

# Kipp & Zonen pyranometer calibrations

## WHAT



*'ka-lə-brāt'*

To correlate the readings of an instrument with those of a standard in order to check the instrument's accuracy.

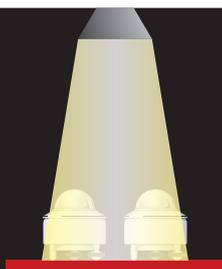
## WHY

Exposure to sunlight can cause slight changes to the sensitivity of a pyranometer over time.

Regular recalibration is needed for accurate measurements.



## HOW



The Kipp & Zonen Device and Procedure forms Annex A.3.1 of the ISO 9847 calibration standard.

It uses an artificial light source to compare the sensitivity of the test pyranometer with a reference pyranometer calibrated under sunlight.

**AT LEAST EVERY**

**WHEN**

**2 YEARS**

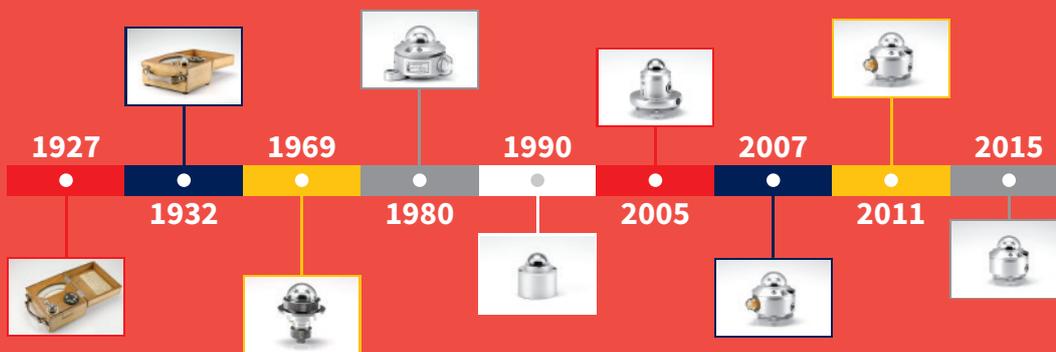
Kipp & Zonen recommends recalibration every 2 years after first use. International Standard IEC 61724-1 Photovoltaic System Performance - Monitoring:

**Class A (High accuracy):  
recalibration once per year**

**Class B (Medium accuracy):  
recalibration once every two years**

Class C (Basic accuracy):  
as per manufacturer's requirements

## SINCE



Pyranometers calibrated on any Kipp & Zonen automated facility can be fully checked for historic reliability, stability and uncertainty through the factory calibration database. Certificates and instrument labels can be easily reprinted if necessary.



**QUALITY**

Kipp & Zonen remotely manages and monitors its automated calibration facilities around the world. Software controls the calibration process, avoids operator mistakes and saves all the results in a central database. Only after a successful calibration a certificate and instrument label can be printed.

Kipp & Zonen partners receive the Approved Calibration Facility stamp only after the installation and commissioning meets Kipp & Zonen quality standards and calibration staff are fully trained. All pyranometers are inspected, tested and calibrated to the same procedures and quality as at the factory in Delft, The Netherlands.

# SMART



SMP Smart pyranometers can be used immediately after recalibration, since the analog and digital outputs are converted to the new sensitivity stored inside.

CMP pyranometers have a new sensitivity value ( $\mu\text{V}/\text{W}/\text{m}^2$ ) that must be used in the calculation from output ( $\mu\text{V}$ ) to irradiance ( $\text{W}/\text{m}^2$ ), typically in a data logger.

# TRACEABILITY

Kipp & Zonen reference instruments are **fully traceable to SI** through the **World Radiometric Reference** at the **World Radiation Centre** in Davos, Switzerland

*pmod* wrc

## WHERE

Kipp & Zonen is installing factory-standard automated calibration facilities in all the important regions of the world.



Calibrations can be performed nearby,  
at lower cost  
(reduced shipping and customs charges)  
and more quickly  
(less time in transport)

**10.000**  
pyranometers  
per year are  
calibrated on  
Kipp & Zonen  
automated  
calibration  
facilities around  
the world



[www.kippzonen.com](http://www.kippzonen.com)