



## ISO Secondary Standard

Internal thermistor for optimized measurements

### Overview

The CMP21, manufactured by Kipp & Zonen, is an ISO secondary-standard pyranometer with an internal thermistor. It monitors solar radiation for the full solar spectrum range, and is

well-suited for scientific use and in top-level solar-radiation monitoring networks. This pyranometer connects directly to a Campbell Scientific data logger.

### Benefits and Features

- › Includes thermistor for individually optimized temperature compensation
- › Compatible with most Campbell Scientific data loggers
- › Integrated bubble level is visible without removing sun shield
- › Desiccant-filled drying cartridge prevents dew from forming on the inner sides of the domes
- › Compatible with the CVF4 heater/ventilator that keeps the domes free from ice and dew
- › Measures reflected solar radiation when inverted
- › Provides measurements in direct sunlight, under plant canopies, when the sky is cloudy, and in artificial light

### Detailed Description

The CMP21 measures solar radiation with a high-quality blackened thermopile protected by two glass domes. An internal thermistor allows individually optimized temperature compensation of the measurements.

The CMP21 has flat spectral sensitivity, from 285 to 2800 nm, that makes it ideal for applications in natural sunlight, under plant canopies, in green houses or buildings, and inverted to measure reflected solar radiation.

A desiccant-filled drying cartridge prevents dew from forming on the inner sides of the CMP21's domes. Campbell Scientific also offers the CVF4 heater/ventilator that keeps its domes free from ice and dew.

The CMP21 includes a white snap-on sun shield that reduces the sensor's temperature. A bubble level and adjusting leveling screws enable the sensor to be leveled without using a leveling base.

## Specifications

Sensor	High-quality blackened thermopile protected by two glass domes
Measurement Description	Monitors solar radiation for the full solar spectrum range
ISO Classification	Class A (secondary standard)
Spectral Range	285 to 2800 nm
Sensitivity	7 to 14 $\mu\text{V}/\text{W}/\text{m}^2$
Temperature Dependence of Sensitivity	< 1% (-20° to +50°C)
Response Time	< 5 s (95% of final value)
Zero Offset Due to Thermal Radiation	< 7 $\text{W}/\text{m}^2$ (200 $\text{W}/\text{m}^2$ )
Non-Stability	< 0.5% (change/year)
Non-Linearity	< 0.2% (0 to 1000 $\text{W}/\text{m}^2$ )
Directional Error	< 10 $\text{W}/\text{m}^2$ (up to 80° with 1000 $\text{W}/\text{m}^2$ beam)

Tilt Error	< 0.2%
Level Accuracy	0.1°
Impedance	10 to 100 $\Omega$
Operating Temperature Range	-40° to +80°C
Typical Signal Output	0 to 15 mV (for atmospheric applications)
Maximum Irradiance	4000 $\text{W}/\text{m}^2$
Expected Daily Uncertainty	< 2%
Dome Diameter	5 cm (2 in.)
Width	15 cm (5.9 in.) with shield
Height	9.25 cm (3.64 in.)
Weight	0.9 kg (2 lb) with 10.1 m (33 ft) cable

For comprehensive details, visit: [www.campbellsci.com/cmp21](http://www.campbellsci.com/cmp21) 



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