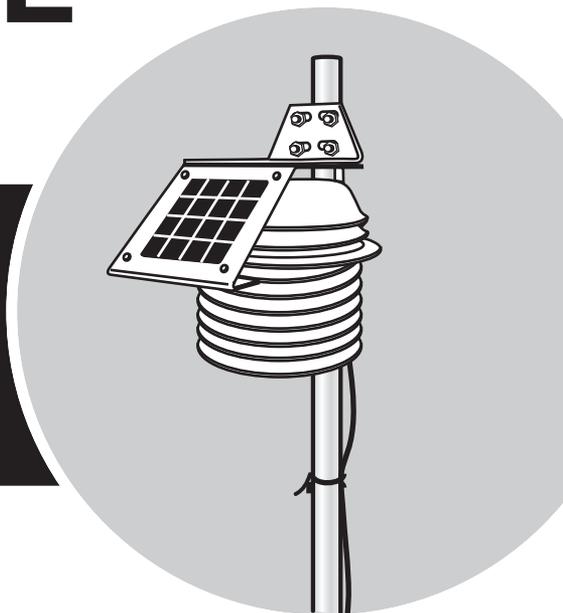


USER MANUAL

Temperature Humidity Sensor



With 24-Hour Solar-Powered
Fan-Aspirated Radiation Shield

Product number 6832

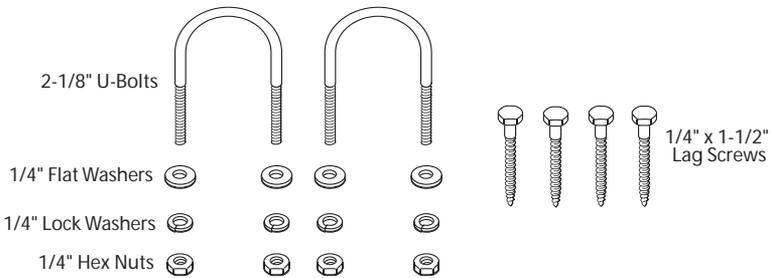
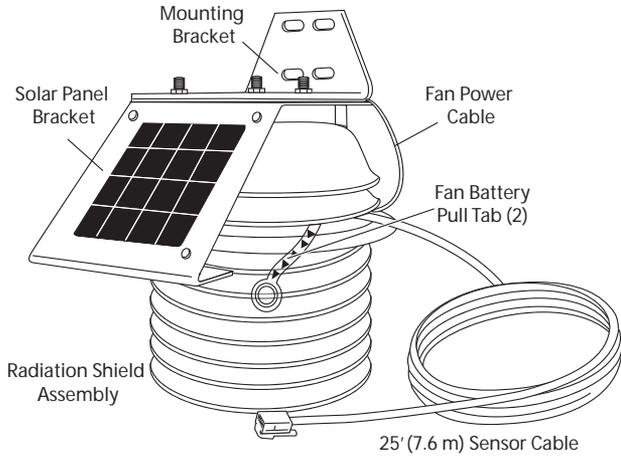
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Temperature/Humidity Sensor with 24-Hr Fan Product No. 6832

Components

The Temperature/Humidity Sensor consists of temperature and humidity sensors with a 25' sensor cable. The temperature and humidity sensors are mounted in a 24-Hour Fan-Aspirated Radiation Shield to minimize the impact of solar radiation on sensor readings.



