# Spectally Flat Class C Pyranometer

## LPPYRA-Lite

### COMPACT THERMOPILE MEASUREMENT FOR PV AND GENERAL SOLAR RADIATION MONITORING


## INTRODUCTION

The LPPYRA-Lite series brings thermopile measurement to compact and cost-effective solar monitoring applications. The pyranometers measure global irradiance on a flat surface - the sum of direct and diffuse solar irradiance - and are classified as Spectrally Flat Class C according to ISO 9060:2018. They also meet the requirements of the WMO Guide to Instruments and Methods of Observation.

With a compact anodized-aluminium housing, an optical glass dome and a choice of passive, analog and digital outputs, LPPYRA-Lite is especially suitable for:

- Small PV power plant monitoring
- Solar efficiency monitoring
- General solar radiation measurements
- Installations where space and weight are limited

## FEATURES

### Compact thermopile design
Accurate thermopile measurement in a compact, lightweight housing designed for small PV systems.

### Effortless installation
Designed for direct tilted mounting on the PV panel plane; an optional base with bubble level supports horizontal installation.

### Built for outdoor use
IP67 protection, anodized-aluminium housing and optical glass dome for operation from -40 to +80 °C.

## CONFIGURATION & MEASUREMENT

### Four output options
Choose passive mV, 2-wire 4...20 mA, RS485 Modbus-RTU or SDI-12.

### Easy RS485 configuration
Set the Modbus address and communication parameters using the optional CP24 cable or a standard RS485 converter.

### Wide irradiance range
Measure global irradiance from 0 to 2000 W/m² across the entire series.

### Individual factory calibration
Each pyranometer is calibrated according to ISO 9847:2023 (Type A1) and identified by its individual sensitivity factor.

COMPACT & LIGHTWEIGHT
A space-saving solution weighing approximately 150 g.

DIRECT PV INSTALLATION
Designed for installation directly on the PV panel plane.

THERMOPILE TECHNOLOGY
Wide spectral response from 300 to 2800 nm.

ACCORDING TO THE STANDARD
Spectrally Flat Class C according to ISO 9060:2018 and compliant with WMO recommendations.

FLEXIBLE OUTPUTS
Available with passive mV, 4...20 mA, Modbus-RTU or SDI-12 output.

OUTDOOR READY
IP67 protection and an operating range from -40 to +80 °C.

## Technical specifications

| | |
|---|---|
| Sensor | Thermopile |
| Typical sensitivity | 5...15 µV/Wm$^{-2}$ |
| Measuring range | 0...2000 W/m$^2$ |
| Viewing angle | 2π sr |
| Spectral range (50%) | 300...2800 nm |
| Output | LPPYRA-Lite: passive in mV<br>LPPYRA-LiteAC: 2-wire (current loop) 4...20 mA<br>LPPYRA-LiteS: RS485 Modbus-RTU<br>LPPYRA-LiteS12: SDI-12 |
| Power supply | LPPYRA-Lite: no power required<br>LPPYRA-LiteAC: 10...28 Vdc<br>LPPYRA-LiteS: 5...30 Vdc<br>LPPYRA-LiteS12: 7...30 Vdc |
| Consumption | LPPYRA-LiteAC: equal to output signal (4...20 mA)<br>LPYRA-LiteS: 8mA<br>LPPYRA-LiteS12: <200 µA normal operation<br>< 5 mA during measure |
| Connection | LPPYRA-Lite / LPPYRA-LiteAC: 4-pole M12<br>LPPYRA-LiteS / LPPYRA-LiteS12: 8-pole M12 |
| Weight | 150 g approx. |
| Operating conditions | -40...+80 °C / 0...100 %RH / Max. altitude 6000 m |
| Protection degreee | IP 67 |
| Materials | Housing: anodized aluminium<br>Dome: optical glass |
| MTBF | > 10 years |

## ISO 9060:2018 Technical Specifications

| | | |
|---|---|---|
| Classification | | Spectrally Flat Class C |
| Response time (95%) | | < 25 s |
| Zero offset | a) response to a 200 W/m² thermal radiation | < \|±20\| W/m² |
| | b) response to a 5 K/h change in ambiente temperature | < \|±6\| W/m² |
| | c) total zero offset including the effects a), b) and other sources | < \|±30\| W/m² |
| Long-term instability (1 year) | | < \|±2\| % |
| Non-linearity | | < \|±2\| % |
| Directional response | | < \|±25\| W/m² |
| Spectral error | | < \|±2\| % |
| Temperature response (-10...+40 °C) | | < \|±3\| % |
| Tilt response | | < \|±3\| % |

## Dimensions


## Ordering codes

**LPPYRA-Lite**

OUTPUT
Blank = analog in mV
AC= 2-wire (current loop) 4...20 mA
S = RS485 Modbus-RTU
S12 = SDI-12

Pyranometers are supplied with female M12 free connector.
Cable, fixing accessories/adapters and Calibration Report have to be ordered separately.

## Accessories

| | |
|---|---|
| LPS40/32 | Fixing adapter from 40 to 32 mm holes centre distance. |
| LPS40/32BL | Fixing adapter from 40 to 32 mm holes centre distance. With integrated levelling device. Accuracy of levelling device < 0.2°. |
| LPS3 | Fixing bracket for the pyranometer, suitable for Ø40...50 mm mast. Installation on horizontal or vertical mast. LPS40/32... adapter is required. |
| LPS5 | Adjustable holder for mounting the pyranometer in an inclined position on Ø 30...50 mm mast. LPS40/32... adapter is required. |
| CPM12AA4... | Cable with 4-pole M12 connector on one end, open wires on the other end. Available length: 2, 5 or 10 m). For LPPYRA-Lite and LPPYRA-LiteAC. |
| CPM12-8D... | Cable with 4-pole M12 connector on one end, open wires on the other end. Available length: 2, 5 or 10 m). For LPPYRA-LiteS and LPPYRA-LiteS12. |
| CP24 | PC connecting cable for the configuration of LPPYRA-LiteS RS485 Modbus parameters. |

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