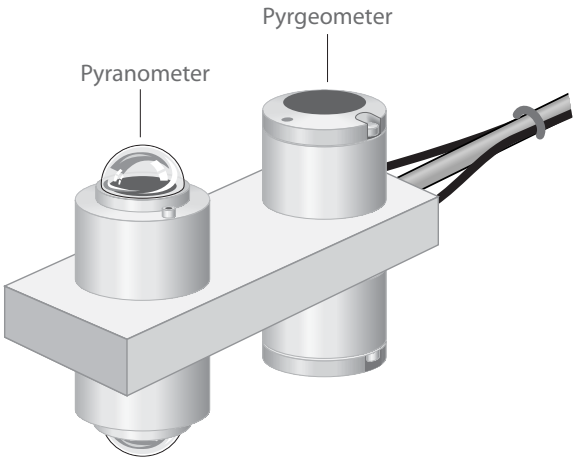
CNR1, CNR1-L

Solar and Far Infrared Radiation Balance Radiometers

CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

The CNR1 net radiometer is manufactured by Kipp & Zonen for applications requiring research-grade performance. The radiometer measures the energy balance between incoming short-wave and long-wave infrared radiation versus surface-reflected short-wave and outgoing long-wave infrared radiation.

The CNR1 consists of a pyranometer and pyrgeometer pair that faces upward and a complementary pair that faces downward. The pyranometers and pyrgeometers measure short-wave and far infrared radiation, respectively. All four sensors are calibrated to an identical sensitivity coefficient. The CNR1 also includes an RTD to measure the radiometer's internal temperature, a 4WPB100 module to interface the RTD with the datalogger, and a heater that can be used to prevent condensation. Please note that the CNR1 is not compatible with our CR200(X)-series dataloggers.



Mounting

To avoid shading effects and to promote spatial averaging, the CNR1 should be mounted at least 5-ft (1.5 m) above the ground. Campbell Scientific recommends mounting the CNR1 to a separate vertical pipe at least 25-ft away from other mounting structures. The 26120 Net Radiation Sensor Mounting Kit is used to mount the CNR1 to a vertical pole or a horizontal crossarm (CM202, CM204, or CM206).

Ordering Information

Solar and Far Infrared Radiation Balance Radiometers	
CNR1	Kipp & Zonen Net Radiometer with 82-ft (25 m) cable length.
CNR1-L	Kipp & Zonen Net Radiometer with user-specified cable length. Enter cable length, in feet, after the -L. Must choose a cable termination option (see below).

Cable Termination Options for CNR1-L (choose one)	
-PT	Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.
-PW	Cable terminates in connector for attachment to a prewired enclosure.

Mount	
26120	Net Radiation Sensor Mounting Kit for mounting the radiometer to a vertical pole or horizontal crossarm.

Specifications

Sensors:	Kipp & Zonen's CM3 ISO-class, thermopile pyranometer, CG3 pyrgeometer, PT100 RTD
Spectral response	
Pyranometer:	305 to 2800 nm
Pyrgeometer:	5000 to 50,000 nm
Response Time:	18 seconds
Typical Sensitivity Range:	7 to 15 µV W^{-1} m^2
Output Range	
Pyranometer:	0 to 25 mV
Pyrgeometer:	±5 mV
Expected Accuracy for Daily Totals:	±10%
Directional Error:	<25 W m^{-2} (pyranometer)
Heating Resistor:	24 Ohms, 6 W at 12 Vdc
Operating Temperature:	-40° to 70°C
Dimensions	
Mounting Arm Diameter:	0.625 in. (1.6 cm)
Mounting Arm Length:	14.5 in. (37 cm)
Radiometer:	9.1 x 3.1 x 6.1 in. (23.2 x 8.0 x 15.6 cm)
Weight:	8.8 lbs (4 kg)
Datalogger Requirements:	Six differential or four single-ended and two differential analog channels
CE Compliance:	CE compliant under the European Union's EMC directive

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