Tools for Setup

In addition to the hardware provided, you will need some or all of the following materials:

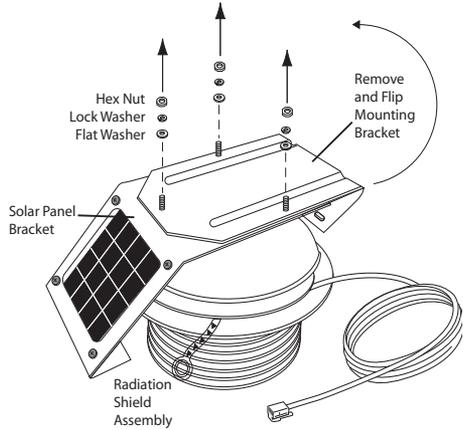
- Adjustable wrench or 7/16" wrench
- Drill and 3/16" (5 mm) drill bit (if mounting on a flat, vertical surface)

Prepare the Temperature/Humidity Sensor

Rotate the Mounting Bracket

To facilitate packing and shipping the Temperature/Humidity Sensor, the mounting bracket is installed upside down at the factory. For best air flow through the shield as well as ease of installation, we suggest you flip it over.

1. Place the Temperature/Humidity Sensor on a table or level work surface.
2. Remove the three sets of hex nuts, lock washers and flat washers that hold the mounting bracket and the solar panel bracket together as shown in the illustration. Be careful not to lose the small nuts and washers.
3. Remove only the mounting bracket, flip it over and replace it on the solar bracket.
4. Fasten the mounting bracket in place by replacing the hex nuts and washers.



Start the fan

The 24-hour fan batteries are shipped with pull tabs that prevent draining the batteries until ready to use. Pull the tabs. You should hear the fan come on.

Before You Install the Temperature/Humidity Sensor

Choose a Location

It is important to remember to choose a location that best represents the environment you would like monitor and/or protect. Consider the following factors as you choose a location:

- In the Northern Hemisphere, the solar panel should face south for maximum sun exposure. In the Southern Hemisphere, it should face north.
- Do not mount the sensor near any source of cold or heat that might distort temperature measurements.
- Mount so that the screened opening at the bottom of the radiation shield is not blocked and air can move up into the shield.
- Mount the sensor over vegetation or soil if possible.
- Do not install over or near sprinklers, which may inflate humidity values.

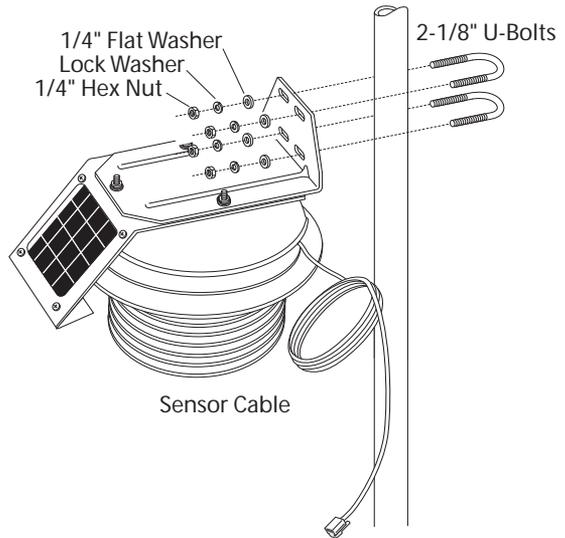
For Frost Monitoring Locations

- Place the sensor at about 5' (1.5m) in a grassy, open field that receives the coldest temperatures adjacent to the area at risk of frost damage.

Mounting on a Pole

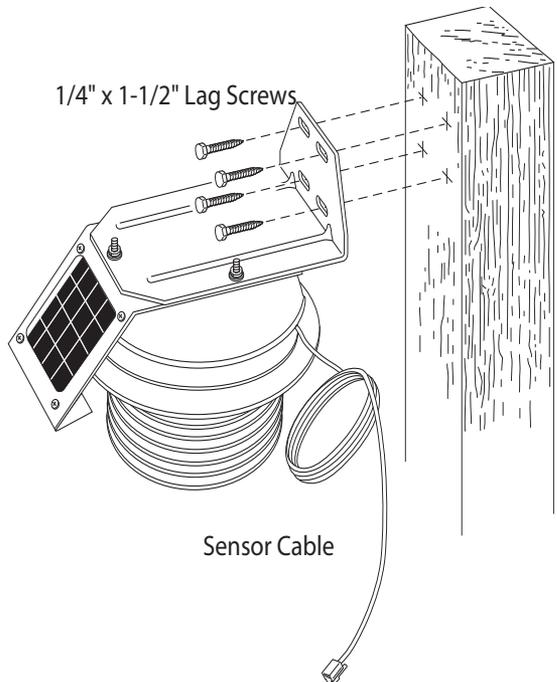
Use a pole having an outside diameter between 1" and 1-1/4" (25 – 31 mm).

