

# PYRANOMETER PYR-420®

hw rev. RGB402A

## USER MANUAL



### GENERAL DESCRIPTION

**PYR1-420 and PYR2-420** are ISO 9060:2018 CLASS B (First Class) and CLASS C (Second Class) thermopile pyranometers for measuring solar irradiance in PV plants.

**PYR1-420 and PYR2-420** are equipped with electronics to amplify a very weak signal coming from the thermopile. They are composed of the best operational amplifiers on the market to guarantee linearity, noise immunity, constant behavior over time and temperature variations. They have a **4 to 20 mA output signal**.

### FEATURES

<b>Measurements:</b>	<b>PYR1-420</b>	<b>PYR2-420</b>
spectral range:	300 ÷ 2900nm	300 ÷ 2900nm
input irradiance range:	0 ÷ 1600 W/m <sup>2</sup>	0 ÷ 1600 W/m <sup>2</sup>
<b>Response time:</b>	< 20 sec	< 25 sec
<b>Temperature response:</b>	< ± 2 % (-10 to +40°C)	
<b>Zero offset</b>		
Thermal radiation (at 200 W/m <sup>2</sup> )	<14 W/m <sup>2</sup>	<20 W/m <sup>2</sup>
Temperature change (5 k/h)	<± 3 W/m <sup>2</sup>	<± 6 W/m <sup>2</sup>
<b>Outputs</b>		
serial:	4 ÷ 20 mA current loop	
<b>Output resolution:</b>	1W/m <sup>2</sup>	
<b>Output precision:</b>		
Tilt response (0 ÷ 90°):	< ± 2%	< ± 4%
Temp. Response ( Δt = 50K)	< 4%	< 8%
<b>Working temperature:</b>	-40 ÷ +80 °C	
<b>Supply:</b>	9 ÷ 30 Vdc protected against short circuit	
<b>Encapsulation:</b>	Quartz [k5]	
	Double glass dome	Single glass dome
<b>Special glass transparent to:</b>	0,3 ÷ 3,0 μm	0,3 ÷ 3,0 μm
<b>Case:</b>	Anodized aluminum	
<b>Connectors:</b>	standard M8 3 pin female	
<b>Dimensions:</b>	Φ 162 x h 104 mm	

### PIECE'S LIST

- Pyranometer with sun screen
- M8 3pin male connector
- Instruction sheet
- Calibration Report

#### CALIBRATION:

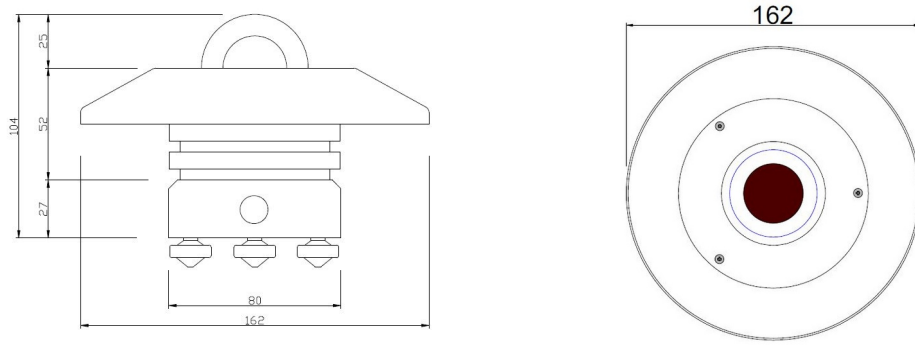
- Date: ..... Operator: .....

- S/N: .....

- ..... mA @0 W/m<sup>2</sup> STC [pin 3]

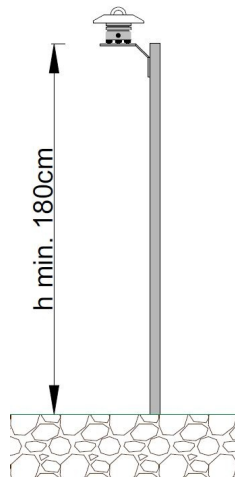
- ..... mA @ 1600 W/m<sup>2</sup> STC [pin 3]

## DIMENSIONS



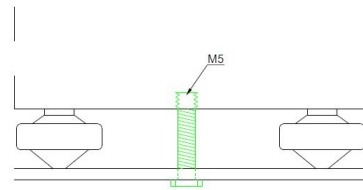
## INSTALLATION

It is recommended to install the product at a minimum height of 180cm above the ground.



