A REVOLUTIONARY NET RADIOMETER: CNR4

- **Light Weight**
- **WMO Good Quality classification**
- **Integrated ventilation unit**

Kipp & Zonen introduces a new benchmark in net radiometry. The CNR4 is the only instrument available that combines four sensors into one housing, complies with the World Meteorological Organization standard 'Good Quality' and has an integrated ventilation unit.

CNR4 consists of a pair of pyranometers and a pair of pyrgeometers. One set facing upward and one set facing downward. Together they measure the energy balance between short-wave and long-wave (Far Infrared) radiation. CNR4 is built on the legacy of the popular CNR1, but is improved in almost every respect.



CNR4's unique design is very light weight with an integrated sun shield to reduce thermal effects on the measurements. The meniscus dome of the upper pyrgeometer gives significantly better long-wave measurements. The optional CNF 4 ventilation unit is a unique and efficient way to reduce dirt, precipitation, dew and frost on the sensors.

CNR4 is the perfect choice for meteorological, hydrological and agricultural scientific research.

The CNR4 net radiometer measures the energy balance between incoming short-wave and long-wave Far Infrared (FIR) radiation versus surface-reflected short-wave and outgoing long-wave radiation.

The CNR4 net radiometer consists of a pyranometer pair, one facing upward, the other facing downward, and a pyrgeometer pair in a similar configuration. The pyranometer pair measures the short-wave radiation. And the pyrgeometer pair measures long-wave radiation. The upper long-wave detector of CNR4 has a meniscus dome. This ensures that water droplets role off easily and improves the field of view to nearly 180°, compared with a 150° for a flat window. All 4 sensors are integrated directly into the instrument body, instead of separate modules mounted onto the housing. But are each calibrated individually for optimal accuracy.

Two temperature sensors, a Pt-100 and Thermistor, are integrated for compatibility with every data logger. The temperature sensor is used to provide information to correct the infrared readings for the temperature of the instrument housing. Care has been taken to place the long-wave sensors close to each other and close to the temperature sensors. This assures that the temperatures of the measurement surfaces are the same and accurately known. Which improves the quality of the long-wave measurements.

The design is very light in weight and has an integrated sun shield that reduces thermal effects on both long-wave and short-wave measurements. The cables are yellow with waterproof connectors as used with all our new radiometers. The mounting rod can be unscrewed for transport, like the CNR2.

An optional ventilation unit with heater is designed as an extension of the sunshield and can be fitted new to the CNR4 or retrofitted later. This unit is compact and provides efficient air-flow over the domes and windows to minimize the formation of dew and reduce the frequency of cleaning. The integrated heater can be used to melt frost.

The CNR4 specifications comply with the WMO classification of Good Quality.

PRODUCT SPECIFICATION

Spectral range	305 to 2800 (short wave) nm
Spectral range	4500 to 42000 (long wave) nm
Sensitivity	5 to 20 µV/W/m²
Temperature dependence of sensitivity (-10 ºC to +40 ºC)	< 4 %
Response time	< 18 s
Non-linearity	< 1 %
Operating temperature	-40 to 80 °C
International standards (WMO)	Good Quality WMO
Ventilation power	(of the optional CNF 4 ventialtion unit) 3 W