1. Hold the mounting bracket against the pole. Put two U-bolts around the pole and insert the ends through the holes in the back of the mounting bracket.
2. Secure the mounting bracket using 1/4" flat washers and 1/4" hex nuts. Tighten all four sets of washers and hex nuts until the mounting bracket is firmly mounted on the pole.
3. Use the longer cable tie to secure the coil of unused cable to the pole; use the 8" cable ties to secure the uncoiled sensor cable to pole to prevent fraying in wind.



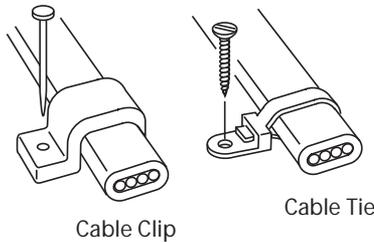
Mounting on a Post

1. Using four 1/4" x 1-1/2" lag screws, attach the mounting bracket to the surface in the desired location. Drill holes using a 3/16" (5 mm) drill bit. Use a carpenter's level when marking the holes to ensure that the bracket will be level.
2. Using an adjustable wrench or 7/16" wrench, tighten the lag screws.
3. Use the longer cable tie to secure the coil of unused cable use the 8" cable ties to secure the uncoiled sensor cable to prevent fraying in wind.



A Note on Securing Cables

To prevent fraying or cutting of cables, secure them so they will not whip in the wind. Secure a cable to a metal pole by wrapping electrical tape around it or using the supplied cable ties. Make sure cables are secure by placing clips or ties approximately every 3 – 5' (1 – 1.6 m).



Note: Do not use metal staples or a staple gun to secure cables. Metal staples—especially when installed with a staple gun—have a tendency to cut the cables.

Maintaining Your Temperature/Humidity Sensor and 24- Hour Fan-Aspirated Radiation Shield

The cross-section diagram shows how the 24-Hour Fan-Aspirated Radiation Shield draws outside air up through the sensor chamber and between the three walls surrounding the sensor chamber, while the shield stack prevents radiation heating of the outer wall.

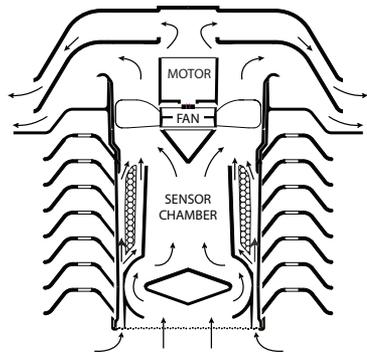
Check the radiation shield for debris or insect nests several times a year and thoroughly clean as often as necessary. A buildup of material inside the shield reduces its effectiveness and may cause inaccurate temperature and humidity readings.

To clean it, disassemble the shield and clean interior surfaces of the shield and the Temperature Humidity Sensor as necessary to prevent dirt build up.

Check to make sure the fan is running by listening for it, or by holding a piece of tissue paper under the shield. See “Specifications” on page 9.

See “Replacing the Fan Motor and Batteries” on page 8.

Clean the surfaces of the shield plates periodically with a damp cloth.



CAUTION: DO NOT remove nesting insects or animals by spraying insect killer of any kind into the radiation shield. Chemicals could easily damage the circuitry inside your temperature/humidity sensor.

