# CM 4 · High Temperature Pyranometer

## FOR IRRADIANCE MEASUREMENTS AT HIGH TEMPERATURES

Heat resistant instrument design
Extended operating temperature range
Excellent temperature dependency
Built-in Pt-100 temperature sensor
High irradiance measurement capacity

## Introduction

**Environmental exposure affects products and materials. Testing these effects is done at outdoor weathering facilities or in special climate chambers. In these facilities solar radiation and environment are simulated to create the most extreme conditions and for accelerated ageing and heat load tests. These industrial tests require measuring devices to check or verify the light intensity (irradiance) at various positions within the test environment. The CM 4 high temperature pyranometer is specially designed for measuring solar or artificial light irradiance under the most extreme temperature conditions.**

Kipp & Zonen has been manufacturing pyranometers for over 75 years. We produce models at all price and performance points, up to the very best available. All comply with the requirements of ISO 9060 and are fully traceable to the World Radiometric Reference (WRR) in Davos, Switzerland, where Kipp & Zonen instruments form part of the World Standard Group.

# CM 4 High Temperature Pyranometer

With an operating temperature range from -40 °C to +150 °C and measurement up to 4000 W/m² the CM 4 is a unique instrument. All the radiometer components are specially selected for their ability to withstand these extremely high temperature and irradiance levels.

CM 4 has internal first-order temperature compensation, but it is also supplied with a built in Pt-100 temperature sensor to provide additional information on the measurement conditions.

CM 4 is supplied with a graph of the radiometer temperature dependence of sensitivity. Monitoring the temperature during operations allows easy data correction afterwards for improved measurement accuracy.

## Applications

Climate chambers and other technical facilities with extreme conditions are typical environments for the CM 4. For example, vehicles are tested in artificial climates for thermal stress and degradation of materials and systems.

The CM 4 High Temperature Pyranometer is a radiometer specially designed for measuring solar or artificial light irradiance under the most extreme temperature conditions.

The CM 4 is supplied fitted with a captive 10 m long special high temperature signal cable.

## Specifications

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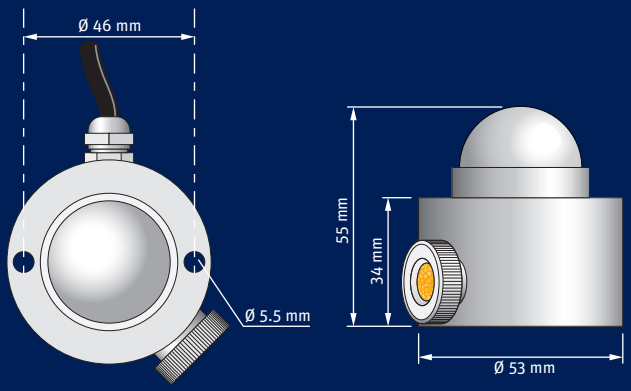
|---|---|
| ISO CLASSIFICATION | ISO Second Class |
| Spectral range (50 % points) | 300 - 2800 nm |
| Sensitivity (nominal) | 4 - 10 µV/W/m² |
| Response time (95%) | < 8 s |
| Non-stability (change/year) | < 1 % |
| Non-linearity (0 to 2500 W/m²) | < 3 % |
| Temperature dependence of sensitivity | < 2 % (0 °C to +100 °C)<br>< 3 % (-20 °C to +150 °C) |
| Directional error (up to 80 ° with 1000 W/m² beam) | < 20 W/m² |
| Impedance | 200 - 2000 Ω |
| Field of view | 180 ° |
| Operating temperature | -40 °C to +150 °C |
| Relative humidity | 0 - 100 % RH |
| Zero offsets<br>(a) thermal radiation (200 W/m²)<br>(b) temperature change (5 K/h) | <br>< 15 W/m²<br>< 4 W/m² |
| Tilt error | < 1 % |
| Maximum irradiance | 4000 W/m² |
| Weight | 250 g |
| Shock / vibration | ICE721-3-2-2m2 |
| Cable length | 10 m (captive) |

Note: The performance specifications quoted are worst-case and/or maximum values

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