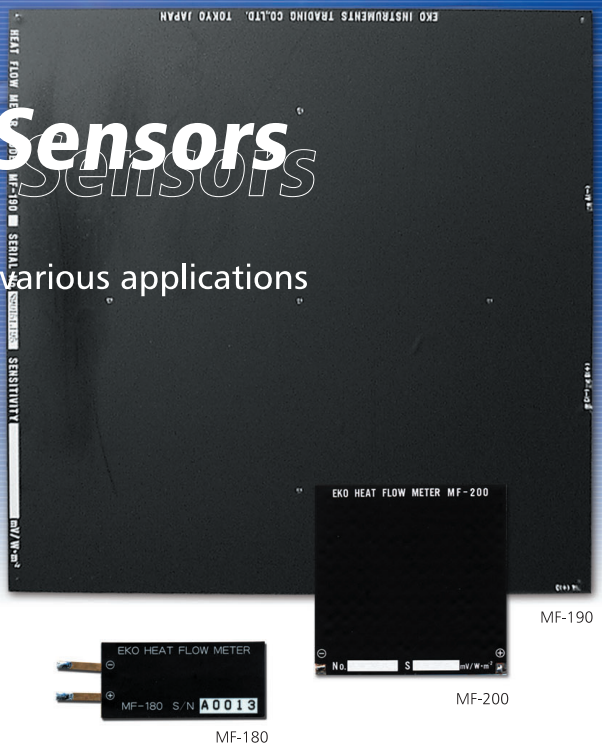
MF-180 MF-180M MF-190 MF-200

Heat Flow Sensors

Heat flow measurement for various applications



MF-190

MF-200

MF-180

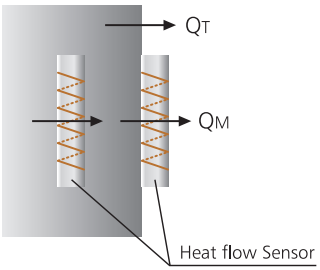
EKO Heat Flow Sensors are suitable for the direct measurement of heat flow inside materials, and the measurement of the radiant flow emitted by bodies such as refrigerators and containers.

PRINCIPLE OF THE MEASUREMENT

There are three modes in heat transmission, thermal conduction, radiation and convection. If the heat flow sensor is placed on the surface of the material, it measures the total value of those three modes. If the sensor is placed inside the material, it directly measures the heat transmission caused by thermal conduction.
The heat flow is calculated as follows;

$$Q_M = \frac{1}{R}$$

"QM" Heat flow passing through two sensors
"R" Thermal resistance



Where is the temperature difference between both surfaces of the sensor.
By taking out the temperature difference using the thermopile, the passing heat flow can be directly measured. Constant 1/R is calibrated preliminary by the standard heat flow sensor. Namely, QM = kE where "k" is calibration constant and "E" is electromotive force, which is proportional to . However, heat flow "QT" without setting heat flow sensor is generally not the same as above "QM". EKO thin heat flow sensors determine "QT" the same as "QM" practically.

Specifications

	MF-180	MF-180M	MF-200	MF-190
Sensitivity (mV/W·m^{-2}) at 20℃, Typ.	0.012	0.008	0.006	0.24
Temperature range (℃)	-30 to +120	-30 to +120	-20 to +120	-20 to +120
Thermal resistance (m^2·℃/W)	1.4 x 10^{-2}	1.5 x 10^{-2}	3.04 x 10^{-3}	3.04 x 10^{-3}
Temperature dependency (%/℃), Typ.	-0.03	-0.03	<0.05	<0.05
Reproducibility (%)	± 2	± 2	± 2	± 2
Internal resistance (Ω), Typ.	300 to 450	300 to 450	20	850
Substrate	Teflon	Teflon	Glass epoxy	Glass epoxy
Cladding	Polyester	Carbon FRP	Polyester	Polyester
Size L x W x T (mm)	42 x 20 x 0.9	50 x 25 x 1.2	50 x 50 x 0.7	310 x 310 x 0.7
Weight (g)	1.1	1.8	3.3	120
Features	All-purpose Small size High sensitivity	Small and durable Waterproof	Very thin and flexible Low heat resistance	Large size and very thin Flexible Low heat resistance
Applications	・Evaluation for building thermal insulation ・Medical and physiological thermal comfort ・Heat loss through reaction chamber	・Soil heat flow ・Microclimate phenomena in greenhouses ・Road and soil freezing test	・Heat losses through heating pipe and air ducts ・Heat radiation and absorption of vehicle ・Heat efficiency of furnaces and ovens	・Evaluation for building thermal insulation ・Metabolisms of animals (Calories box) ・Heat losss of insulation material

IQNet ISO9001 CERTIFIED ISO14001 CERTIFIED ISO17025 CERTIFIED

iSweek www.isweek.com
Add: 16/F, Bldg. #3, Zhongke Mansion, No.1 Hi-Tech S. Rd, Hi-Tech Park South, Shenzhen, Guangdong, 518067 P.R.China
Tel: + 86-755-83289036 Fax: + 86-755-83289052 E-mail: sales@isweek.com