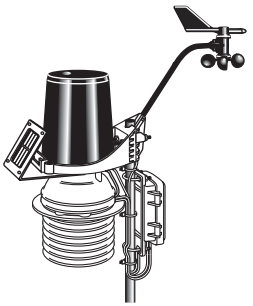


INTEGRATED SENSOR SUITE WITH FAN-ASPIRATED RADIATION SHIELD

ADDENDUM, REV B

For Vantage Pro® and Vantage Pro Plus™

The Vantage Pro Integrated Sensor Suite (ISS) with the Fan-Aspirated Radiation Shield uses a combination of fan-aspiration and shielding to minimize the effects of solar radiation-induced temperature error.

Fan-Aspirated ISS Addendum Overview

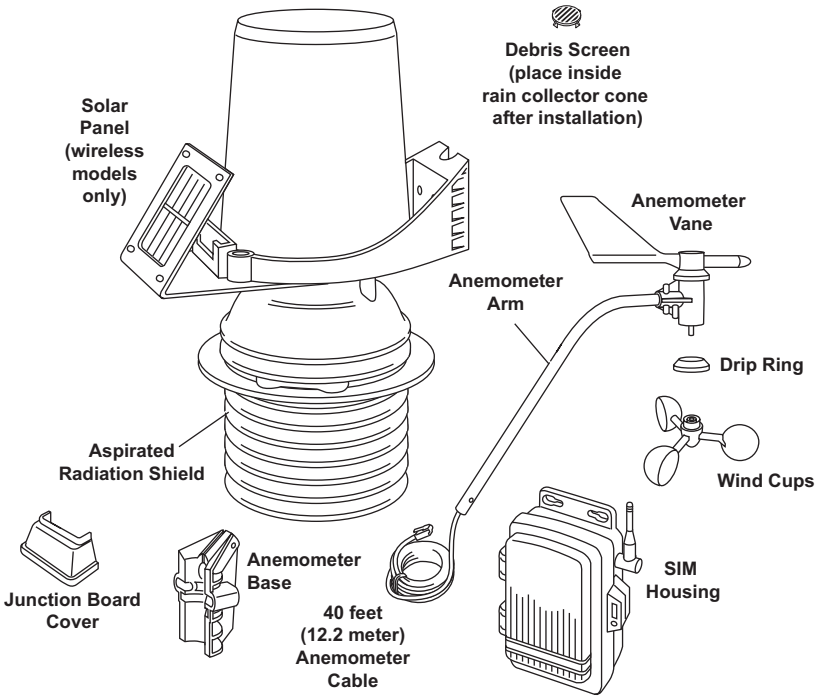
This addendum provides additional information specific to the installation and use of the fan-aspirated radiation shield only, and is intended to be used in conjunction with the "Integrated Sensor Suite Installation Manual."

The table below shows the location of the information required to install and maintain your Fan-Aspirated ISS.

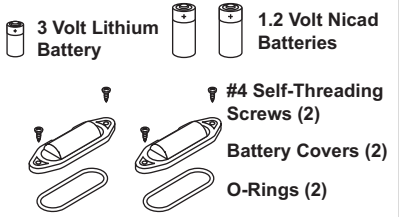
SECTION/PROCEDURE	IN THIS ADDENDUM	IN THE ISS INSTALLATION MANUAL
Tools for Setup		X
Preparing the Anemometer		X
Preparing the Rain Collector	X	
Disassembling the Radiation Shield	X	
Making Junction Board Connections	X	
Powering ISS and Testing Communications		X
Powering and Testing the Fan	X	
Reassembling the Radiation Shield	X	
Choosing a Site for the ISS		X
Mounting the ISS		X
Additional Mounting Options		X
Fan-Aspirated ISS Options	X	
Fan-Aspirated ISS Maintenance	X	
Theory of Operation	X	
Fan-Aspirated ISS Troubleshooting	X	
Fan-Aspirated ISS Specifications	X	

Components

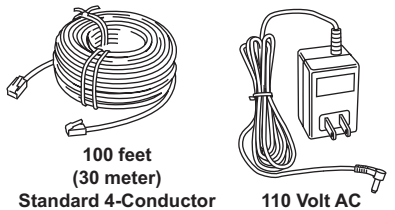
The Fan-Aspirated ISS includes these components:



