

RC01

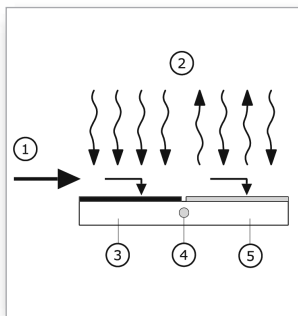
RADIATION / CONVECTION (RADCON) HEAT FLUX SENSOR

Ideally suited for heat transfer analysis within industrial furnaces and ovens, for baking and drying process applications, the RC01 is cable of measuring high intensity radiative and convective heat fluxes, as well as temperature. RC01 measurement results are often used to characterize optimal oven/furnace settings "fingerprint", making it possible to compare or reproduce oven/furnace environmental conditions.

The RC01 consists of two heat flux detectors: a gold plated low emissivity detector (sensitive to convective transfer effects only), and a second black coated detector (sensitive to both radiative and convective transfer effects). A type 'K' thermocouple is embedded within the sensor below the detector surfaces. Additional heat-sink options are available for the RC01 (nickel heat-sink is typical, RC01-M option). The RC01-M optioned model is supplied standard with an external temperature sensor for ambient air temperature measurement. By measuring the heat fluxes, sensor temperature, and surrounding ambient air temperature, local heat transfer coefficients can be determined.

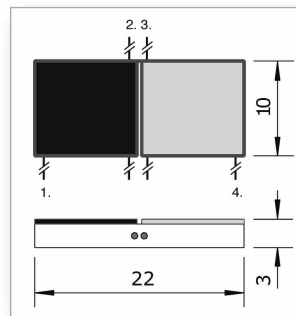
APPLICABLE STANDARDS

Alternative designs: Hukseflux specializes in heat flux sensor design and can offer sensors of modified dimension and specification (e.g. custom RC01 model with water cooling).



◀ Figure 1: RC01 sensor dimensions. (22x10x3 mm)

1. convective heat
2. radiative heat
3. heat flux sensor with black-body detector (0.85 emission approx.), sensitive to convective and radiative heat flux effects
4. temperature sensor (for sensor temperature measurement)
5. heat flux sensor with gold plated detector (emission dependent on radiation spectrum, Infrared emission coefficient < 0.05), convective heat effects only.



- ◀ 1., 2. wiring of black-body detector
3., 4. wiring of gold plated detector
5., 6. wiring of type K thermocouple
Ambient air temperature sensor is not depicted in Figure 1.

Dimensions of RC01-M, including the heat sink: 65x65x13 mm.



APPLICATIONS

- ▶ Drying kilns, baking ovens
- ▶ Continuous belt dryers

Note: Above applications are inclusive of, but not limited to the entire RC01 application range.

RC01 GENERAL SPECIFICATIONS

Heat flux measurement:	1 black-body detector 1 gold (reflective) detector
Temperature measurement:	type K thermocouple
Sensitivity:	3 $\mu\text{V}/\text{W}/\text{m}^2$
Expected accuracy:	within $\pm 10\%$
Temperature sensor:	type K thermocouple
Response time:	0.5 s (1/e)
Temperature range:	0 - 250° C
Heat flux range:	heat-sink temp dependent (10 kW/m^2 typical)
CE certification:	RC01 is CE certified

RC01 HEAT SINKS

RC01-M on Nickel heat sink with ambient air temperature sensor