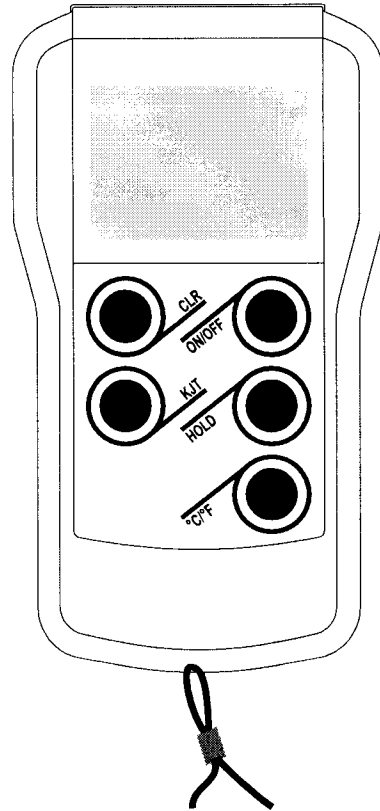


Instruction Manual

HH603A

**K J T - Thermocouple
Thermometer**



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It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.
WARNING: These products are not designed for use in, and should not be used for, patient-connected applications.

Dear Customer,
 Thank you for choosing an Omega Engineering product.
 Please read this instruction manual carefully prior to use.
 This manual will provide you with the necessary information for correct use of the instrument.

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PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it to make sure that no damage has occurred during shipping. If there is any damage, notify Omega Customer Service.

Each meter is supplied complete with:

- 3 x 1.5V AA alkaline batteries
- Instruction manual
- Beaded type K thermocouple

Note: Save all packing material until you are sure that the instrument functions correctly. All defective items must be returned in the original packing with the supplied accessories.

GENERAL DESCRIPTION

HH603A is a powerful and flexible thermometer which can take measurements using different types of thermocouple probes (K, J and T). This meter has been designed using the latest microprocessor technology to provide reliable and accurate high resolution measurements in a wide temperature range.

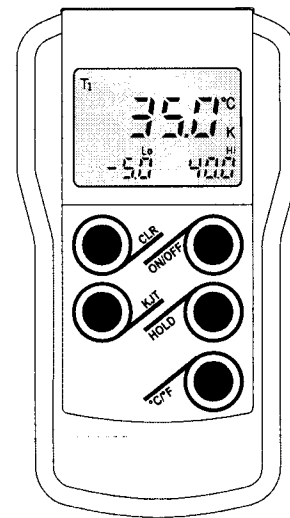
Standard features include dual-level LCD (which allows continuous displaying of High and Low temperature values), °C/°F selection, HOLD function, auto-off capability, remaining battery life indication, low battery detection, and long battery life.

SPECIFICATIONS OF HH603A

SPECIFICATIONS	
Range (*)	K -200.0 to 999.9°C / 1000 to 1371°C -328.0 to 999.9°F / 1000 to 2500°F
	J -200.0 to 999.9°C -328.0 to 999.9°F / 1000 to 1832°F
	T -200.0 to 400.0°C -328.0 to 752.0°F
Resolution	K 0.1°C (-149.9 to 999.9°C) 0.2°C (-200.0 to -150.0°C) / 1°C (1000 to 1371°C) 0.1°F (-24.9 to 999.9°F) / 0.2°F (-249.9 to -25.0°F) 0.3°F (-328.0 to -250.0°F) / 1°F (1000 to 2500°F)
	J 0.1°C (-200.0 to 999.9°C) 0.1°F (-149.9 to 999.9°F)
	0.2°F (-328.0 to -150.0°F) / 1°F (1000 to 1832°F)
	T 0.1°C (-149.9 to 400.0°C) 0.2°C (-200.0 to -150.0°C)
	0.1°F (0.0 to 752.0°F) / 0.2°F (-270.0 to -0.1°F) 0.3°F (-328.0 to -270.1°F)
	Accuracy ±0.5°C (-100.0 to 999.9°C) / ±1°C (outside) (@20°C/68°F) ±1°F (-148.0 to 999.9°F) / ±1.5°F (outside) for one year, excluding probe error
	Typical EMC Deviation ± 3°C / ± 6°F
	Battery 3x1.5V AA (IEC LR6) batteries, approx. 500 hours of continuous use
	Auto-off user selectable: 60 min or disabled
Environment -10 to 60°C (14 to 140°F); RH 100%	
Dimensions 150 x 80 x 36 mm (5.9 x 3.1 x 1.4")	
Weight 235 g (8.3 oz.)	

(*) Range may be limited by probe.

HH603A



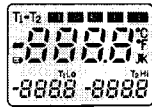
Keyboard Functions:

- ON/OFF : turn the meter ON and OFF.
- HOLD : freeze the reading on display.
- °C/°F : change reading unit (°C or °F).
- KJT : select the thermocouple type.
- CLR : clear the HI and LO values.

