



Non-Contact Temperature Measurement of Remote Surfaces

Overview

The IR120 sensor provides a means of accurately measuring the temperature of a remote surface without influencing the target by sensing the infra-red radiation emitted. This makes it ideal for measuring spatial average temperatures for leaf

and tree canopy studies and for hard surfaces such as roads where installing invasive sensors would be costly or difficult. The sensor can also be used to measure the temperature of soil, snow or water.

Technical Description

The IR120 has a wide field of view (half angle 20°) and an output signal of 20 mV per °C; a built in amplifier ensures excellent noise immunity. An integrated calibrated thermistor behind the main thermopile provides a reference body temperature. For long term external use the sensor can be mounted into a specially adapted camera housing or

within an adapted data logger enclosure with IR transmissive window or an enclosure with a hard germanium window. The sensor is compatible with the CR1000, CR800 series and CR3000 data loggers or any other logger offering suitable reverse excitation.

Specifications

Field of View (FOV)	20° (half angle)
Dimensions	92 mm long by 28 mm diameter
Response Time	<1 second to changes in target temperature
Target Output Signal	20 mV per °C (difference from sensor body)
Signal Offset	removed by calibration (supplied)
Typical noise level	IR120 0.05°C RMS (as measured by a CS datalogger)
Wavelength Range	IR100: effective bandwidth: 8 to 14 µm (some sensitivity from 2-6 µm)

Calibrated Range	-25°C below body temperature to +25°C above body temperature
Operating Range	-25°C to +60°C
Accuracy over Calibrated Range	±0.2°C (against a blackbody source over a 50°C temperature span under laboratory conditions)
Current Consumption	0.4 mA when excitation applied, 0 mA quiescent
Sensor output impedance	320 Ω
Thermopile Excitation Voltage	+2 to +3.5V

Thermistor Excitation

-2.5V or +400 mV

Voltage

For comprehensive details, visit: www.campbellsci.eu/ir120 



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