



TEN TEGAM WAY  
GENEVA, OHIO 44041  
440-466-6100 • FAX: 440-466-6110  
E-mail: sales@tegam.com

## **RH-CAL**

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### **RELATIVE HUMIDITY CALIBRATION KIT**

#### **1. INTRODUCTION**

The RH Calibration Kit provides an accurate method for calibrating the relative humidity sensor. The procedure is based on using selected saturated salt solutions to produce a known RH. The method is described in detail in the ASTM standard E104-85 "Standard Practice For Maintaining Constant Relative Humidity by Means of Aqueous Solutions".

#### **2. KIT CONTENTS**

- A. One bottle containing approximately 14 grams of ACS reagent-quality Lithium Chloride (LiCl) salt to produce 11.3% RH.
- B. One bottle containing approximately 17 grams of ACS reagent-quality Sodium Chloride (NaCl) salt to produce 75.3% RH.
- C. One foam block for holding the bottles upright for testing and to stabilize the temperature.
- D. Two fitting caps.
- E. One liquid dropper.
- F. One O-ring.
- G. One set of instructions.

### 3. PREPARATION OF SALT SOLUTIONS

Use pure distilled water only to make up solutions. Using the liquid dropper, add the distilled water to the bottle to be used for Lithium Chloride (LiCl). Stir well after each addition, until the salt can absorb no more water as will be evidenced by any free liquid. For best results keep the excess liquid to a minimum. Close the bottle when mixed and insert in the foam block for temperature stabilization.

(Saturated solution of LiCl will solidify with time; this is normal and does not affect potency.)

Follow the same procedure for the Sodium Chloride (NaCl) with the vial marked "NaCl 75%".

**NOTE:** New solutions should be prepared at least 12 hours prior to first-time use.

The Relative Humidity values of 11.3% and 75.3% are valid at 25°C (77°F). The following table lists the values at various room temperatures and should be used as the RH values in the actual calibration procedure.

TEMPERATURE	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)	30°C (86°F)	35°C (95°F)	40°C (104°F)
LITHIUM CHLORIDE (LiCl)	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.2%
SODIUM CHLORIDE (NaCl)	75.7%	75.6%	75.5%	75.3%	75.1%	74.9%	74.7%

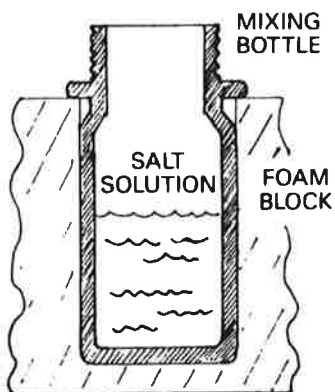
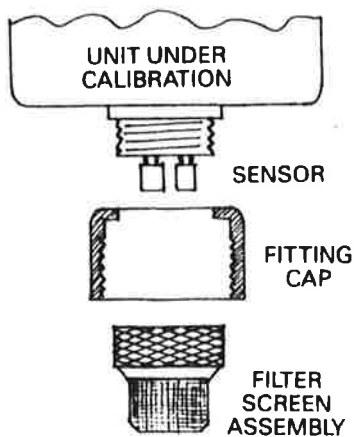
(These values are published by NBS, Vol. 81A, 1977, p 89-96, "Humidity Fixed Points of Binary Saturated Aqueous Solutions", by L.Greenspan.)

#### 4. CALIBRATION SET-UP FOR RH TRANSMITTERS (RH, RHT)

- A. Disconnect all wires to unit and remove cover.
- B. Unscrew filter-screen assembly from unit.
- C. Seat fitting cap. (There are two fitting caps in kit. Use cap with smaller hole.)
- D. Carefully screw on filter-screen assembly (securing cap to unit) until finger tight.
- E. Screw on fitting cap and unit together to the 11.3% RH Lithium Chloride solution.
- F. Connect required wires to unit.
- G. Allow at least 1 hour for stabilization or until the unit indicates a non-changing value. Follow the calibration procedure outlined in the instruction sheet for the unit being tested.
- H. Repeat the same procedure for the 75.3% RH Sodium Chloride solution.

**NOTE:**

The unit and the solution should be at the same uniform, stable temperature before starting calibration.



## 5. CALIBRATION SET-UP FOR HUMIDITY CONTROLLER, DUCT PROBE

- A. Unscrew sensor screen cap from probe.
- B. Place plastic fitting cap, with large center hole, over sensor screen cap as shown with O-ring inside fitting cap.
- C. Screw assembly into probe.
- D. When calibrating, press cable toward front of probe to prevent breaking air-seal at sensor end.

### NOTE: SENSORS SHOULD NOT TOUCH SALT SOLUTION

- E. Allow at least 1 hour for stabilization or until controller indicates a non-changing value. Follow the calibration procedure outline in the instruction manual for the Humitran-DP probe manual.
- F. Repeat the same procedure for the 75.3% RH Sodium Chloride solution.

### NOTE:

The probe and the solutions should be at the same uniform, stable temperature before starting calibration.

