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HH11B
DIGITAL THERMOMETER

INSTRUCTION SHEET

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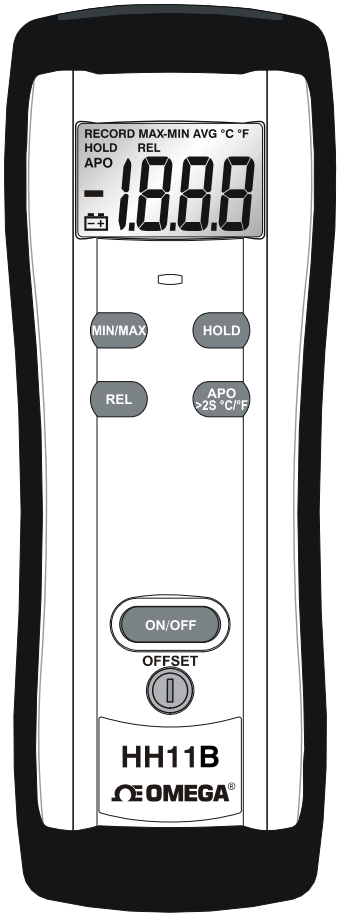

INTRODUCTION

This instrument is a portable 3½ digit, compact-sized digital thermometer designed to use external K-type thermocouples as temperature sensor. Temperature indication follows National Bureau of Standards and IEC 584 temperature/voltage tables for K-type thermocouples. One K-type thermocouple is supplied with the thermometer.

SAFETY INFORMATION

It is recommended that you read the safety and operation instructions before using the thermometer.

WARNING
To avoid electrical shock, do not use this instrument when working voltages at the measurement surface over 24V AC or 60V DC.

WARNING
To avoid damage or burns, do not make temperature measurement in microwave ovens.

CAUTION
Repeated sharp flexing can break the thermocouple leads. To prolong lead life, avoid sharp bends in the leads, especially near the connector.

The ⚠ symbol on the instrument indicates that the operator must refer to an explanation in this manual.

SPECIFICATIONS

ELECTRICAL

Temperature Scale:
Celsius or Fahrenheit user-selectable
Measurement Range:
-200°C to 1372°C, -328°F to 1999°F
Auto range: 0.1°C/1°C, 0.1°F/1°F
Accuracy:
Accuracy is specified for operating temperatures over the range of 18°C to 28°C (64°F to 82°F), for 1 year, not including thermocouple error.
±(0.1%rdg+1°C) on -60°C to 1372°C
±(0.1%rdg+2°C) on -60°C to -200°C
±(0.1%rdg+2°F) on -76°F to 1999°F
±(0.1%rdg+4°F) on -76°F to -328°F
Temperature Coefficient:
0.1 times the applicable accuracy specification per °C from 0°C to 18°C and 28°C to 50°C (32°F to 64°F and 82°F to122°F).
Input Protection:
60V dc or 24V ac rms maximum input voltage on any combination of input pins.
Input Connector:
Accepts standard miniature thermocouple connectors (flat blades spaced 7.9mm, center to center).

ENVIRONMENTAL

Ambient Operating Ranges:
0°C to 50°C (32°F to 122°F)
Storage Temperature:
-20°C to 60°C (-4°F to 140°F)

GENERAL

Display: 3½ digit liquid crystal display (LCD) with maximum reading of 1999.
Low battery indication: The "⊟+" is displayed when the battery voltage drops below the operating level.
Measurement rate: 1 time/second.
Operating environment: 0°C to 50°C at <70% R.H.
Storage temperature: -20°C to 60°C, 0 to 80% R.H. with battery removed from meter.
Accuracy: Stated accuracy at 23°C±5°C, <75% R.H.
Battery: Standard 9V battery (NEDA 1604, IEC 6F22).
Battery Life: 100 hours typical with carbon zinc battery.
Dimensions: 210mm(H) x 65mm(W) x 35mm(D).
Weight: approx. 282g including battery.
Supplied Wire: 4 feet type "K" thermocouple bead wire (Teflon tape insulated). Maximum insulation temperature 260°C (500°F). Wire accuracy ±2.2°C or ±0.75% of reading (whichever is greater) from 0°C to 800°C.

OPERATING INSTRUCTIONS

1. "°C/°F" Button: Selecting the Temperature Scale

Readings are displayed in either degrees Celsius(°C) or degrees Fahrenheit(°F). When the thermometer is turned on, it is set to the temperature scale that was in use when the thermometer was last turned off. To change the temperature scale, hold down for 2 seconds "APO >2S°C/°F" key.

2. "HOLD" Button

Press the "HOLD" key to enter the Data Hold mode, the "HOLD" annunciator is displayed. When HOLD mode is selected, the thermometer held the present readings and stops all further measurements. Press the "HOLD" key again cancels HOLD mode, causing the thermometer to resume taking measurements.

3. "REL" Button

Press "REL" key to enter Relative mode, zero the display, and store the displayed reading as a reference value and annunciator REL is displayed. Pressing "REL" key over 2 seconds to exit the relative mode.

4. "APO" Button

Pressing "APO >2S °C/°F" key to trigger on or off APO mode, and then APO annunciator will appear or disappear on the display. Power is automatically turn off, if no operation for a period of time, and "APO" annunciator is displayed at upper-left corner when APO function is enabled.

5. "MIN/MAX" Button

Press "MIN/MAX" once to begin recording MIN and MAX. Press "MIN/MAX" to select MIN or MAX or MAX-MIN or AVG. Hold down for 2 seconds to exit MIN/MAX function.
In the MIN/MAX record mode can not power off, must leave MIN/MAX record mode then power off.

OFFSET ADJUSTMENT

The OFFSET control is set at the factory to allow for the variations found in standard thermocouples. By adjusting the OFFSET control, you can optimize measurement accuracy for a particular thermocouple at a particular temperature.

Adjusting for Accurate Measurements

1. Connect the thermocouple to the input connector and turn the thermometer on.
2. Place the thermocouple in a known, stable temperature environment at or near the temperature you wish to measure, and allow the readings to stabilize.
3. Slowly adjust the OFFSET control so that the thermometer reading matches the temperature of the known environment. Leave sufficient time between adjustments to allow for measurement lag.

Resetting the OFFSET Control

To return the OFFSET control to the factory setting without having to recalibrate the thermometer, perform the following procedure:

1. Connect a thermocouple that is in good working order to the input that is to be adjusted.
2. Place the thermocouple in an ice-water bath and allow the readings to stabilize.
3. Slowly adjust the OFFSET control until the thermometer reads 0°C (32°F).

Probe Detector

The red LED will be on when no K-type thermocouple probe is inserted into the TEMP input of the meter, and will be off after K-type thermocouple probe is inserted. If the red LED stays on when thermocouple probe is attached, check the thermocouple probe which might be damaged.

OPERATOR MAINTENANCE

WARNING
To avoid possible electrical shock, disconnect the thermocouple connectors from the thermometer before removing the cover.

Battery Replacement

1. Power is supplied by 9V (NEDA 1604, IEC 6F22).
2. The "⊟+" appears on the LCD display when replacement is needed.
3. Remove the battery from battery contacts.
4. When not use for long time remove battery.
5. Don't keep in place with high Temp, or high humidity.

Cleaning

Periodically wipe the case with a damp cloth and detergent, do not use abrasives or solvents.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests / inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.
The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:
1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:
1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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