

BTMETER BT-1500

BTMETER BT-1500 Industrial Laser Thermometer Gun User Manual

Model: BT-1500

1. INTRODUCTION

This manual provides detailed instructions for the safe and effective use of your BTMETER BT-1500 Industrial Laser Thermometer Gun. This non-contact infrared thermometer is designed for accurate temperature measurement in various industrial and professional applications. Please read this manual thoroughly before operation and retain it for future reference.

PROFESSIONAL INFRARED PYROMETER



Figure 1: The BTMETER BT-1500 in use for diverse applications, including cooking, HVAC, and industrial processes.

2. SAFETY INFORMATION

WARNING: Class II Laser Product

- Do not stare directly into the laser beam.
- Avoid direct eye exposure to the laser.
- Do not aim the laser at people or animals.
- This device is intended for measuring the temperature of inanimate objects only. It is not designed for human or animal temperature measurement.
- Keep out of reach of children.
- Use caution when operating near reflective surfaces, as the laser can reflect.

The BT-1500 uses a Class II laser with an optical power of $<0.5\text{mW}$ and a wavelength of 630-670nm.

3. PRODUCT OVERVIEW

The BTMETER BT-1500 is a high-performance infrared thermometer featuring a wide temperature range, dual

laser targeting, and multiple measurement modes for industrial applications.

3.1 Key Features

- **Wide Temperature Range:** Measures from -50°C to 1500°C (-58°F to 2732°F).
- **High Accuracy:** Provides measurements with an accuracy of $\pm 2\%$ or $\pm 2^\circ\text{C}$ ($\pm 3.6^\circ\text{F}$).
- **Dual Laser Targeting:** Two non-contact digital lasers for precise targeting and instant measurement within 0.25 seconds.
- **Distance to Spot Ratio (D:S):** 30:1, allowing for accurate measurements from a safe distance.
- **Multiple Measurement Modes:** Includes MIN (Minimum), MAX (Maximum), AVG (Average), and DIF (Difference) temperature readings.
- **Adjustable Alarms:** High/Low/Difference temperature alarms to alert users when temperatures exceed or fall below set thresholds.
- **Backlit LCD Screen & Flashlight:** Large, backlit display and integrated flashlight for visibility in low-light conditions.
- **Auto Power OFF:** Extends battery life.
- **Low Power Indicator:** Alerts when battery is low.

3.2 Component Identification

Refer to the diagram below for identification of the main components of your BT-1500 thermometer.



Figure 2: Labeled diagram of the BTMETER BT-1500 Infrared Thermometer, showing the LCD Display, Laser ON/OFF, Trigger, Backlight/UP button, Mode Select, T/UP button, Emissivity/Flashlight button, and Battery door.

1. LCD Display
2. Laser ON/OFF Button
3. Measurement Trigger
4. Backlight / Up Button
5. Mode Select Button
6. Temperature Unit / Up Button
7. Emissivity / Flashlight Button
8. Battery Door

4. SETUP

4.1 Battery Installation

The BT-1500 requires one 9V battery (included). To install or replace the battery:

1. Locate the battery door (8) at the bottom of the handle.

2. Open the battery door.
3. Connect the 9V battery to the terminal inside the compartment, ensuring correct polarity.
4. Place the battery into the compartment and close the battery door securely.

A low power indicator will appear on the display when the battery needs replacement.



Figure 3: Package contents, showing the BT-1500 thermometer, carrying case, 9V battery, and screwdriver.

5. OPERATING INSTRUCTIONS

5.1 Taking a Measurement

1. Point the thermometer at the target surface.
2. Press and hold the Measurement Trigger (3). The laser pointers will activate, indicating the measurement area.
3. The measured temperature will be displayed on the LCD screen (1).
4. Release the trigger to hold the reading on the display. The device will automatically power off after a period of inactivity to conserve battery.



Figure 4: Close-up view of the dual laser pointers on the BT-1500, indicating the measurement target area.

5.2 Switching Temperature Units (°C/°F)

To switch between Celsius (°C) and Fahrenheit (°F):

- While the device is on, press the T/UP button (6) to toggle the temperature unit.



Figure 5: The BT-1500 display showing temperature readings in both Celsius and Fahrenheit, demonstrating the unit switchable feature.

5.3 Mode Selection (MIN/MAX/AVG/DIF)

Press the Mode Select button (5) repeatedly to cycle through the available measurement modes:

- **MIN:** Displays the minimum temperature recorded during a continuous measurement.
- **MAX:** Displays the maximum 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.



