

HFP03 ULTRA SENSITIVE HEAT FLUX PLATE

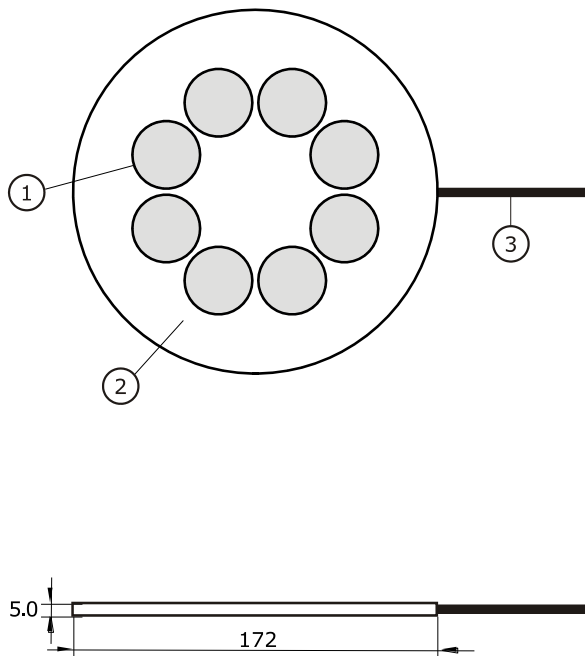


Figure 1

HFP03 heat flux plate dimensions:
(1) sensor area,
(2) guard of ceramics-plastic composite,
(3) cable, standard length 5 m.
All dimensions are in mm.

MORE INFORMATION / OPTIONS

Additional cable length x metres (add to 5 m),
AC100 amplifier, LI 19 hand held readout

HFP03 is an ultra sensitive sensor for measurement of small heat fluxes through soil, walls and building envelopes. By using a ceramics-plastic composite body the total thermal resistance is kept small.

INTRODUCTION

HFP03 serves to measure the heat that flows through the object in which it is incorporated or on which it is mounted.

HFP03 has been built specifically for measurement of small flux levels, in the order of less than 10 Wm^{-2} , for instance in geothermal applications.

The actual sensor in HFP03 is a thermopile. This thermopile measures the differential temperature across the ceramics-plastic composite body of HFP03. Working completely passive, HFP03 generates a small output voltage proportional to the local heat flux.

Using HFP03 is easy. For readout one only needs an accurate voltmeter that works in the millivolt range. To calculate the heat flux, the voltage must be divided by the sensitivity; a constant that is supplied with each individual instrument. HFP03 is weatherproof. It complies with the CE directives.

Traceability of calibration is to the "guarded hot plate" of National Physical Laboratory (NPL) of the UK, according to ISO 8302 and ASTM C177. In case a sensitive measurement is not needed the model HFP01 should be considered.

As an alternative multiple HFP01 sensors can be put in series to enhance sensitivity.

For employing HFP03, the HFP01 manual can be used; a dedicated appendix is added. The main differences are dimensions and sensitivity.

HFP03 SPECIFICATIONS

Sensitivity (nominal):	500 $\mu\text{V}/\text{W.m}^2$
Resistance (nominal):	18 Ω
Temperature range:	-30 to +70 $^{\circ}\text{C}$
Sensor thermal resistance:	$< 6.25 \cdot 10^{-3} \text{ Km}^2/\text{W}$
Range :	+2000 to -2000 W.m^2
Temperature dependence:	$< 0.1\%/^{\circ}\text{C}$
Calibration traceability:	NPL, ISO 8302 / ASTM C177
Expected typical accuracy:	within +5/- 15%
(12hr totals)	in most common soils, within +5/ -5 % on walls