Additional Components for Wireless Models

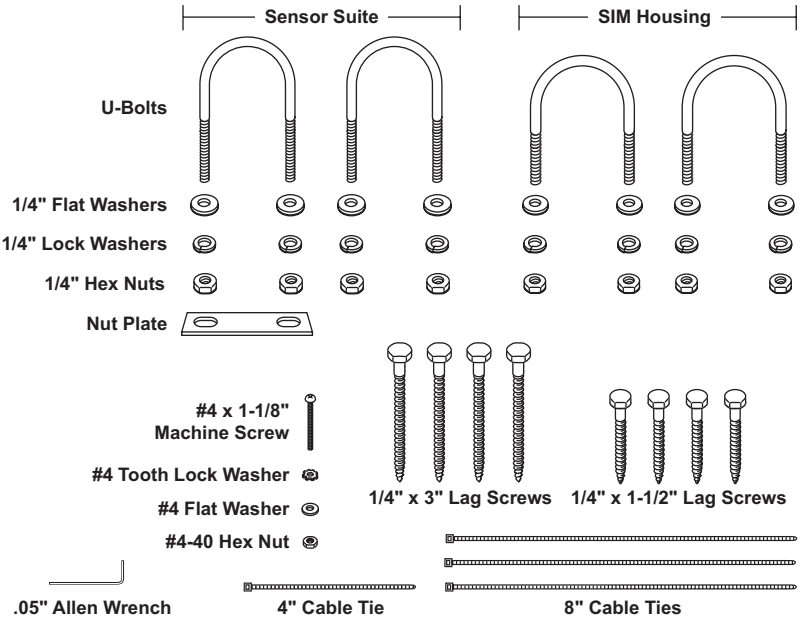


Additional Components for Cabled Models



#4 x 1/2" Screw
#4 Flat Washer
Cable Clamp

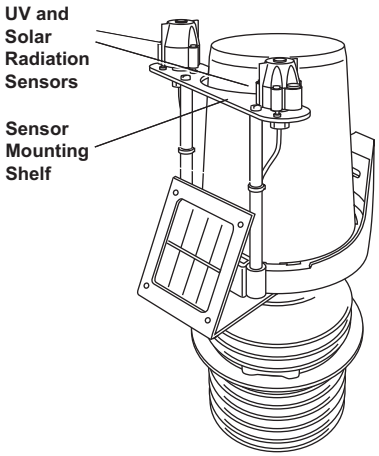
The hardware shown here is provided for assembly and mounting:



Additional Components on Vantage Pro Plus

Vantage Pro *Plus* includes an ultraviolet (UV) sensor and a solar radiation sensor. These two sensors are mounted next to the rain collector on your ISS.

CAUTION: *Do not to touch the small white diffusers on top of the UV and solar radiation sensors. Oil from the skin reduces sensor sensitivity.*



Vantage Pro Plus ISS

Tools for Installation

- Small Phillips-head screwdriver
- Scissors or wire-cutters
- Adjustable wrench or 7/16" wrench
- Compass or local area map
- Ballpoint pen or paper clip (small pointed object of some kind)
- Drill and 3/16" (5 mm) drill bit (if mounting on a vertical surface)

Preparing the Anemometer

Refer to this section in your ISS Installation Manual.

Preparing the ISS for Installation

The radiation shield must be partially disassembled in order to make power connections for either the solar panel or AC-power adapter, and to install batteries in solar-powered models.

Preparing the Rain Collector

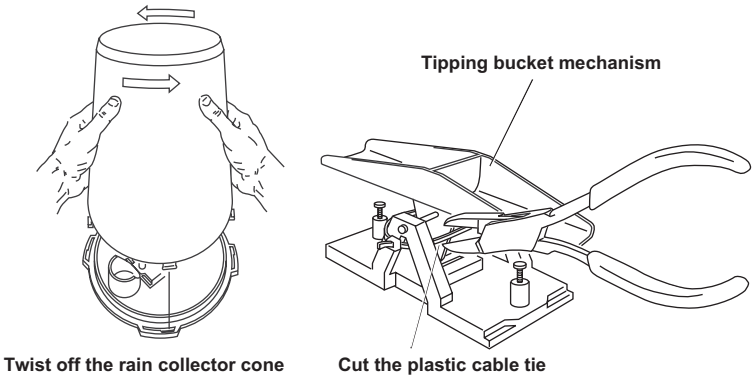
Follow these steps to prepare the rain collector for operation and to begin disassembling the radiation shield.

1. Remove the rain collector cone from its base by rotating the cone counterclockwise until its latches line up with openings which allow you to lift it off. The cone fits in the base tightly and may require extra pressure to remove it when new.

