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Tilswall W301

Tilswall Infrared Thermometer User Manual

Model: W301 | Brand: Tilswall

1. INTRODUCTION

Thank you for purchasing the Tilswall Infrared Thermometer. This non-contact temperature gun is designed for safe and accurate surface temperature measurements across a wide range of applications, from industrial use to household tasks like cooking and refrigeration. It provides quick readings without direct contact, ensuring safety and convenience.

Important Note: This device is intended for measuring the temperature of inanimate objects only. It **isnot** designed for measuring human or animal body temperature. Readings obtained from living beings will not be accurate.



Image: The Tilswall Infrared Thermometer, shown with two AAA batteries, highlighting its compact design and ready-to-use nature.

2. SAFETY INFORMATION

Please read all safety warnings carefully before using this product to ensure safe operation and prevent damage to the device or injury to yourself.

- **Laser Safety:** This device uses a Class 2 laser (<1 mW). Do not stare directly into the laser beam or point it at people or animals. Direct eye exposure can cause eye damage.
- **Not for Human/Animal Use:** As stated, this thermometer is for inanimate objects only. Do not use it to measure body temperature.
- **Temperature Range:** Do not attempt to measure temperatures outside the specified range of -58°F~1112°F (-50°C~600°C).
- **Handling:** Do not drop the device or subject it to strong impacts.
- **Moisture:** Keep the device dry. Do not expose it to water or high humidity.

- **Cleaning:** Refer to the maintenance section for proper cleaning instructions.



Image: A visual warning indicating that the infrared thermometer should not be used on humans, emphasizing its purpose for inanimate objects.

3. PACKAGE CONTENTS

Upon opening the package, please verify that all items listed below are present and in good condition:

- 1 x Tilswall Infrared Thermometer (Model W301)
- 2 x AAA Batteries (pre-installed or included separately)
- 1 x Instruction Manual (this document)

4. PRODUCT OVERVIEW

Familiarize yourself with the components of your Tilswall Infrared Thermometer:

Key Components

Component	Description
Laser Aperture	Emits the laser pointer for aiming.
Infrared Sensor	Detects infrared radiation to measure temperature.
LCD Display	Shows temperature readings, mode, and battery status.
Trigger	Activates the thermometer for measurement.
Mode Button	Cycles through settings like emissivity adjustment.
Unit Selection Button (°C/°F)	Switches between Celsius and Fahrenheit.
Backlight Button	Toggles the LCD backlight.
Battery Compartment	Holds 2 AAA batteries.

High-Sensitive Sensor

laser indication, 0.5 second fast measurement



Accuracy: **$\pm 1.5\%$**



Response Time: **0.5s**



Emissivity: **0.10 -1.00**

Image: Close-up view of the thermometer's sensor area, detailing its high sensitivity, $\pm 1.5\%$ accuracy, 0.5s response time, and adjustable emissivity range of 0.10-1.00.

5. SETUP

5.1 Battery Installation

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

The device is now ready for use. A low battery indicator will appear on the LCD when the batteries need replacement.

6. OPERATING INSTRUCTIONS

6.1 Taking a Measurement

1. Hold the thermometer by the handle and point the front end towards the object you wish to measure.
2. Press and hold the trigger to turn the unit on and activate the laser pointer.
3. Aim the laser dot at the center of the target surface. The temperature reading will be displayed on the LCD instantly (within 0.5 seconds).
4. Release the trigger to hold the reading on the display. The device will automatically turn off after 30 seconds of inactivity to conserve battery life.

Press & Aim



Image: A hand demonstrating how to press the trigger and aim the laser of the thermometer, with an inset showing the temperature reading on the LCD.

6.2 Distance to Spot Ratio (D:S)

The Tilswall Infrared Thermometer has a Distance to Spot (D:S) ratio of 12:1. This means that at a distance of 12 inches from the target, the measurement spot diameter will be 1 inch. For optimal accuracy, ensure the target area is larger than the spot size. Measuring closer to the object will result in a smaller measurement spot and potentially more accurate

readings for smaller targets.



Image: A diagram illustrating the 12:1 Distance to Spot ratio, showing how the measurement spot size increases with distance from the object.

6.3 Adjusting Emissivity

Emissivity is a measure of an object's ability to emit infrared energy. Different materials have different emissivity values. For improved accuracy, especially on various surfaces, you can adjust the emissivity setting (ϵ) from 0.1 to 1.0. The preset emissivity is 0.95, which is suitable for most organic materials and painted surfaces.

