

CNR2

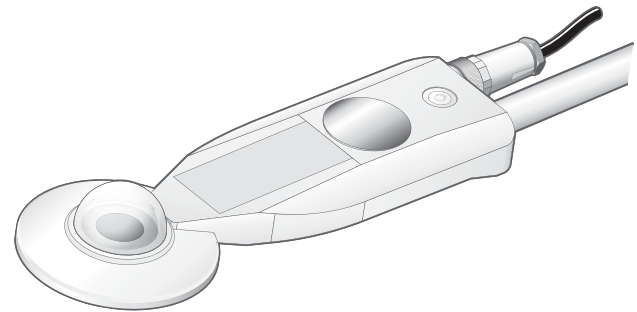
Net Radiometer

Kipp & Zonen's CNR2 Net 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. It consists of a pyranometer and pyrgeometer pair that face upward and a complementary pair that face downward. The pyranometers and pyrgeometers measure shortwave and far infrared radiation, respectively. Field-of-view is 180 degrees for the upper pyranometer, and 150 degrees for the lower pyranometer. Both upper and lower pyrgeometers provide a 150 degree field-of-view.

The CNR2 uses drying cartridges to prevent condensation. Please note that the CNR2 is not compatible with our CR200(X)-series dataloggers.

Mounting

To avoid shading and to promote spatial averaging, the CNR2 should be mounted at least 1.5 m above the ground and away from obstructions (see below). It can be attached to a vertical pipe or horizontal cross-arm (CM202, CM204, or CM206). To do this, first connect the radiometer to the 26127 Mounting Boom.* The mounting boom then attaches to the pipe or cross-arm via the 26120 Net Radiation Sensor Mounting Kit. The kit includes adjustment screws for leveling the CNR2. Sensitivity is reduced when the radiometer is not level (see tilt-error in specifications).



Ordering Information

Net Radiometer

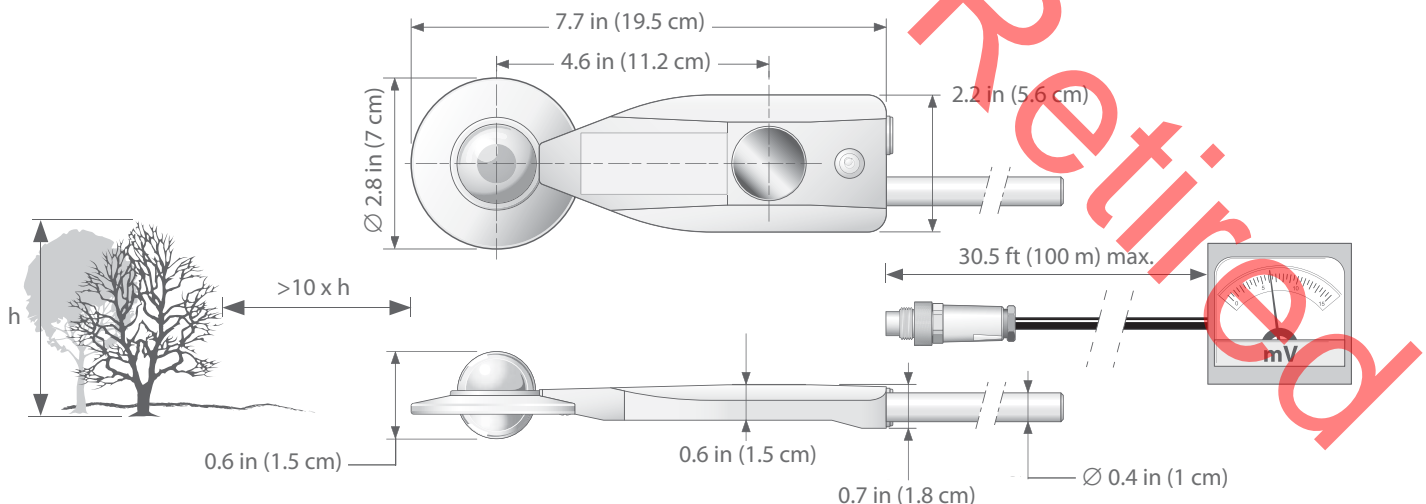
CNR2 -L Kipp & Zonen Net Radiometer. Shipped with a 26127 Mounting Boom, a WRR Traceable Calibration Certificate for the pyranometers, a WRR Traceable Calibration Certificate for the pyrgeometers, two drying cartridges, and a cable with a user-specified length. Enter the cable length, in feet, after the -L. Must choose a cable termination option (see below).

Cable Termination Options (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.

Accessories/Replacement Parts

- 26120** Net Radiation Sensor Mounting Kit.
- 20645** Replacement Drying Cartridges (limited shelf life); should be replaced every six months.



*The 26127 Mounting Boom began shipping with the CNR2 in January 2010. If you purchased the radiometer before January 2010 or bought it directly from Kipp & Zonen, you need to purchase the 26127 Mounting Boom from Campbell Scientific in order to mount the CNR2 to a cross-arm or pole via the 26120 mounting kit.

Specifications

Spectral Response

Pyranometer: 310 to 2800 nm
Pyrgeometer: 4.5 to 42 μm

Response Time: <10 seconds

Temperature Dependence of Sensitivity: <5% (-10° to +40°C)

Sensitivity Range: 10 to 20 $\mu\text{V W}^{-1} \text{m}^2$

Output Range

Pyranometer: 0 to 50 mV
Pyrgeometer: ± 5 mV

Sensitivity Change per Year: <1%

Tilt Error: <1%

Uncertainty in Daily Total: <10%

Sensor Asymmetry: <5%

Directional Error: <20 W m^{-2} (pyranometer)

Operating Temperature: -40° to 80°C

Weight

Radiometer: 8.8 oz (250 g)
Cable: 10.6 oz (300 g) with 30 ft length

Datalogger Requirements: Two differential analog channels

CE Compliance: Conforms to the CE guideline 89/336/EEC 73/23/EEC

