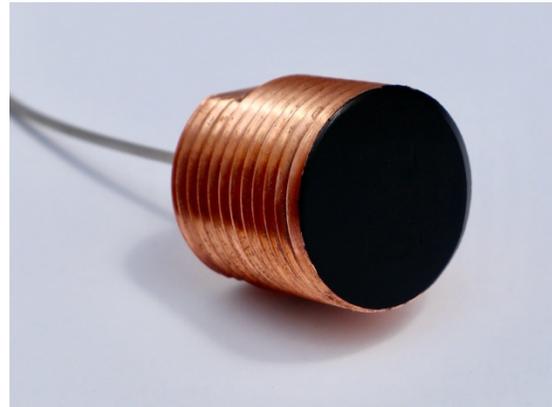


HTHF-Probe Heat Flux Sensor Description

The HTHF-Probe is a welded sensor made from high temperature materials. It operates on the basic principle of measuring the temperature drop across a known thermal resistance using a thermoelectric thermopile to amplify the heat flux signal. Thermocouples are also used to monitor the surface temperatures of the sensor, which provides additional information on the state of the thermal system.

Potential Applications

- Measuring heat flux in high temperatures
- Combustion R&D
- Fire research



Heat Flux Sensor Specifications

Sensor Type	Differential-Temperature Thermopile
Nominal Sensitivity	Approx. 250 $\mu\text{V}/(\text{W}/\text{cm}^2)$
Sensor Thickness (t)	3.175 mm
Continuous Temperature Limit	350 degC
Short-term Temperature Limit	500 degC*
Maximum Heat Flux	1 MW/m ² **
Sensor Surface Thermocouple	Type-K
Sensing Area Dimensions	L = 9.8 mm W = 5.7 mm
Total Housing Dimensions	D = 25.4 mm L = 25.4 mm
Thread Size	1-12UNF-2A
Sensor Housing Material	Copper 110

*The standard copper housing determines the limiting temperature factor. Custom material housing such as stainless steel may be built upon request. Incident air temperature may be hotter assuming proper sinking conditions are met.

**Maximum heat flux is application dependent. Proper sinking may tolerate higher incident heat flux.

HTHF-Probe Water-Cooled Housing

An optional water-cooled housing unit can be installed onto the HTHF-Probe sensor. The sensor and water-cooled unit are both threaded so the sensor can be easily installed into the cooling assembly.



HTHFS-Probe Water-Cooled Housing Specifications

Material	Copper 110 (not pictured)
Sensor Hole Diameter	25.4 mm
Outer Diameter	82 mm
Inlet Tube ID	6.35mm or 1/4"
Outlet Tube ID	4.76mm or 3/16"
Sensor Hole Thread Size	1-12UNF-2A
Temperature Limit	100 degC*
Max Heat Flux with Sensor	2 MW/m2**

*Temperature will not exceed the boiling point of water. Incident air temperature may be significantly hotter assuming proper sinking conditions are met.

**Maximum heat flux is application dependent. Proper sinking may tolerate higher incident heat flux.