METEOROLOGY
HYDROLOGY
ENVIRONMENTAL MONITORING

Piranometro Spectrally Flat Class A (secondary standard)

Description

PCTRA072 pyranometer is intended for solar radiation measurement on a plane/level surface (Watt/m²). The radiation measured is the sum of direct sun and of diffuse irradiance (global radiation).

PCTRA072 uses a ISO 9060 Secondary standard pyranometer and it complies with WMO publication "Guide to meteorological Instruments and Methods of Observation", 5th edition (1983).

The pyranometer is based on a thermopile sensor. The sensing surface of the thermopile is coated with an opaque black paint providing a flat spectral response for the full wavelength range. The pyranometer spectral range is determined by the transmission of the dome made of special material that allows an extension of the spectral range up to 283nm.

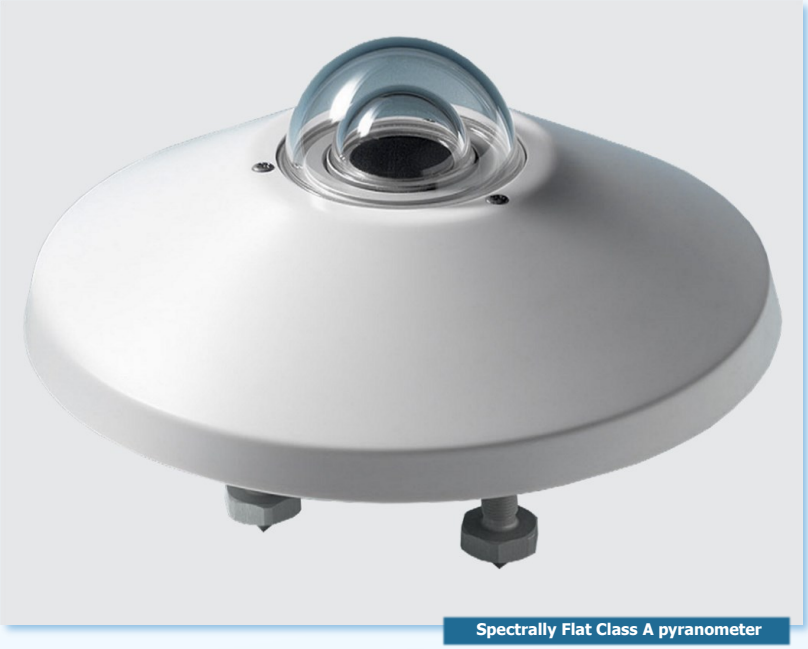
The irradiance energy is absorbed by the blackened surface of thermopile providing a temperature difference between the centre of the sensor (hot junction) and the body of pyranometer (cold junction). This difference is then converted to a voltage according to the Seeback effect.

PCTRA072 has two domes with 50 and 30 mm external diameter to guarantee correct thermal insulation from wind and to reduce sensitivity to thermal radiation. The dome protects the thermopile from dust which could modify spectral sensitivity. PCTRA072 is then provided with a bubble level for the correct levelling of the sensor.

A second thermopile is mounted inside the instrument and not accessible by light. This second thermopile, connected antiseries with respect to the sensor exposed to light, reduces the signals of the pyranometers caused by sudden temperature changes (thermal shock).

In order to minimize variations of sensitivity according to the temperature, the sensor are equipped with a passive compensation circuit.

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



Spectrally Flat Class A pyranometer

Pyranometer with ring shield

Technical specifications may be varied without prior notice

MTX S.r.l.
Via Zamboni, 74 – 41011 Campogalliano (MO) (I)
Tel. +39 059 2551150
C.F. - P.IVA - R.I. 04343730281
R.E.A. MO 370886
Capitale Sociale: € 100.000,00 i.v.
web: www.mtx.it – e-mail: sales@mtx.it – PEC: mtxsrl@pec.mtx.it

Technical specifications

Sensor type	Thermopile
Sensitivity (typical)	6 ...11µV/(W/m²)
Impedance	5Ω 50Ω
Measuring range	0 … 2000W/m² (4000W/m² option)
Viewing range	2π sr
Spectral range (dome transmission)	283nm … 2800nm
Operating temperature	-40 … 80°C
Protection rate	IP67
Response time (95%)	<5sec
Zero off-set	- Response to 200W/m² thermal radiation: <|±7|W/m² - Response to 5K/h change in ambient temperature: <|±2|W/m² - Total zero off-set including the effects a), b) and other sources: <|±10|W/m²
Long-term instability (1 year)	<|±0,5| %
Non-linearity	<|±0,2| %
Cosine response	<|±10|W/m²
Spectral error	<|±0,2| %
Response depending on the temperature(-10...+40 °C)	< 1 %
Tilt response	<|±0,2| %

Ordering codes

Spectrally Flat Class A pyranometer with µV output	**PCTRA072**
Spectrally Flat Class A pyranometer with 0 … 1V output (0 … 2000W/m²)	**PCTRA074**
Spectrally Flat Class A pyramoneter with 4 … 20mA output (0 … 2000W/m²)	**PCTRA073**
Spectrally Flat Class A pyranometer with Modbus RS485 output	**PCTRA089**
Spectrally Flat Class A pyranometer with µV output with adjustable shield ring to measure the diffuse compone-net only	**PCTRA076**
Spectrally Flat Class A pyranometer with 4 … 20mA output (0 … 2000W/m²) + Modbus RS485	**PCTRA104**

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