Tip: *Steady the base between your knees when you rotate the rain collector.*

Note: *If installed, the UV and solar radiation sensor cables are routed through the base of the rain collector. Please make sure they do not get moved and make sure they do not interfere with the tipping bucket mechanism or with latching the cone back onto the base.*

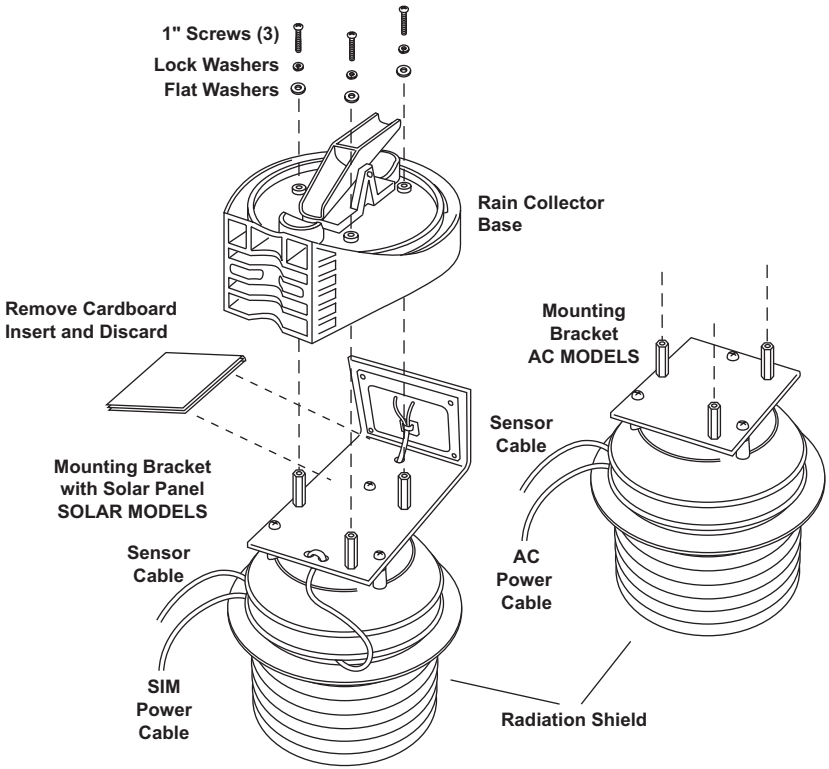
2. Carefully cut and remove the plastic cable tie (usually black in color) that holds the two-sided tipping bucket mechanism in place during shipping.



