



## Research Grade

Robust 4-way radiometer that requires little maintenance

### Overview

The NR01, manufactured by Hukseflux and cabled for use with Campbell Scientific data loggers, is a research-grade net radiometer that measures the energy balance between incoming short-wave and long-wave infrared radiation versus surface-reflected short-wave and outgoing long-wave infrared radiation. Our data loggers measure the NR01's output and control its internal heater. This net radiometer offers a

professional solution for scientific-grade energy balance studies.

**Note:** NR01 radiometers with a serial number less than 2313 used the pn 21271 fitting. NR01 radiometers with a serial number greater than 2312 do not need the pn 21271 fitting.

### Benefits and Features

- › Internal RTD provides temperature compensation of measurements
- › Research-grade performance
- › Internal 1-W heater reduces formation of dew and melts frost
- › Separate outputs of short-wave and long-wave infrared radiation for better accuracy and more thorough quality assurance
- › Robust—only requiring limited maintenance

### Detailed Description

The NR01 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.

The NR01 includes an on-board RTD to measure the radiometer's internal temperature and a 1-W heater that minimizes the formation of dew and melts frost. To reduce

current drain, a relay is typically used to turn on the heater only when the solar radiation is less than 20 W/m<sup>2</sup>.

Campbell Scientific's CR6 and CR3000 dataloggers can directly measure this radiometer. A CR1000 can also be used, but a 4WPB100 module is required to measure the internal RTD.

## Specifications

|                                    |   |
|------------------------------------|---|
| Sensor                             | Hukseflux's SR01 ISO-class, thermopile pyranometers, IR01 pyrgeometers, PT100 RTD |
| Measurement Description            | Measures incoming and outgoing short-wave and long-wave radiation                 |
| Response Time                      | 18 s  |
| Sensitivity                        | 10 to 40 $\mu\text{V W}^{-1} \text{m}^2$  |
| Expected Output Range              | -0.1 to +50 mV  |
| Expected Accuracy for Daily Totals | $\pm 10\%$  |
| Heater                             | 90 ohm, 1.6 W (at 12 Vdc)   |

|                             |   |
|-----------------------------|---|
| Operating Temperature Range | -40° to +80°C   |
| Heater Current Drain        | ~140 mA   |
| Dimensions                  | 26.3 x 11.3 x 12.1 cm (10.4 x 4.4 x 4.8 in.)                              |
| Weight                      | › 1.3 kg (2.9 lb) with 5 m (16.4 ft) cable<br>› 0.9 kg (2 lb) sensor only |

### Pyranometer

|                |                |
|----------------|----------------|
| Spectral Range | 305 to 2800 nm |
|----------------|----------------|

### Pyrgeometer

|                |                   |
|----------------|-------------------|
| Spectral Range | 4500 to 50,000 nm |
|----------------|-------------------|



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