Note: Spraying down or using water excessively to clean the radiation shield can damage the sensitive sensors or alter the data and readings the ISS is transmitting.

To thoroughly clean the 24-Hour Fan-Aspirated Radiation shield and Temperature/Humidity Sensor:

Tools and supplies needed:

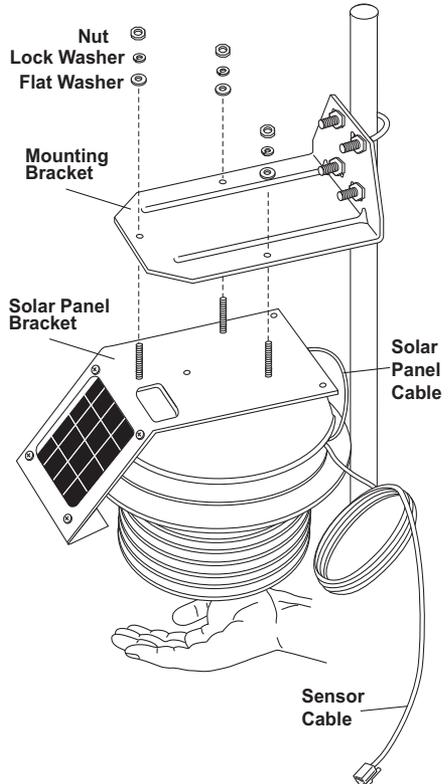
- Adjustable wrench
- Soft, damp cloth
- Soft brush (such as a toothbrush)
- Small Phillips head screwdriver if you are also replacing the fan batteries

You will not need to remove the mounting bracket from the pole or post on which it is mounted. You will be able to remove the entire radiation shield so that you can clean it and access the temperature/humidity sensor, the fan, and the fan batteries.

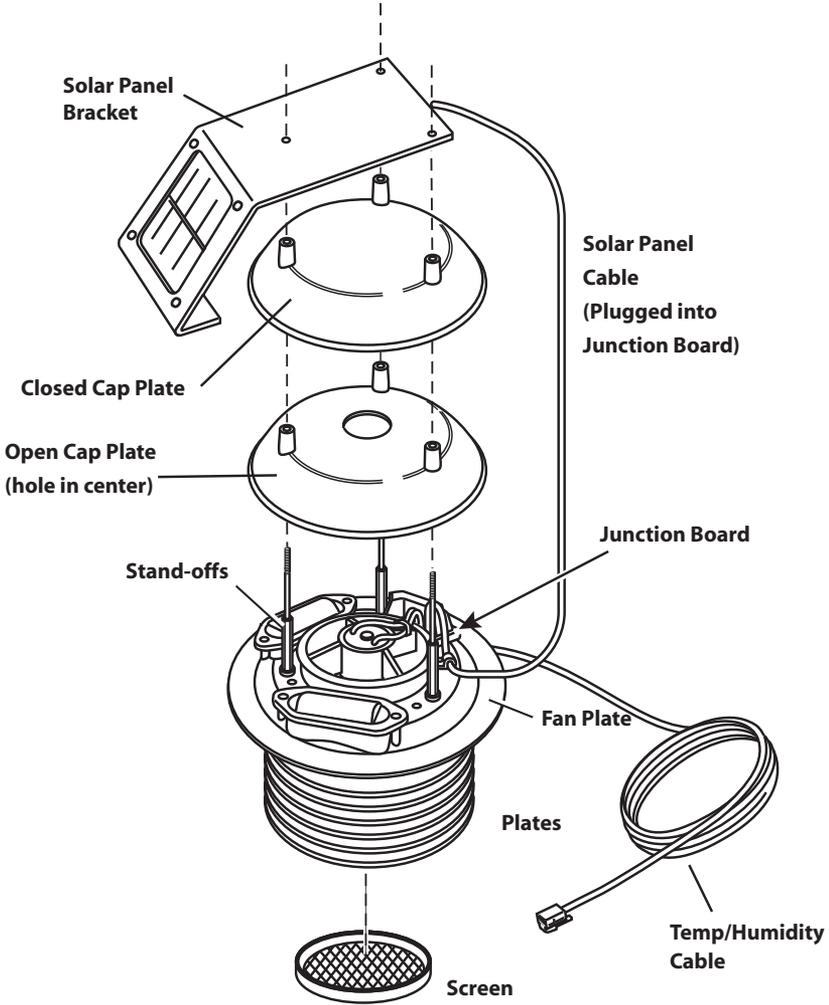
Tips: If you are out in the field where it is very dusty, place the radiation shield on a convenient work place, such as a table, a piece of cardboard, or a pickup truck tailgate.