Figure 6: The BT-1500 display illustrating the MIN, MAX, AVG, and DIF measurement modes, useful for tracking temperature variations.

5.4 Setting High/Low Temperature Alarms

The BT-1500 allows you to set high and low temperature alarms. When the measured temperature exceeds the high alarm or falls below the low alarm, an audible alert will sound.

1. Press the Mode Select button (5) until the alarm setting mode is displayed (e.g., "HAL" for High Alarm, "LAL" for Low Alarm).
2. Use the Backlight/UP button (4) and T/UP button (6) to adjust the alarm threshold values.
3. Press the Mode Select button (5) again to confirm and exit the alarm setting.

5.5 Using the Flashlight

To activate the built-in flashlight for illumination in dark environments:

- Press the Emissivity/Flashlight button (7). Press again to turn off.

6. MEASUREMENT PRINCIPLES

6.1 Distance to Spot Ratio (D:S)

The BT-1500 has a Distance to Spot (D:S) ratio of 30:1. This means that from a distance of 30 units, the thermometer will measure a spot diameter of 1 unit. For example, at 30 inches, it measures a 1-inch spot. To ensure accurate readings, make sure the target area is larger than the spot size at your measurement distance.



Figure 7: Illustration of the 30:1 Distance to Spot ratio, showing how the measurement area expands with distance from the target.

6.2 Emissivity

Emissivity (ϵ) is a measure of an object's ability to emit infrared energy. Different materials have different emissivity values. The BT-1500 has an adjustable emissivity setting to improve accuracy for various surfaces. The default emissivity is typically 0.95, suitable for most organic materials, painted surfaces, and plastics. To adjust emissivity:

1. Press the Emissivity/Flashlight button (7) to enter emissivity adjustment mode. The emissivity value will flash on the display.
2. Use the Backlight/UP button (4) and T/UP button (6) to increase or decrease the emissivity value.
3. Press the Emissivity/Flashlight button (7) again to confirm and exit.

Consult an emissivity table for common materials if precise measurements are required for specific surfaces.

7. MAINTENANCE

7.1 Cleaning

To clean the thermometer, wipe the casing with a soft, damp cloth. Do not use abrasive cleaners or immerse the device in water. Keep the laser lens clean and free of dust or debris for accurate readings.

7.2 Battery Replacement

Replace the 9V battery when the low power indicator appears on the display. Refer to section 4.1 for battery installation instructions.

7.3 Storage

When not in use for extended periods, remove the battery and store the thermometer in a cool, dry place, away from direct sunlight and extreme temperatures.

8. TROUBLESHOOTING

Problem	Possible Cause	Solution
Device does not turn on.	Dead or incorrectly installed battery.	Check battery polarity. Replace with a new 9V battery.
Inaccurate readings.	Target too small or too far. Incorrect emissivity setting. Lens is dirty. Measurement taken through glass or other transparent materials.	Ensure target is larger than spot size (refer to D:S ratio). Move closer if necessary. Adjust emissivity for the target material. Clean the laser lens. Infrared thermometers cannot measure through transparent surfaces.
Laser or flashlight not working.	Malfunction or low battery.	Ensure battery is fully charged. If problem persists, contact customer support.
Display shows "ERR" or other error codes.	Measurement outside range or internal error.	Ensure target temperature is within the device's specified range. If error persists, try resetting the device by removing and reinserting the battery. Contact support if the issue continues.

9. SPECIFICATIONS

Feature	Detail
Model	BT-1500
Temperature Range	-50°C to 1500°C (-58°F to 2732°F)

Feature	Detail
Accuracy	±2% or ±2°C (±3.6°F)
Distance to Spot Ratio (D:S)	30:1
Response Time	0.25 seconds
Emissivity	Adjustable
Laser Type	Class II, <0.5mW, 630-670nm
Power Source	1 x 9V Battery (included)
Auto Power Off	Yes
Display Type	Digital, Backlit LCD
Material	Metal (Outer Material Type)
Item Weight	160 Grams
Dimensions (Approx.)	7.6 inches (Length)
Certifications	CE, WEEE

10. WARRANTY AND SUPPORT

For warranty information and technical support, please contact BTMETER customer service. Details are typically available on the product packaging or the official BTMETER website. Keep your purchase receipt as proof of purchase.

For general inquiries or assistance, you may visit the BTMETER official website or contact their support channels.