Preparing the Rain collector

Disassemble the Radiation Shield

1. Remove the three screws connecting the rain collector base from the mounting bracket as shown below:.



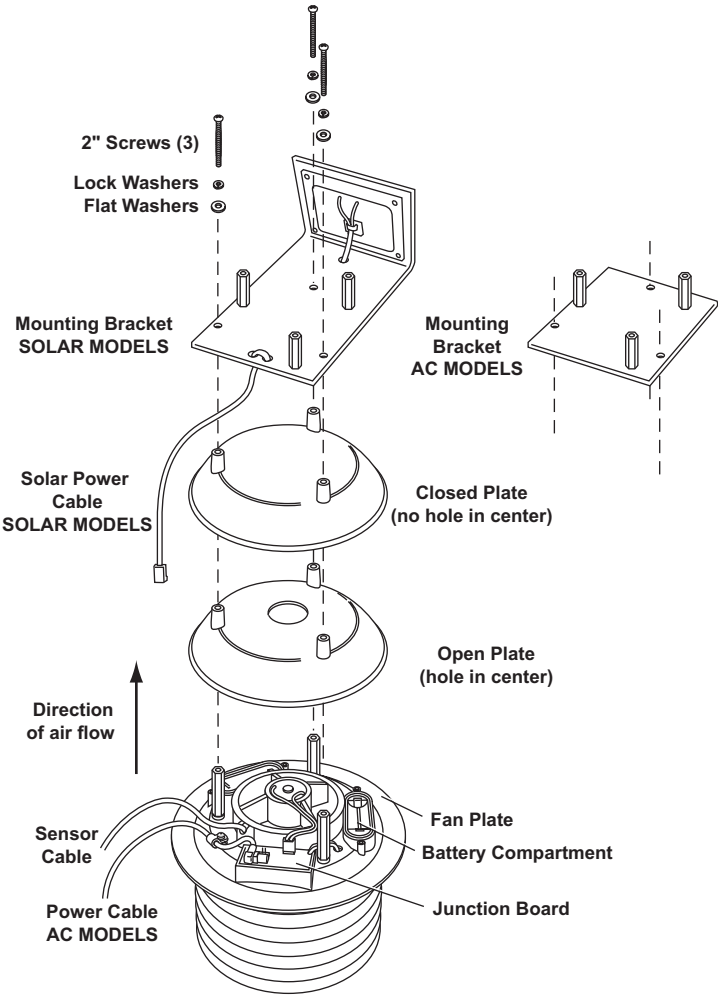
Removing the Rain Collector Base

2. Lift the rain collector base off of the mounting bracket.

Tip: *For easier re-assembly, mark the holes in the mounting bracket used by the rain collector base, the holes used by the radiation shield, and the orientation of the bracket relative to the radiation shield.*

3. Remove the cardboard packing insert and discard.

4. Remove the three (3) screws connecting the mounting bracket to the radiation shield.



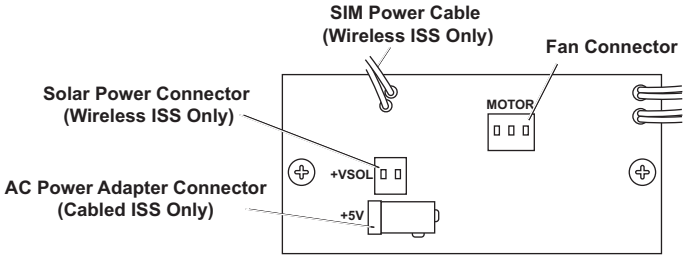
Removing the Mounting Bracket

5. Lift the mounting bracket off of the radiation shield.

6. Remove the top two (2) radiation shield plates to expose the fan plate and junction board.

Powering the Fan

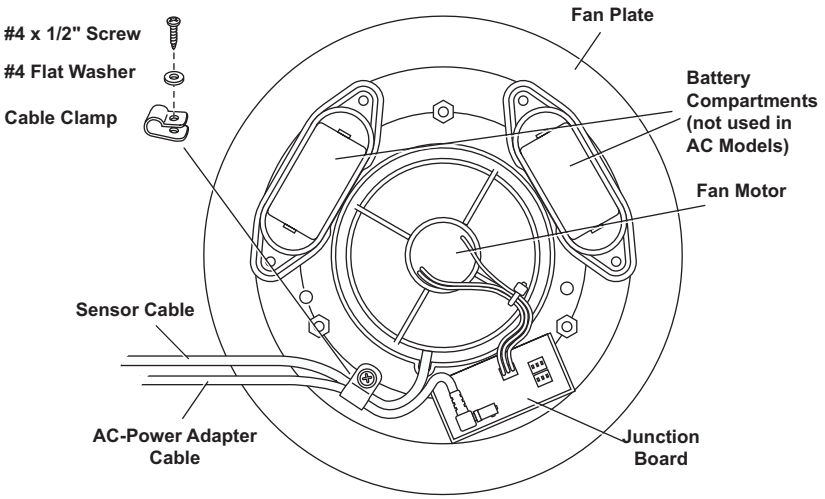
The Cabled ISS fan is powered by an AC-power adapter. The Wireless ISS fan is solar-powered and uses batteries for overnight power storage.



Junction Board Connections

Connecting AC Power (Cabled ISS)

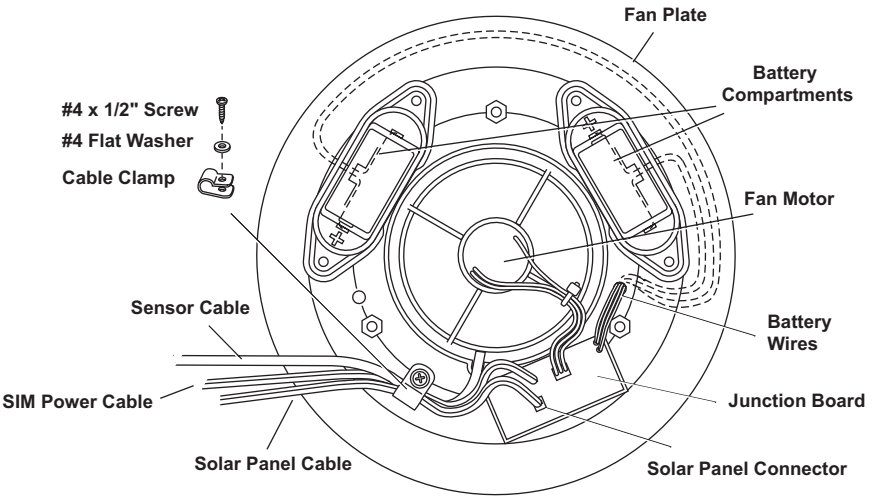
1. Locate the Junction Board on the fan plate (See below).
2. Connect the AC-power adapter to the +5V connector on the Junction Board.
3. Plug the AC-power adapter into an AC outlet.
4. Check to see that the fan is blowing air in the upward direction.
5. Unplug the AC power adapter from the AC outlet until you are ready to mount the ISS.
6. Secure the AC power cable and sensor cable to the fan plate with the supplied cable clip.



