

**HFP01SC**

Self-Calibrating Soil Heat Flux Plate



Extreme Accuracy

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

Overview

The HFP01SC* 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 of our dataloggers
- › Uses Van den Bos-Hoeksma self-calibration method to provide high-degree of measurement accuracy

Technical 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 datalogger.

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.

**The HFP01SC is manufactured by Hukseflux (Delft, The Netherlands) for Campbell Scientific.*

questions & quotes: 780.454.2505

www.campbellsci.ca/hfp01sc-l



Ordering Information

Heat Flux Sensors

Recommended cable length is 25, 50, 75, or 100 ft (8, 15, 23, or 31 m).

HFP01SC-L Hukseflux Self-Calibrating Soil Heat Flux Plate with user-specified cable length; enter cable length, in feet, after the -L. Must choose a cable termination option (see at right).

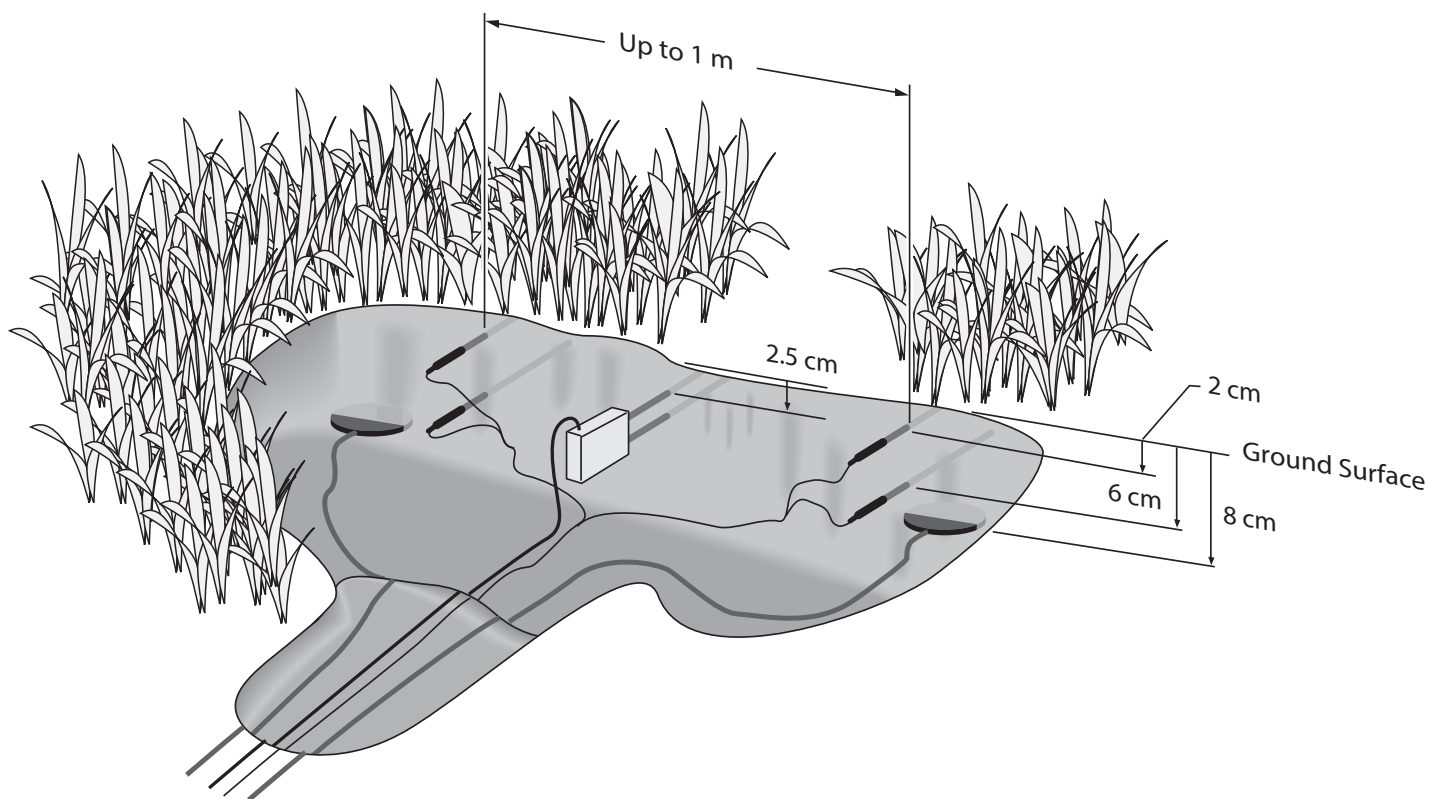
Cable Termination Options (choose one)

-PT Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.

-PW Cable terminates in a connector for attachment to a prewired enclosure.

Specifications

- Sensor Type: Thermopile with film heater
- Sensitivity (nominal): 50 $\mu\text{V W}^{-1} \text{ m}^{-2}$
- Nominal Resistance: 2 Ω
- Temperature Range: -30° to +70°C
- Expected 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 Thickness: 5 mm (0.20 in)
- Plate Diameter: 80 mm (3.15 in)
- Weight without cable: 200 g (7.05 oz)



Above is an example energy-balance installation. The HFP01SC Heat Flux Plates are installed with the CS616 Water Content Reflectometer and TCAV Averaging Soil Temperature Probes. All sensors must be completely inserted into the soil face before the hole is backfilled.