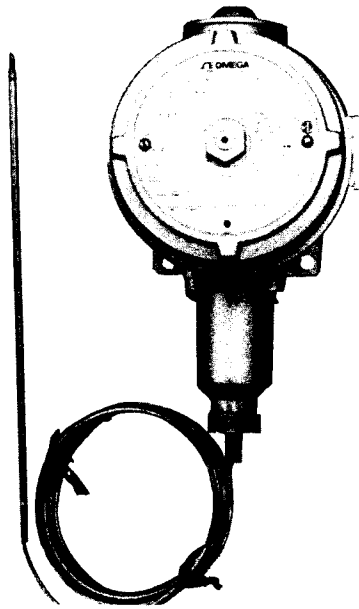


**MODEL HT-121  
EXPLOSION RESISTANT TEMPERATURE CONTROLS**



# Operator's Manual

# INSTALLATION AND MAINTENANCE INSTRUCTIONS

**WARNING:** Misuse or misapplication of this product may cause explosion and personal injury. These instructions must be thoroughly read and understood before unit is installed.

## OPERATION

Temperature variations of a liquid filled sensing bulb are hydraulically transmitted to a bellows or diaphragm which either actuates or deactuates one snap-acting switch at a predetermined set point. Set points are adjusted by turning an external calibrated knob and pointer.

## PART I INSTALLATION

**IMPORTANT:** Install unit where shock, vibration and temperature fluctuations are minimal. Orient unit so that moisture is prevented from entering the enclosure. It is imperative that properly rated explosion-resistant sealing fittings be used for electrical wire entry. Do not mount unit in ambient temperatures exceeding published limits.

### Mounting Standard Controls

The Omega® HT-120 Series Remote Mounted Temperature controls should be mounted vertically (temperature assembly facing down).

Controls may be surface mounted via the 4-1/4" screw clearance holes on the enclosure or through the use of a mounting bracket. (See Figure 3 Mounting Dimensions.)

### Model HT-121

Mount in vertical position with temperature assembly facing down. (See Figure 1.)

## PART II WIRING

**WARNING:** Disconnect all supply circuits before wiring unit.

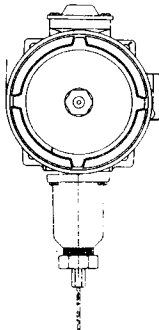


Figure 1. Mounting Diagram

**IMPORTANT:** Electrical ratings stated in literature and on nameplates must not be exceeded—overload on a switch can cause failure on the first cycle. Wire units according to national and local electrical codes. Maximum recommended wire size is 14 AWG. Remove cover and wire controller according to Figure 2.

**CAUTION:** 120 Series Torque Tightening. The recommended tightening torque for field wiring terminals is 7 to 17 lb - in.

\* Enclosures are designed to withstand gas vapor explosions without bursting or loosening of joints, and are capable of arresting the propagation of flame from the interior of the enclosure to the surrounding atmosphere.

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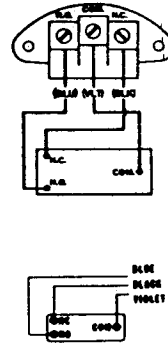


Figure 2. Wiring Diagram

## PART III SET POINT ADJUSTMENTS

**NOTE:** For set point adjustments and recalibration, connect control to a calibrated temperature source and stabilize unit.

### Model HT-121

Adjust set point by turning external knob and pointer to desired setting on scale. Recalibration—adjusting set point after replacing switch(es) and/or thermal assembly:

Slowly turn adjustment knob until switch transfers. Compare switch transfer point to actual temperature. If they do not agree, loosen set screws on adjustment knob and align pointer to indicate actual temperature.

Turning knob from low to high temperature for switch transfer achieves temperature "fall" setting. Turning knob from high to low temperature for switch transfer achieves temperature "rise" setting.

## PART IV. REPLACEMENT PROCEDURES

**IMPORTANT:** Use only factory authorized replacement parts and procedures. Components for replacement parts include the switches and the thermal assemblies only. Order parts by name plate information data on model, range and electrical rating.

### Replacement Of Switches

#### Model HT-121

1. Remove cover, (2) switch mtg. screws, switch, insulator.
2. Disconnect (3) switch wires at switch terminal.
3. Install new switch and wire per PART II.
4. Mount switch and insulator inside enclosure and recalibrate per PART III.

**WARNING:** To prevent seizure of enclosure cover, do not remove lubricant (petrolatum). Threads should also be free of dirt, etc.

**NOTE:** Replacing cover hand tight (5 full threads engaged) is sufficient to maintain protection. Additional tightening may be required to fully engage cover "O" ring and seal enclosure for rain-tight protection.

