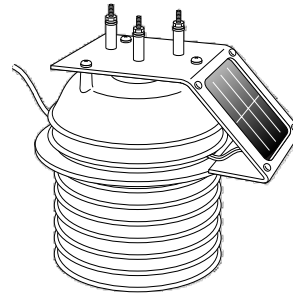


SOLAR-POWER FAN-ASPIRATED RADIATION SHIELD

7755



The model 7755 Aspirated Shield protects user-supplied sensor(s) from direct and reflected solar radiation (insolation) as well as from wind-driven rain. In addition to the shield itself, it includes:

- ▲ Provision for the mounting of a Davis Temperature or Temperature/Humidity or other sensor, e.g. a Vaisala Humitter®.
- ▲ A Solar Panel and Rechargeable Battery for 24-hour solar-powered operation.

Figure 1 shows a simplified cross-section of the shield and illustrates the shield's combination of active and passive ventilation modes. These modes keep the typical radiation-induced temperature error within the shield to less than 1°F (RM Young model 43408 as reference).

Passive Ventilation

Seven shield plates shade the outer wall of the aspirated tube. These plates are made of a specially-formulated plastic proven to provide superior performance in Davis Instruments' passive radiation shield. They reflect thermal radiation, have low thermal conductivity, and permit natural air flow to reach the tube's outer surface. Their unique design permits vertical convection currents within the plate stack, preventing the trapping of warm air between the plates.

Motor-Driven Aspiration

The motor-driven fan pulls air continuously through the sensor chamber and between the three walls of the chamber. Exit air removes thermal build-up from the inner two of the three shield plates at the top of the structure. An aerodynamically-shaped baffle at the air inlet reflects and blocks radiation from below the shield. The motor runs at approximately 40% of full speed in the absence of sunlight.

SPECIFICATIONS (TYPICAL)

Aspiration Rate

At Insolation Rate of 1040 W/m ²	190 feet/min. (0.9 m/s)
No Sunlight (Battery Power)	80 feet/min. (0.4 m/s)

Aspiration rate is affected by the size of the installed sensor. The above value was measured with a Davis model 7819 Temperature Probe installed.

Radiation-Induced Temperature Error 0.6°F (0.33°C) [At solar noon. Insolation = 1040 W/m²]

Reference: RM Young model 43408.

See Figure 2 and Applications Note # 24 for more information.

Dimensions (see figure 1)

Height	11.3 in. (28 cm)
Max. Diameter	9.3 in. (24 cm)
Weight	3.8 lb. (1.7 kg)
Sensor Chamber	See Figure 3a
Sensor Mounting Plate	See Figure 3b

Operating Temperature -4 to +131°F (-20 to +55°C)

INSTALLATION

The model 7755 Aspirated Shield mounts directly to a Davis model 7702 Sensor Arm, a 7704 Rain Collector Shelf, or a 7994 Radiation Shield Bracket. Figure 5 shows the mounting hole pattern.

Note: Humitter is a registered trademark of Vaisala Corporation.