1. Press the "Mode" button for 2 seconds to enter emissivity adjustment mode.
2. Use the "▲" (up) or "▼" (down) buttons to increase or decrease the emissivity value.
3. Press the "Mode" button again to confirm and exit.

Refer to the table below for common emissivity values:

Common Emissivity Values

Material	Emissivity (ε)
Water	0.93
Ice	0.98
Painted Surfaces	0.90-0.98
Wood	0.90
Concrete	0.94
Polished Aluminum	0.05
Oxidized Copper	0.78

Adjustable Emissivity

Step 1:
Find the surface material of the measurement object.

Step 2:
Press "Mode" key for 2 seconds to adjust the meter status.

Step 3:
Press "▲/▼" key to increase or decrease the radiation value.

Measured surface		Radiance
Aluminum	Oxidized	0.2~0.4
	A3003 alloy (oxidized)	0.3
	A3003 alloy (coarse)	0.1~0.3
Brass	Polishing	0.3
	Oxidized	0.5
Copper	Oxidized	0.4~0.8
	Electrical terminal board	0.6
Hastelloy		0.3~0.8
Ferro-nickel	Oxidized	0.7~0.95
	Abrasive blasting	0.3~0.6
	Electropolishing	0.15

***For further information, please refer to the manual**

Image: A guide on adjusting emissivity, showing a table of common materials and their radiance values, and an example of measuring a car engine with the thermometer.

6.4 Unit Selection (°C/°F)

To switch between Celsius (°C) and Fahrenheit (°F), simply press the °C/°F selection button located on the device's control panel.



Image: A comparison of the thermometer's display showing temperature readings in both Celsius and Fahrenheit, illustrating the unit selection feature.

6.5 Other Functions

- **LCD Backlight:** Press the backlight button to illuminate the display for easy reading in low-light conditions.
- **Data Hold:** The last measured temperature will remain on the display after releasing the trigger.
- **Auto-Off:** The thermometer will automatically power off after 30 seconds of inactivity to save battery life.
- **Low Battery Indication:** An icon will appear on the display when the battery level is low, indicating it's time to replace the batteries.



Image: An illustration highlighting the 30-second auto-off feature of the thermometer, showing a clock icon with a circular arrow.

7. MAINTENANCE

7.1 Cleaning

- To clean the thermometer's casing, wipe gently with a damp cloth. Do not use abrasive cleaners or solvents.

- Do not wet the device or immerse it in water.
- For the lens, use a soft cloth or cotton swab with a small amount of rubbing alcohol. Avoid scratching the lens.

7.2 Storage

- Store the thermometer in a cool, dry place, away from direct sunlight and extreme temperatures.
- If the device will not be used for an extended period, remove the batteries to prevent leakage.

8. TROUBLESHOOTING

Common Issues and Solutions

Problem	Possible Cause	Solution
Device does not turn on.	Dead or incorrectly installed batteries.	Check battery polarity or replace with new AAA batteries.
Inaccurate readings.	Incorrect emissivity setting; target too small; dirty lens; outside operating temperature range.	Adjust emissivity for the material; ensure target is larger than spot size; clean the lens; ensure ambient temperature is within range.
Laser not visible.	Laser function disabled or malfunction.	Ensure laser is enabled (if applicable); contact support if persistent.
Display is dim or blank.	Low battery; backlight off.	Replace batteries; press backlight button.

9. SPECIFICATIONS

Feature	Detail
Model Number	W301
Temperature Range	-58°F~1112°F (-50°C~600°C)
Accuracy	±1.5%
Response Time	0.5 seconds
Distance to Spot Ratio (D:S)	12:1
Emissivity	Adjustable 0.1-1.0 (preset 0.95)
Laser Type	Class 2, <1 mW
Power Supply	2 x AAA Batteries (included)

Feature	Detail
Auto-Off	30 seconds
Product Dimensions	9 x 5 x 17 cm
Weight	250 g
Material	Polypropylene
Certifications	CE, FCC, FDA

10. WARRANTY AND SUPPORT

Tilswall products are manufactured to high-quality standards. For information regarding warranty coverage and customer support, please refer to the warranty card included with your product or visit the official Tilswall website. If you encounter any issues or have questions about your Tilswall Infrared Thermometer, please contact our customer support team:

- **Manufacturer:** Tilswall
- **Seller:** Tilswall Inc (via Amazon.ca)
- **Amazon Product Page:** <https://www.amazon.ca/dp/B08Z7P2WC6>
- **Tilswall Store on Amazon:** <https://www.amazon.ca/stores/TILSWALL/page/CE13CE93-34C0-4105-AB8D-B9ABCB43684D>

Please have your model number (W301) and purchase details ready when contacting support.

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