

Spectrally Flat Class B Pyranometer

LPPYRA12

○ 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

○ HIGH IMMUNITY AGAINST INTERFERENCE

Protected against overpower and **fully electrically isolated** from any mounting surface



Main Applications

Environmental studies
Research
Meteorology
PV monitoring

Measuring solar efficiency – highly accurate

The **LPPYRA12** is built around the LPPYRA02, a Spectrally Flat Class B pyranometer. The LPPYRA12 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 μV 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^2 .

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 any surface, 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**.

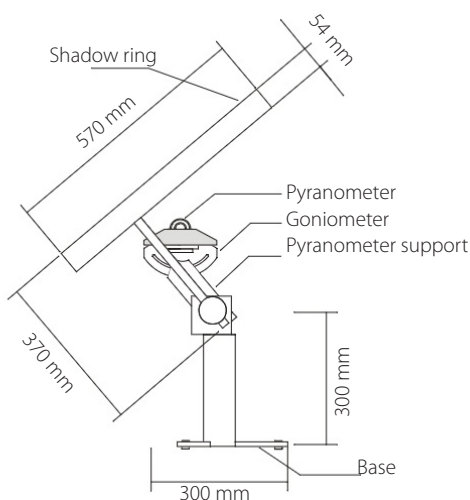
Each of our pyranometers is **calibrated separately** during production; all are supplied standard with a Report of Calibration in accordance with the ISO 9847:1992. Next to this, we are the only pyranometer producer that has invested in a full range of 6 accredited ISO 17025 Calibration Laboratories.

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

Sensor	Thermopile
Typical Sensitivity	$6 \div 12 \mu\text{V}/\text{Wm}^{-2}$
Impedance	$33 \div 45 \Omega$
Measuring range	$0 \div 2000 / 4000 \text{ W}/\text{m}^2$
Viewing angle	$2\pi \text{ sr}$
Spectral range (50%)	$283 \div 2800 \text{ nm}$
Operating temperature/ humidity	$-40 \div 80 \text{ }^\circ\text{C}$ $0 \div 100 \text{ } \%$ RH
Output	Depending on the model: - Analog in $\mu\text{V}/\text{Wm}^{-2}$ - Analog 4÷20 mA - Analog 0÷1 V, 0÷5 V or 0÷10 V - Double output: Analog 4÷20 mA + Digital RS485 Modbus-RTU - Digital RS485 Modbus-RTU - Digital SDI-12
Power supply	$10 \div 30 \text{ Vdc}$ (4÷20 mA - 0÷1 V - 0÷5 V outputs) $15 \div 30 \text{ Vdc}$ (0÷10 V output) $5 \div 30 \text{ Vdc}$ (RS485 Modbus-RTU) $7 \div 30 \text{ Vdc}$ (SDI-12)
Consumption	< 200 μA for SDI-12 version
Connection	- 4-pole M12 connector for analog output models - 8-pole M12 connector for digital and double output models
Accuracy of levelling device	< 0.1°
Protection Degree	IP 67
MTBF	> 10 years

Dimensions



ISO 9060:2018 Technical Specifications

Classification	Spectrally Flat Class B
Response time (95%)	< 10 s
a) response to a $200 \text{ W}/\text{m}^2$ thermal radiation	< $ \pm 10 \text{ W}/\text{m}^2$
b) response to a 5 K/h change in ambient temperature	< $ \pm 4 \text{ W}/\text{m}^2$
c) total zero off-set including the effects a), b) and other sources	< $ \pm 15 \text{ W}/\text{m}^2$
Long-term instability (1 year)	< $ \pm 1 \%$
Non-linearity	< $ \pm 1 \%$
Response according to the cosine law	< $ \pm 18 \text{ W}/\text{m}^2$
Spectral error	< $ \pm 0.5 \%$
Temperature response ($-10 \dots +40^\circ\text{C}$)	< 1.5 %
Tilt response	< $ \pm 2 \%$

LPPYRA12 is equipped with a **Spectrally Flat Class B** pyranometer (LPPYRA02) in accordance with ISO 9060:2018.



Ordering Codes

LPPYRA12
Blank = 0...2000 W/m^2
4 = 0...4000 W/m^2
Only for AC - AV - ACS models.

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

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

Accessories

LPS1	Fixing bracket for mast $\varnothing 40 \div 50 \text{ mm}$.
CPM12AA4.xx	Cable for LPPYRA12 / 12AC / 12AV models. M12 connector on one end, open wires on the other end (2, 5 or 10 m).
CPM12-8D.xx	Cable for LPPYRA12S / 12S12. M12 connector on one end, open wires on the other end (2, 5 or 10 m).
CPM12-8DA.xx	Cable for LPPYRA12ACS. 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).

Delta OHM

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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.

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Rev. 1.2 - 03.21