

Calibration Report: Pyrheliometers

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SUMMARY

Calibration date: 2012 May 11.
Next calibration due: 2014 May 11.
Application period: 2012 April 27 through 2014 May 11.
Reference standard: AHF-31041.

The calibration coefficients and their associated uncertainties (U95%) have been determined for three pyrheliometers. The unit of the calibration coefficients (S) is $\mu\text{V}/(\text{W}/\text{m}^2)$. This calibration coefficient can be traced to the World Radiation Reference determined by the World Standard Group (WSG) kept at the Physikalisch-Meteorologisches Observatorium in Davos Switzerland, through the 2010 International Pyrheliometer Comparison (IPC XI). The test pyrheliometers were attached to specific Campbell 10X data loggers, and these calibrations may not be valid on other loggers. The logger-pyrheliometer combination is calibrated with respect to the WSG.

The sensitivity factor and its associated uncertainty (95%) are as follows:

Manufacturer	Serial Number	logger $\mu\text{V}/(\text{W}/\text{m}^2)$	S U95	Logger
Kipp and Zonen	CH1-960133	10.69	$\pm 0.59\%$	23X- 3135
Kipp and Zonen	CH1-010254	10.51	$\pm 0.43\%$	23X- 2216
Eppley	NIP- 31375E6	8.20	$\pm 0.24\%$	10X-23017

NOTE CH1-010254 was damaged by a tracker problem and repaired on 2012-05-11.

Application

$$I = (\text{mV output})/S \pm \text{sqrt}(2)*U95\%$$

Where: I = the irradiance measured by the pyrheliometer
(mV output) = microvolt output of the pyrheliometer
S = calibration coefficient of the pyrheliometer
U95% = the 95 % confidence level of a field measurement.

Details available on request.