



HFP01SC-L

Self-Calibrating Soil Heat Flux Plate



Extreme Accuracy

Self-calibrating; ideal for energy-balance in eddy-covariance and Bowen-ratio systems

Overview

The HFP01SC, manufactured by Hukseflux, measures soil heat flux—typically for energy-balance or Bowen-ratio flux systems. It is intended for applications requiring the highest possible degree of measurement accuracy. The HFP01SC outputs a

voltage signal that is proportional to the heat flux of the surrounding medium. At least two sensors are required for each site to provide spatial averaging. Sites with heterogeneous media may require additional sensors.

Benefits and Features

- › Corrects for errors due to differences in thermal conductivity between the sensor and surrounding medium, temperature variations, and slight sensor instabilities
- › Compatible with most Campbell Scientific data loggers
- › Uses Van den Bos-Hoeksma self-calibration method to provide a high degree of measurement accuracy

Detailed Description

The HFP01SC consists of a thermopile and a film heater. The thermopile measures temperature gradients across the plate. During the in-situ field calibration, the film heater is used to generate a heat flux through the plate. The amount of power used to generate the calibration heat flux is measured by the data logger. Each plate is individually calibrated, at the factory, to output flux.

Self-calibration corrects for errors due to differences in thermal conductivity between the sensor and surrounding medium, temperature variations, and slight sensor instabilities.

Note: In an energy-balance installation, all sensors must be completely inserted into the soil face before the hole is backfilled.

Specifications

Sensor Type	Thermopile with film heater
Sensitivity	50 $\mu\text{V W}^{-1} \text{m}^{-2}$ (nominal)
Nominal Resistance	2 Ω

Temperature Range	-30° to +70°C
Expected Typical Accuracy	$\pm 3\%$ of reading
Heater Resistance	100 Ω (nominal)

Heater Voltage Input	9 to 15 Vdc
Heater Voltage Output	0 to 2 Vdc
Duration of Calibration	±3 minutes @ 1.5 W (typically performed every 3 to 6 hours)

Average Power Consumption	0.02 to 0.04 W
Plate Diameter	80 mm (3.15 in.)
Plate Thickness	5 mm (0.20 in.)
Weight	200 g (7.05 oz) without cable

For comprehensive details, visit: www.campbellsci.com/hfp01sc-l 



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