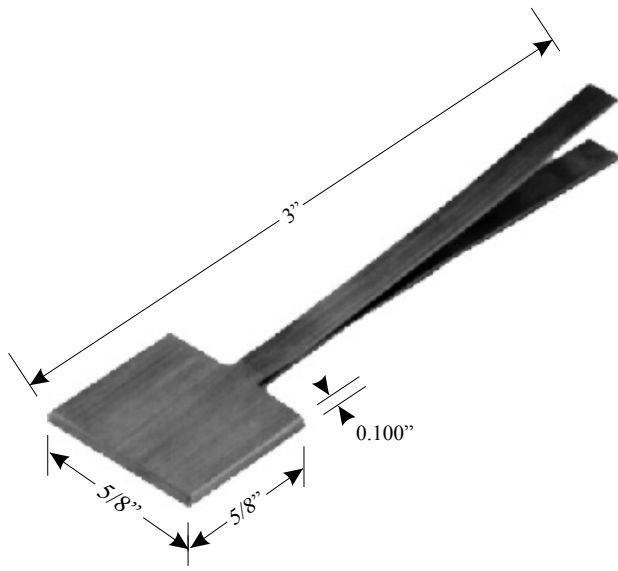


THE HT-50 THERMAL FLUX METER



FOR PRECISE MEASUREMENT OF HEAT FLUXES

- Heat Fluxes To 10^6 Btu/hr ft²
- Temperature Range to 18000F.
- Rapid Response (0.1 Secs.)
- Linear Output
- Accuracy 5%
- Negligible Thermal Resistance
- No Power Supply Required

PRINCIPLE

The flow of heat to, or from a surface on which the transducer is placed creates a small temperature difference between the upper and lower surfaces of the transducer. These surfaces are in thermal contact with a miniature, high temperature thermopile which generates a direct current signal from this temperature difference. The thermoelectric element yields signals which may be measured by a microvolt meter. Because each unit is self-powered, no excitation voltage is necessary. The thermal resistance introduced by the transducer is negligible for all practical purposes.

CALIBRATION

ITI Thermal Flux Meters are individually calibrated at a base temperature of 70°F. An absolute calibration technique is used to determine the meter constant to the required accuracy, and verified by calculation. A temperature correction curve for elevated temperatures is also provided.

SPECIFICATIONS

Temperature Range	- 425°F. to 1800°F. (2000°F. in Vacuum)
Maximum Flux Density.....	10^6 Btu/hr ft ²
Material.....	Stainless Steels
Time Constant.....	0.1 Secs.
Size	0.100" x 5/8" x 5/8"
Sensitivity.....	150 Btu/hr ft ² mVolt
Accuracy.....	5%

APPLICATION

The Model HT-50 Thermal Flux Meter is a solid state, flat-plate, metallic transducer designed to measure heat flow directly. This transducer is placed upon any surface through which the heat flow is to be measured. The unit will measure heat flow to, or from any surface. In many cases, the transducers may also be installed internally within any barrier with no loss of accuracy.

Application areas include:

- Furnace/Boiler Heat Flow
- High Temperature Heat Transfer
- Engine Heat Loss Measurements
- Physical Property Determinations
- Aeronautical and Space Technology

OPERATION

The transducer may be attached to the heat transfer surface by either clamp, or ceramic cement. The D.C. signal generated by the transducer from the heat flow is conducted to the readout by means of a cable. When the transducer attains equilibrium (app. 0.1 sec.) with the surface, the generated voltage will be proportional to the heat flux. When this output voltage is multiplied by a specific calibration constant, which is supplied with each transducer, the resulting value will be heat loss/gain in terms of Btu/hr ft².

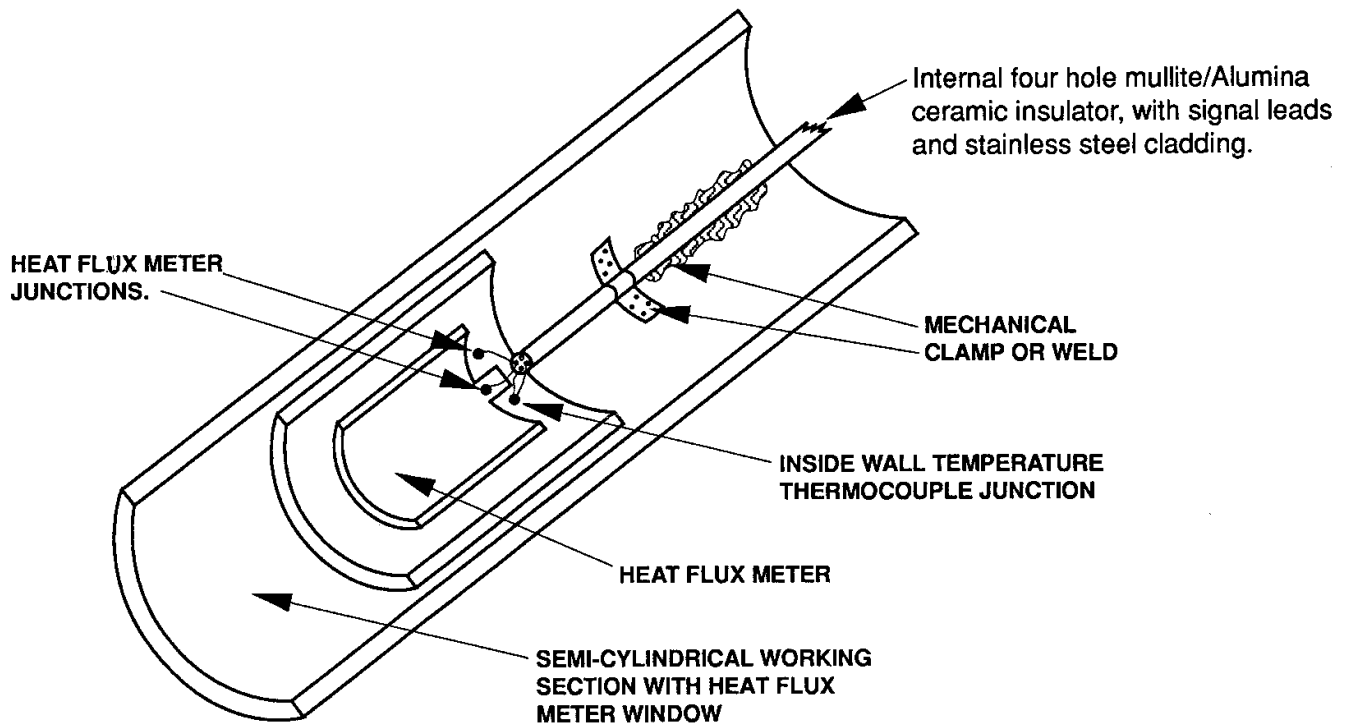


Figure 1 An application of Model HT-50 to heat flux measurements in boiler tubes.