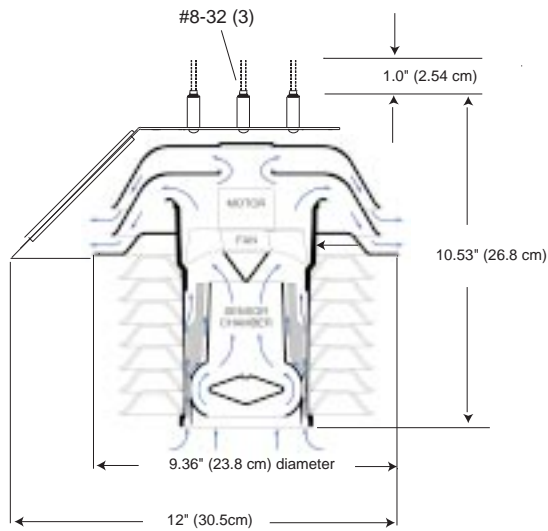


Figure 1.
Cross Section Showing Air Flow and Outside Dimensions

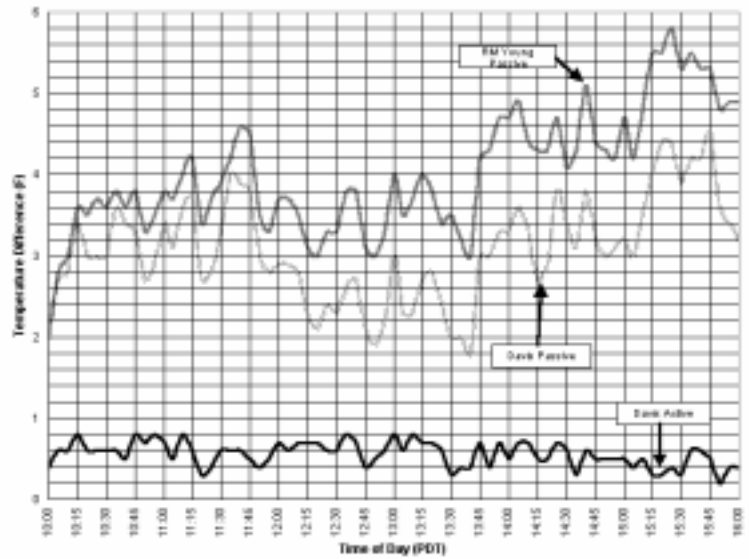


Figure 2.
Temperature Inside Three Radiation Shields, Using an RM Young Model 43408 as Reference. ("RM Young Passive" is a model 41002; "Davis Passive" is a model 7714 with model 7818 Temperature Probe installed; "Davis Active" is a solar-powered model 7755 with model 7818 Probe installed.)

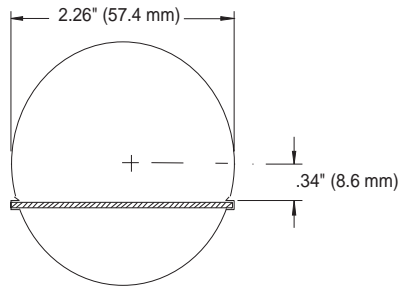


Figure 3a.
Sensor Chamber Cross Section

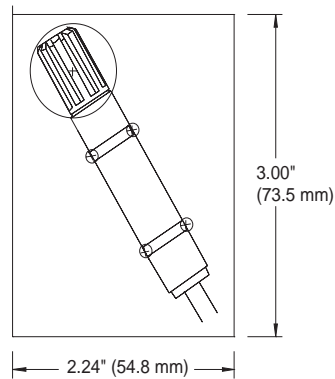


Figure 3b.
Sensor Board with Humitter installed
(Humitter not included)

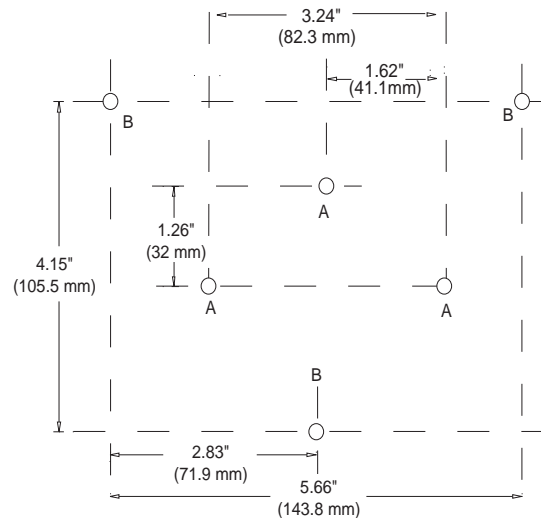


Figure 5. Mounting Hole Locations
[Either set of 3 holes (A or B) may be used]