AC Power-Adapter Cable Routing

Connecting Solar Power (Wireless ISS)

1. Locate the Junction Board on the fan plate (See below).
2. Connect the solar power cable to the VSOL connector on the Junction Board.
3. Secure the cables to the fan plate with the supplied cable clamp.

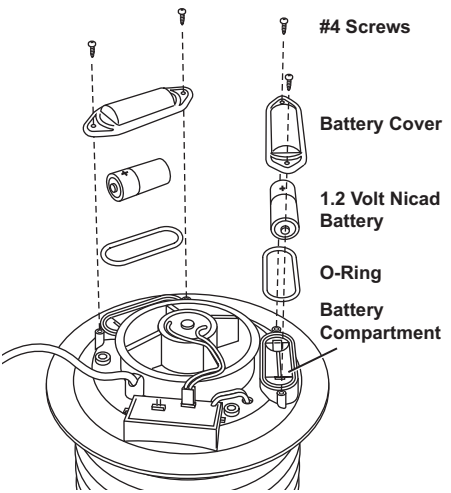


Solar Power Cable Routing

Installing the Fan Batteries (Wireless ISS)

The fan will begin operating as soon as you install the batteries. To prevent discharging the batteries, you should install the batteries immediately before mounting the ISS in its final (sunny) location.

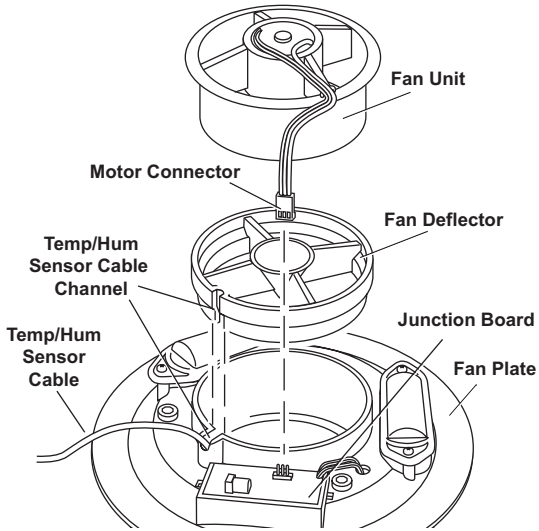
1. Insert a NiCad battery in each compartment, matching the plus (+) sign on the battery with the plus (+) sign in the battery compartment.
2. Verify that the fan is blowing air up and away from the Temp / Hum sensor.
3. Insert the O-ring in the groove around the edge of each battery compartment.
4. Attach the battery covers to the battery compartments using two #4 x 3 / 8" (9.5 mm) screws each.



Installing the Batteries

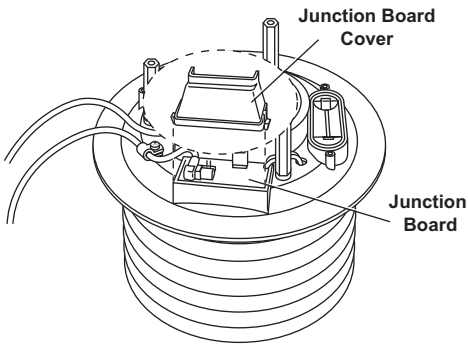
Reassembling the Radiation Shield

1. Make sure the Temp / Hum sensor cable runs through the provided cable channels and that the fan unit is seated on the fan plate.



Sensor Cable Channel in Fan Plate and Fan Deflector

2. Install the Junction Board Cover as shown in the illustration. The Junction Board Cover presses easily into place when you are installing it.



Junction Board Cover Installation

Note: *To remove the cover, press gently in on both sides to release the latches holding it in place.*

3. Place the two radiation shield plates on top of the fan plate, open plate first with the closed plate on top, being careful to line up the three screw holes.

4. Gently place the mounting bracket on top of the radiation shield, being careful to line up the three screw holes and also being very careful not to move the top two (2) radiation shield plates.

