

Worldwide calibration services

Sensors must be recalibrated - Hukseflux services are at your disposal

Hukseflux is a leading manufacturer of heat flux sensors and pyranometers. Such sensors are usually recalibrated every 2 years. With 30 year of calibration experience we are here to serve you.

Requirements of ISO, IEC and WMO

Quality management systems such as ISO 9001 require regular calibration of all traceable measuring instruments. At Hukseflux we recommend recalibration at least every 2 years. IEC 61724-1, a standard covering PV system performance monitoring, requires pyranometer calibration every 2 years. The WMO manual, describing best practices in meteorological observations, requires the same.

Why work with us

- well established and traceable calibration methods
- fast turnaround times
- calibration references for many brands and models of pyranometers, heat flux sensors and amplifiers
- calibration facilities in the EU, USA, Japan, China, Australia, Singapore and Brazil



Figure 1 Calibration of all major pyranometer brands.

Services: what we do

- perform accurate calibration of solar radiation, heat flux, and longwave radiation sensors
- work according to established standards

Certificate

With its products or as part of calibration services, Hukseflux Delft issues calibration certificates, with content limited as per ISO/IEC 17025-7.8.1.3. Such a certificate contains the calibration result, an uncertainty, a description of the calibration procedure and the traceability. In case an earlier certificate is supplied with the instrument, we include a reference in our calibration certificate to this earlier certificate. As an option, a certificate including name and contact information of the customer may be ordered.



Figure 2 A calibration certificate is supplied with each sensor documenting traceability and uncertainty evaluation.

Sensor calibration service capabilities

Table 1 Hukseflux calibration services.

HUKSEFLUX CALIBRATION SERVICES			
calibration item	brand and model	calibration method	comment
heat flux sensors (typically water-cooled, high flux)	Hukseflux SBG series GG series Medtherm Schmidt Boelter and Gardon type sensor	ISO 14934 Fire tests - Calibration and the use of heat flux meters - Part 3: Secondary calibration method. Transfer calibration by comparison to a secondary standard under a radiant source. Calibration may be performed at multiple flux levels, also for one sensor. Calibration up to $100 \times 10^3 \text{ W/m}^2$	Concerning heat flux sensors, Hukseflux is not an ISO/IEC 17025 accredited laboratory; users may need calibration of their local reference measurement standard at an accredited laboratory for certified fire testing such as Rise , NIST or LNE . Hukseflux' calibration reference standard is calibrated up to $75 \times 10^3 \text{ W/m}^2$
heat flux sensors (low flux)	Hukseflux HFP series FHF series	Hukseflux internal method HFPC. This method is validated against ASTM C1130 Standard Practice for Calibrating Thin Heat Flux Transducers	
pyranometers albedometers	Hukseflux LP, SR series Kipp & Zonen CMP, SMP series	Conform ISO 9847:2023 Solar energy - Calibration of field pyranometers by comparison to a reference pyranometer, type A1	1 albedometer = 2 pyranometers Hukseflux has limited repair possibilities for other-than-Hukseflux-brand sensors
pyrheliometers	Hukseflux DR series Kipp & Zonen CHP series SHP series	Internal method HFPC, similar to pyranometer calibration	No longer supported: for DR01 with serial number < 8200 and the discontinued model DR03
pyrgeometers	Hukseflux IR series	Hukseflux internal method IRC under a blackbody source relative to a reference traceable to WISG For IR20: under outdoor clear sky conditions relative to a reference traceable to WISG	There is no standard practice available from ISO or ASTM for pyrgeometer calibration
net radiometers	Hukseflux NR01, RA01	See pyranometers and pyrgeometers	NR01 consists of 2 pyranometers and 2 pyrgeometers
amplifiers	Hukseflux -TR amplifiers Kipp & Zonen AMPBOX series	Calibration and re-programming.	

Checklist / requirements for recalibration of sensors

Table 2 Checklist for calibration services.

HUKSEFLUX CALIBRATION SERVICES		
subject	responsible	responsibility
contact our Service desk / Service form	customer	Before service, contact service@hukseflux.com . Complete the Service (RMA) form and email it to us. We need to know the sensor model(s), quantity and serial number(s), the sensor condition, and information what servicing is needed; often this is not only calibration but also repair.
calibration: list of permissible sensors	customer	<p>Hukseflux can calibrate all sensors of the Hukseflux brand, except for DR01 with serial number < 8200 and the discontinued model DR03. In case of other-than-Hukseflux brand sensors only: transmit the brand name and a scanned copy of the previous calibration certificate. Hukseflux may (not) be capable of calibrating your sensor. Wait for our reply.</p> <p>We can calibrate the following pyranometer models of the Kipp & Zonen brand: CM11, CM21, CMP10, CMP11, CMP21, SMP10, SMP11, SMP21 - produced after 01-01-2008 CMP6, CM6B, SMP6 - produced after 01-01-2006 CM3, CMP3, CM3-P, SMP3 - produced after 01-01-2006 and the following pyrhelimeter models of the Kipp & Zonen brand: CH1, CHP1, SHP1 - produced after 01-01-2011 Please contact us in case your sensor is produced before the production dates mentioned above.</p> <p>We can calibrate most water-cooled heat flux sensors (Gardon gauges and Schmidt-Boelter gauges) of the Medtherm brand with smooth (non threaded) 0.5 or 1 inch diameter housings. Calibration capabilities (see table 1 for details) include the following models: 64-xxyy-20, 21 and 18 with xx < 100 and yy void or "SB", GTW-7-32, GTW-10-32 (also with extension 485A).</p>
calibration of other sensors	customer	To judge if we can calibrate other models or brands: please supply us with the brand name, model number, calibration certificate and a photograph.
Options	customer	As an option, you may order a certificate including your name and contact information.
conditions	customer	Only if different-than-usual: specify required calibration reference conditions.
logistics: supply	customer	Specify shipment responsibility. Usually, the customer will be responsible for shipment both ways.
quotation	Hukseflux	The quotation will include a reference number. Possibly, in case of unclear condition of the sensor, the quotation includes a diagnostics fee. This fee must also be paid in case the sensor is irreparable. In case sensors are not clean, a cleaning fee may be charged per sensor.
order	customer	Include the Hukseflux reference number (usually our quotation/proforma invoice number).
confirmation	Hukseflux	Hukseflux will issue a confirmation with an estimated delivery time.
calibration	Hukseflux	Typical processing time is 15 working days. This can be shortened upon request.
logistics: pickup	customer	Please follow Hukseflux shipment directions.



Figure 3 A typical calibration system at Hukseflux.

Restrictions

- Hukseflux is ISO 9001 certified, and an accredited calibration laboratory according to ISO / IEC 17025 for pyranometers and pyrhemometers. In some applications, for example using heat flux sensors in fire testing, end-users may require accredited calibration for their local reference measurement standard. They must then let this calibration be performed at **Rise**, **NIST** or **LNE**.
- Hukseflux can calibrate sensors of other-than-Hukseflux brands. However, Hukseflux is not able to perform diagnostics and service of sensors of those brands. In case other-than-Hukseflux brand sensors need extensive servicing or repair which cannot be performed by the user, we recommend obtaining this service from the manufacturer.

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 the main office in the Netherlands, and locally owned representations in the USA, Brazil, India, China, Southeast Asia and Japan.

Would you like more information?
E-mail us at: info@hukseflux.com