



Electro Optical Components, Inc.

5464 Skylane Boulevard, Suite D, Santa Rosa, CA 95403

Toll Free: 855-EOC-6300

www.eoc-inc.com | info@eoc-inc.com



gSKIN[®]

Heat Flux Sensors for Core Body Temperature

ADVANTAGES OF USING gSKIN[®] HEAT FLUX SENSORS FOR CORE BODY TEMPERATURE

- *Small sensors with high sensitivity, easily integrated into application setups*
- *Non-invasive, fast measurement technique with the potential to determine core body temperature*

RESEARCH AND DEVELOPMENT FOCUS AREAS FOR gSKIN[®] HEAT FLUX SENSORS

The Heat Flux Sensor Model has been tested and works under steady state conditions and at rest. Currently, greenTEG engineers are working on a prototype to determine:

- *An algorithm for Core Body Temperature and Skin Heat Flux*
- *Compensation of external conditions (radiation, wind, rain, thermal insulation, sweating)*
- *Fast equilibration time*

POTENTIAL APPLICATION AREAS FOR MONITORING CORE BODY TEMPERATURE



- *Performance optimization for athletes*
- *Monitoring inside incubators for prematurely born children*
- *Alerting people working in highly dangerous environments (Fire fighters, Miners, Soldiers)*
- *Sleep quality tracking*
- *Monitoring animal breeding*

SIMPLIFIED METHOD FOR MEASURING CORE BODY TEMPERATURE

1. Install a gSKIN[®] Heat Flux Sensor and temperature sensor on the forehead.
2. Log the temperature and heat flux measurements (in Watts/m²).
3. Determine the thermal resistance (in Kelvin/Watt/m²) between the forehead and the core with the calibration measurement (assuming $T_{core} = 37^{\circ}C$).
4. Calculate the temperature difference between the chest and core by using:

$$\Delta T = (\text{Heat Flux}) \times (\text{Thermal Resistance})$$

5. Calculate the temperature at the core by using:

$$T_{Core} = T_{Skin} + \Delta T$$

