Residual Humidity Calibration Instructions for HygroSet II Digital Thermometer/Hygrometer

The HygroSet II Digital Hygrometer can be easily calibrated with a corrected residual humidity reading using household items. ***You will need***: *HygroSet II Digital Hygrometer, Mason Jar with metal lid, Salt, Water.*

Method:

1. Cover the bottom of the mason jar with a solid layer of salt. Add enough water into the salt layer that the water becomes visible as a liquid layer above the salt. The goal is to create a saturated salt solution---excess water beyond saturation is not desirable and will alter the results. Salt crystals and water should both be present.
2. The HygroSet Hygrometer has a magnet on the back of it. Use this magnet to attach the hygrometer to the inside of the mason jar lid. With the hygrometer attached, screw the lid in place on jar until it seals.
3. Leave the jar out overnight. During this time, the solution and air within the sealed mason jar will reach an equilibrium. The chemical system within the jar will provide a fixed point of relative humidity above the solution where your hygrometer has been placed. The equilibrium relative humidity (RH) for a saturated salt solution of sodium chloride (table salt) is about 75% for the temperature range 0 – 30° C (32 - 86° F).

Temperature ° C	Equilibrium RH of Saturated NaCl
0	75.51 ± 0.34
5	75.65 ± 0.27
10	75.67 ± 0.22
15	75.61 ± 0.18
20	75.47 ± 0.14
25	75.29 ± 0.12
30	75.09 ± 0.12

Source: Greenspan, Lewis. "Humidity Fixed Points of Binary Saturated Aqueous Solutions." *Journal of Research of the National Bureau of Standards—A. Physics and Chemistry.* Vol. 81A, No. 1, January – February 1977.

4. When the RH reading on your hygrometer has stabilized, it should read 75%. If it does, your hygrometer is reading just fine and no calibration is needed. If it does not, you will need to use the humidity adjustment knob and set button to adjust the reading to 75. To do this, note any difference between your actual reading and the chart above.

Example: Equilibrium RH of NaCl at 25 ° C: 75
Your actual reading: 72
Difference: 3

5. Turning the adjustment wheel will adjust the humidity reading 1% for every 1 click of the turn. Turning clockwise will adjust the reading up, counter-clockwise will adjust the reading down. Turn the adjustment knob the appropriate number of clicks to adjust for the difference you found in the calculation above (ie. 3 clicks in this example).
6. Press the Set Button to lock in your adjustment. The reading will reset in a few seconds and refresh every 10 seconds thereafter.
7. Reassemble the mason jar as before and allow the humidity to return to equilibrium for a few hours. Double check your reading and adjust again if necessary.[1]