



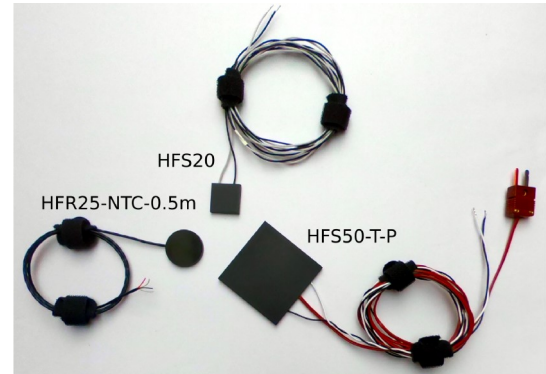
## Universal Heat Flux Sensors

For Industry, Laboratory and Research

Model: HFS50, HFS15, HFS20, HFR25, HDSM16, HFRM16, HFSRM10 und HFRM10

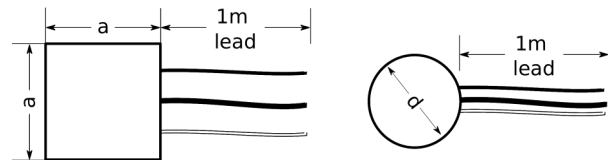
### Features:

- Direct Heat Flux Readout
- Measures Bidirectional Heat Flow
- Sensitivity unaffected by Vacuum
- Self-generating output - requires no Amplifier nor Power Supply or Reference Junction
- Easy to install - stick (glue)



### Description:

The heat flow ( $\Phi$ ) through the sensor creates a small temperature gradient that is proportional to the heat flow. The temperature gradient perpendicular to the sensor surface generates an equivalent voltage. The heat flow readout of the sensor is the voltage multiplied with the calibration constant of the sensor.



### Applications:

- Green Roof and Soil
- Insulation evaluation of Roofs, Walls ect.
- Submarines and Vessels
- Biomedical research
- Laboratory &

### Specifications:

Heat Flux Range: ..... 9.5 kWm<sup>-2</sup>  
 Temperature range: ..... -30 C to +150 C  
 Thermal conductivity: ..... 0.316 Wm<sup>-1</sup>K<sup>-1</sup>  
 Accuracy: ..... ±5%  
 Linearity: ..... ±2%  
 Environmental resistance: ..... Water proof, impervious to pressure or vacuum  
 Heat flux direction: ..... bidirectional  
 Optional Temperature sensors: Thermocouple type K or T and NTC  
 Calibration: ..... Each sensor is supplied with a calibration constant traceable to NIST. Optional temperature sensor calibration possible

Order No.	Model	Sensitivity <sup>1</sup>		Impedance ohms	Time const. <sup>2</sup> Sekond	Length a mm (Inch)	Diameter d mm (Inch)	Thickness t mm (Inch)	Temperature (optional)
		(Wm <sup>-2</sup> )mV	BTU/ft <sup>-2</sup> )mV						
C04-010-010	HFRM10	375	1.19	30	4	--	10 (0.4)	2	Thermocouple K,T
C03-010-010	HFSM10	375	1.19	30	4	10 (0.4)	--	2	Thermocouple K,T
C04-016-010	HFRM16	150	47.6	100	4	--	16 (0.63)	2	Thermocouple K,T
C03-016-010	HFSM16	150	47.6	100	4	16 (0.63)	--	2	Thermocouple K,T
C03-020-010	HFS20	80	25.4	200	15	20 (0.79)	--	3	Thermocouple K,T, NTC
C04-025-010	HFR25	60	19.03	250	15	--	25 (0.98)	3	Thermocouple K,T, NTC
C03-035-010	HFS35	15	4.76	1000	15	35 (1.38)	--	3	Thermocouple K,T, NTC
C03-050-010	HFS50	8	2.54	2000	15	50 (1.97)	--	3	Thermocouple K,T, NTC

<sup>1</sup> Nominal

<sup>2</sup> 68% of reading, nominal

## Optional temperature sensors:

Sensors can be shipped with optional temperature sensors included.

Possible sensors are:

- Thermocouple type T (without/with plug) NTC with 2.2k $\Omega$  at 25°C
- Thermocouple type K (without/with plug)
- NTC with with 2.2k $\Omega$  at 25°C

**Cabels and wiring:**

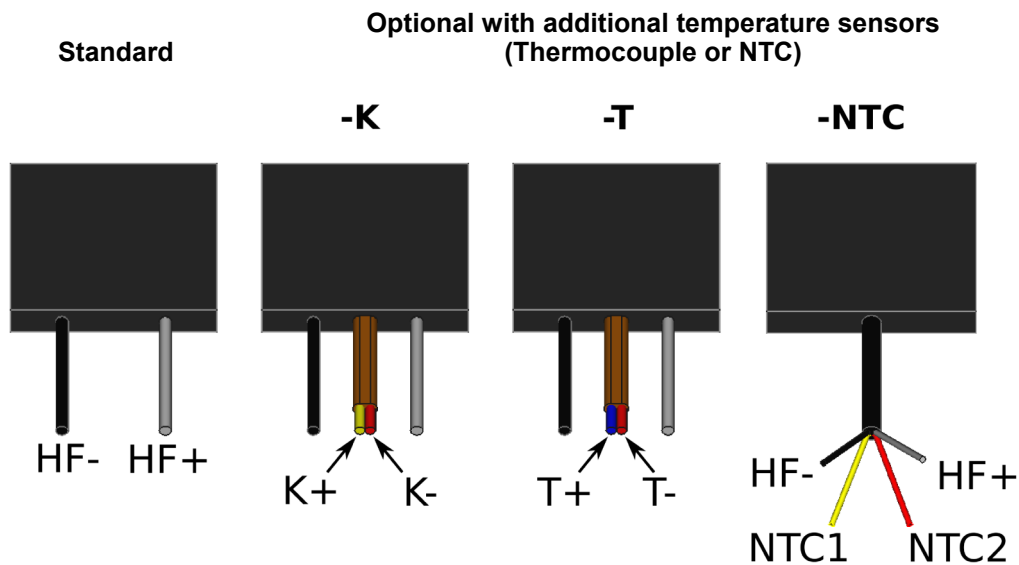
Sensors are equipped with 1 m cable.

Without temperature sensors cables are twisted pair FEP cables with black/white color coding and 1.2 mm diameter (AWG24).

Thermocouple temperature sensors are equipped with (1.4x2.4 mm, AWG24) PTFE cables. Sensors with NTC are connected by 0.6 mm (AWG30) FEP isolated cables for heat flow and NTC in a black FEP coating with a total diameter of 1.85 mm. Refer to Fig. 1 for the color coding.

Other cable coatings as i.e. PU on request possible.

Fig. 1



**Sensor nomenclature:**

**HFS50**

(Sensor type)

-

**NTC**

(temperature sensor)

-

**1m**

(cable length)

**Add for optional temperature sensors:**

- -T or -T-P for T-Type thermocouple (without/with plug)
- -K or -K-P for K-Type thermocouple (without/with plug)
- -NTC for NTC with 2.2k $\Omega$  at 25°C Add for optional longer cables

**Add for optional longer cables:**

- -Xm with X the cable length)

**Example:**

- -HFS20: HFS20 with 1m cable length
- -HFR25-K-P-10m: HFR25 HFR25 with 10 m cable length and a K-Thermocouple with a plug