12-Volt Motor Aspirated Radiation Shield

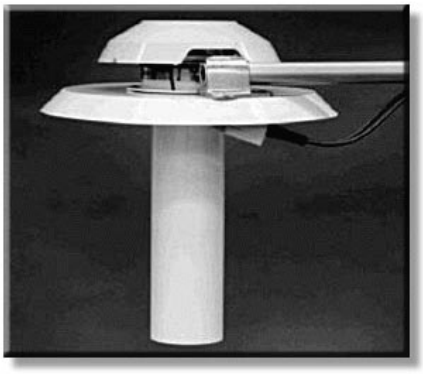
S1075Z

- **Operates on AC, batteries, or solar power**
- **Delta-T accuracy < 0.10°C**
- **Easy calibration and service**
- **Reduces radiation errors to less than 0.08°C**

This sensor has a unique feature of an optional battery back-up system. The 12-Volt Motor Aspirated Radiation Shield is designed to continuously sample ambient air with high accuracy for temperature and differential temperature. The shield design eliminates all errors caused by either solar or terrestrial radiation, as well as secondary errors caused by convective heat transfer from the outer shield surfaces.

The temperature sensor is mounted vertically within the shield. Air is drawn into the bottom of the shield through two concentric ports. High velocity air drawn into the outer port scrubs the hot surface air from the exterior radiated surfaces and is exhausted. The inner port draws in the air sample, a true gas temperature measurement is made and the air is exhausted at the top of the radiation shield. This air flow system prevents convective heat transfer to the sampling stream.

The shield is constructed of three lightweight aluminum cylinders which surround the sensors. All outer surfaces have been painted with a high gloss enamel for maximum reflection. All interconnecting materials have been selected to minimize conductive heat transfer between the various shields. The combination of air flow, symmetrical shield design, and proper selection of surface finishes, provide a shield that eliminates all errors caused by radiation.



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Technical Specifications

S1075Z

Under radiation intensity of 1,080 W/m² ambient temperature:	0.2°C
Delta-T:	0.05°C
Aspiration Rate:	3 m/sec (10 ft/sec) over temperature sensor
Radiation Error:	Less than 0.08°C under maximum solar radiation of 1.6 gm-cal/cm/min
Operating Temperature Range:	-30°C to +70°C (standard)
Flow Rate	
Sample Air:	600 ft/min
Scrubbing Air:	1000 ft/min
Power Inputs:	12 V @ 0.1 amp (does not include sensor power)
PHYSICAL	
Mounting:	Mounts on horizontal ¾" (1½" O.D.) pipe
Minimum Sensor Length:	10 cm (4in)
Maximum Sensor Length:	20 cm (8 in)
Maximum Sensor Diamter:	2.5 cm (1 in)
Weight:	2.7 kg (6 lbs)