

PYRAsense13 LPS13...

SPECTRALLY FLAT CLASS A PYRANOMETER WITH SHADOW RING

INTRODUCTION

The LPS13... is built around the LPS10, our Class A Spectrally Flat pyranometer. This family of pyranometers is standard equipped with an adjustable shadow ring that prevents the direct solar radiation to reach the sensor the whole day long, so that only the diffuse solar radiation will be measured.

Measuring only diffuse solar radiation provides valuable information about the **atmospheric conditions and overall energy distribution** in a particular location. This data are particularly relevant especially for:

- gathering information about cloud cover and atmospheric transparency crucial for weather forecasting, climate modeling, and understanding regional climate patterns;
- understanding the proportion of diffuse radiation relative to total solar radiation for assessing the solar energy potential of a region - essential for planning and optimizing the performance of solar energy systems, such as solar panels and solar thermal collectors;
- understanding the complex interactions between solar radiation, atmospheric dynamics, and climate processes - necessary for improving climate models, predicting climate change impacts, and assessing regional climate variability.

FEATURES

Integrated diagnostic for digital models

Internal temperature, relative humidity, and pressure sensors. You can keep an eye on the operating condition of your pyranometer and predict any maintenance work in advance, thus always ensuring reliable measurements.

Built-in **days-of-operation counter** to optimize your maintenance schedule effortlessly, ensuring peak performance.

Integrated bubble level in the base of the support

To ease levelling during installation.

Moreover, the pyranometer can be equipped with an optional tilt sensor which allows the position of the complete ring and sensor structure to be monitored over time

CONFIGURATION & MEASUREMENT

The sensors

Using the PC application software DATAsense, it is possible to configure the sensor (e.g., Modbus parameters, measuring range for the analog output, etc.), monitor the measurements in real time and save the values detected during the connection in a file.

Passive, analog or RS485 Modbus-RTU isolated output + optional additional analog output

Configurable 0...10 V, 0...5 V, 0...1 V, 4...20 mA or 0...20 mA.

The irradiance range

It is configurable for the analog output.

Calibration report

The pyranometers are supplied factory calibrated according to ISO 9847:2023 (Type A1) standard and with an individual Calibration Report.





SMART TECHNOLOGY

Digital models with internal diagnostic sensors to keep operating conditions always under control.

Built-in days-of-operation counter.



EASY TO SET UP & QUICK TO INSTALL Integrated bubble level and optional tilt sensor to ensure accurate installation in any position.

Configuration and real time data monitoring via software.



ACCURATE & RELIABLE Supplied factory calibrated with individual Calibration Report. ISO 17025 Calibration Certificate available upon request.



ACCORDING TO THE STANDARD Spectrally Flat Class A according to ISO 9060.

WMO recommendations & IEC 61724-1 requirements fully compliant.



GREAT FLEXIBILITY
Wide variety of outputs choice.

Technical specifications according to ISO 9060:2018

Classification Spectrally Flat Class A Response time (95%) < 2 s (LPS13Mxx)

< 5 s (LPS130C0 and LPS130P0)

< | ±10 | W/m²

a) response to a 200 W/m² < | ±7| W/m²

thermal radiation

b) response to a 5 K/h change in < | ±2 | W/m2 ambient temperature

a) total zero offset including the < | ±10 | W/m2

effects a), b) and other sources

Long-term instability (1 year) <| ±0.5| % Non-linearity <| ±0.2| %

Directional response (up to 80° with

1000 W/m² beam)

<| ±0.2| % Spectral error Temperature response <| ±0.5| %

(-10...+40°C)

Tilt response < | ±0.2 | %

Additional measurements in digital models

-40...+80 °C range temperature Internal resolution 0.1°C

± 0.5 °C (0...60 °C) accuracy

relative humidity 0...100 %RH range

resolution 0.1 %RH

±3%RH@25°C(20...80%RH) accuracy

300...1100 hPa range Internal 0.1 hPa resolution

± 1 hPa (0...60 °C) accuracy

range 0°...+180°

resolution 0.1°

> < 0.5° accuracy

Ordering codes

LPS13...

M00	Modbus output, without tilt
M0T	Modbus output, with tilt
MA0	Modbus + configurable analog output, without tilt
MAT	Modbus + configurable analog output, with tilt
0C0	2-wire (current loop) 420 mA output
0P0	mV output



General specifications

Thermopile Sensor Typical 6...15 µV/Wm⁻²

sensitivity

Measuring -200...4000 W/m²

range The irradiance range for the analog

output is 0...2000 W/m² by default, and is configurable in LPS13Mxx

Resolution 0.1 W/m²

Viewing angle $2\pi sr$

Spectral range

(50%)

283...2800 nm

Output Dipending on the model:

RS485 Modbus-RTU

RS485 Modbus-RTU + analog configurable 4...20 mA (default), 0...20 mA, 0...1 V, 0...5 V or 0...10 V

2-wire (current loop) 4...20 mA

passive in mV

7...30 Vdc for RS485 output Power supply

10...30 Vdc for analog output 15...30 Vdc for 0...10 V output

Modbus output models: Consumption (digital 15 mA @ 24 Vdc models) 21 mA @ 12 Vdc

Modbus + analog output models: 37 mA @ 24 Vdc & lout=22 mA 43 mA @ 12 Vdc & lout=22 mA

Connection 5-pole M12

8-pole M12 (for LPS13MAx)

Weight 6.8 kg approx. Operating -40...+80 °C 0...100 %RH conditions

Max. altitude 6000 m

Bubble level < 0.2°

accuracy

Protection **IP 67**

degree

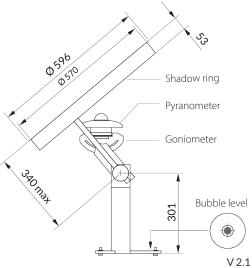
Materials Housing: anodized aluminium

Screen: ASA Dome: optical glass

Ring and stand: aluminum alloy and

stainless steel

MTBF > 10 years



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