OPERATIONAL GUIDE

To switch the instrument ON, press the ON/OFF key.

The thermometer will carry out a self diagnostic test routine, the LCD will show all segments for a few seconds (or as long as ON/OFF is held), followed by the percentage indication of the remaining battery life.

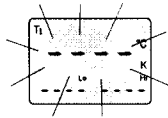


The thermometer then enters normal measurement mode.

If a temperature probe is plugged in, the meter displays the measured temperature.

If no probe is plugged in, or if the reading is over-range, the display shows flashing dashes.

If a measurement is slightly over the range of the meter specifications, the display will flash the closest full-scale value.



To switch the meter OFF, press the ON/OFF key.

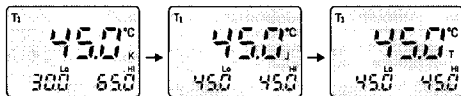
Note: The meters are provided with an acoustic signal feature activated when buttons are pressed, which can be disabled using a switch located in the battery compartment (see figure on page 8).

°C/°F SELECTION

Measurements can be displayed in either degrees Celsius or Fahrenheit. The meter is factory set to °C scale; to change the scale, press °C/°F key.

THERMOCOUPLE TYPE SELECTION, KJT

By pressing KJT, the thermometer is set according to the connected thermocouple type. The corresponding symbol will be displayed, i.e. K for K-type, J for J-type, T for T-type.

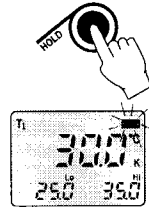


Note: Changing thermocouple type resets the HI and LO values.

HOLD FUNCTION

The HOLD function is activated by pressing the HOLD key.

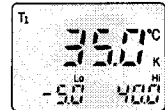
The measured temperature is held on the display until HOLD is pressed again. The "HOLD" tag blinks on the display while in HOLD mode.



Note: Although the display is frozen, internally the meter continues measuring and updating Hi/Lo, relative and average values.

HIGH/LOW TEMPERATURES

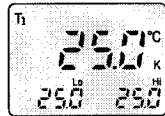
The maximum and minimum temperatures are continuously monitored and displayed on the lower portion of the LCD.



Note: When the reading goes over-range or the probe is removed, the Hi and Lo values display dashes until cleared.

CLEAR FUNCTION

Upon pressing the CLR key, the High/Low values may be cleared at any time during measurement and the current reading is assigned to the highest and lowest temperature values for the displayed channel only.



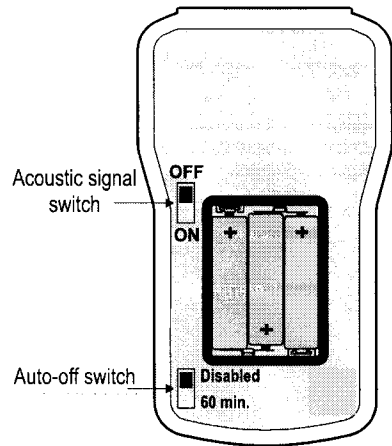
AUTO SHUT-OFF

To save battery life, the meters are provided with an auto-off feature, which switches the meter off after 60 minutes of nonuse.

To disable this feature set the internal slide-switch located in the battery compartment.

BATTERY COMPARTMENT

See "Battery replacement" section for back cover removal/installation.



CALIBRATION

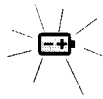
All OMEGA Engineering thermometers have been accurately pre-calibrated at the factory; they are not field calibratable.

However, it is recommended to have all thermometers recalibrated at least once a year.

For an accurate annual recalibration, contact OMEGA Customer Service Dept.

BATTERY REPLACEMENT

When the battery level is below 5%, a warning symbol will blink on the LCD to indicate a low battery condition.



If the battery level is low enough to cause erroneous readings, the Battery Error Prevention System (BEPS) turns the meter off.

Immediately replace the batteries with new ones.

The batteries are accessed by separating the front and the back halves of the meter: unscrew the 4 screws on the back of the meter and carefully replace the three batteries located in the battery compartment, while paying attention to their polarity. Reattach the back making sure that the gasket is in place and tighten the 4 screws to ensure a watertight seal.

Battery replacement must only take place in a non-hazardous area using 1.5V AA (IEC LR6) alkaline batteries.

Recommendations for Users

Before using these products, make sure that they are entirely suitable for the environment in which they are used.

Operation of these instruments in residential area could cause unacceptable interferences to radio and TV equipments, requiring the operator to take all necessary steps to correct interferences.

Any variation introduced by the user to the supplied equipment may degrade the instruments' EMC performance.

To avoid electrical shock, do not use these instruments when voltages at the measurement surface exceed 24VAC or 60 VDC.

To avoid damages or burns, do not perform any measurement in microwave ovens.

Note: To clean the meters, do not use aggressive detergents. It is recommended to use water.

WARRANTY

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 are not warranted, including but not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser 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.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

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.

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

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