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- Wire: Thermocouple, RTD & Thermistor
- Calibrators & Ice Point References
- Recorders, Controllers & Process Monitors
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- Load Cells & Pressure Gauges
- Displacement Transducers
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- Air Velocity Indicators
- Turbine/Paddlewheel Systems
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- pH Electrodes, Testers & Accessories
- Benchtop/Laboratory Meters
- Controllers, Calibrators, Simulators & Pumps
- Industrial pH & Conductivity Equipment

DATA ACQUISITION

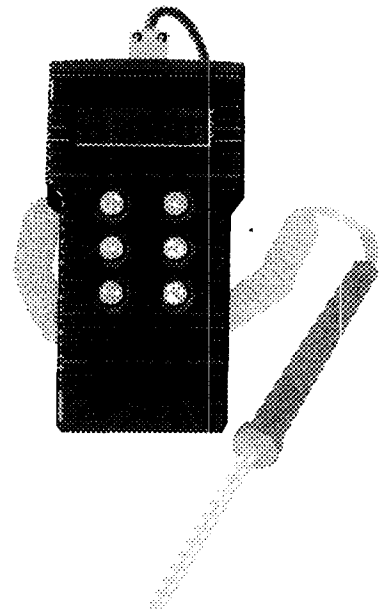
- Data Acquisition and Engineering Software
- Communications-Based Acquisition Systems
- Plug-in Cards for Apple, IBM & Compatibles
- Datalogging Systems
- Recorders, Printers & Plotters

HEATERS

- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

 **HH64**

 **Water-Resistant
Handheld Thermometer**



**Operator's Manual
M1219/0193**

WARRANTY

OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of **13 months** from date of purchase. OMEGA 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 our customers receive maximum coverage on each product. If the unit should malfunction, it must be returned to the factory for evaluation. Our 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. However, this WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being 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 or which are damaged by misuse are not warranted. These include contact points, fuses, and triacs.

We are glad to offer suggestions on the use of our various products. Nevertheless OMEGA only warrants that the parts manufactured by it will be as specified and free of defects.

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LIMITATION OF LIABILITY: The remedies of buyer set forth herein are exclusive and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

Every precaution for accuracy has been taken in the preparation of this manual, however, OMEGA ENGINEERING, INC. neither assumes responsibility for any omissions or errors that may appear nor assumes liability for any damages that result from the use of the products in accordance with the information contained in the manual.

RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA ENGINEERING Customer Service Department. Call toll free in the USA and Canada: 1-800-622-2378, FAX: 203-359-7811; International: 203-359-1660, FAX: 203-359-7807.

BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, YOU MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OUR 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. Please have the following information available BEFORE contacting OMEGA:

1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems you are having with the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. That way our customers get the latest in technology and engineering.

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SECTION 1 INTRODUCTION

1.1 GENERAL DESCRIPTION

The OMEGA Model HH64 is a versatile water-resistant microprocessor-based handheld thermometer. From the front panel, the user can choose between four different thermocouple types, and choose to display temperature in °F, °C or A (Kelvin) on a large 0.5" (12.5 mm) LCD (Liquid Crystal Display). Autoranging and error indicators are standard features, along with a MIN/MAX Temperature function and display HOLD. The nameplate on the back of the meter briefly explains the operating modes and includes some performance specifications. Its microprocessor design ensures high accuracy and stability, while its water-resistant casing provides protection against splashes and moisture.

1.2 FEATURES

- Accepts thermocouple types K, N, T, J
- Displays temperature in °F, °C, or A (Kelvin)
- Accuracy of better than $\pm 0.1\%$ of reading $\pm 0.2^\circ\text{C}$
- Displays minimum or maximum temperature reading
- Freezes current temperature reading with display HOLD
- 0.1° resolution to 999.9°C , autoranges to 1° above 999.9°C
- Water resistant
- Over range indication/Open circuit indicator
- Low battery indicator
- Retains programmed thermocouple type and degree scaling when meter is switched off

SECTION 2 UNPACKING

Remove the packing list and verify that all equipment has been received. If there are any questions about the shipment, please call OMEGA Customer Service Department at 1-800-622-2378 or (203) 359-1660.

