



HENNLICH

MERES

## SPECTRALLY FLAT CLASS B PYRANOMETER SERIES

### INTRODUCTION

PYRAsense is our new family of pyranometers that brings solar global radiation measurement to a higher level !

We produce a full range of pyranometers, all based on the thermopile principle, very precise

Depending on the model and according to ISO 9060:2018 and WMO (World Meteorological Organization) recommendations, our PYRAsense are all classified as Spectrally Flat Class A, Class B and Class C.

The LPS02.. is the Class B of the series, particularly suitable for those applications where high performances are required such as:

- Environmental studies
- Research
- Meteorology
- PV monitoring

### 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.

#### Effortless installation

Integrated bubble level the adjustable feet to ease horizontal positioning during installation. Moreover, the pyranometer can be equipped with an optional tilt sensor which allows continuous monitoring of the correct installation.

#### Shield your investment

ASA protection screen to ensure unparalleled thermal stability against UV radiation, high impact and shock resistance. Moreover, this material remains free from yellowing and retains its properties unchanged 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

## PYRASENSE02 LPS02



#### 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 B according to ISO 9060.

WMO recommendations & IEC 61724-1 requirements fully compliant.



#### GREAT FLEXIBILITY

Wide variety of outputs choice.



#### EXTENDED WARRANTY

4 years in addition to the standard 2 years for a total of 6 years warranty



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# PYRASENSE02 LPS02

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Classification	<b>Spectrally Flat Class B</b>
Response time (95%)	<b>&lt; 10 s</b>
Zero offset	a) response to a 200 W/m <sup>2</sup> thermal radiation <b>&lt;   ±10  W/m<sup>2</sup></b>
	b) response to a 5 K/h change in ambient temperature <b>&lt;   ±4  W/m<sup>2</sup></b>
	a) total zero offset including the effects a), b) and other sources <b>&lt;   ±15  W/m<sup>2</sup></b>
Long-term instability (1 year)	<b>&lt;   ±1  %</b>
Non-linearity	<b>&lt;   ±1  %</b>
Directional response (up to 80° with 1000 W/m <sup>2</sup> beam)	<b>&lt;   ±18  W/m<sup>2</sup></b>
Spectral error	<b>&lt;   ±0.5  %</b>
Temperature response (-10...+40°C)	<b>&lt;   ±1.5  %</b>
Tilt response	<b>&lt;   ±1  %</b>

## Additional measurements in digital models

Internal temperature	range	<b>-40...+80 °C</b>
	resolution	<b>0.1 °C</b>
	accuracy	<b>± 0.5 °C (0...60 °C)</b>
Internal relative humidity	range	<b>0...100 %RH</b>
	resolution	<b>0.1 %RH</b>
	accuracy	<b>± 3 %RH @25 °C (20...80 %RH)</b>
Internal pressure	range	<b>300...1100 hPa</b>
	resolution	<b>0.1 hPa</b>
	accuracy	<b>± 1 hPa (0...60 °C)</b>
Tilt sensor	range	<b>0° ...+180°</b>
	resolution	<b>0.1°</b>
	accuracy	<b>&lt; 0.5°</b>

## Ordering codes

LPS02...	<b>M00</b>	Modbus output, without tilt
	<b>M0T</b>	Modbus output, with tilt
	<b>MA0</b>	Modbus + configurable analog output, without tilt
	<b>MAT</b>	Modbus + configurable analog output, with tilt
	<b>OC0</b>	2-wire (current loop) 4...20 mA output
	<b>OP0</b>	mV output

## General specifications

Sensor	<b>Thermopile</b>
Typical sensitivity	<b>6...12 μV/Wm<sup>2</sup></b>
Measuring range	<b>-200...4000 W/m<sup>2</sup></b> <b>The irradiance range for the analog output is 0...2000 W/m<sup>2</sup> by default, and is configurable in LPS02Mxx</b>
Resolution	<b>0.1 W/m<sup>2</sup></b>
Viewing angle	<b>2π sr</b>
Spectral range (50%)	<b>283...2800 nm</b>
Output	<b>Depending on the model:</b> <ul style="list-style-type: none"> <li><b>RS485 Modbus-RTU</b></li> <li><b>RS485 Modbus-RTU +</b> configurable analog 4...20 mA (default), 0...20 mA, 0...1 V, 0...5 V or 0...10 V</li> <li><b>2-wire (current loop) 4...20 mA</b></li> <li><b>passive in mV</b></li> </ul>
Power supply	<b>7...30 Vdc for RS485 output</b> <b>10...30 Vdc for analog output</b> <b>15...30 Vdc for output 0...10 V</b>
Consumption (digital models)	<b>Models with Modbus output:</b> <b>15 mA @ 24 Vdc</b> <b>21 mA @ 12 Vdc</b> <b>Models with Modbus + analog output:</b> <b>37 mA @ 24 Vdc &amp; Iout=22 mA</b> <b>43 mA @ 12 Vdc &amp; Iout=22 mA</b>
Connection	<b>5-pole M12</b> <b>8-pole M12 (only for LPS02MAx)</b>
Weight	<b>620 g approx.</b>
Operating conditions	<b>-40...+80 °C</b> <b>0...100 %RH</b> <b>Max. altitude 6000 m</b>
Bubble level accuracy	<b>&lt; 0.2°</b>
Protection degree	<b>IP 67</b>
Materials	<b>Housing: anodized aluminium</b> <b>Screen: ASA</b> <b>Dome: optical glass</b>
MTBF	<b>&gt; 10 years</b>

