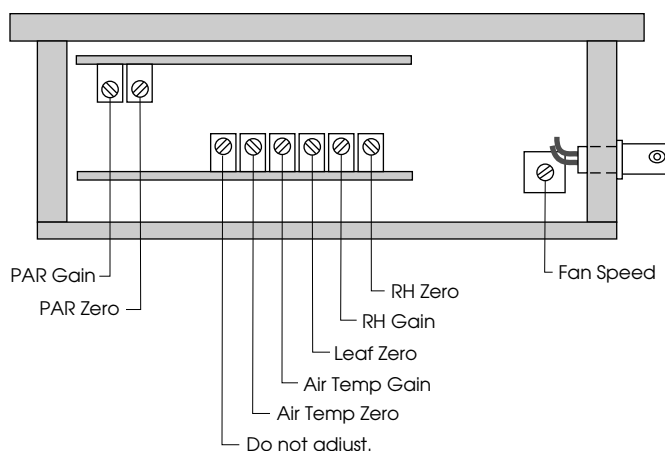


# Recalibration of Relative Humidity Sensors

## LI-6000 and LI-6200

Complete recalibration of the LI-6000 and LI-6200 by LI-COR or an authorized service representative is recommended once each year. However, the user can check and calibrate (if need be) the RH function of the instrument at ambient temperatures. No special skills are required, but all recommendations given below should be followed in detail to obtain the best results.

- 1) After receiving the instrument from LI-COR, check the RH sensor calibration by comparison with a reference measurement of relative humidity (e.g. aspirated psychrometer or dew point hygrometer). Continue checking the RH sensor every 2 - 3 weeks thereafter. The Vaisala HUMICAP® RH sensor often shows a 2 - 3% decrease during the first year (i.e., displayed RH drops by 2 or 3).
- 2) If the displayed RH is different by 4% RH or more as compared to the reference reading, then recalibrate the relative humidity function of the instrument.
- 3) The following RH pre-calibration procedure can be used to approximately set the zero and gain RH potentiometers (pots) before performing the relative humidity calibration using the reference measurement. This procedure will calibrate the RH to within 2 - 3% of the actual relative humidity. Before proceeding, install your smallest chamber and check to be sure that the system does not leak.
  - a) Fill the desiccant tube 3/4 full with fresh magnesium perchlorate.
  - b) For the LI-6200, the humidity lookup table (FCT 47) should match the values given on the factory calibration sheet. The multiplier value (FCT C7) should also read 0.024414. For the LI-6000, set system parameters for use with desiccant (WINT=0, W SLP=0, FLOW=0, RH IN=0, CORR RH=Y).
  - c) With the sensor head connected to a leaf chamber (the 1/4 liter chamber, if possible), close and latch the chamber and direct all the air flow through the desiccant. Allow the dry air to circulate for 10 minutes through the closed system. Make sure that the chamber fan(s) is turned on.
  - d) Monitor RH on the console display until a stable reading (near zero) is obtained.
  - e) Remove the top plate from the sensor housing by removing the 4 screws in the corners.
  - f) Adjust the RH zero potentiometer with a small screwdriver to read 2% relative humidity. As shown in the diagram, this is the potentiometer furthest to the right (fan switch side).
  - g) Stop air flow (pump off) through system and open the leaf chamber slightly. With the chamber fan(s) on, press your lips against the chamber opening and slowly exhale into the cuvette 3 - 4 times to saturate the air inside the cuvette. After the last breath of warm moist air, immediately close and latch the chamber.
  - h) When a stable relative humidity is obtained, adjust the RH gain potentiometer until the display reads 96% relative humidity. As shown in the diagram, this is the 2nd potentiometer from the right.



- i) Repeat the procedure beginning with step (c) if the span adjustment was large. This must be done due to the interaction between the zero and gain pots.

- 4) With the pump off, chamber open, and fan(s) operating, allow the chamber to equilibrate (1 hour) to ambient conditions.
- 5) Make an independent measurement of ambient relative humidity with a psychrometer. With the open leaf chamber pointing away from the user, adjust the RH gain potentiometer until the display gives the same reading as the psychrometer.

**Observe the following precautions since each affects the ‘zero’ adjustment.**

- The air flow to the chamber should be unobstructed and have no leaks, as it would in normal operation.
- Always use the same size leaf chamber and same flow rate.
- Chamber walls should be clean.
- Always use new desiccant when checking/recalibrating the RH sensor.

If using a psychrometer for the reference RH measurement, minimize the errors associated with unmatched wet and dry bulb temperature sensors, atmospheric pressure, radiation, conduction, inadequate ventilation, and impure water.

**Important Instructions on Care and Storage of Vaisala Humidity Sensor.**

1. Do not store below 10% RH or above 90% RH.
2. Do not store the sensor with a desiccant pack (e.g. silica gel).
3. Do not touch or scratch the surface of the sensor.
4. Clean only with dust-free air or rinse with distilled water.
5. After rinsing: Allow the sensor to re-equilibrate for one day at the humidity at which you will be using it before measurements (or doing a recalibration). The same procedure applies if water has condensed on the sensor.

**Note:** Recalibration should not be necessary after washing the sensor.

6. Do not expose the sensor to solvents, cigar or cigarette smoke.
7. Do not expose to sulphurous pollutants, especially at high humidities (where there may be a chance of condensation on the sensor).