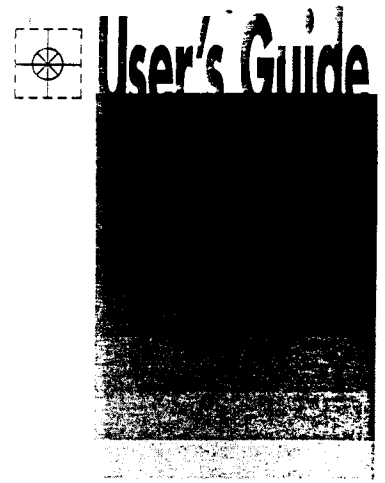


CE



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# RH71 Digital Hygro-Thermometer



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OMEGA's Model RH71 (Digital Hygro-thermometer) is a versatile instrument for measuring temperature and relative humidity. Special features include a calculated dew point switchable between °F and °C. Also, the temperature reading is switchable between °F and °C. Included is a hold/reset button so that the display can be frozen when recording readings. Also it can indicate maximum and minimum readings. This instrument is a must for anyone in the heating, ventilation and air conditioning industry. Specific applications include environmental, indoor air quality and many others where accurate temperature and relative humidity measurements are essential.

#### SPECIFICATIONS:

##### Ranges:

Relative Humidity(%RH):

5.0 to 95.0% RH

Temperature: -4° to 176°F (-20° to 80°C)

##### Accuracy:

%RH: ±2.0% RH

Temperature: ±0.3% of Reading ±1 digit

##### Resolution:

%RH: 0.1% RH

Temperature: 0.1°F or °C (1°F below -99.9°F)

##### Response Time:

%RH: Up to 90% of change in measured value in 15 seconds

Temperature: Approximately 60 seconds

##### Temperature Drift:

±0.5% RH per 10°C (18°F)

##### Display:

0.5" LCD, 4 digits

##### Operating Temp:

Instrument: 32° to 125°F / 0° to 50°C

Probe: -4° to 176°F / -20° to 80°C

##### Power Supply:

2 AA alkaline batteries

##### Battery life:

Approximately 300 hours

##### Battery check:

Automatic low battery display

M-2487

**Dimensions:**

**Instrument:** 7.1" X 3.0" X 0.8"  
**Probe:** 1" diameter  
**Weight:** 8 ounces with batteries

**Optional:**

Ni-Cad Rechargeable battery and charger RH71-AC

Additional relative humidity probe RH70-RP

Analog Output RH71-A

Two separate outputs (0-1 VDC)

**%RH:**

Scale Factor: 10mV/% RH

Range: 0 to 1 VDC is 0 to 100% RH

eg. 55.0% RH = 0.550 VDC

**Temperature:**

Scale Factor: 3.33mV/°C

Range: 0 to 1 VDC is -100 to 200° C

eg. 0.0°C = 0.333 VDC

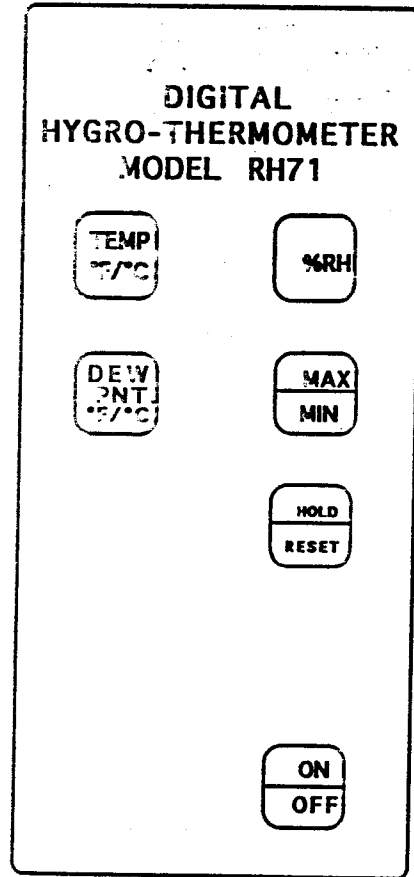
**Unit comes complete with:**

1 pc. RH70-RP combination temperature & relative  
humidity probe

2 pcs. AA 1.5 V alkaline battery

1 pc. carrying case

## SWITCH FUNCTIONS



Pressing "ON/OFF" key switches unit ON.  
Pressing "ON/OFF" key a second time  
will turn unit OFF.



Pressing the "TEMP" key displays temperature  
in degrees Fahrenheit (°F).  
Pressing the "TEMP" key a second time display  
temperature in degrees Celsius (°C).

