

## CMP pyranometers

Specifications	CMP3	CMP6	CMP10 and CMP11	CMP21	CMP22	
Classification to ISO 9060:1990	Second Class	First Class	Secondary Standard	Secondary Standard	Secondary Standard	
Sensitivity	5 to 20 $\mu\text{V}/\text{W}/\text{m}^2$	5 to 20 $\mu\text{V}/\text{W}/\text{m}^2$	7 to 14 $\mu\text{V}/\text{W}/\text{m}^2$	7 to 14 $\mu\text{V}/\text{W}/\text{m}^2$	7 to 14 $\mu\text{V}/\text{W}/\text{m}^2$	
Impedance	20 to 200 $\Omega$	20 to 200 $\Omega$	10 to 100 $\Omega$	10 to 100 $\Omega$	10 to 100 $\Omega$	
Expected output range (0 to 1500 $\text{W}/\text{m}^2$ )	0 to 30 mV	0 to 30 mV	0 to 20 mV	0 to 20 mV	0 to 20 mV	
Maximum operational irradiance	2000 $\text{W}/\text{m}^2$	2000 $\text{W}/\text{m}^2$	4000 $\text{W}/\text{m}^2$	4000 $\text{W}/\text{m}^2$	4000 $\text{W}/\text{m}^2$	
Response time (63%)	< 6 s	< 6 s	< 1.7 s	< 1.7 s	< 1.7 s	
Response time (95%)	< 18 s	< 18 s	< 5 s	< 5 s	< 5 s	
Instrument accuracy	Spectral range (20% points)	285 to 3000 nm	270 to 3000 nm	270 to 3000 nm	210 to 3600 nm	
	Spectral range (50% points)	300 to 2800 nm	285 to 2800 nm	285 to 2800 nm	250 to 3500 nm	
	Zero offsets (unventilated) (a) thermal radiation (at 200 $\text{W}/\text{m}^2$ ) (b) temperature change (5 K/h)	< 15 $\text{W}/\text{m}^2$ < 5 $\text{W}/\text{m}^2$	< 10 $\text{W}/\text{m}^2$ < 4 $\text{W}/\text{m}^2$	< 7 $\text{W}/\text{m}^2$ < 2 $\text{W}/\text{m}^2$	< 7 $\text{W}/\text{m}^2$ < 2 $\text{W}/\text{m}^2$	< 3 $\text{W}/\text{m}^2$ < 1 $\text{W}/\text{m}^2$
	Non-stability (change/year)	< 1%	< 1%	< 0.5%	< 0.5%	< 0.5%
	Non-linearity (100 to 1000 $\text{W}/\text{m}^2$ )	< 1.5%	< 1%	< 0.2%	< 0.2%	< 0.2%
	Directional response (up to 80° with 1000 $\text{W}/\text{m}^2$ beam)	< 20 $\text{W}/\text{m}^2$	< 20 $\text{W}/\text{m}^2$	< 10 $\text{W}/\text{m}^2$	< 10 $\text{W}/\text{m}^2$	< 5 $\text{W}/\text{m}^2$
	Spectral selectivity (350 to 1500 nm)	< 3%	< 3%	< 3%	< 3%	< 3%
	Tilt response (0° to 90° at 1000 $\text{W}/\text{m}^2$ )	< 1%	< 1%	< 0.2%	< 0.2%	< 0.2%
	Temperature response	< 5% (-10°C to +40°C)	< 4% (-10°C to +40°C)	< 1% (-10°C to +40°C)	< 1% (-20°C to +50°C)	< 0.5% (-20°C to +50°C)
	Field of view	180°	180°	180°	180°	180°
Accuracy of bubble level	< 0.2°	< 0.1°	< 0.1°	< 0.1°	< 0.1°	
Temperature sensor output				10 k Thermistor (optional Pt-100)	10 k Thermistor (optional Pt-100)	
Detector type	Thermopile	Thermopile	Thermopile	Thermopile	Thermopile	
Operating and storage temperature range	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	
Humidity range	0 to 100%	0 to 100%	0 to 100%	0 to 100%	0 to 100%	
MTBF (Mean Time Between Failures)	> 10 years	> 10 years	> 10 years	> 10 years	> 10 years	
Ingress Protection (IP) rating	67	67	67	67	67	
Onsite pyranometer uncertainty	Calculate with Suncertainty App	Calculate with Suncertainty App	Calculate with Suncertainty App	Calculate with Suncertainty App	Calculate with Suncertainty App	
Recommended applications	Economical solution for routine measurements in weather stations, field testing	Good quality measurements for hydrology networks, greenhouse climate control	Meteorological networks, PV panel and thermal collector testing, materials testing	Meteorological networks, reference measurements in extreme climates, polar or arid	Scientific research requiring the highest level of measurement accuracy and reliability	

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

Standard 10 k thermistor or optional Pt-100 temperature sensor with CMP21 and CMP22. Individual directional response and temperature dependence test data with CMP21 and CMP22