Note: *Take note of the cable placement and routing as you disassemble the shield so you can replace them correctly.*

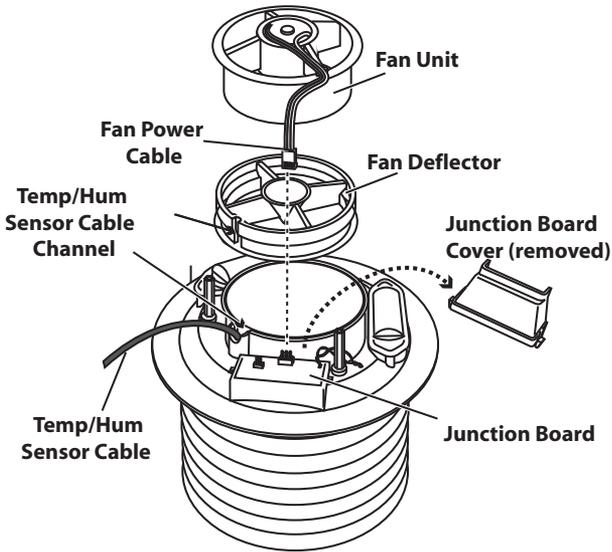
1. Disconnect the sensor cable.
2. Using an adjustable wrench, remove the three hex nuts, lock washers, and flat washers connecting the mounting bracket to the solar panel bracket and radiation shield.
3. While removing the hex nuts and washers, support the radiation shield from the bottom. When the hex nuts and washers are removed, it will drop. Take care not to lose the washers and nuts.
4. Place the radiation shield on a workspace.
5. Lift off the solar panel bracket (with the solar panel cable still connected).



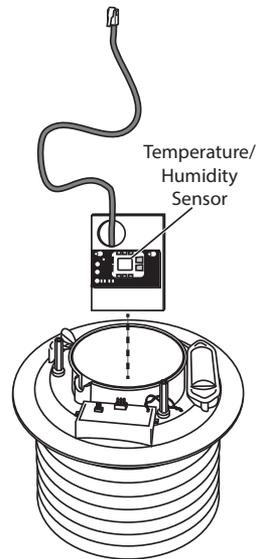
6. Remove the two cap plates.



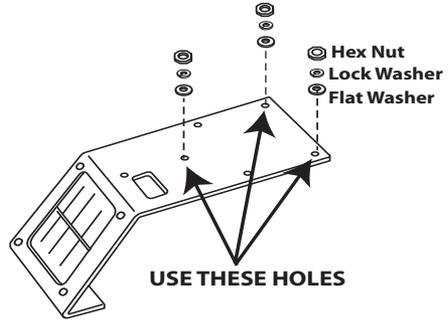
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7. Remove the white junction board cover and unplug the fan power cable from the junction board.



8. Lift out the fan and the fan deflector.
9. Pull the temperature/humidity sensor up and out.
10. Use a soft brush to clean the white plastic and gold mesh of the sensor.
11. Remove all debris from inside the shield and fan and wipe the interior surfaces with a damp cloth.
12. Remove the screen from the bottom of the radiation shield. Wipe it clean, as well as up into the interior of the radiation shield. Replace the screen.
13. Replace the temperature/humidity sensor. It fits one way, into the slots on the side. Route the cable up through the channel and replace the fan deflector with the cable channels correctly aligned with the sensor cable. If a new fan and batteries are needed, See “Replacing the Fan Motor and Batteries” on page 8.
14. Replace the fan and plug the fan power cable back into the junction board. The fan should start to rotate.