Note: *Solar ISS: Place the mounting bracket with the solar panel positioned opposite the location of the junction board.*

5. Hold the mounting bracket in place with one hand while you start the three (3) long screws.

Tip: *Be sure to start all three screws before you tighten any of them.*

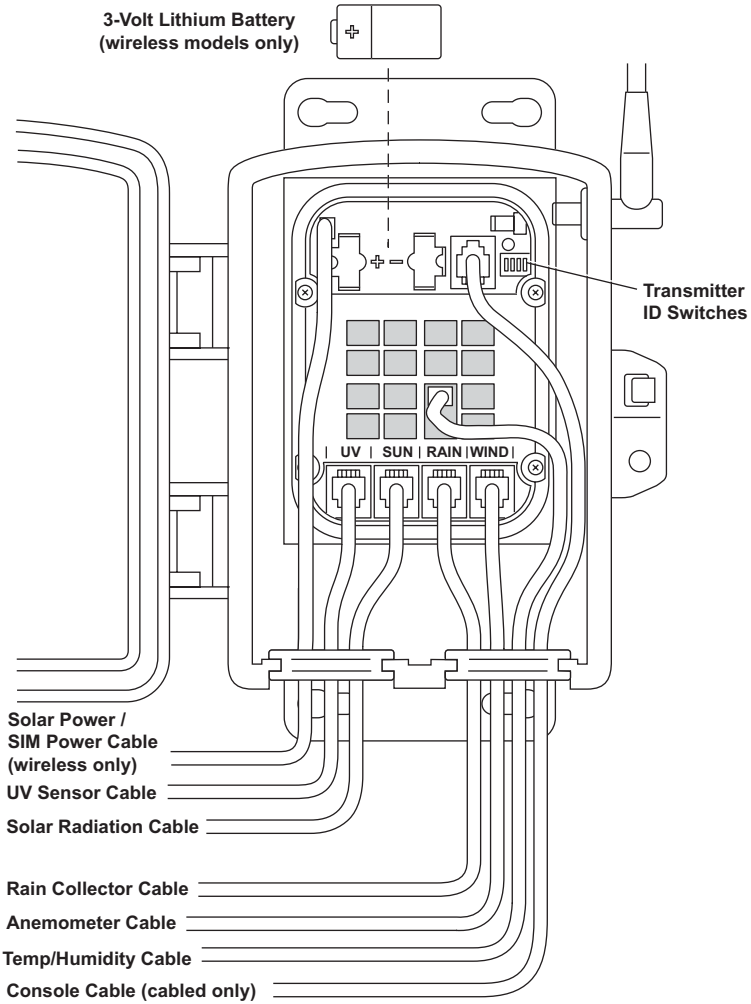
6. Place the rain collector base on top of the mounting bracket and fasten using three screws. Do not over-tighten.
7. Install the rain collector cone on the base, making sure that nothing inside the cone interfers with the tipping bucket operation.

Preparing the SIM for Installation

The ISS sensors are connected by cables to the **Sensor Interface Module** (SIM), located inside the SIM housing. The SIM contains electronics that measure and store weather values for transmission to the console via cable or radio. The SIM housing protects the SIM from the elements and provides easy access to SIM cable connections.

Connecting the Sensors

1. Take one of the square rubber grommets from the bottom of the SIM housing and run the cables for the UV and Solar Radiation sensors through it, if included on your station.
2. **Wireless ISS**: Run the Solar Power cable through the grommet.
3. Take the other square rubber gromment and run the Rain Collector, Anemometer, and Temp / Hum sensor cables through it.
4. **Cabled ISS**: run the console cable through the grommet.
5. Install the first grommet in the left slot in the SIM housing, and install the second grommet in the right slot, adjusting the inside cable lengths as needed for a tidy installation.
6. Refer to the ISS SIM Connections illustration and connect only the sensor cables as shown. You will connect the power cables in the next procedure.



ISS SIM Connections

Applying Power and Testing Communications

Cabled Vantage Pro: Powering the ISS and Testing Communication with the Console

Refer to this section in your ISS Installation Manual.

