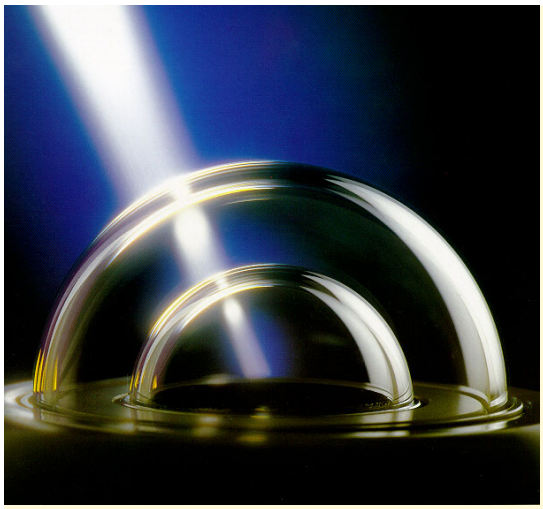
Kipp & Zonen

CM Series

Pyranometer Range



features:

According to the ISO 9060 / WMO standards
- Secondary standard (CM 11, CM 21, CM 22)
- First class (CM 6B)
- Second class (CM 3)

Reliable all weather performance

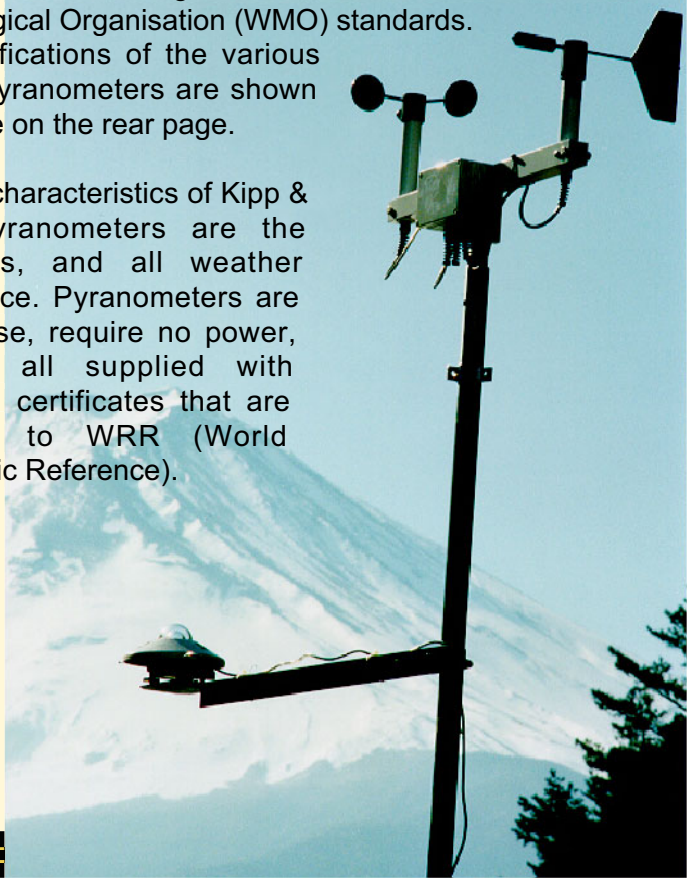
The widest range of pyranometers and accessories available

Kipp & Zonen pyranometers for atmospheric research and industry

Pyranometers are radiometers designed for measuring the irradiance on a plane surface resulting from radiant fluxes in the wavelength range from 0.3 to 3 micrometers, normally from solar radiation and lamps.
Kipp & Zonen has been manufacturing pyranometers for over 70 years. The instruments are used in meteorological research, solar energy research, material testing, climate control in greenhouses, building physics science and many other applications.

Kipp & Zonen can supply a full range of pyranometers and accessories, according to the ISO 9060 and World Meteorological Organisation (WMO) standards. The specifications of the various types of pyranometers are shown in the table on the rear page.

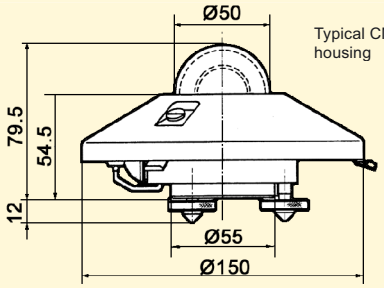
Common characteristics of Kipp & Zonen pyranometers are the robustness, and all weather performance. Pyranometers are easy to use, require no power, and are all supplied with calibration certificates that are traceable to WRR (World Radiometric Reference).



