type Thermocouple Range	-4°F to 932°F (-20°C to 500°C)
Distance-to-Spot Ratio (D:S)	50:1
Response Time	0.5 seconds
Emissivity	Adjustable (0.1-1.0), default 0.95
Accuracy (Infrared)	±2% or ±2°C (±3.6°F)
Accuracy (K-type)	±1.5% or ±1.5°C (±2.7°F)
Humidity Measurement	Yes
Laser Targeting	13-point laser
Display Type	Digital LCD with Backlight
Auto-Shutdown	15 seconds
Power Source	2 x AAA Batteries (included)
Product Dimensions	16 x 8.64 x 4.83 cm
Weight	136.08 g
Material	Acrylonitrile Butadiene Styrene

11. Warranty and Support

SURPEER offers excellent customer service. For technical inquiries or support, please contact SURPEER customer service. They typically respond within 24 hours.
Please refer to your purchase documentation for specific warranty details.