



CM6B PYRANOMETRIC SENSOR

Sensor for measuring the global solar radiation, model CM6B



PRODUCT DESCRIPTION

Class 1 pyranometer for measuring the efficiency of photovoltaic systems. Typical uses: atmospheric research, meteorological stations, climatology, farming, research in the energy savings sector. The pyranometre comprises: support bracket, silicagel crystals cartridge, 2 charges, level for levelling, 4-pole M12 movable socket and calibration ratio, and 4-pole 2 m cable with 4-pole M12 connector on one side, open wires on the other. In agreement with the ISO 9060 standard and WMO recommendations, the Class 1 pyranometers are sturdy, reliable instruments built to withstand adverse weather conditions and are suitable for installations in the field.

OPERATION

The pyranometers measure the global solar radiation in the spectrum range $0.3\mu\text{m} \div 3\mu\text{m}$. Powered externally, it is equipped with a two-wire connection with 4-20 mA current output. The CM6B pyranometer is based on a thermopile sensor. The sensitive surface of the thermopile is covered with matt black paint so that the pyranometer is not selective to the various wave lengths. The spectrum range of the pyranometre is determined by the transmission of the two K5 type glass domes. The radiating energy is absorbed by the blackened surface of the thermopile, thus creating a difference in temperature between the centre of the thermopile (hot joint) and the body of the pyranometer (cold joint). The difference in temperature between hot joint and cold joint is converted into a difference in potential owing to the Seebeck effect. The CM6B has two domes, each pyranometre is calibrated separately referring to the WRR (World Radiometric Reference) and is accompanied by a Calibration Ratio.

The sensitivity of the pyranometre is factory-adjusted so that 4...20 mA = 0...2000 W/m².

$$E_e = 125 \cdot (I_{out} - 4mA)$$

Where E_e : is the radiation stated in W/m²

I_{out} : is the current in mA absorbed by the instrument

MAIN FEATURES

Accessories included :

The sensor is supplied complete with support, cartridge for the silicagel crystals, 2 charges in addition to the 2-metre-long 4-pole cable with 4-pole M12 connector on one side and open wires on the other..

Easy maintenance:

by simply cleaning the external dome.

Sturdy and reliable construction:

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INSTALLATION

The CM6B is to be installed in a station easy to reach for periodic cleaning of the external dome and for maintenance. At the same time it should be avoided that constructions, trees and obstacles of any type that exceed the horizontal surface on which the pyranometre rests. If this is not possible, it is recommended to choose a position where the obstacles present on the sun's path from dawn to dusk be lower than 5°.

Note: The presence of obstacles on the line of the horizon considerably affects the measurement of the direct radiation.

The transducer must be place in the centre of any vegetation at the site, and not on one side. This is to prevent privileged directions from being created in the reading. The sensor must be secured in a perfectly horizontal position, ensured using a spirit level, to prevent water from seeping into the instrument.

- The pyranometre is to be placed away from all types of obstacle that might project the sun's reflection (or its shade) onto the pyranometre
- When the pyranometre is used without the white shield, it has to be positioned so that the electric cable comes out of the north pole part if it is used in the northern hemisphere, from the south pole part if used in the southern hemisphere, in compliance with the ISO TR9901 standard and with WMO recommendations. In any case, it is preferable to follow this recommendation also when the shield is used.
- In order to get an accurate horizontal positioning, the CM6B pyranometre is equipped with a bubble. It is adjusted using the two screws with adjustment ring nut with which the tilt of the pyranometre can be changed. It can be secured on a surface using the two 6 mm diameter holes with 65 mm centre distance.
- The installer must be careful so that the height of the support post does not exceed the pyranometre plane, which would introduce measurement errors caused by the reflections and shadows caused by the post.

- It is preferable to thermally isolate the pyranometre from its support, and at the same time ensure that there is good electrical earth contact

If the sensor is found to be out of tolerance during maintenance, it should be calibrated.

COMPONENTS THAT CAN BE ADDED OR BE BUILT INTO THE PRODUCT

none

TECHNICAL SPECIFICATIONS

Specifications	
Sensor type	Solar radiation transducer
Range of measurement	0-2000 W/m ²
Spectrum range	305 nm-2800nm
Sensitivity	10 μ V/ (W/m ²)
Electrical output	4-20 mA
Operative temperature	.40°C... +80° C
Field of view	2 π sr
Material	

CERTIFICATIONS AND PROTOCOLS

Certifications	Reference Standards
Safety	EN61000-4-2, EN61010-1 LEVEL 3
Electrostatic discharge	EN61000-4-2 LEVEL 3
Electrical fast transients	EN61000-4-4 LEVEL 3
Change in voltage	EN61000-4-11
Susceptibility to electromagnetic interference	ENC1000-4-3
Electromagnetic interference emissions	EN5505020 class B