

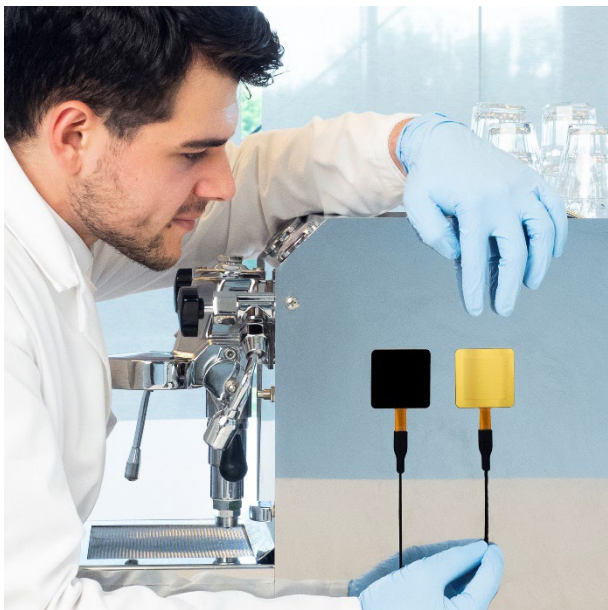
# BLK - GLD STICKER SERIES

Black and gold stickers for measuring convective and radiative heat flux separately

*Want to study energy transport/heat flux in detail? Hukseflux helps taking your measurement to the next level. Simply provide your heat flux sensors with radiation-absorbing black and radiation-reflecting gold stickers. You can then measure convective + radiative flux with one, and only convective flux with the other. Subtract the two measurements and you have radiative flux. BLK and GLD stickers are available for sensors of the FHF05 series and for the HFP01. They are designed to be applied by the user to the sensor; see the user manual and installation video for instructions.*



**Figure 1** BLK – GLD stickers with radiation-absorbing (black) and - reflecting (gold) coatings are available for sensors of the FHF05(SC) series and HFP01 heat flux sensors.



**Figure 2** Measuring with BLK – GLD stickers; application of a BLK black sticker and a GLD gold sticker on an FHF05 sensor for measuring radiative and convective heat flux.

## Introduction

Heat flux measurement is a powerful tool to gain insights into processes involving the transport of thermal energy. Heat flux consists of conductive, convective and radiative flux. When measuring heat flux, users may wish to measure only radiative or only convective heat flux. This is now possible with the BLK – GLD sticker series, designed to be used with a wide range of our market-leading heat flux sensors. The BLK black absorbing stickers will absorb all radiation and are sensitive to both radiative and convective heat flux, while the GLD gold reflective stickers reflect all radiation and are sensitive to convective heat flux only. Combining BLK and GLD, applied to two separate heat flux sensors, will allow for measuring radiative heat flux:

$$\Phi_{\text{radiation} + \text{convection}} = \Phi_{\text{BLK}}$$

$$\Phi_{\text{convection}} = \Phi_{\text{GLD}}$$

$$\Phi_{\text{radiation}} = \Phi_{\text{BLK}} - \Phi_{\text{GLD}}$$

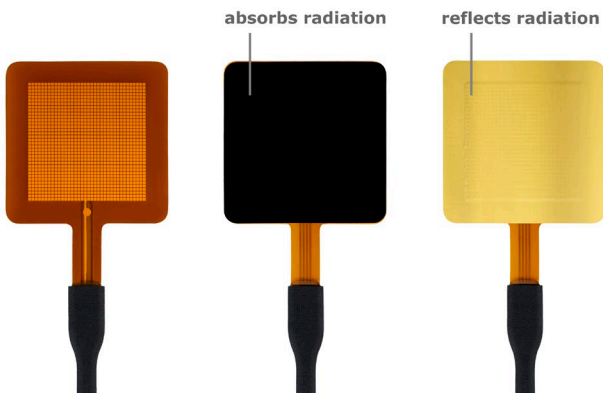
## Unique features and benefits

BLK – GLD sticker series:

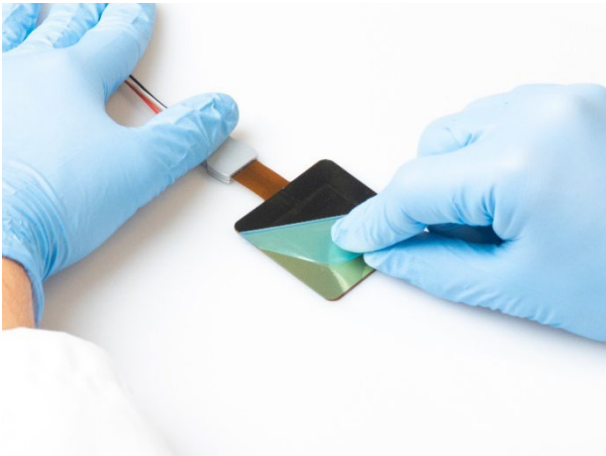
- makes it possible to perform convective and radiative heat flux measurements
- available as accessory for the FHF05(SC) series and HFP01 heat flux sensors
- designed to be applied by the user

## Easy to use

BLK – GLD stickers are designed to be applied by the user, but can optionally also be pre-applied at the factory. Applying a sticker to a heat flux sensor does not change the sensitivity of the sensor, so no additional calibration is required. Using the reliable measurement technology behind our heat flux sensors, separating convective and radiative heat flux has never been easier.



