

# Owner's Manual & Safety Instructions

**Save This Manual** Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

17k

# AMES

INSTRUMENTS™

63980

## DUAL INPUT THERMOMETER



Visit our website at: <http://www.harborfreight.com>  
Email our technical support at: [productsupport@harborfreight.com](mailto:productsupport@harborfreight.com)

When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

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No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools. Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein. Tools required for assembly and service may not be included.

### **⚠WARNING**





**Read this material before using this product.  
Failure to do so can result in serious injury.  
SAVE THIS MANUAL.**

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## WARNING SYMBOLS AND DEFINITIONS

	<p>This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.</p>
 <b>DANGER</b>	<p>Indicates a hazardous situation which, if not avoided, will result in death or serious injury.</p>
 <b>WARNING</b>	<p>Indicates a hazardous situation which, if not avoided, could result in death or serious injury.</p>
 <b>CAUTION</b>	<p>Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.</p>
<p><b>NOTICE</b> <b>CAUTION</b></p>	<p>Addresses practices not related to personal injury.</p>

# IMPORTANT SAFETY INFORMATION

## Safety Warnings and Precautions

### **⚠ WARNING**

**Read all safety warnings and all instructions.**

*Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.*

**Save all warnings and instructions for future reference.**

1. Do not use for medical purposes.
2. Electrical shock can cause death or injury! NEVER TOUCH exposed conductors of electricity.
3. Inspect the Thermometer before use. In addition to a general inspection, look specifically for:
  - a. Pay special attention to the insulation protecting the thermocouple joints.
  - b. Check the thermocouples for exposed metal, damaged insulation, and continuity.
  - c. Replace damaged thermocouples immediately, before use.
4. Do not use Thermometer if:
  - a. Thermocouples are dirty or have residue on them.
  - b. The battery is low.
  - c. Near any explosive gasses or fumes.
  - d. Any abnormal operation is detected.  
(If in doubt about the condition of the Thermometer, have it serviced before use.)
  - e. The battery cover is open.
5. Power this Thermometer using only the battery(ies) referenced in the Specifications Chart.
6. Disconnect the thermocouples before opening Thermometer casing.
7. Avoid injury from burns. Keep clothing, hair, hands, tools, test equipment, etc. away from hot or cold temperatures when measuring.
8. Observe work area conditions. Don't expose to rain. Keep work area clean and well lit.
9. Keep children away. Children must never be allowed in the work area.
10. Stay alert. Watch what you are doing, use common sense. Do not operate any Thermometer when you are tired.
11. Do not operate Thermometer if under the influence of alcohol or drugs. Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the meter.
12. Do not apply voltage exceeding 30V between thermocouples or between thermocouples and ground.
13. Dress properly. Protective, electrically nonconductive clothes and nonskid footwear are recommended when working.
14. Wear ANSI-approved safety goggles during use.
15. Only use accessories intended for use with this Thermometer.
16. Avoid damaging Thermometer. Use only as specified in this manual.

17. Performance of this Thermometer may vary depending on battery condition.
18. Use the proper thermocouple, settings, techniques, and range for the tests performed. Start with the range stated in the instructions.
19. When using two thermocouples for dual measurement, ensure that there is no potential difference between the two lines.
20. Do not attempt to charge battery.
21. Do not reverse the polarity of the battery when installing.
22. Have the Thermometer calibrated by a qualified technician every year to maintain accurate results.
23. Do not disassemble Thermometer; take it to a qualified technician when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
24. The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.



**SAVE THESE INSTRUCTIONS.**

# Specifications

Thermocouple Type	K, J, T, E
Measurement Range	K: -328.0° F to +2501° F (-200.0° C to +1372° C) J: -346.0° F to +2192° F (-210.0° C to +1200° C) T: -418.0° F to +752° F (-250.0° C to +400° C) E: -238.0° F to +1832° F (-150.0° C to +1000° C)
Accuracy	± (0.5% + 32.9° F)
Operating Temperature	Range: 32°F - 104°F (0°C - 40°C)
Display	LCD
Battery	9V (Included)