There are the following **fixing types**:

- With M5 screw on flat bases;
- Bracket on pole;
- Inclinable bracket in degrees



M5 screw on flat bases

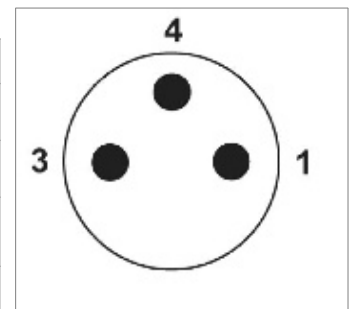
\*screw's thread must be 0,4cm + distance between the pyranometer and the base. (approx. 1,5 - 1,8 cm long.)

## CONNECTIONS

The connector is a 3 pin M8 standard. The male connector is not included, but it can be found in commerce: anyhow, if you desire it you can order it to us.

The IP67 3-pin circular female connector carries all the signals from the PYR-420 as in Tab. 1 and Fig. 1, that shows a front view of the female connector wired to the sensor (or a back side view of the male connector):

#	Name	Description	Loose pins
1	-	-	
2	-	-	
3	SUPPLY +Vin	Power supply input, + 9...30Vdc - See tab. 2	Blue
4	I out (-)	Current Output (-)	Black



Tab. 1

The compliance voltage depends by the burden resistor (datalogger input impedance) with the relation:  $\text{voltage} = 8 + \text{impedance} \cdot 0.02$

The voltage supply has to be equal or greater than compliance voltage.

Verify the input impedance of your DataLogger. Here below a table given to see DataLogger compatibility:

Input burden [Ohm]	Min. supply voltage [V cc]
20	8
100	10
150	11
250	13
500	18
1000	28

Tab. 2

### MEASUREMENT

The signal can be read with a amperometer placed in series to the output pole of the instrument, or with a datalogger with a 4-20 mA input.

### CALIBRATION

It is recommended to send to factory for verifying calibration after 2 years of outdoor work.

### MAINTENANCE

Reading is reduced if the dome is not clean.

1. Keep the dome clean using water or alcohol.
2. Keep instrument levelled.
3. Recalibrate every 2 years.

### USER INFORMATION

**Read this document carefully before installation.**

Warranty is 2 years from date of invoice, subject to correct installation and use. Soluzione Solare accepts no liability for any loss or damage arising from incorrect use of the product. This device conforms to the EU 'CE' guideline 89/336/EEC/73/23/EEC. Unauthorised modifications may void the warranty and CE validity. Visit our website for the latest product support information.

### CONTACTS

Other Information about our solar devices are available at: [www.soluzionesolare.it/prodotti](http://www.soluzionesolare.it/prodotti)

For technical support, contact: [support@soluzionesolare.it](mailto:support@soluzionesolare.it)



**DICHIARAZIONE DI CONFORMITÀ ISO 9060**  
**ISO 9060 COMPLIANCE STATEMENT**

Dichiara sotto la propria responsabilità che i nostri prodotti:  
*declares under our sole responsibility that the our product:*

**PYRA-420, PYRA-485**


al quale si riferisce questa dichiarazione, è conforme alle norme europee armonizzate  
come pubblicato nella Gazzetta Ufficiale della CE, basato sul seguente standard:  
*to which this declaration relates, is in conformity with European Harmonised Standards  
as published in the Official Journal of the EC, based on the following standard:*

**ISO 9060**

[Solar energy – Specification and classification of instruments for measuring hemispherical solar and direct solar radiation]

Vicenza, 1 January 2019

Il legale rappresentante  
*Legal representative*

  
A. Calatroni