

HF05

Industrial heat flux sensor

HF05 measures heat flux and surface temperature in industrial environments. The sensor has a fully sealed stainless steel body and a PTFE cable. It can withstand relatively extreme environmental conditions.



Figure 1 HF05 industrial heat flux sensor



Figure 2 Example of an industrial heat flux sensor mounted on a boiler wall using tack-welded threads and spring-loaded bolts. The sensor is mounted on a well-prepared flat surface. Cabling must be provided with strain relief.

Introduction

HF05 measures heat flux through the object on which it is mounted, in W/m^2 , as well as its surface temperature in $^{\circ}C$. The sensors in HF05 are a thermopile and a type K thermocouple. A thermopile and a thermocouple are passive sensors; they do not require power. The sensors inside HF05 are protected by a fully sealed stainless steel body. Typical applications of HF05 are studies of fouling in industrial environments mounted on tubing or on the jacket of reactors. HF05 is also used for performance evaluation of industrial insulation. Using HF05 is easy. It can be connected directly to commonly used data logging systems. The heat flux in W/m^2 is calculated by dividing the HF05 output, a small voltage, by the sensitivity. The sensitivity is provided with HF05 on its product certificate.

Standards

HF05 complies with the requirements of ASTM C1041-85 (2007) Standard Practice for In-Situ Measurements of Heat Flux in Industrial Thermal Insulation Using Heat Flux Transducers.

Calibration

HF05 calibration is traceable to international standards. The factory calibration method follows the recommended practice of ASTM C1130.

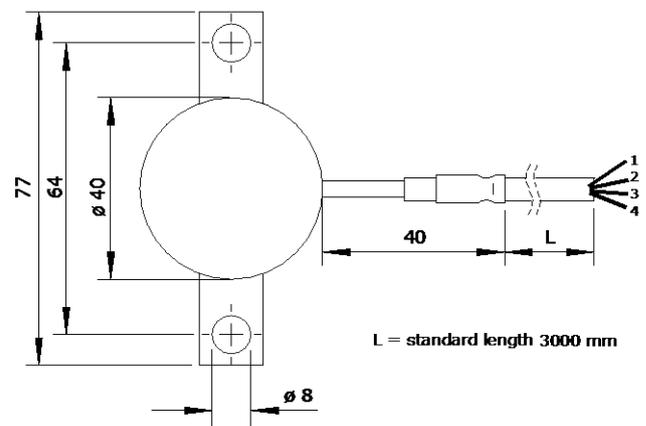


Figure 3 HF05 dimensions in $\times 10^{-3}$ m.

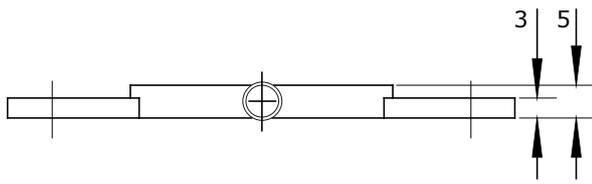


Figure 4 HF05 dimensions in $\times 10^{-3}$ m.

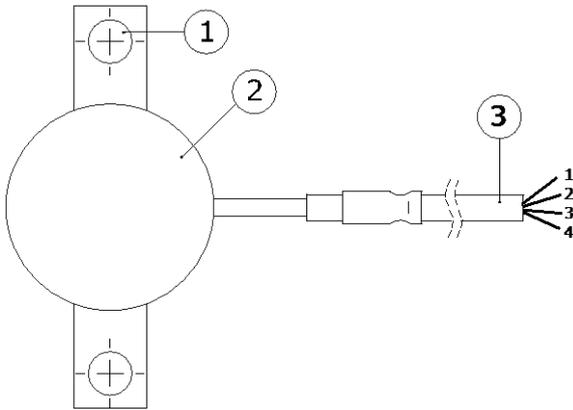


Figure 5 HF05: The heat flux sensor (2) is connected to a short rigid stainless steel tube. This sensor-to-cable transition is connected to a PTFE cable (3). Two mounting flanges (1) are attached to the sensor body.

Suggested use

- industrial heat flux measurements
- performance evaluation of industrial insulation

See also

- model HF01 for higher temperatures up to 800 °C
- model HFP01 for lower temperatures up to 70 °C
- our complete product range of heat flux sensors
- our industrial heat flux sensors (PDF)

HF05 specifications

Measurand	heat flux
Measurand	temperature
Heat flux sensor	thermopile
Temperature sensor	thermocouple type K
Uncertainty of heat flux calibration	$\pm 10\%$ (k= 2)
Calibration traceability	to SI units
Recommended number of sensors	2 per measurement location
IP protection class	IP67
Measurement range	-6000 to 6000 W/m ²
Sensitivity (nominal)	15×10^{-6} V/(W/m ²)
Rated operating temperature range	-30 to +170 °C
Standard cable length	3 m
Order code	HF05 / cable length in m

Options

- longer cable (specify total cable length in m)
- connector at HF05 cable end
- EC type examination certificate (ATEX) II 2 G EEx d IIC T6
- extension cable with 2 connectors matching cable connector and chassis connector (specify cable length in m)
- chassis connector with internal wiring (colour code of wiring identical to cable colour code)

About Hukseflux

Hukseflux Thermal Sensors offers measurement solutions for the most challenging applications. We design and supply sensors as well as test & measuring systems, and offer related services such as engineering and consultancy. With our laboratory facilities, we provide testing services including material characterisation and calibration. Our main area of expertise is measurement of heat transfer and thermal quantities such as solar radiation, heat flux and thermal conductivity. Hukseflux is ISO 9001:2008 certified. Hukseflux sensors, systems and services are offered worldwide via our office in Delft, the Netherlands and local distributors.

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