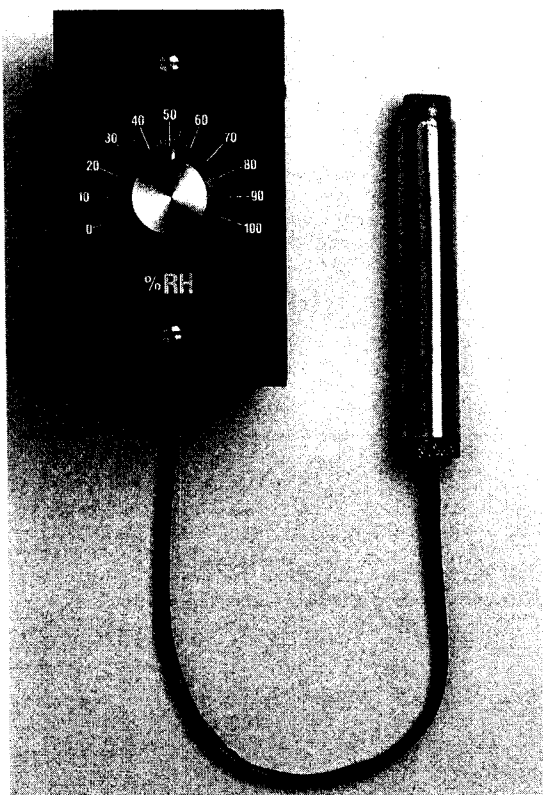




User's Guide



An OMEGA Technologies Company

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RHCN-3 RH Set Point Controller



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 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.

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. 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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RELATIVE HUMIDITY SETPOINT/CONTROLLER RHCN-3

GENERAL DESCRIPTION

The model RHCN-3 is an economical relative humidity probe and setpoint controller designed for the O.E.M. market. The stainless steel probe uses a thin film polymer capacitor to sense relative humidity. The probe may be mounted up to several thousands of feet from the setpoint controller. The controller includes a bandwidth control and a recorder output of 10 millivolts/%RH. A resistor may be removed to obtain 50 millivolts/%RH output. The controller output is a SPDT relay contact.

OPERATION

See Figure I for terminal connections. User can add wire to five foot cable if required, observing color code as shown. Removing resistor as shown results in 50MV/%RH output and does not affect accuracy. Adjust bandwidth as required. Adjusting to "8" mark means the switching points will be 8%RH above, and 8%RH below the setpoint shown on the "T" box front panel. The bandwidth setting is independent of setpoint setting.

MAINTENANCE

If the probe filter is clogged, unscrew knurled end cap at probe end and carefully pull out the printed circuit board and sensor. Clean filter, reinsert board, and end cap. If necessary use a soft art-size brush to remove lint from sensor.

If sensor is subject to 100% RH condensation, it must be dried to obtain correct reading. No recalibration is required. The probe should not be exposed to high concentrations of ammonia, alcohol vapors, air pollutants, or contaminants.

CALIBRATION

A. Single point field calibration:

If necessary, a single adjustment of the SPAN trimpot may be done at the highest available known RH value while monitoring the recorder output with a voltmeter.

B. Regular calibration procedure:

Place probe in known low RH environment (example: 10%RH) adjust ZERO trimpot CCW so that the recorder output decreases to a minimum value (near zero volts) where further adjustment produces no change. Now carefully turn ZERO trimpot CW until voltmeter just starts to increase above the minimum value.

Place probe in known high RH environment and allow to stabilize (example: 75%RH). Adjust the SPAN trimpot so that the voltmeter reads the difference between the low and high RH values (in our example: $75 - 10 = 65\%RH$). Finally adjust the ZERO trimpot so that the voltmeter read the high RH value (example: 75%). Note that for the 10MV/%RH output $65\%RH = .65$ volts, $75\%RH = .75$ volts. For the 50MV/%RH output $65\%RH = 3.25$ volts, $75\%RH = 3.75$ volts.

SPECIFICATIONS

ACCURACY: $\pm 3\%$ RH, from 3% to 95%RH

OPERATING TEMPERATURE RANGE: Probe -20°C to 85°C , Controller 0°C to 75°C .

RECORDER OUTPUT: 10MV/%RH (50MV/%RH with resistor removed, See Figure 1).

CONTROLLER OUTPUT: SPDT (Form "C") relay; 5AMPS, 250VAC or 30VDC.

BANDWIDTH CONTROL: ± 0 to $\pm 20\%$ RH, independent of Setpoint setting.

POWER: 8VDC to 30VDC at 125 milliamps maximum.

PROBE: Stainless steel .75" diam., 4.7" long, 5 foot 2-wire cable with bracket for wall mounting.

ENCLOSURE: Controller mounted in standard metal "T" box (4 1/2" x 2 3/4" x 2" deep), screw terminal connections.

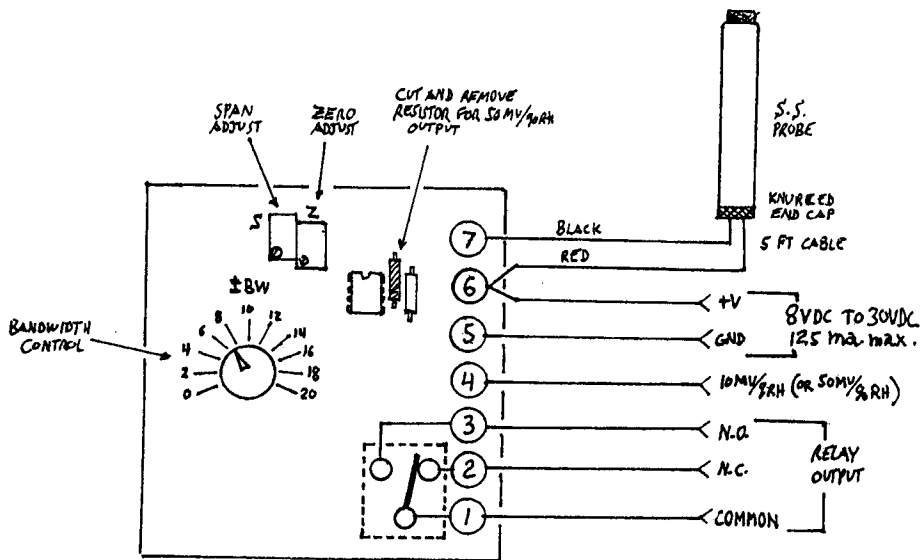


FIGURE 1

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE, OPERATING: PROBE; -20°C to 85°C (-4°F to 185°F)
CONTROLLER; 0°C to 75°C (32°F to 167°F)

TEMPERATURE, STORAGE: PROBE; -40°C to 85°C (-40°F to 185°F)
CONTROLLER; -10°C to 80°C (14°F to 176°F)

HUMIDITY, OPERATING: PROBE; 0 to 99%RH non-condensing
CONTROLLER; 10% to 90%RH non-condensing

HUMIDITY, STORAGE: PROBE; 0 to 100%RH
CONTROLLER; 0 to 90%RH non-condensing

PRESSURE, OPERATING AND STORAGE: PROBE; 30PSI
CONTROLLER; ambient pressure

The controller will be earth grounded using the grounding terminal inside the enclosure marked ⊕.

The 8-30VDC supply shall originate from a source complying with the Low Voltage Directive.

The controller conforms to the following directive under the above conditions.

Low Voltage Directive EN61010-1 (1993) 73/23/EEC

NOTES



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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.

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- ☑ Recorders, Controllers & Process Monitors
- ☑ Infrared Pyrometers

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