



Extreme Accuracy

Ideal for energy-balance
and Bowen-ratio systems

Overview

The HFP01* measures soil heat flux—typically for energy-balance or Bowen-ratio flux systems. It 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

- › Compatible with most of our dataloggers
- › Compatible with the CWS900-series interfaces, allowing it to be used in a wireless sensor network

Technical Description

The HFP01 uses a thermopile to measure temperature gradients across its plate. Operating in a completely passive way, it generates a small output voltage that is proportional to this differential temperature. Assuming that the heat flux is steady, that the thermal conductivity of the body is constant, and that the sensor

has negligible influence on the thermal flow pattern, the signal of the HFP01 is directly proportional to the local heat flux.

The HFP01's output is in millivolts. To convert this measured voltage to heat flux, it must be divided by the plate's calibration constant. A unique calibration constant is supplied with each sensor.

**The HFP01 is manufactured by Hukseflux (Delft, The Netherlands) for Campbell Scientific.*



Ordering Information

Heat Flux Sensors

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

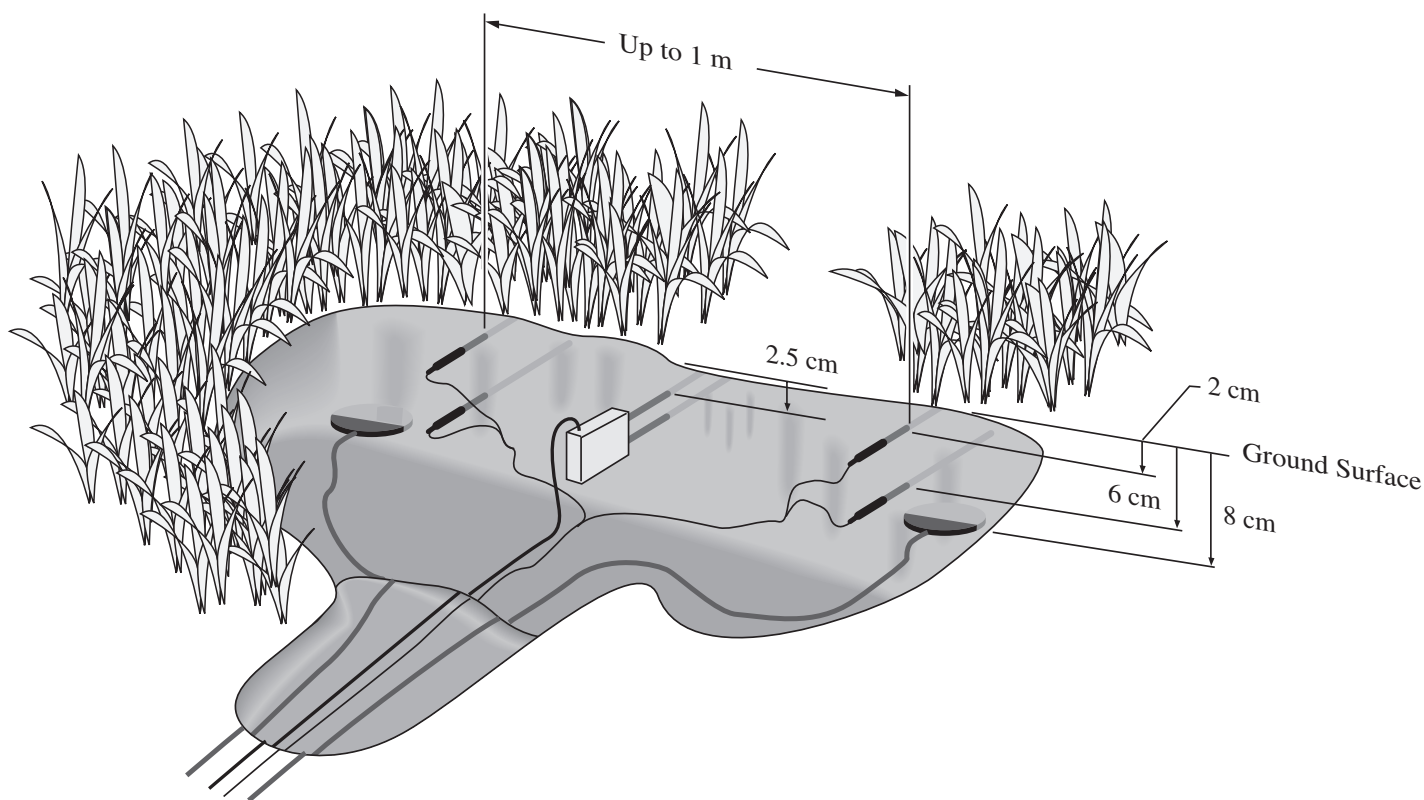
HFP01-L Hukseflux Soil Heat Flux Plate with user-specified cable length; enter cable length, in feet, after the -L. Must choose a cable termination option (see below).

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.
- CWS** Cable terminates in a connector for attachment to a CWS900 interface. Connection to a CWS900 interface allows the HFP01 to be used in a wireless sensor network.

Specifications

- Sensor Type: Thermopile
- Sensitivity (nominal): $50 \mu\text{V W}^{-1} \text{ m}^2$
- Nominal Resistance: 2Ω
- Temperature Range: -30° to $+70^\circ\text{C}$
- Sensor Thermal Resistance: $< 6.25 \times 10^{-3} \text{ K m}^2 \text{ W}^{-1}$
- Measurement Range: $\pm 2000 \text{ W m}^{-2}$
- Expected Typical Accuracy (12 hour totals): within -15% to +5% in most common soils
- 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 HFP01 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.



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