METEOROLOGY
HYDROLOGY
ENVIRONMENTAL MONITORING

Pyranometer Spectrally Flat Class C (ex second class) ISO9060

Description

The pyranometer measures global solar radiation on a plane/level surface (Watt/m²). The Measured radiation is the sum of direct solar radiation and diffuse irradiation (global radiation).

The sensor complies with ISO 9060:2018 Spectrally Flat Class C (second class) pyranometers and to WMO publication "Guide to meteorological Instruments and Methods of Observation".

The sensor is based on a thermopile sensor. The sensing surface of the thermopile is coated with an black matt paint providing a flat spectral response for the full wavelength range.

The spectral range of the pyranometer is determined by the transmission through the glass dome K5 type.

The irradiance energy is absorbed by the blackened surface of thermopile providing a temperature difference between the centre of the sensor (hot junction) and the body of pyranometer (cold junction). This difference is then converted to a voltage according to the Seeback effect.

The sensor has a dome with 32 mm external diameter and 4 mm thickness to guarantee correct thermal insulation from wind and to reduce sensitivity to thermal radiation. The dome protects the thermopile from the dust which could modify spectral sensitivity. The sensor is then provided with a bubble level for the correct levelling of the sensor.

To avoid condense formation on the inner surface of the dome, moisture absorbing silica-gel is put inside the pyranometer.

The sensor is equipped with a protection shield (PCTRA066)

Pyranometer Spectrally Flat Class C

Pyranometer - application example

Technical specifications may be varied without prior notice

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Technical specifications

Sensor type	Thermopile
Typical sensitivity	5 .... 15µV/(W/m²)
Impedance	33 ... 45Ω
Measuring range	0 ... 2000W/m²
Range of view	2π sr
Spectral range (50%)	300 ... 2800nm
Operating temperature	-40 ... 80°C
Electrical output	According to the model: • Analog in µV/W/m² • Analog 4...20mA • Analog 0...1 V, 0...5 V o 0...10 V • Double output: analog 4÷20 mA + digital RS485 Modus-RTU • Digital RS485 Modbus-RTU • Digital SDI-12
Power supply	10...30V (versions with output 4...20mA, 0...1 V o 0...5 V) 15...30V (output 0...10 V) 5...30V (RS485 Modbus-RTU) 7...30V (SDI-12)
Power consumption	< 200µA for the SDI-12 version
Connection	Connector M12 (4 or 8 poles according to the version)
Accuracy of the level	< 0,2°
Protection rate	IP67
MTBF	> 10 years
Response time (95%)	<20sec
Off-set of the Zero	- Response to thermal radiation of 200W/m²: <|±15|W/m² - Response to change of enviroment temperature 5K/h: <|±4|W/m² - Total zero off-set including effects a), b) and other sources: <|±20|W/m²
Long-term instability (1 anno)	<|±1| %
Non-linearity	<|±1,5| %
Response according to the law of cosine	<|±20|W/m²
Spectral error	<|±2| %
Response according to the temperature	< 3 %
Response according to the Tilt	<|±2| %

Ordering codes

Pyranometer Spectrally Flat Class C (second class) with output in µV	**PCTRA053**
Pyranometer Spectrally Flat Class C (second class) with output 4 ... 20mA	**PCTRA059**
Pyranometer Spectrally Flat Class C (second class) with output 0 ... 1V; 0 ... 5V (to define at the order)	**PCTRA060**

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