

# CNR1, CNR1-L

## Research-grade Net Radiometers

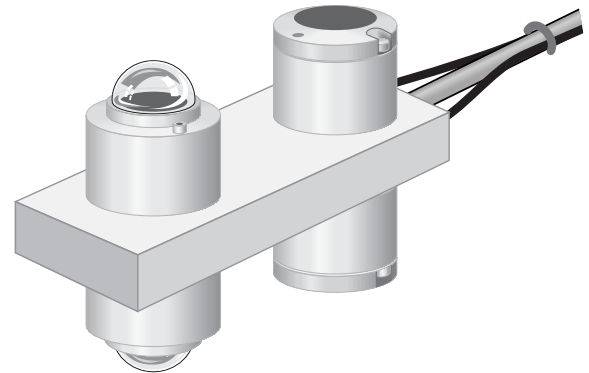


The CNR1 net radiometer is manufactured by Kipp & Zonen for applications requiring research-grade performance. The radiometer measures the energy balance between incoming short-wave and long-wave IR radiation versus surface-reflected short-wave and outgoing long-wave IR radiation.

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-series dataloggers.

### Mounting

To avoid shading effects and to promote spatial averaging, the CNR1 should be mounted at least 1.5 m above the ground. Campbell Scientific recommends mounting the CNR1 to a separate vertical pipe at least 25-feet away from other mounting structures. PN 14264 mounting bracket is used to mount the CNR1 directly to a vertical pipe, or to a UT018 Tower Mounting Bracket and Crossarm.



### Ordering Information

#### Research-grade Net Radiometers

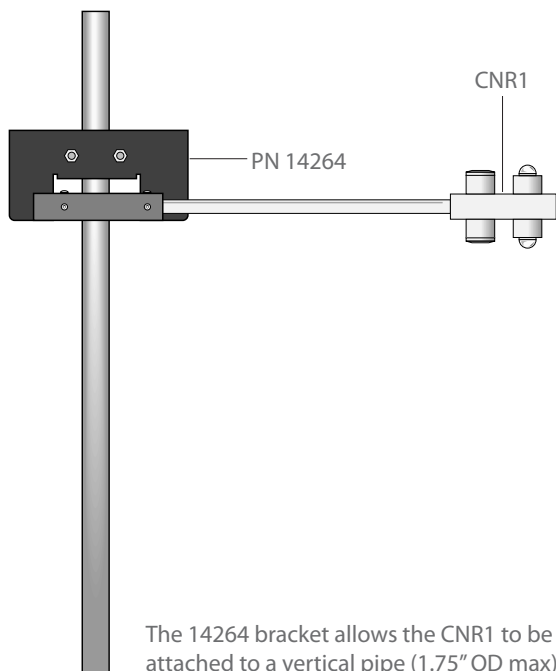
- CNR1** Kipp & Zonen Net Radiometer with an 82-foot (25 m) lead length.
- CNR1-L** Kipp & Zonen Net Radiometer with user-specified lead length. Enter lead length, in feet, after the -L. A pigtail option needs to be chosen (see below).

#### Pigtail Options for CNR1-L (choose one)

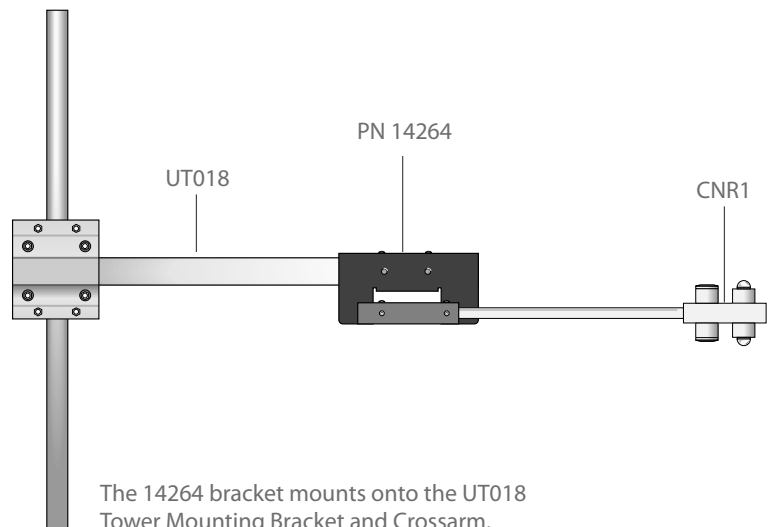
- PT** Cable terminates in pigtail for direct connection to a datalogger's terminals.
- PW** Cable terminates in connector for attachment to a prewired enclosure.

#### Mounts

- 14264** Mounting Kit for CNR1 or CNR1-L that allows attachment to a UT018 or vertical pipe.
- UT018** 2-ft Sensor Crossarm with Tower Mounting Hardware



The 14264 bracket allows the CNR1 to be attached to a vertical pipe (1.75" OD max).



The 14264 bracket mounts onto the UT018 Tower Mounting Bracket and Crossarm.

## Specifications

<b>Sensor:</b>	Kipp & Zonen's CM3 ISO-class, thermopile pyranometer, CG3 pyrheliometer, PT100 RTD	<b>Directional error:</b>	<25 W m <sup>-2</sup> (pyranometer)
<b>Spectral response</b>		<b>Heating resistor:</b>	24 Ohms, 6 W at 12 Vdc
Pyranometer:	305 to 2800 nm	<b>Operating temperature:</b>	-40° to 70°C
Pyrheliometer:	5000 to 50,000 nm	<b>Dimensions</b>	
<b>Response time:</b>	18 seconds	Mounting arm diameter:	0.625" (1.6 cm)
<b>Typical sensitivity range:</b>	7 to 15 μV W <sup>-1</sup> m <sup>2</sup>	Mounting arm length:	14.5" (37 cm)
<b>Output range</b>		Radiometer:	9.1" x 3.1" x 6.1" (23.2 cm x 8.0 cm x 15.6 cm)
Pyranometer:	0 to 25 mV	<b>Weight:</b>	8.8 lbs (4 kg)
Pyrheliometer:	±5 mV	<b>Datalogger requirements:</b>	Six differential or four single-ended and two differential analog channels
<b>Expected accuracy for daily totals:</b>	±10%	<b>CE Compliance:</b>	CE compliant under the European Union's EMC directive

