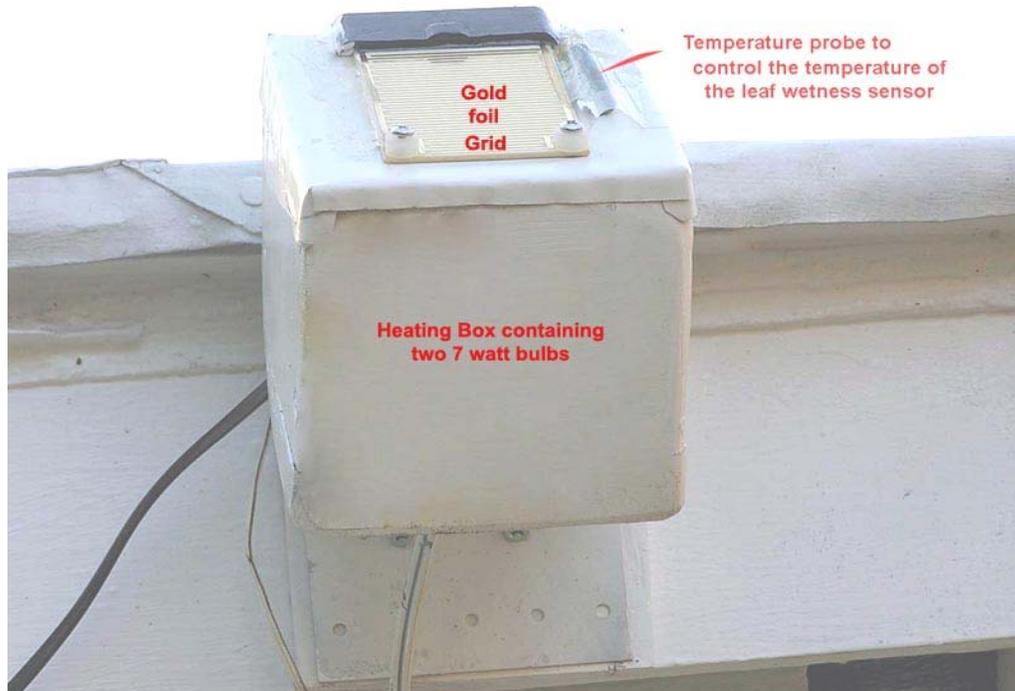


Precipitation Sensor Invention

Have you ever wondered when the precipitation started during the night or when it ended?

This tutorial will tell you how it can be done.



First you need to have power to your weather station.

Then build a small box that can house two or three night light bulbs which are generally about 7 Watts. Sockets were found for these 7 W bulbs at a local electrical store.

Then to be able to control the amount of heat in the box a dimmer switch was installed. See the image below. A dimmer switch LC-300NLH- BR was obtained at Home Depot.

To be able to control the heat of the grid on the upper surface of the box you also need to place a thermometer bulb on the aluminum flashing to know the temperature of the grid. The grid needs to be kept around 20° above the air temperature so no condensation will occur on the grid.

This way if moisture is detected it is known that it is precipitation and not condensation.

In very cold climates it would be wise to use thicker wood to build the box so it is better insulated or use a higher wattage bulb. They make a 15 W bulb that is used to illuminate wall pictures. Wireless thermometers are also reasonably priced today and could be used to reduce the number of wires needed.

Also with the heat applied it will dry the grid after a rain and the moisture sensor will again return to zero indicating the time the precipitation stopped.

Then from Davis Instruments purchase a leaf wetness sensor part number 06420 which are now selling for around \$80-\$90 and is the most expensive part of the setup depending on what equipment you already have.

Remove the grid system of the leaf wetness sensor and place it on aluminum flashing that covers the small box that you built. The grid should be caulked to the aluminum flashing with clear silicone caulk being very careful not to get any of the caulk on the upper grid surface.

People that have the Davis moisture sensor know the scale runs from 0 to 15 with 15 being wet and zero being dry. If you have a Vantage Pro II Davis instrument you need product number 6345, the wireless leaf and soil moisture temperature station, where you have two hook ups for leaf wetness sensors.

And if you purchase WeatherLink software with your Davis instrument part of the program allows one to plot strip charts and you can actually plot a graph showing the times of precipitation and periods of drying in the time of starting and ending and a record of a precipitation event.

This also works well during snowstorms as the heated grid melts the snow and detects the moisture and sets off the alarm. I know when the first precipitation occurs in the night and the alarm will awaken you so you don't miss out on the beginning of the snowstorm.

This sensor is so sensitive that a few drops of rain will set it off. One can actually tell that precipitation is occurring before you could even see it by looking out the window from inside. This instrument can actually let you know when a slight trace of rain fell during the night that you otherwise would not have observed and also know when it occurred.



Note in the graph below you can see that the precipitation started at approximately 3:45 AM. The first .01 of an inch of precipitation actually occurred around 5 AM and there was a period of time around 2:00 PM. when precipitation stopped and started again around 5:20 PM. The blue line represents the wetness of the grid on the precipitation sensor. The red line represents the actual amount of precipitation that has occurred. You can see at the maximum precipitation rate around 10:00 AM 0.05 of an inch was occurring every five minutes. You'll also notice that between the hours of 1:00 in 2:00 PM that no measurable rain occurred but a light sprinkle occurred raising the grid moisture sensor to about nine. It also becomes obvious that this instrumentation can add a lot of the added data to your website and to the records that you keep on a monthly basis.

