

Net-radiometer



Description

The PCTRA055 measures the net radiation across a surface, from near ultraviolet to far infrared. The Net radiation is defined as the difference between the radiation that reaches the upper surface and the irradiation on the lower surface of the net radiometer. The surface of the upper receiver measures the direct solar radiation plus the diffuse one and the radiation at longer wavelengths emitted from the sky (clouds), while the lower receiving area measures the solar radiation reflected from the ground (albedo) and the radiation length wavelengths emitted from the earth.

The instrument is designed and constructed to be used outdoors in any weather conditions.

The net radiometer PCTRA055 is based on a thermopile sensor whose warm joints are in thermal contact with the receiver while the upper cool joints are in thermal contact with the lower receiver. The temperature difference between the two receivers is proportional to the net irradiation.

The temperature difference between hot and cold junction is converted into a voltage by Seebeck effect. The two receivers are made from a portion of spherical coated Teflon®.

The particular form of the two receivers provides a response in accordance with the cosine. The Teflon® coating, as well as allowing outdoor installation for long periods without risk of damage, can have a constant spectral response from ultraviolet (200nm) up to far infrared (100 μm).

Through an external interface the signal generated by the sensor can be converted into a standard electrical signal (current or voltage).



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Technical specifications may be varied without prior notice

Technical specifications

Sensor type	Thermopile
Sensitivity (typical)	10 μ V/(W/m ²)
Impedance	2 Ω ... 4 Ω
Measuring range	\pm 2000W/m ²
Spectral range	0,2 μ m ... 100 μ m
Linearity	\leq 1%
Operating temperature	-40 ... 80°C
Response time (95%)	< 75sec.
Electrical output	On two wires (mV)
Dimensions	Diam. = 80mm H = 17mm
Weight	0.45Kg

Ordering codes

Net-radiometer with μ V output (wire lenght 5m)	PCTRA055
Net-radiometer with output in μ V (wire lenght 10m)	PCTRA069
Signal converter amplifier with 4 ... 20mA output	PCTRA154
Signal converter amplifier with 0 ... 1V; 0 ... 5V output (to define at the order)	PCTRA155

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