**%RH**

Pressing "%RH." key displays relative humidity with 0.1% RH resolution.

**DEW  
PNT.  
°F/°C**

Pressing "DEW PNT." key displays calculated dew point in °F with 0.1 °F resolution.

Pressing the "DEW PNT." key a second time displays calculated dew point in °C with 0.1 °C resolution.

**MAX  
MIN**

Pressing "MAX/MIN" key will display the highest reading since turn on. The maximum will operate in temperature, relative humidity and dew point modes.

The temperature maximum is indicated by a flashing "H tP" and then the reading. The relative humidity maximum is indicated by a flashing "H rH" and then the reading. The calculated dew point maximum is indicated by a flashing "H dP" and then the reading.

Pressing "MAX/MIN" key a second time will display the lowest reading since turn on.

The minimum will operate in temperature, relative humidity and dew point modes.

The temperature minimum is indicated by a flashing "L tP" and then the reading. The relative humidity minimum is indicated by a flashing "L rH" and then the reading. The calculated dew point minimum is indicated by a flashing "L dP" and then the reading.

This mode is cleared by pressing the "TEMP", "%RH" or "DEW PNT." KEY.

The maximum and minimum readings are cleared by turning the unit Off.



Pressing "HOLD/RESET" key will freeze the reading on the display. The "HOLD" symbol is displayed and the current reading is held until reset or turned off.

Pressing "HOLD/RESET" key a second time will unfreeze the display. The "HOLD" symbol no longer displays and the unit returns to the measuring mode active before "HOLD" was initiated.

**NOTE:** continuing to press the "HOLD/RESET" key will cause the instrument to toggle between hold and reset.

## OPERATIONS

- 1) Remove battery compartment lid and insert batteries. Replace the lid. Make sure the unit is OFF before replacing batteries and attaching probe. Appendix C contains more information on changing batteries.
- 2) Attach the probe's 5 pole connector to the instrument by lining up the key to the keyway and inserting connector. Now turn the collar to tighten connector to instrument. More connector information is in Appendix A.
- 3) Press "ON/OFF" key, the unit will turn on. The start up sequence displays information about the unit. The unit will display "8 8.8.8" as a display check. Next to be displayed is the battery condition: "bA85" means the battery is at 85%. Now the startup sequence is complete and the unit starts displaying temperature in °F. When the battery symbol appears on the display, replace the batteries.

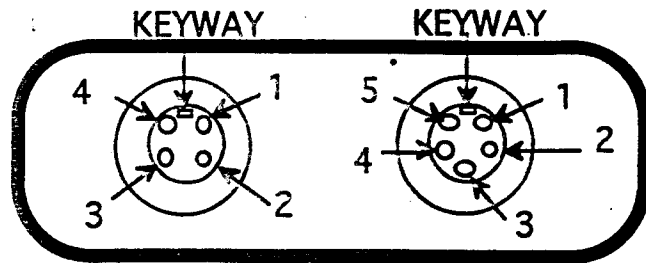
- 4) To read temperature press "TEMP" key for desired function and place probe in area. The maximum or minimum reading since turn on can be displayed by pressing the "MAX/MIN" key. If "E-xx" is displayed see Appendix D on Error codes.
- 5) To read relative humidity press "%RH" key and place probe in area. The maximum or minimum reading since turn on can be displayed by pressing the "MAX/MIN" key. If "E-xx" is displayed see Appendix D on Error codes.
- 6) To read calculated dew point press "DEW PNT." key for desired function and place probe in area. The maximum or minimum reading since turn on can be displayed by pressing the "MAX/MIN" key. If "E-xx" is displayed see Appendix D on Error codes.
- 7) To get maximum or minimum reading since turn on, press "MAX/MIN" key. Pressing the "MAX/MIN" key again causes the unit to toggle between maximum and minimum.  
The flashing "H tP" is the temperature maximum.  
The flashing "L tP" is the temperature minimum.  
The flashing "H rH" is the relative humidity maximum.  
The flashing "L rH" is the relative humidity minimum.  
The flashing "H dP" is the dew point maximum.  
The flashing "L dP" is the dew point minimum.  
To clear MAX/MIN mode press "TEMP", "DEW PNT." or "%RH" key. If "E-xx" is displayed see Appendix D on Error codes.
- 8) To use the optional analog output, attach 4 pole analog out cable to instrument by lining up the key to the keyway and inserting connector. Now turn collar to tighten connector to instrument. More connector information is in Appendix A.