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15. Replace the junction board cover.
 16. Replace the two cap plates. (Note that the closed plate goes on top.)
 17. Replace the solar bracket, being careful to use the correct holes in the bracket as shown.
 18. Align the top of the screws with the holes in the mounting base.
 19. Replace the nuts, lock washers and flat washers.
 20. Reconnect the temperature/humidity sensor cable.



Replacing the Fan Motor and Batteries

To replace the fan motor and batteries in the 24-Hour Fan-Aspirated Radiation Shields, use product no. 7758B: Standard Motor Kit for Fan-Aspirated Radiation Shield with Batteries.

Troubleshooting

"I am not receiving data from my sensors."

Make sure the sensor cable is firmly connected. Try reseating the connections.

"My data does not seem to be accurate."

Make sure the screened opening at the bottom of the radiation shield is not blocked and air can circulate up the tube. Make sure the fan is running, by listening for it or by placing a small piece of tissue paper against the screen under the shield.

"The fan is not running."

Make sure the solar panel cable is firmly connected. If you have changed the batteries, make sure the fan batteries they were inserted in the right orientation (+ to + and - to -).

Specifications

General

Operating Temperature	-40° to +150° F (-40° to +65° C)
Non-operating Temperature	-40° to +158° F (-40° to +70° C)
Sensor Type	
Temperature	PN junction silicone diode
Relative Humidity	Film capacitor element
Housing Material	UV-resistant PVC plastic
Shield Dimensions, with bracket	8.1" high x 9.5" width x 7.8" deep (206 mm x 241 mm x 198 mm)
Weight	6.6 lbs. (3.0 kg)

Sensor Output (as used by Davis Instruments weather station consoles)

Temperature (Air)	
Resolution and Units	0.1°F or 0.1°C (user-selectable)
Range	-40° to +150° F (-40° to +65° C)
Sensor Accuracy	±0.5°F (±0.3°C)
Radiation Induced Error.	+4°F (2°C) at solar noon (insolation = 1040 W/m ² , avg. wind speed ≤2 mph (1 m/s))
Update Interval	10 seconds
Alarms	High & Low Threshold from Current Reading
Relative Humidity	
Resolution and Units	1% RH
Range	1 to 100% RH
Accuracy	±2%
Drift	±0.5% per year
Update Interval	10 seconds
Alarms	High & Low Threshold from Current Reading

24-Hour Fan-Aspirated Radiation Shield

Aspiration Rate	
Solar-powered, full sun	190 ft./min. (0.96m/s)
Battery only	80 feet/min (0.4 m/s)
Radiation Induced Temperature Error	0.5°F (0.3°C) [At solar noon, insolation = 1040 W/m ² (Reference: RM Young model 43408)]
Battery Charge/Operating Temperature	32° to +113°F (0° to +45°C)
Battery Discharge/Storage Temperature	-4° to +140°F (-20° to +60°C)
Fan Primary Power	Solar panel
Fan Secondary Power	One or two 1.2 v NiMH C-cells

Contacting Davis Instruments

If you have questions about your temperature/humidity sensor, or encounter problems installing or operating the sensor, please contact Davis Technical Support.

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

- Online:** www.davisnet.com
See copies of user manuals, product specifications, application notes, software updates, and more.
- E-mail:** support@davisnet.com
- Telephone:** (510) 732-7814
Monday – Friday, 7:00 a.m. – 5:30 p.m. Pacific Time.

Temperature/Humidity Sensor with 24-Hr Fan-Aspirated Radiation Shield, 6832

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