

# Net-Radiometer LPNET14

## 4-COMPONENT NET-RADIOMETER

### INTRODUCTION

LPNET14 is a 4-component net-radiometer designed for precise and reliable measurement of net radiation across the spectral range of 0.3  $\mu\text{m}$  to 45  $\mu\text{m}$ . With its cutting-edge technology, LPNET14 delivers unparalleled accuracy, making it an essential tool for professionals needing top-tier data in all weather conditions.

### FEATURES

#### Comprehensive Measurement Capability

Equipped with two advanced pyranometers and two high-performance pyrgeometers, the LPNET14 captures both global and reflected solar radiation ( $E_{\text{SW}\downarrow}$  and  $E_{\text{SW}\uparrow}$ ) along with infrared radiation from the sky and ground ( $E_{\text{FIR}\downarrow}$  and  $E_{\text{FIR}\uparrow}$ ). No detail in your measurements will be left behind.

#### Precision Engineering

The LPNET14 is enhanced with a built-in temperature sensor (NTC), ensuring accurate infrared data by precisely correlating thermopile output with the instrument's temperature. You can trust your data, even in the most challenging environments.

#### All-Weather Durability

Whether it's a hot summer day or a cold winter morning, the LPNET14 performs flawlessly. Its robust design requires minimal maintenance, and its scratch-resistant silicon windows ensure long-lasting durability under harsh weather conditions.

#### Innovative Technology

The pyranometers' matt black thermopile sensors guarantee high efficiency across varying wavelengths, while the custom-designed optical glass domes and anti-scratch DLC coatings on the pyrgeometers protect against environmental wear and tear. The result? Long-lasting performance and hassle-free operation.

#### Wide Spectral Range

LPNET14 offers unparalleled coverage, with pyranometers measuring solar radiation, and pyrgeometers capturing infrared radiation. No other net-radiometer gives you this breadth of data.



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#### COMPREHENSIVE MEASUREMENT

Two pyranometers (global/reflected solar) and two pyrgeometers (sky/ground infrared) provide full-spectrum radiation data



#### PRECISION WITH TEMPERATURE CONTROL

Built-in NTC sensor ensures accurate infrared readings by linking thermopile output with temperature



#### ALL-WEATHER DURABILITY

Scratch-resistant coatings and minimal maintenance, ready for any environment



#### WIDE SPECTRAL RANGE

Measures solar radiation and infrared radiation for comprehensive data coverage

## Technical specifications

### Pyranometer Spectrally Flat Class C according to ISO 9060:2018

|                     |                                                  |
|---------------------|--------------------------------------------------|
| Typical sensitivity | 5...15 $\mu\text{V}/(\text{W}/\text{m}^2)$       |
| Impedance           | 33...45 $\Omega$                                 |
| Measuring range     | 0...2000 $\text{W}/\text{m}^2$                   |
| Viewing angle       | $2\pi$ sr                                        |
| Spectral range      | 300 nm...2800 nm (50%)<br>335 nm...2200 nm (95%) |

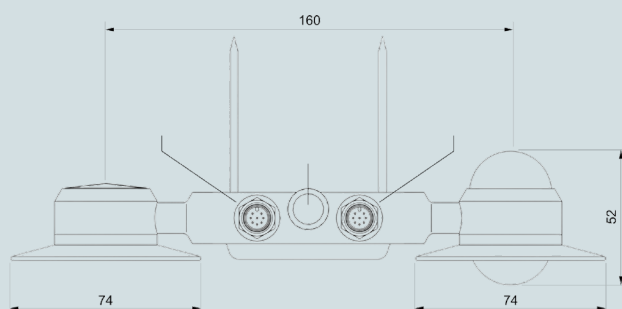
### Pyrgeometer

|                     |                                            |
|---------------------|--------------------------------------------|
| Typical sensitivity | 5...10 $\mu\text{V}/(\text{W}/\text{m}^2)$ |
| Impedance           | 33...45 $\Omega$                           |
| Measuring range     | -300...+300 $\text{W}/\text{m}^2$          |
| Viewing angle       | $160^\circ$                                |
| Spectral range      | 5.5...45 $\mu\text{m}$ (50%)               |

### General specifications

|                       |                                                                                                                                                                                                         |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating temperature | -40...80 $^\circ\text{C}$                                                                                                                                                                               |
| Materials             | Housing and fixing shaft: anodized aluminium<br>Screen: ASA<br>Pyranometer dome: optical glass<br>Pyrgeometer window: silicon<br>Salts compartment cover: polycarbonate<br>Bird spikes: stainless steel |
| Protection            | IP65                                                                                                                                                                                                    |

## Dimensions



## Ordering codes

|                |                                                                                                |
|----------------|------------------------------------------------------------------------------------------------|
| <b>LPNET14</b> | 4-sensor (2 pyranometers and 2 pyrgeometers) irradiance meter for measuring the net radiation. |
|----------------|------------------------------------------------------------------------------------------------|

## Measuring principle

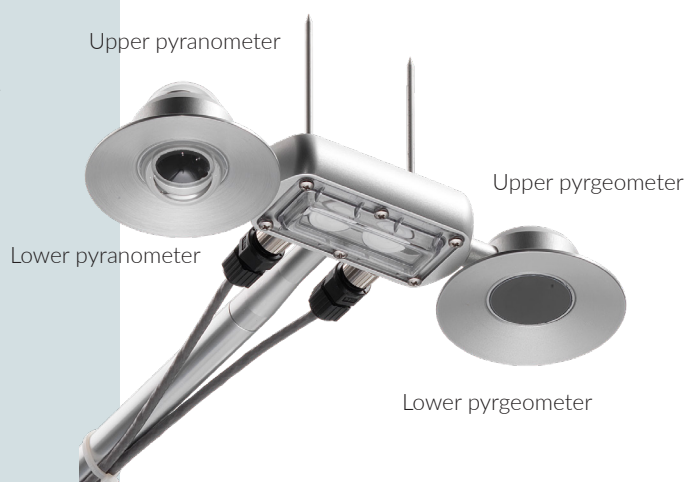
The LPNET14's pyranometers measure solar radiation, while its pyrgeometers measure infrared radiation. Both use thermopile sensors, with pyranometers utilizing black-painted surfaces to absorb radiation across multiple wavelengths. Pyrgeometers are protected by silicon discs and a durable, scratch-resistant coating.

Thermopile sensors create a temperature difference between the hot and cold junctions, converting it into a potential difference via the Seebeck effect. For accurate infrared measurements, knowing the pyrgeometer's temperature is essential, as it affects detected signal.

## Installation

The LPNET14 should be installed in an easily accessible location for regular cleaning of the silicon window. Avoid placing it near obstacles like buildings or trees that exceed the horizontal plane. If this isn't possible, choose a site where obstacles are below  $10^\circ$ .

When mounting on a mast, ensure the sensor is positioned to avoid any shadows throughout the day. In the Northern Hemisphere, follow ISO TR9901 and WMO guidelines by installing the radiometer south of the mast. Use the provided shaft to ensure precise horizontal alignment on the support pole.



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