Item: Aspirated Solar Shield

Manufacturer/Model: Met One Instruments / 076B 7308

Description:
A white-painted aspirated solar shield containing a 12-volt DC-powered fan to aspirate the air temperature sensor.

Radiation Error: < 5% under max solar radiation of 1116 W per m^2
Shield Temp. Range: -50^o C to 85^o C
DC FAN Temp. Range: -20^o C to 75^o C
DC Fan Flow: 97.1 CFM
Power Requirement: 4.3 watts

How are they installed?
The three shields are placed such that their lower openings through which the fans draw air are 1.5 m above the ground. The air temperature (in all three shields) and relative humidity (in Shield 1 only) therefore represent atmospheric conditions about 1.5 m above the ground.

Why are shields needed?
A solar shield is required to keep incoming solar radiation from affecting the air temperature sensors by day, and to keep outgoing infrared radiation from cooling the air temperature sensors at night. The shield should be fan-aspirated to insure its internal temperature is very close to the ambient air temperature. Data from the shield fan is recorded to verify that the fan is operating at the proper rotational speed. As seen in the picture on the next page, the sensors in the middle tube are separated from the sunlit surface by two further walls to ensure the air drawn past the instruments is not warmed by the sun heating the outer wall.

Inside the shield three cylindrical walls surround the sampling chamber.