MAXIMUM

December 18, 1996

# WeatherMAX Outside Relative Humidity Field Calibration

**Required equipment:**

- A precision psychrometer, chilled mirror dew point hygrometer or equivalent standard instrument.
- An accurate digital voltmeter covering the range of 0.1 to 3.0 VDC.
- An area to perform this procedure that has a stable humidity within the range you wish to calibrate to, and good air flow to prevent a stagnant air mass. A small fan blowing across the area can be helpful. The temperature in this area MUST BE BETWEEN 70 and 74ºF.
- A table, bench, or counter-top to rest the sensor and standard instrument on that has a surface consisting of a material that will not influence the humidity (e.g. glass, plastic, or metal).

**Procedure:**

1 Bring the components of the system (WeatherMAX , sensor, interface board, junction box, junction cables and, AC adapter) to your calibration area.

2 Reconnect the components as shown in the installation instructions.

3 Perform the initial activation procedure as given in the instructions. Make sure the sensor cover is still installed on the housing. IMPORTANT - After removing the wet towel YOU MUST WAIT THREE HOURS BEFORE PROCEEDING!

4 Connect the voltmeters negative lead to the common connection (see figure 1).

5 Check the sensors current setting by connecting the voltmeters positive lead to U1 Pin #10 (see figure 1). The reading should be between 2.1 and 2.35 volts. If it is not in this range then adjust trimpot R15 so that it is in range.

Note: this trimpot sets the reference to the servo control loop so, it appears to behave a bit strange. Example- as you turn up the setting it will go to a high value and then settle back down as the servo circuit settles. Turn the trimpot just a little at a time and watch the action on the voltmeter.

6 Remove the four cover screws from the sensor base (see figure 2). Gently lift the sensor cover straight up and off of the base, and slip the wire out of the notch in the cover.

7 Using a grease pencil or magic marker put an index mark on the calibration plate and main circuit board so that you can quickly find your starting point. Carefully grasp the calibration plate between your thumb and forefinger at the point indicated on the diagram (see figure 3).

8 Turn the calibration plate until the instrument reads somewhere near mid-scale (50% RH). You should increase the display update rate on WeatherMAX, to make it easier to set, by pressing the adjust key twice.

9 Lightly breathe on the humidity element to verify that the pointer RISES. If the pointer falls instead of rises turn the calibration plate 90º.

10 Connect the voltmeters positive lead to the Vout connection (see figure 1).

11 Turn the calibration plate slowly until the voltmeter reads the lowest possible voltage.

12 Set trimpot R34 (offset) so that the voltage is between 0.195 and 0.215 volts.

13 Turn the calibration plate slowly until the voltmeter reads the highest possible voltage.

14 Set trimpot R35 (gain) so that the voltage is between 1.460 and 1.480 volts.

NOTE: The trimpots may interact slightly, so it may be necessary to repeat steps 11 to 14 a few times to achieve proper calibration.

15 Repeat steps 8 & 9.

16 Let the system rest for one hour.

17 Position your calibration standard instrument within 1 foot of the sensor.

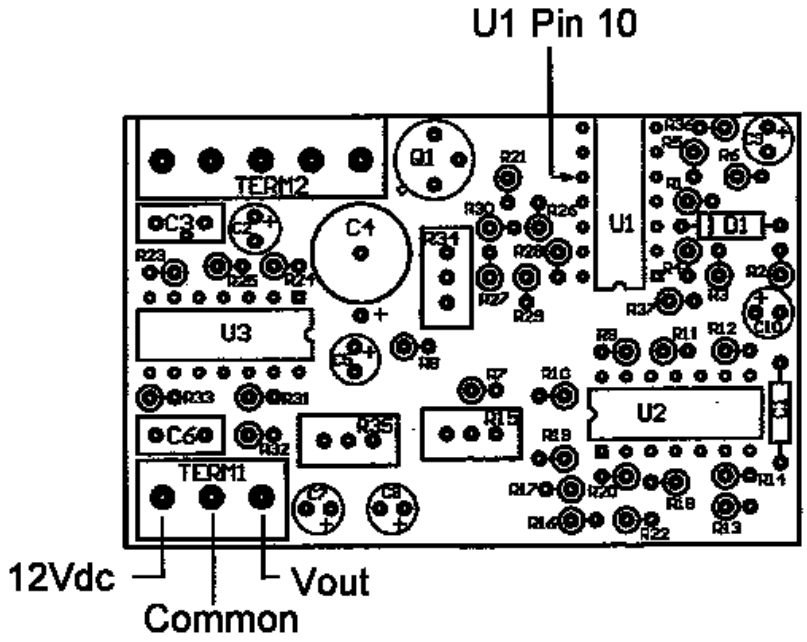
18 Obtain an accurate reading from your standard instrument.

19 Adjust the calibration plate until the reading on WeatherMAX matches the reading of your standard. This completes the calibration procedure.

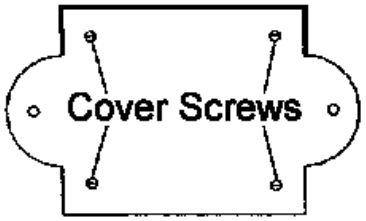
20 Reassemble the cover to the sensor, and be sure not to move the calibration plate on the sensor, or move the trimpots on the interface board.

21 Reinstall your instrument.

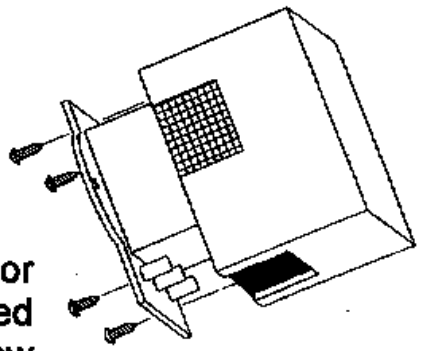
## Figure 1




## Figure 2




Sensor Rear View



Sensor Exploded View

## Figure 3

Sensor Inside View