In the range of secondary standard pyranometers, Kipp & Zonen supplies equipment with special features; a record breaking response time, exceptional levelling accuracy and a test certificate also covering the directional response. These important parameters ensure the highest accuracy measurements.

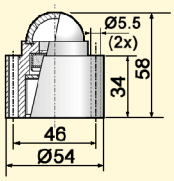
CM Series

Pyranometer Range



Typical CM series housing

CM 3 housing



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

Kipp & Zonen B.V. reserve the right to alter specifications of the equipment described in this documentation without prior notice

Specifications

	CM 22	CM 21	CM 11	CM 6B	CM 3
ISO Classification / WMO Classification	Secondary Standard High Quality	Secondary Standard High Quality	Secondary Standard High Quality	First Class Good Quality	Second Class Moderate Quality
Response time (95 %)	5 s	5 s	12 s	18 s	18 s
Zero offsets (a) thermal radiation (200 W/m²) (b) temperature change (5 K/hr)	 ± 3 W/m² ± 1 W/m²	 ± 7 W/m² ± 2 W/m²	 ± 7 W/m² ± 2 W/m²	 ± 15 W/m² ± 4 W/m²	 ± 15 W/m² ± 4 W/m²
Non stability (change/year)	± 0.5 %	± 0.5 %	± 0.5 %	± 1 %	± 1 %
Non linearity (0 - 1000 W/m²)	± 0.2 %	± 0.2 %	± 0.6 %	± 1.2 %	± 2.5 %
Directional error (at 1000 W/m²)	± 5 W/m²	± 10 W/m²	± 10 W/m²	± 20 W/m²	± 25 W/m²
Temperature dependence of sensitivity	± 0.5 % (-20 to +50 °C)	± 1 % (-20 to +50 °C)	± 1 % (-10 to +40 °C)	± 2 % (-10 to +40 °C)	± 6 % (-10 to +40 °C)
Tilt response (at 1000 W/m²)	± 0.2 %	± 0.2 %	± 0.2 %	± 1 %	± 2 %
Other specifications					
Sensitivity (µV/W/m²)	7 - 14	7 - 17	4 - 6	9 - 15	10 - 35
Impedance	10 - 100 Ω	40 - 100 Ω	700 - 1500 Ω	70 - 100 Ω	100 - 200 Ω
Level accuracy	0.1°	0.1°	0.1°	0.5°	1°
Operating temperature	-40 to +80 °C	-40 to +80 °C	-40 to +80 °C	-40 to +80 °C	-40 to +80 °C
Cable length	10 m	10 m	10 m	10 m	10 m
Spectral range (50 % points)	200 - 3600 nm	305 - 2800 nm	305 - 2800 nm	305 - 2800 nm	305 - 2800 nm
Typical signal output for atmospheric applications	0 - 25 mV	0 - 25 mV	0 - 10 mV	0 - 25 mV	0 - 50 mV
Maximum irradiance	4000 W/m²	4000 W/m²	4000 W/m²	2000 W/m²	2000 W/m²
Expected daily accuracy	± 1 %	± 2 %	± 3 %	± 5 %	± 10 %
Recommended applications	Scientific research requiring the highest level of measurement accuracy and reliability	Meteorological networks, reference measurements in extreme climates, polar or arid	Meteorological networks, solar energy collector testing, materials testing	Good quality measurements for greenhouse climate control, field testing	Economical solution for routine measurements in weather stations

Options

- Cable extension (5,10,15, 20, 25,100 m) [1,2,3,4,5)]
- Connector to extended cable [1,2,3,4,5)]
- Various Filter Domes [2,3,4)]
- Incorporated temperature sensor, Pt-100 or 10K thermistor [1,2,3)]

[1)] for CM 22 [2)] for CM 21 [3)] for CM 11 [4)] for CM 6B [5)] for CM 3

Accessories

- CV 2 Ventilation System [1,2,3,4)]
- 2AP Suntracker and Positioner [1,2,3,4)]
- CLF 1 levelling fixture [5)]
- CM 121B Shadow Ring [1,2,3,4)] *CLF 1 required for* 5)
- SOLRAD Integrator and dataloggers [1,2,3,4,5)]
- Various albedo mounting plates [1,2,3,4,5)]

4414-470-W31

Solar & Atmospheric Science

Kipp & Zonen

www.kippzonen.com

Kipp & Zonen B.V.
Röntgenweg 1 2624 BD Delft
P.O. Box 507 2600 AM Delft
The Netherlands

T +31(0)15 2698 000
F +31(0)15 2620 351
E info.holland@kippzonen.com

Your local dealer: