# Spectrally Flat Class A Pyranometer

## LPPYRA13

### ○ ACCORDING TO THE **STANDARD**

Follows recommendations of the WMO fully compliant with ISO 9060:2018

#### ○ GREAT FLEXIBILITY

Wide availability of standard output signals for **easy integration** in any installation

#### ○ EASY TO SET UP AND QUICK TO INSTALL

**Rugged housing** with low temperature response Integrated **levelling device** for perfect positioning

#### ○ ACCURATE AND RELIABLE SYSTEM

High reliability - 6 year warranty Individual Calibration Reports for each instrument

#### O HIGH IMMUNITY AGAINST INTERFERENCE

Protected against overpower and fully electrically isolated from any mounting surface

#### Research grade high performance pyaranometer



Research Meteorlogy PV monitoring

The LPPYRA13 is built around the LPPYRA10, a Spectrally Flat Class A pyranometer. The LPPYRA13 is standard equipped with an adjustable shadow ring for measuring diffuse radiation only.

The pyranometers in this series are all based on the thermopile principle, **very precise**. This principle provides a  $\mu$ V signal without the need of an external power supply. To be able to transfer the signal over a longer distance and to prevent interference, mostly types are equipped with an integrated transmitter. When using a 4-20 mA, 0-10 VDC or RS485 Modbus-RTU output, an external active power supply is necessary. The output of these series is always related to W/m<sup>2</sup>.

All our pyranometers are made in a way that the electrical system is totally isolated from the housing, making it possible to mount the pyranometer on anysurface, including metal ones, without the need of isolation.

Delta OHM is one of the main pyranometer producers worldwide. We produce a full range of pyranometers according to the ISO 9060: 2018 - Spectrally Flat Class A, B and C.

Each of our pyranometers is **calibrated separately** during production; all are supplied standard with a Report of Calibration in accordance with the ISO 9847:1992. Next to this, we are the only pyranometer producer that has invested in a full range of 6 accredited ISO 17025 Calibration Laboratories.

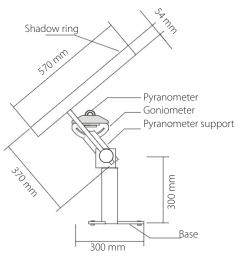
Pyranometers can be used as stand-alone or in combination with our weather stations. Delta OHM provides a full range of data loggers with integrated GSM/3G/4G modem to read and transfer measured data to any database or Cloud solution.



#### **Technical Specifications**

lechnical Specificat	lons
Sensor	Thermopile
Typical Sensitivity	6÷11 µV/Wm⁻²
Impendance	5 Ω ÷ 50 Ω
Measuring range	$0 \div 2000 / 4000 \text{ W/m}^2$
Viewing angle	2π sr
Spectral range (50%)	283 ÷ 2800 nm
Operating temperature/ humidity	-40 ÷ 80 °C 0 ÷ 100 % RH
Output	Depending on the model: - Analog in µV/Wm <sup>-2</sup> - Analog 4÷20 mA - Analog 0÷1 V, 0÷5 V or 0÷10 V - Double ouput: Analog 4÷20 mA + Digital RS485 Modus-RTU - Digital RS485 Modbus-RTU - Digital SDI-12
Power supply	10÷30 Vdc (4÷20 mA - 0÷1 V - 0÷5 V outputs) 15÷30 Vdc (0÷10 V output) 5÷30 Vdc (RS485 Modbus-RTU) 7÷30 Vdc (SDI-12)
Consumption	< 200 µA for SDI-12 version
Connection	<ul> <li>4-pole M12 connector for analog output models</li> <li>8-pole M12 connector for digital and double output models</li> </ul>
Accuracy of levelling device	< 0.1°
Protection Degree	IP 67
MTBF	> 10 years

#### Dimensions





In order to ensure the quality of our instruments, we are constantly re-evaluating our products. Improvements can imply changes in specification; we advise you to always check our website for the newest version of our documentation.

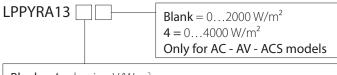
#### ISO 9060:2018 Technical Specifations

190 9000.2010 recimical specifications		
Classification	Spectrally Flat Class A	
Response time (95%)	< 5 s	
a) response to a 200 W/m <sup>2</sup> thermal radiation	$<  \pm 7  W/m^2$	
b) response to a 5 K/h change in ambiente temperature	$<  \pm 2  W/m^2$	
c) total zero off-set including the effects a), b) and other sources	$<  \pm 10  W/m^2$	
ng-term instability (1 year)	<  ±0.5  %	
Non-linearity	<  ±0.2  %	
esponse according to the cosine law	$<  \pm 10  W/m^2$	
Spectral error	<  ±0,2  %	
Temperature response (-10+40°C)	< 1 %	
Tilt response	<  ±0.2  %	
	Classification Response time (95%) a) response to a 200 W/m <sup>2</sup> thermal radiation b) response to a 5 K/h change in ambiente temperature c) total zero off-set including the effects a), b) and other sources c) total zero off-set including the effects a), b) and other sources Non-linearity Spectral error Temperature response (-10+40°C)	

LPPYRA13 is equipped with a **Spectrally Flat Class A** pyranometer (LPPYRA10) in accordance with ISO 9060:2018.



## **Ordering Codes**



 $\begin{array}{l} Blank = \mbox{Analog in } \mu \mbox{V/Wm}^{-2} \\ AC = \mbox{Analog } 4 \div 20 \mbox{ mA} \\ AV = \mbox{Analog } 0 \div 1 \mbox{V}, 0 \div 5 \mbox{V or } 0 \div 10 \mbox{ (to be defined when ordering)} \\ ACS = \mbox{Analog } 4 \div 20 \mbox{ mA} + \mbox{digital Modbus-RTU} \\ S = \mbox{Digital RS485 Modbus-RTU} \\ S12 = \mbox{Digital SDI-12} \end{array}$ 

All pyranometers are supplied with shade disk, cartridge for silica-gel crystals, 2 spare sachets, levelling device, Calibration Report.

Accessories	
CPM12AA4.xx	Cable for LPPYRA13 / 13AC / 13AV models. M12 connector on one end, open wires on the other end (2, 5 or 10 m).
CPM12-8D.xx	Cable for LPPYRA13S / 13S12. M12 connector on one end, open wires on the other end (2, 5 or 10 m).
CPM12-8DA.xx	Cable for LPPYRA13ACS. M12 connector on one end, open wires on the other end (2, 5 or 10 m).
CP24	PC connecting cable for the RS485 MODBUS parameters configuration (only for models with RS485 output).

We look forward to your enquiry: Phone +39 049 89 77 150 Email: sales@deltaohm.com

#### Delta OHM S.r.l.

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