9) To hold a particular reading, press the "HOLD/RESET" key. The "HOLD" symbol is displayed on the LCD. This reading will be held until the "HOLD/RESET" is pressed again or the unit is turned off.

10) Press ON/OFF key to turn unit off when not in use.

## APPENDIX A CONNECTOR PINOUTS



### \*\*ANALOG OUTPUT CONNECTOR

PIN 1 - GROUND - BLACK  
PIN 2 - TEMP - GREEN  
PIN 3 - %RH - GRAY  
PIN 4 - NC - WHITE  
- NC - YELLOW  
- NC - RED  
- NC - BLUE

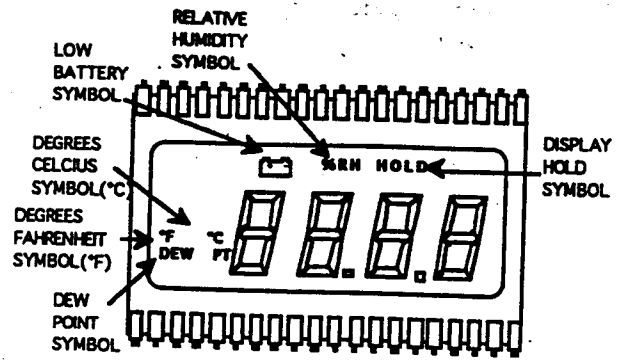
### TEMP/%RH CONNECTOR

PIN 1 - RTD1a - GREEN  
PIN 2 - GROUND - BLACK  
PIN 3 - %RH - GRAY  
PIN 4 - V+ - RED  
PIN 5 - RTD2a - YELLOW

**\*\*NOTE: THIS IS OPTIONAL**

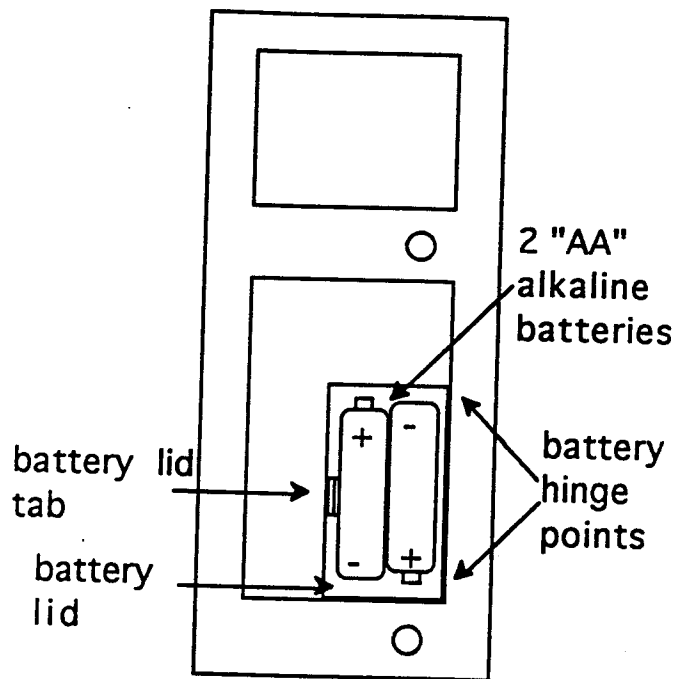
## APPENDIX B

### LCD DISPLAY



## APPENDIX C

### CHANGING BATTERIES



APPENDIX C (continued)

CHANGING BATTERIES

- 1). Remove battery lid by pushing the battery lid tab to the right and lifting.
- 2). The battery lid should swing out of the way and off.
- 3). Remove the batteries from the battery box.
- 4). Insert 2 "AA" alkaline batteries into the battery box as shown above.
- 5). Replace battery lid by placing the battery hinge points into the slots and swinging it shut. The battery lid tab should snap into place.

APPENDIX D

ERROR CODES

- "E-06" Relative Humidity lower than range of 3.0% to 97.0 % RH.
- "E-07" Relative Humidity higher than range of 3.0% to 97.0% RH.
- "E-08" Temperature lower than range of -95.0°C/-139°F to 205.0°C/401.0°F.
- "E-09" Temperature higher than range of -95.0°C/-139°F to 205.0°C/401.0°F.
- "E-10" Relative Humidity not within range (3.0% to 97.0% RH) for calculating the Dew Point.
- "E-11" Temperature not within range (-20.0°C/-4.0°F to 80.0°C/176.0°F) for calculating the Dew Point.





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 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 should malfunction, 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 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 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, EXPRESSED 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.**

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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. P.O. 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. P.O. number to cover the COST of the repair,
2. Model and serial number of 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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