SAFETY

SETUP

OPERATION

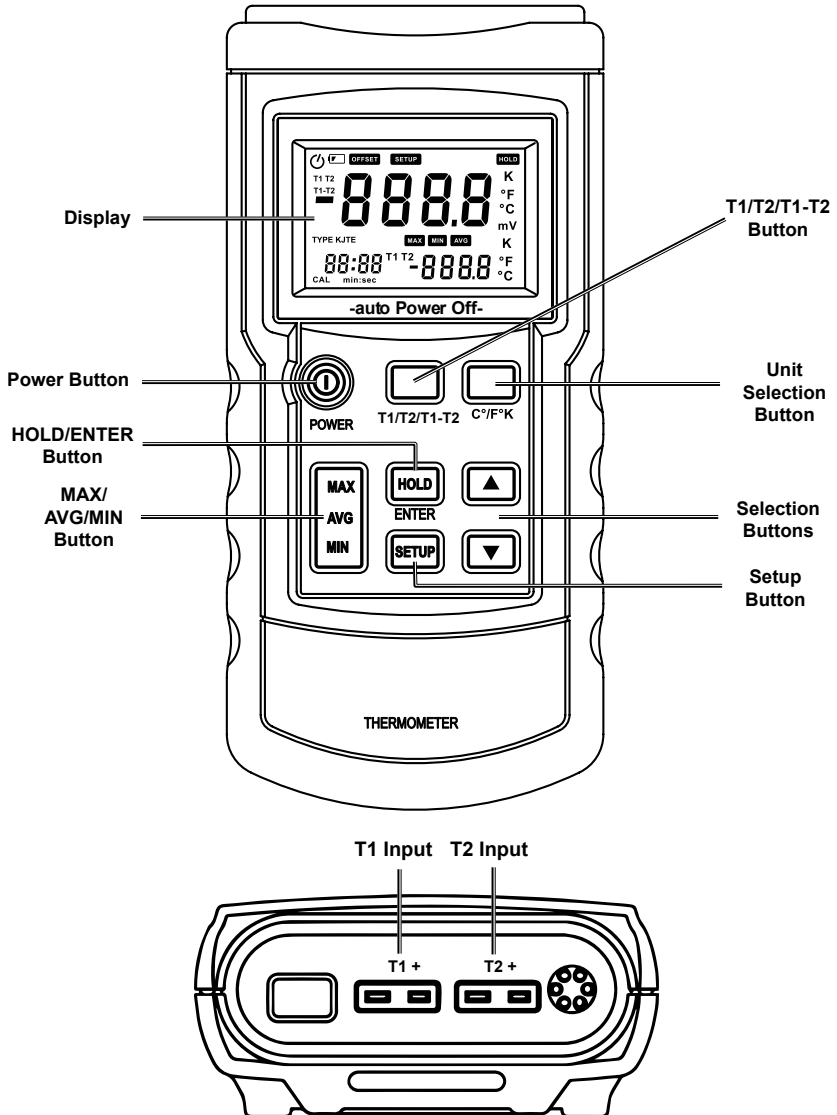
MAINTENANCE

# Setup - Before Use:

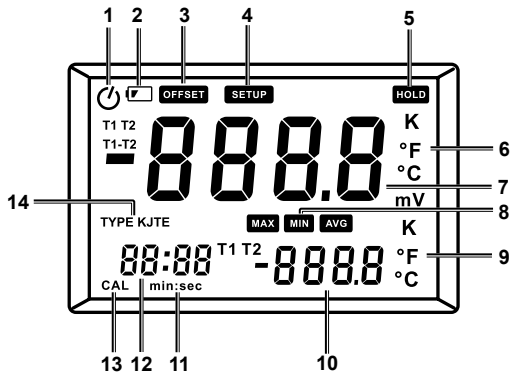


Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

## Functions



# Display



Symbol	Description
1	Auto Power-Off
2	Low Battery
3	Offset
4	Setup Mode
5	Data Hold
6	K / °F / °C
7	- 888.8
8	Maximum, Minimum, Average
9	K / °F / °C
10	- 888.8
11	Time Format
12	Time Display
13	Manual Calibration Mode
14	K / J / T / E

# Operating Instructions



Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

Electrical shock can cause death or injury! NEVER TOUCH exposed conductors of electricity.

## General Operating Instructions

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### Setup

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1. Press **SETUP** button to enter setup mode. **SETUP** flashes on Display.
  2. Press **SETUP** button to cycle through settings.
  3. Cycle through each setup screen to exit setup mode.
- Note:** Changes to settings are saved when exiting setup mode. If Thermometer is powered off while in setup mode, changes are not saved.

### Thermocouple Type (TYPE)

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1. Press **SETUP** until **TYPE** is displayed.
2. Set thermocouple type to K, J, T, or E using Selection Buttons.

### Offset

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Adjust the displayed measurement value to compensate for thermocouple error. Allowable adjustment range is  $\pm 42.8^{\circ}\text{F}$  ( $6^{\circ}\text{C}$ ).

1. Place thermocouple in a known and stable temperature environment (such as an ice bath or dry well calibrator).
2. Allow temperature measurement to stabilize.
3. Press **SETUP** until **OFFSET** is displayed.
4. Adjust T1 offset value using Selection Buttons until measured temperature is consistent with calibration temperature.
5. Press **SETUP** again to adjust T2 offset value.