Wireless Vantage Pro: Powering the ISS and Testing Communication with the Console

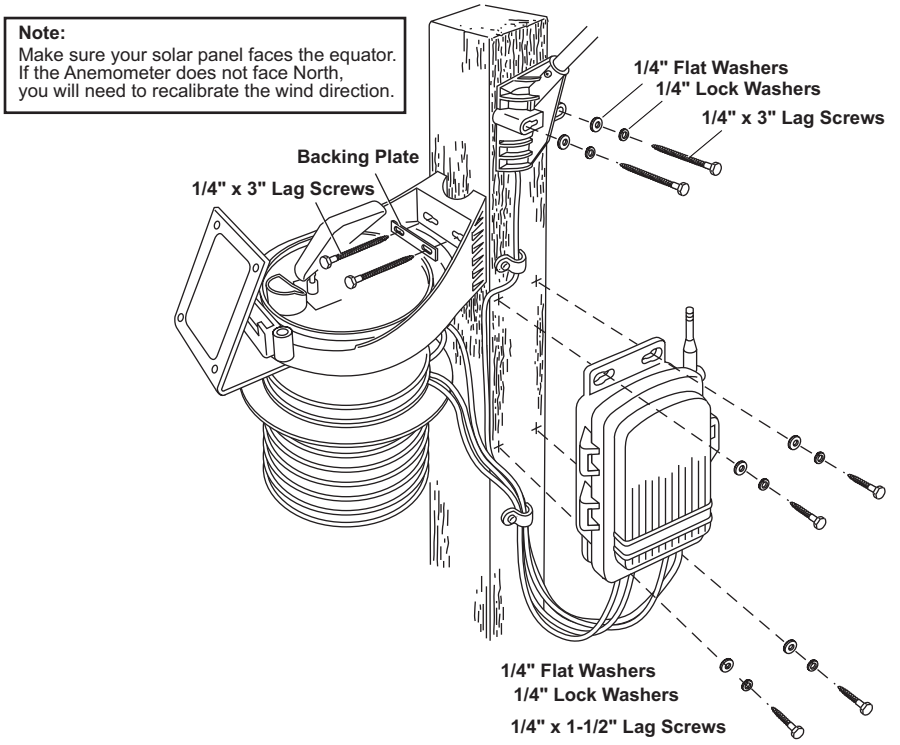
1. Connect the Solar Power Cable to the SIM as shown in the ISS SIM Connections illustration (page 11).
2. Refer to this section in your ISS Installation Manual for the rest of the procedures required to power and test the ISS.

Choosing a Site for the ISS

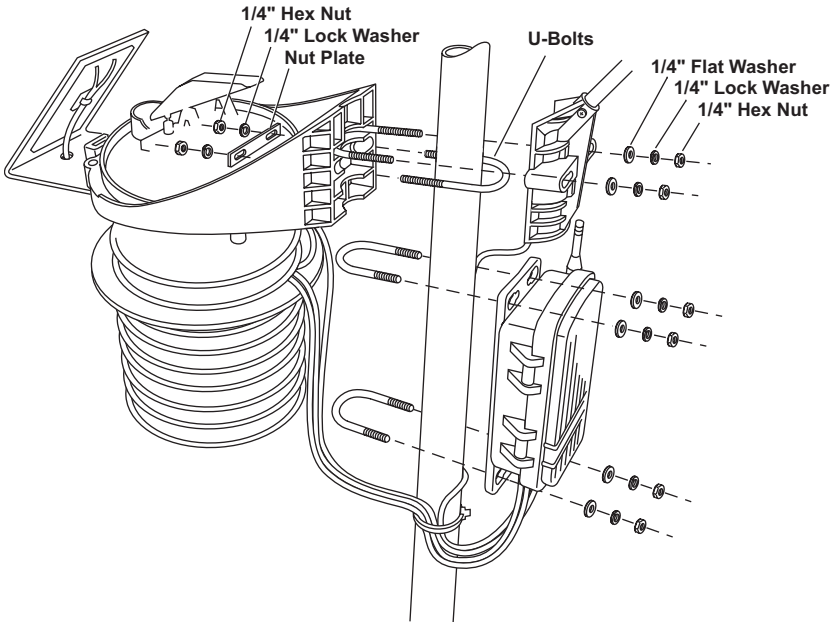
Refer to this section in your ISS Installation Manual.

Mounting the ISS

Refer to the following illustrations and refer to this section in your ISS Installation Manual to mount the ISS.



Mounting on a Post



Mounting on a Pipe

Additional Mounting Options

Refer to this section in your ISS Installation Manual.

Fan-Aspirated ISS Installation Options

Batteries

The Wireless Fan-Aspirated ISS is solar powered and is supplied with two NiCad C-cell batteries. At your option you may decide to install either zero, one, or two C-cell batteries.

- Install two fan batteries for maximum length of overnight aspiration but with slightly lower average daytime aspiration.
- Install only one fan battery for some overnight aspiration but with slightly higher average daytime aspiration.
- Install no batteries for maximum daytime aspiration and no nighttime aspiration.