Upon receipt of shipment, inspect the container and equipment for any signs of damage. Take particular note of any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE

The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

Please note that the following items should be in the box:

QUANTITY	DESCRIPTION
1	9 Volt Battery (P/N MN1604)
1	TAS Transition Adaptor (P/N TAS-K-2)
1	Beaded Wire Type K Thermocouple Probe (P/N SC-TT-K-30-36)
1	Operator's Manual

* T/C type K, N, T, J

SECTION 3 CONTROLS AND INDICATORS

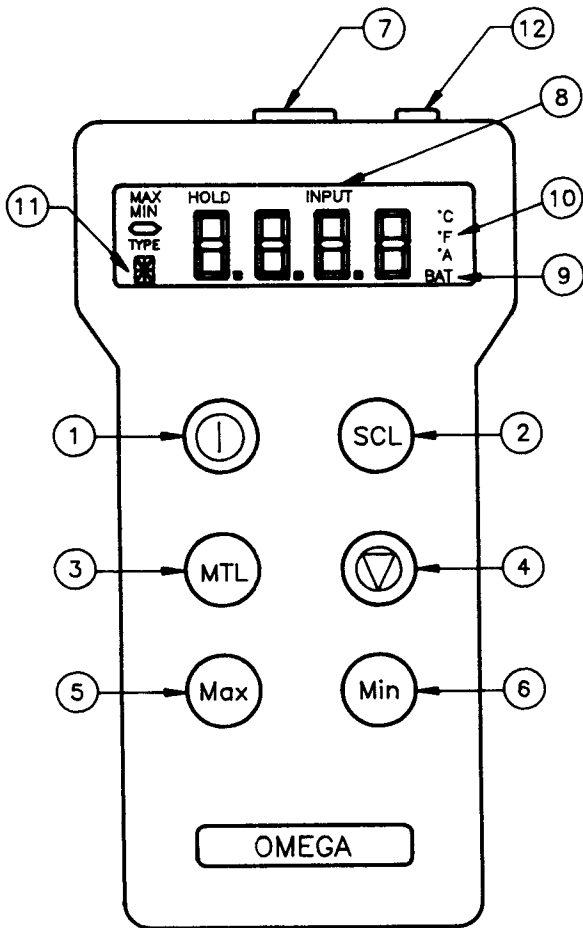


Figure 3-1. Model HH64

ITEM/KEYPAD SYMBOL	CONTROL/INDICATOR	FUNCTION
1		ON/OFF Switch Turns the meter on or off.
2		Temperature Scale Selection Switch (°C, °F, A) Changes the temperature scale to either C, F, or A (Kelvin). The selected scale is shown on the display. (A is the 'Absolute Scale' known as Kelvin)
3		Thermocouple Selection Switch (K, N, T or J) Changes the thermocouple calibration of the meter to either K, N, T or J. The selected thermocouple type is shown on the display.
4		Display HOLD Switch Freezes the display with the current measured value. The display indicates the meter is in the HOLD mode. Pressing this button again releases this function.
5		MAX Temperature Reading Switch The displayed value changes only with increasing temperature. The display indicates the meter is in the MAX mode. Pressing this button again releases this function.
6		MIN Temperature Reading Switch The displayed value changes only with decreasing temperature. The display indicates the meter is in the MIN mode. Pressing this button again releases this function.

NOTE

The display HOLD function can be used after the MAX or MIN reading function has been selected. However, if the display HOLD function has been selected before the MAX or MIN reading function, then these two functions will be inoperative. The last measured temperature will be held constant on the display.

ITEM	CONTROL/INDICATOR	FUNCTION
7	Sealed Sub-miniature Female Thermocouple Connector	This water-tight female input jack accepts thermocouples of type K, N, T, or J with a male OMEGA SMP sub-miniature connector.
8	Open Input/Over Range	'---- INPUT' appearing on the display indicates the thermocouple input to the meter is an open circuit. This may be due to no thermocouple connected to the meter, a poor connection between the thermocouple and meter, or a broken thermocouple connected to the meter.
9	Low Battery Indicator	'BAT' will appear on the display if the battery voltage is low. Replace the battery as soon as possible after this symbol appears.
10	Temperature Scale	Displays the selected temperature scale (Celsius, Fahrenheit or Kelvin, represented by 'A' for Absolute).
11	Thermocouple Symbols	Displays the selected thermocouple type (K, N, T, or J).
12	Calibration Connection	For factory calibration

SECTION 4 ASSEMBLY

4.1 PROBE/METER ASSEMBLY

Plug the Thermocouple Probe into the Sealed Sub-miniature Female Thermocouple Connector on top of the HH64 meter, observing the correct polarity. Refer to item #7 in Figure 3-1 for the location of the Thermocouple Connector.

4.2 BATTERY INSTALLATION/REPLACEMENT

1. Unscrew the two screws at the bottom of the HH64 meter and carefully remove the bottom section which covers the battery compartment.

NOTE

Make sure that the rubber gasket used to seal the battery cover to the main case remains in place when reassembling.

2. If replacing an existing battery:
 - a) Slide the battery out of its holder.
 - b) Disconnect the battery from the battery clip.
3. Connect a 9 volt battery to the battery clip, observing the correct polarity.
4. Slide the battery into its holder.
5. Replace the bottom section of the meter and tighten the screws.

