NR01 4-Component Net Radiation Sensor

Product Overview

NR01 is a 4-component net-radiation sensor that is used for scientific grade energy balance studies. The instrument has separate measurements of solar (Short Wave or SW) and Far Infra-Red (Long Wave or LW) radiation.

Major improvements relative to comparable instruments include weight (reduced), solar offsets in the LW signal (reduced), ease of leveling (high, because leveling assembly is included).

NR01, a 4-Component Net Radiation Sensor

Introduction

NR01 serves to measure the 4 separate components of the surface radiation balance. Working completely passive, using a thermopile sensors, NR01 generates 4 small output voltage proportional to the incoming and outgoing SW and LW fluxes. The SW solar radiation sensors are also called pyranometers, the LW sensors are also called pyrgeometers.

For calculation of sky and surface temperature, a Pt100 temperature sensor is included in the pyrgeometers. In order to avoid deposition of dew, the pyrgeometers may be heated. A 2-axis leveling assembly is included.

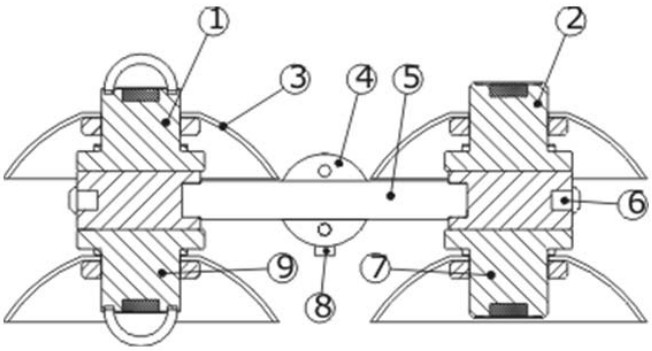

Figure 1 NR01 4 Component Net Radiation Sensor. SW solar radiation sensor or pyranometer (1), LW Far Infra-Red radiation sensor or pyrgeometer (2), radiation shield (3), leveling assembly for x- and y axis (4, 5)

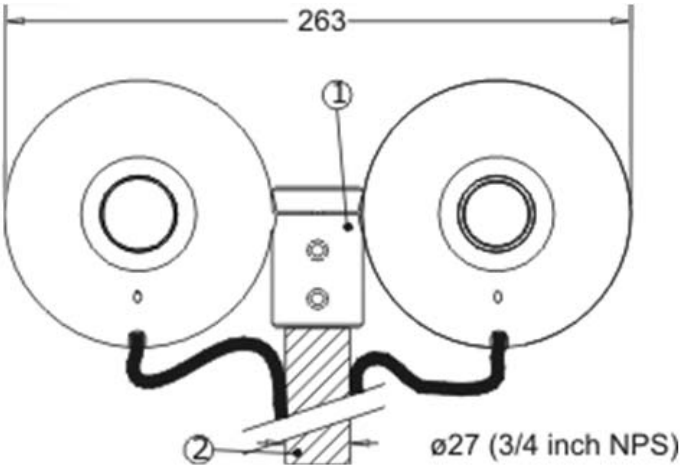

Figure 2 NR01 top view. Standard cable length is 5 m. Cable can be installed / replaced by the user. Attachment to a 1 inch tube is extremely easy, leveling possibilities are included. Dimensions in mm.

The NR01 cable can easily be installed or replaced by the user. See also RA01 radiometer, which is a single side version of NR01. Combined with esti-mates of SW albedo - and of surface temperature, this instrument can also be used for estimation of net-radiation. For a single pyrgeometer see also IR02.

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NR01 Specifications

Measurement	
Temperature range	-40 to +80 $_{o}$C
Range	0 to 2000 W.m$_{-2}$
Temperature Sensor	PT100
Temperature Sensor	Users own Preference can be plugged in
Pyranometer (SW)	
Pyranometer ISO classification	Second class
Spectral Range	305 to 2800nm
Calibration Tracibility	WRR
Pyrgeometer (LW)	
Spectral Range	4500 to 5000 nm
Calibration Traceability	ITS90
Window Heating Offset @ 1000 Wn^{-2} solar radiation	15 Wm^{-2}
Heating Power	1.6 Watt @ 12VDC
Power	
Power supply	1050 mAmp Lithium Polymer Battery
Charging Voltage	12V DC
Power Consumption	667 mA for 2.5 seconds (33 mW)
Dimensions	
Dimensions	263mm

Features

- 4 Component Net-Radiation Sensor
- Separate Measurement of:
  - Short Wave (SW) radiation
  - Far Infra Red or Long Wave (LW Radiation)
- Reduced Solar Offsets in LW signal
- Light Weight
- Ease of Leveling

Applications

- Meteorology
- Energy Balance Research

Accessories

- Additional Cable Length x Meters (5 m maximum)