**Figure 3** Example: FHF05-50X50 foil heat flux sensor without and with BLK-50X50 and GLD-50X50 stickers.



**Figure 4** BLK – GLD sticker series are designed to be easily applied by the user. Pre-application to the sensor of your choice at the factory is optional.

## BLK - GLD Sticker specifications

### BLK

Measurand	hemispherical solar radiation
Measurand	convective + radiative heat flux
Spectral range (UV-VIS-NIR-FIR)	250 to > 10000 x 10 <sup>-9</sup> m
Absorption over range	> 95 %
Rated temperature range - continuous use	-40 to +150 °C*
Rated temperature range - short intervals	-40 to +260 °C*

### GLD

Measurand	convective heat flux
Spectral range (NIR-FIR)	700 to > 1000 x 10 <sup>-9</sup> m
Reflection over range	> 95 %
Spectral range (VIS)	400 to 700 x 10 <sup>-9</sup> m
Reflection over range	> 80 %
Solar absorption	< 20 %
Rated temperature range - continuous use	-185 to +150 °C*
Rated temperature range - short intervals	-185 to +260 °C*

### Working with BLK – GLD sticker series

Effect on sensor sensitivity	negligible
Application on sensor	by user or at factory see user manual and instruction video

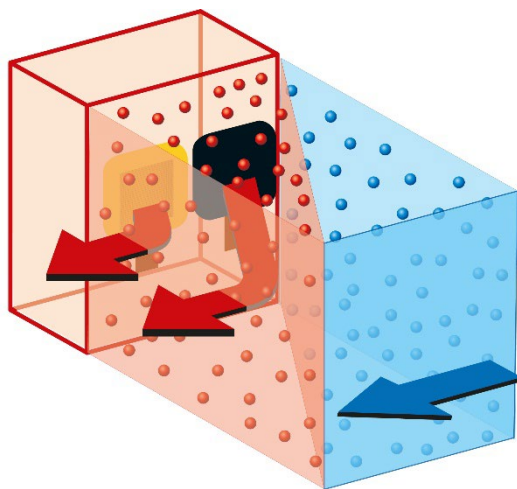
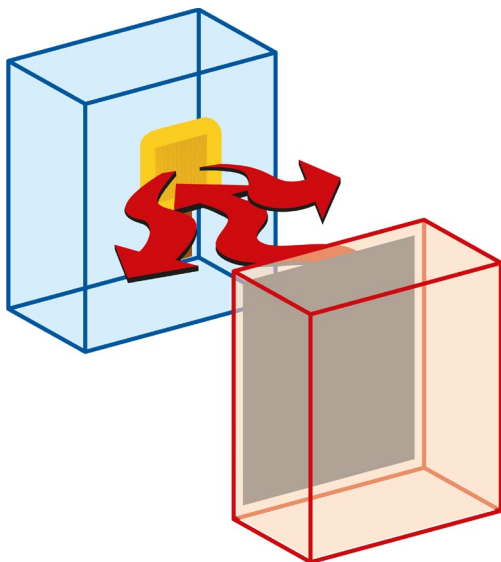
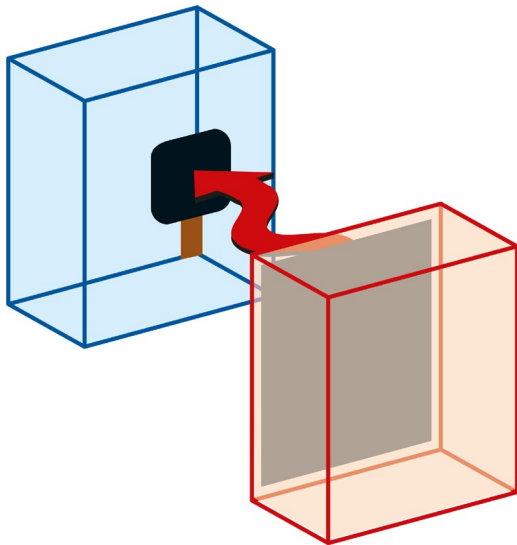
### Versions and order codes

GLD for use with FHF05(SC):	GLD-10X10
	GLD-15X30
	GLD-50X50 (SC)
	GLD-15X85
	GLD-85X85 (SC)
BLK for use with FHF05(SC):	BLK-10X10
	BLK-15X30
	BLK-50X50 (SC)
	BLK-15X85
	BLK-85X85 (SC)

GLD for use with HFP01: GLD-80

BLK for use with HFP01: BLK-80

\* See also the rated temperature ranges of the heat flux sensors in the sensor user manuals



**Figure 5** The working principle of BLK – GLD stickers: sensors equipped with black absorbing stickers absorb all radiation while gold reflective stickers reflect all radiation. Both stickers are sensitive to convective heat flux.

## Options

- pre-applied to the sensor at the factory

## See also

- [instruction video](#) on our YouTube channel
- [FHF05 series](#) general-purpose heat flux sensors
- [FHF05SC series](#) self-calibrating heat flux sensor with integrated heater
- model [HFP01](#) (used on walls and in soils as lower cost alternative to FHF05 85X85)
- view our complete [range of heat flux sensors](#)

## About Hukseflux

Hukseflux is the leading expert in measurement of energy transfer. We design and manufacture sensors and measuring systems that support the energy transition. We are market leaders in solar radiation- and heat flux measurement. Customers are served through our headquarters in the Netherlands, and locally owned representative sales offices in the USA, Brazil, India, China, Southeast Asia and Japan.

Interested in this product?  
E-mail us at: [info@hukseflux.com](mailto:info@hukseflux.com)