~~A low-current fan (#7759) is available that uses less power than the standard fan. This allows the solar-powered Fan-Aspirated ISS to run for a longer period of time during darkness. The low-current fan is recommended for use in high latitudes during the Winter months, in climates that experience extended periods of cloudy weather, or for any location with limited solar charging.~~

Fan-Aspirated ISS Maintenance

- Keep the surfaces clean, since the Fan-Aspirated Radiation Shield is less effective when the surfaces are dirty. Remove dust from the solar panel and the shield with a damp cloth.
- Remove any debris obstructing air flow through the radiation shield, e.g., leaves, twigs, webs, and nests.
- Avoid spraying insect killer of any kind into the radiation shield as this may damage the sensors and the shield.
- Once a year: replace the motor (Part # 7758 ~~or #7759),~~ batteries (solar-powered models only), and remove any debris lodged inside the unit.

Annual Maintenance

1. Retrieve your Fan-Aspirated ISS and place on a stable work surface.
2. Disassemble the Radiation Shield (See page 4).
3. Unplug the old motor and remove from it from the Radiation Shield (See page 9).
4. Install the new motor / fan assembly (#7758 ~~or #7759)~~ and plug it into the Junction Board (See page 9).
5. Remove the old fan batteries (See page 8).
6. Install new batteries (NiCad C-cells).
7. Assemble the Radiation Shield (See page 9).
8. Re-mount the Fan-Aspirated Radiation Shield in its previous location.

Fan-Aspirated ISS Troubleshooting

If you are experiencing problems with your Fan-Aspirated ISS, first be sure to check all cable connections. If you are unable to solve the problem, please call Davis Technical Support. We'll be glad to help. Most questions can be answered while you're on the phone. You can also email us for support, or visit our website. Sorry, we are unable to accept collect calls.

Note: *Please do not return items to the factory for repair without prior authorization.*

Contacting Davis Instruments

(510) 732-7814 for Technical Support, Monday – Friday, 7:00 a.m. – 5:30 p.m. Pacific Time.

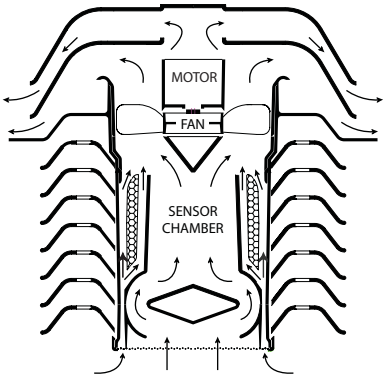
support@davisnet.com E-mail to Technical Support.

(510) 670-0589 Fax to Customer Service or Tech Support.

www.davisnet.com Copies of User Manuals are available on the "Support" page. Watch for FAQs and other updates. Subscribe to the e-newsletter.

Theory of Operation

The diagram below shows how the Fan-Aspirated Radiation Shield draws outside air up through the sensor chamber and between the three walls surrounding the sensor chamber.



Cross-section of Fan-Aspirated Radiation Shield

Fan-Aspirated ISS Specifications

Aspiration Rate	215 ft./min. (1.1 m/s) (AC-powered) 190 ft./min (.96 m/s) (solar-powered, full sun), 80 feet/min. (0.4 m/s) (battery only)
Radiation-Induced Temperature Error	0.5°F (0.3°C) [At solar noon, insolation = 1040 W/m2] (Reference: RM Young model 43408)
Operating Temperature	–40° to +140° F (–40° to +60° C)
Non-operating Temperature	–50° to +158° F (–45° to +70° C)
ISS Primary Power Input	
Wireless ISS	solar panel
Cabled ISS	receives power from Vantage Pro Console
ISS secondary power (Wireless Only)	CR-123A 3-volt lithium battery (approx. two years battery life.)
Fan Primary Power Input	
Wireless ISS	solar panel
Cabled ISS	AC power adapter, 5VDC, 200 mA, regulated
Fan secondary power (Wireless Only)	1 or 2 - 1.2 Volt NiCad C-cells

FCC Part 15 Class B Registration Warning

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved in writing by Davis Instruments may void the user's authority to operate this equipment.

Product Numbers: 6151, 6151C, 6161, 6161C
Davis Instruments Part Number: 7395.152
Integrated Sensor Suite with Fan-Aspirated Radiation Shield Addendum, Rev B
Rev B. Manual (10 June 2002)

The term “IC:” before the radio certification number only signifies that Industry of Canada technical specifications were met.

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