SECTION 5 OPERATING INSTRUCTIONS

5.1 SAFETY PRECAUTIONS

WARNING
Do not subject the thermocouple probe to a voltage greater than 30 Volts RMS, 42.2 V peak above earth ground.
ELECTRICAL SHOCK MAY RESULT!

5.2 OPERATING PROCEDURE

1. The HH64 is compatible with virtually any type K, N, T, or J thermocouple with a subminiature thermocouple connection (OMEGA P/N SMP-(*)-M). Connect a thermocouple probe as described in Section 4.1. The probe must be a thermocouple of type K, N, T, or J. The functions of the meter will remain inoperative until a probe is connected.

* T/C type K, N, T, J

NOTE

While the meter is water resistant, most thermocouple connectors are not. If a conductive solution forms a bridge between the two leads of the thermocouple, the temperature measurement could be false. If conductive solutions are involved, silicone rubber should be applied to seal the connector, as well as the joints surrounding the connector and the thermocouple wire. A water-resistant T/C assembly is recommended when used in the presence of an electrically-conductive liquid. Glass-braided thermocouple wire/insulation is not water resistant and should not be used in applications where conductive solutions are involved.

2. Press the ON/OFF Switch to turn on the HH64 meter. (Keeping this button depressed will show all the display symbols.)

The HH64 meter performs a self-test (for up to 4 seconds) when turned on. The meter is then ready for use and is configured as it was when last turned off.

3. If the thermocouple connected to the meter does not match the thermocouple symbol on the display, press the Thermocouple Selection Switch (MTL) until the thermocouple type (K, N, T or J) matches. NOTE: If the probe and meter/thermocouple types differ, errors in measurement will result.
4. Press the Temperature Scale Selection Switch (SCL) until the display matches the desired scale (°F, °C, or A (Kelvin)).
5. The meter is now ready for use. Other functions may be utilized, but the setting of the thermocouple type (K, N, T, or J) cannot be changed when the display HOLD, MAX or MIN functions are in use.
6. Press the ON/OFF Switch to turn off the HH64 meter when not in use. (Refer to Section 3 for an explanation of the functions.)

SECTION 6 CALIBRATION

The microprocessor of the HH64 stores calibration constants in a non-volatile RAM. It, therefore, has no external adjustment, such as zero and span potentiometers.

SECTION 7 ACCESSORIES

PART NUMBER	DESCRIPTION
HH64-RC	Protective rubber holster for industrial environments
MN1604	9 Volt Battery

See Sections A & D of the OMEGA Temperature Measurement Handbook & Encyclopedia® for a complete selection of thermocouple probes and assemblies.

SECTION 8 SPECIFICATIONS

THERMOCOUPLE TYPES: K, N, T, J

MEASURING RANGE: Type K thermocouple:
–328 to 2282°F (–200 to 1250°C)
Type N thermocouple:
–328 to 2372°F (–200 to 1300°C)
Type T thermocouple:
–328 to 662°F (–200 to 350°C)
Type J thermocouple:
32 to 1382°F (0 to 750°C)

OPERATING MODES: Display HOLD
MAX/MIN Temperature functions

TEMPERATURE UNITS: °F, °C, A (Kelvin)

RESOLUTION: 0.1° below 1000°C
1° above 1000°C (autoranging)

ACCURACY AT 73.4°F (23°C): Better than ±0.1% of reading ±0.2°C

TEMPERATURE COEFFICIENT: ±0.01% ±0.05°C/°C

COLD JUNCTION STABILITY: Better than ±0.075°C/°C

AMBIENT TEMPERATURE RANGE:

Operating: 32 to 122°F (0 to 50°C)
Extended Operating: –4 to 122°F (–20 to 50°C)
Storage: –4 to 158°F (–20 to 70°C)

INPUT IMPEDANCE: 10MΩ ±10%

RESPONSE TIME (Meter only): 1 second to full accuracy

SPECIFICATIONS (CONT'D)

DISPLAY: 0.5" (12.5mm) 4-digit LCD with low battery and open circuit thermocouple indicators

BATTERY TYPE: 9V (Included)

BATTERY LIFE: Greater than 40 hours, Alkaline

DIMENSIONS: 5.5" L x 2.75" W x 1" D
(140 x 70 x 25mm)

WEIGHT: 9.9 oz (281 g)

CONSTRUCTION: Water-resistant, humidity-sealed single impression ABS plastic main body molding with front cover to hold rubber keypad; ABS input top cover and cover plate retaining a rubber seal; single impression ABS battery cover retaining a rubber seal.

NOTES