### Auto Power-Off (P)

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1. Press **SETUP** until **P-** is displayed.
2. Select a value between 5 and 60 minutes using Selection Buttons. Hold Selection Buttons to rapidly increase or decrease value.
3. Select a value less than 5 minutes to disable Auto Power-Off function.
4. When Auto Power-Off function is active,  $\odot$  is displayed.



## System Time Setting (S-T)

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1. Press **SETUP** until **S-T** is displayed.
2. Set system time using Selection buttons.
3. Press **HOLD** to select time format.  
**Note:** System time is the time lapsed from powering on. It will automatically be cleared after powering off.

## Power Frequency Setting (LinE)

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1. Press **SETUP** until **LinE** is displayed.
2. Set interference frequency to 50Hz or 60Hz using Selection Buttons.

## Normal Temperature Compensation (NTC)

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1. Press **SETUP** until **NTC** is displayed.
  2. Set normal temperature compensation to ON or OFF using Selection Buttons.
- Note:** NTC is automatically set to ON when Thermometer is turned on.

## Manual Calibration (CAL)

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1. Press **SETUP** until **CAL** is displayed.
2. Set Manual Calibration to ON using Selection Buttons.
3. Press **SETUP** again to enter Manual Calibration mode.  
**Note:** Manual Calibration mode is automatically set to OFF when Thermometer is turned on.

## Calibration Instructions

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These instructions use the following calibration point:

- a. Normal temperature: 25°C
  - b. T1 input channel: 0 $\mu$ V and 40.000mV
  - c. T2 input channel: 0 $\mu$ V and 40.000 mV
1. Place Thermometer into a thermotank with the temperature set to 25°C for 3 to 5 minutes.
  2. Power on Thermometer and allow measurement to stabilize.
  3. Enable Manual Calibration by following the instructions above.
  4. Press **SETUP** to enter Manual Calibration mode.  
**CAL** flashes on display.
  5. Adjust measured temperature using the Selection Buttons until it is consistent with the temperature in the thermotank.
  6. Press **ENTER** to save calibration value.
  7. Press Input Selection Button to switch to T1 measurement channel.
  8. Input 0 $\mu$ V to T1 measurement channel.
  9. Allow measurement to stabilize, then press **ENTER** to save calibration value.
  10. Press Input Selection button to switch to T2 measurement channel.
  11. Input 0 $\mu$ V to T2 measurement channel.
  12. Allow measurement to stabilize, then press **ENTER** to save calibration value.
  13. Power Thermometer off and restart to complete calibration.

# Measurement Operation

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## Temperature Measurement

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Measure temperature from 32°F to 1832°F (0°C to 1000°C).

1. Connect Thermocouple(s) (included) to T1 and/or T2 Input, following indicated polarity.
2. Press Power Button to turn Thermometer on.
3. Set thermocouple type to be consistent with attached Thermocouple(s).
4. Press Unit Selection Button to select appropriate temperature units.
5. Touch the tip of the Thermocouple to the object to be tested.
6. Read measured temperature on Display. By default, T1 measurement is shown on main display and T2 is shown on auxiliary display.
7. Press **T1/T2/T1-T2** to switch position of T1 and T2 measurements on Display.
8. Press **T1/T2/T1-T2** again to display difference between T1 and T2 measurements.

**Note:** If Thermocouple is not connected to selected Input, Thermocouple is open, or temperature exceeds measuring range, **OL** is displayed.

## Data Hold

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1. Press **HOLD** button to hold reading on Display. The **HOLD** symbol appears.
2. Press **HOLD** again to release the hold.

## Maximum, Average, and Minimum Value Measurements

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1. Press **MAX AVG MIN** one time to view maximum measurement.
2. Press **MAX AVG MIN** two times to view minimum measurement.
3. Press **MAX AVG MIN** three times to view average measurement.
4. Read maximum, minimum, or average measurement on Display.
5. Hold **MAX AVG MIN** to return to normal mode.

# Maintenance and Servicing



Procedures not specifically explained in this manual must be performed only by a qualified technician.

## Cleaning, Maintenance, and Lubrication

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1. Wipe unit with a dry, lint-free cloth. Do not use solvents or abrasives.
2. Remove battery if not in use for long periods.
3. Store unit in a dry location.
4. Other than the battery and fuses, there are no replaceable parts on this unit. **Repairs should be done by a qualified technician.**

## Battery Replacement

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If the  sign appears on the Display, the battery should be replaced.

1. Remove Thermocouple(s) from the Meter.
2. Turn the unit over.
3. Remove screw on battery cover.
4. Remove battery cover carefully.
5. Pull battery out of unit and replace with same.

**Note:** Do not reverse the polarity of the battery.

6. Replace cover and retighten screw.

## Calibration

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Have the Meter calibrated by a qualified technician every year.

## Limited 90 Day Warranty

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

### Record Serial Number Here:

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**Note:** If product has no serial number, record month and year of purchase instead.

