USING BIRD SPIKES

Application Note **37**

With Solar Radiation and/or UV Radiation Sensors

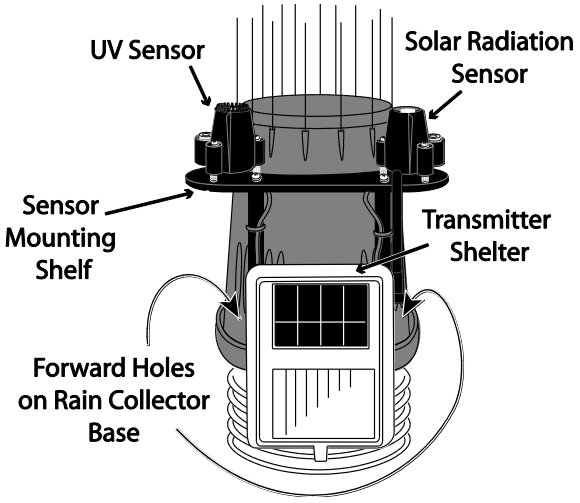
INTRODUCTION

This application note discusses the use of the supplied bird spikes for the Vantage Pro2™ system and their effect on the accuracy of solar radiation and UV radiation sensor readings and how to mitigate those effects.

The bird spikes serve as an effective remedy to prevent birds from landing and defecating in the rain collector cone which often leads to partial or complete blockage of rain water from draining out of the cone into the tipping bucket mechanism. This will result in the reporting of only partial amounts of rain or even no rainfall at all. The new design of the debris screen and cone with bird spike holes allow for the prevention of this problem. Of note, the bird spikes themselves have been shown to have an insignificant impact on rainfall accuracy and a bird spike can always be installed in the debris screen without any effects on solar and UV readings.

However, the bird spikes around the rim of the cone can have a significant impact on solar radiation and UV radiation readings. This is because some of the spikes will cast shadows on the sensor diffusers as the sun travels through the sky each day. The effects are greater for solar radiation because it is primarily direct sunlight, whereas UV radiation is primarily diffuse (reflected) sunlight. Shadows can result is a significant dip in the readings during particular times of day. Exactly how many spikes cast shadows and when these shadows are cast is a function of your latitude and the time of year.

All Vantage Pro2 Plus integrated sensor suites (ISS) manufactured after October, 2014, have the sensor mounting shelf installed so that the sensors are mounted between the transmitter shelter and the rain collector cone. This orientation positions the sensors to face the sun and limit shading by the bird spikes as much as possible.



Note: *Even when properly installed, the sensors may still be partially shaded by the spikes, especially in the tropics where the sun is more directly overhead all day. If birds are not a problem in your installation, the best solution is not to use the bird spikes.*

It should be noted that proper installation is still important for highly accurate readings. The ISS needs to be installed in a location that is free of shadowing by trees, buildings or other objects. Address these issues first before addressing the issues with bird spike installation.

Adding the Bird-Spike Rain Collector to Your ISS

If you are adding the rain collector cone with bird spikes to an existing Vantage Pro2 integrated sensor suite with UV and solar radiation sensors, you should move your sensor mounting shelf to the "front" side of the cone, between the cone and the transmitter shelter. Please see the directions on the next page for how to move the sensors to the other side of the cone.

Moving the UV and Solar Radiation Sensors to the Front of Rain Cone

Note: *For Vantage Pro2 Plus systems with the solar and UV radiation sensors and sensor mounting shelf already installed, it is not necessary to remove the sensors from the sensor mounting shelf or untie the cables from the support tubes.*

1. Remove the rain cone.

2. Remove the transmitter cover. (Pull the tab at the bottom of the cover out and slide the cover up and off.) Unplug the sensor cables (labeled SUN and UV).

3. Remove the foam insert from the hole in the bottom of the transmitter shelter and pull the sensor cables out of the shelter then up through the holes at the back of the rain collector base under the sensor mounting shelf.

4. A 7 3/4" screw secures each support tube to the rain collector base. Remove the nuts from these screws beneath the rain collector base.

5. Move the support tubes (with the sensors still installed) to the mounting holes at the front of the rain collector base and insert the 7-3/4" screws through the holes in the front of the rain collector base.

6. One at a time, place a nut in the opening of the hexagonal recess on the underside of the rain collector base and loosely attach them to the screws. When both nuts are in place, tighten the support tubes screws.

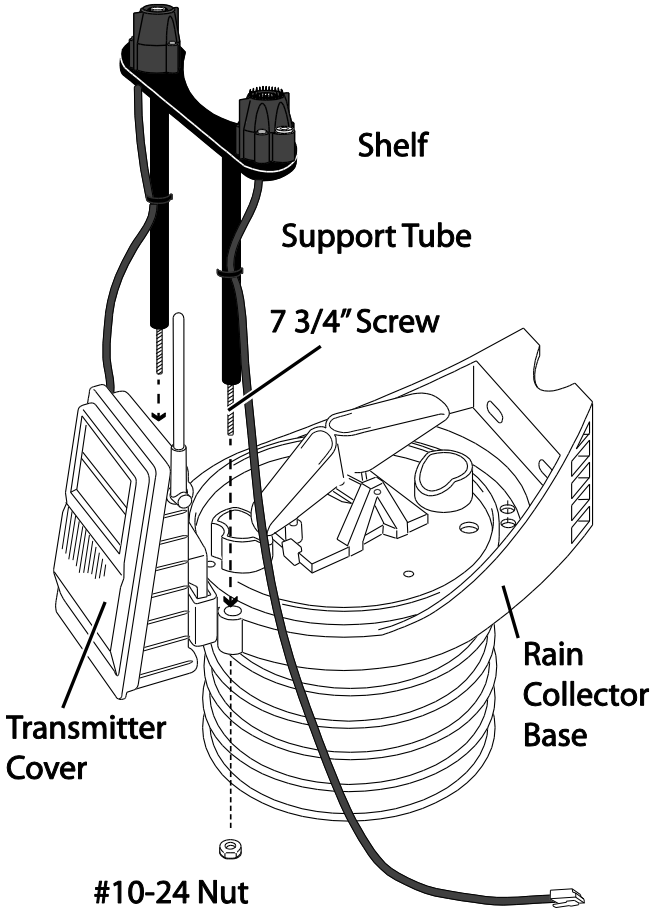
7. The sensors are now closer to the transmitter shelter, so there will be some slack in the cables. Before plugging the sensor cables back into the transmitter, you can take up the slack by winding the cables around the posts under the rain collector base that connect the base to the radiation shield.

8. Feed the cables, one at a time, back into the bottom of the transmitter shelter. Plug them back into the appropriate sockets.

9. Replace the foam insert and close the transmitter shelter cover.

10. If necessary, re-adjust the sensors so they are level and properly positioned so that they are even with or just above the rim of the rain collector. You may also want to re-test the sensors. (See the sensor manual, available online at www.davisnet.com/support/weather for details).

11. Install the new rain collector cone.



* The *UV & Solar Radiation Sensors User Manual*, and all other manuals are available online at www.davisnet.com/support/weather.