## Replacement Of Thermal Assembly (T/A)

1. Place control upside down on work bench.
2. Loosen 3/8" hex dress nut one or two turns to relieve tension on 1/8" hex Thermal Assembly (TA) mtg. nut.
3. Unscrew TA mounting nut from TA housing and carefully remove thermal assembly insuring that "cone" spring and compensator assembly remain in TA housing.
4. Insert new TA, seating bellows stem into cone spring and compensator assembly.
5. Screw on TA mounting screw and screw on "dress" nut snugly. Do not overtighten.
6. Recalibrate per PART III.

### IMPORTANT: MAXIMUM TEMPERATURE

**Maximum Temperature:** The highest temperature to which a sensing element may be occasionally operated without adversely affecting set point calibration and repeatability.

**WARNING:** Maximum temperature stated in literature and on nameplate must never be exceeded, even by surges in the system. Occasional operation of unit up to maximum temperature is acceptable (e.g. start-up, testing). Continuous operation should be restricted to the designated adjustable range.

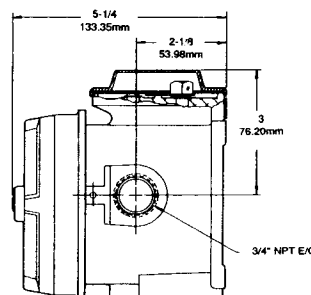
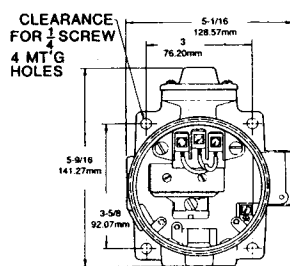
Model HT-121 is UL & CSA Listed. Meets Division 1 and 2; Class I, Groups B, C & D; Class II, Groups E, F, & G; and Class III.

## RECOMMENDED PRACTICES

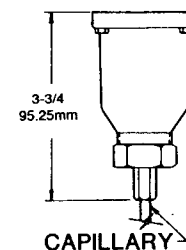
OMEGA Engineering recommends careful consideration of the following factors when specifying and installing OMEGA units. Before installing a unit, the Installation and Maintenance Instructions provided with unit must be read and understood.

- To avoid damaging unit, maximum temperature limits stated in literature and on nameplates must never be exceeded, even by surges in the system. Operation of the unit up to maximum temperature is acceptable on a limited basis (i.e. start-up, testing) but continuous operation must be restricted to the designated adjustable range. Excessive cycling at maximum temperature limits could reduce sensor life.
- A back-up unit is necessary for applications where damage to a primary unit could endanger life, limb or property. A high or low limit switch is necessary for applications where dangerous runaway condition could result.
- The adjustable range must be selected to that incorrect, inadvertent or malicious setting at any range point can not result in an unsafe system condition.
- Install unit where shock, vibration and ambient temperature fluctuations will not damage unit or affect operation. Orient unit so that moisture does not enter the enclosure via the electrical connection.
- Unit must not be altered or modified after shipment.
- Monitor operation to observe warning signs of possible damage to unit, such as drift in set point. Check unit immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage to unit could endanger property or personnel.
- For all applications, a factory set unit should be tested before use.
- Electrical ratings stated in literature and on nameplate must not be exceeded. Overload on a switch can cause damage, possible on the first cycle. Wire unit according to local and national electrical codes, using wire size recommended in installation sheet.
- Use only factory authorized replacement parts and procedures.
- Do not mount unit in ambient temp. exceeding published limits.
- For remote mounted temperature units, capillary lengths beyond 10 feet can increase chance of error, and may require re-calibration of set point and indication.

### MODEL HT-121



### SENSORS



**Figure 3. Mounting Dimensions**  
All dimensions are in inches except where noted.

## WARRANTY

OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of two (2) years from date of purchase. 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 current, heat, moisture, vibration, or misuse. Components which wear or which are damaged by misuse are not warranted. These include contact points, fuses, and triacs.

THERE ARE NO WARRANTIES EXCEPT AS STATED HEREIN. THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL OMEGA ENGINEERING, INC. BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES. THE BUYER'S SOLE REMEDY FOR ANY BREACH OF THIS AGREEMENT BY OMEGA ENGINEERING, INC. OR ANY BREACH OF ANY WARRANTY BY OMEGA ENGINEERING, INC. SHALL NOT EXCEED THE PURCHASE PRICE PAID BY THE PURCHASER TO OMEGA ENGINEERING, INC. FOR THE UNIT OR UNITS OR EQUIPMENT DIRECTLY AFFECTED BY SUCH BREACH.



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TELEX: 996404

FAX: (203) 359-7700

## Return Requests/Inquiries

Direct all warranty and repair requests/inquiries to OMEGA Customer Service Department, telephone number (203) 359-1660. BEFORE RETURNING ANY INSTRUMENT, PLEASE CONTACT THE OMEGA CUSTOMER SERVICE DEPARTMENT TO OBTAIN AN AUTHORIZED RETURN (AR) NUMBER. The designated AR number should then be marked on the outside of the return package.

To avoid processing delays, also please be sure to include:

1. Returnee's name, address, and phone number.
2. Model and Serial numbers.
3. Repair instructions.

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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