

HH12B

DIGITAL THERMOMETER

INSTRUCTION
SHEET

M4614-0208

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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. Two K-type thermocouple is supplied with the thermometer.

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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 to 122°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) <80% R.H.

Storage Temperature:

-20°C to 60°C (-4°F to 140°F) <70% R.H.

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. 292g 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

Reading 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. Single-Thermocouple Temperature Measurement

The thermometer displays the temperature of the thermocouple that is connected to the selected input. Press the “T2” key to display the temperature of the thermocouple connected to the T2 input. Press the “T1” key to display the temperature of the thermocouple connected to the T1 input. The input selection cursor indicates which input is selected.

3. Differential Temperature Measurement

Differential temperature measurement is selected by pressing the “T1-T2” key. This causes the thermometer to display the temperature difference between the two thermocouples (the temperature of thermocouple T1 minus the temperature of thermocouple T2). The selection is indicated by the input selection cursor.

4. “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.

5. “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.

6. “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.

7. “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 T1 or T2 Accurate Measurements

1. Connect the thermocouple to the T1 or T2 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.
4. The calibration of the thermometer-thermocouple combination is now optimized for measurements near the temperature measured in step 2.

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


1. 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.
2. When T1 button is pressed, the T1 red LED will be on, and T2 red LED will be off. When T2 button is pressed, the T2 red LED will be on, and T1 red LED will be off. When T1-T2 button is pressed, both T1 and T2 red LEDs will be on. This is to advise the user to insert the thermocouple probes into the correct T1 and/or T2 TEMP input jack where the red LED is on.

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 “

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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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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