itsensor LM3485 Pyrano Meter PYRA-485 User Manual

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Contents

GENERAL DESCRIPTION

PYR1-485 and PYR2-485 are ISO 9060:2018 CLASS B (First Class) and CLASS C (Second Class) pyranometers respectively, with RS485 bus interface with the well known industry standard protocol Modbus RTU.

FEATURES

	PYR1-485	**PYR2-485**
Measurements: spectral range input irradiance range	300 ÷ 2900nm 0 ÷ 1600 W/m2	
Response time	< 20 sec	< 25 sec
Temperature response	< ± 2 % (-10 to +40°C)	< ± 5 % (-10 to +40°C)
Zero offse Thermal radiation (at 200 W/m2) Temperature change (5 k/h)	<14Wm2	<20Wm2
Resolution Smallest detectable change		
Outputs serial	RS485, standard Modbus RTU protocol 1W/m	
Output resolution:	± 4 W/m²	± 8 W/m²
Output precision Tilt response (0 ÷ 90°) Temp. Response (Δt = 50K)	< ± 2% < 4%	< ± 4% < 8%
Working temperature:	-40 ÷ +80 °	

Supply	C 9 ÷ 30 Vdc protected against short circuit	
Encapsulation:	Quartz [k5]	
Special glass transparent to	Double glass dome 0,3 ÷ 3,0 µm	Single glass dom 0,3 ÷ 3,0 µm
Case	Anodized aluminum	
Connectors	standard M8 4 pin female	
Dimensions	Φ 162 x h 104 mm	

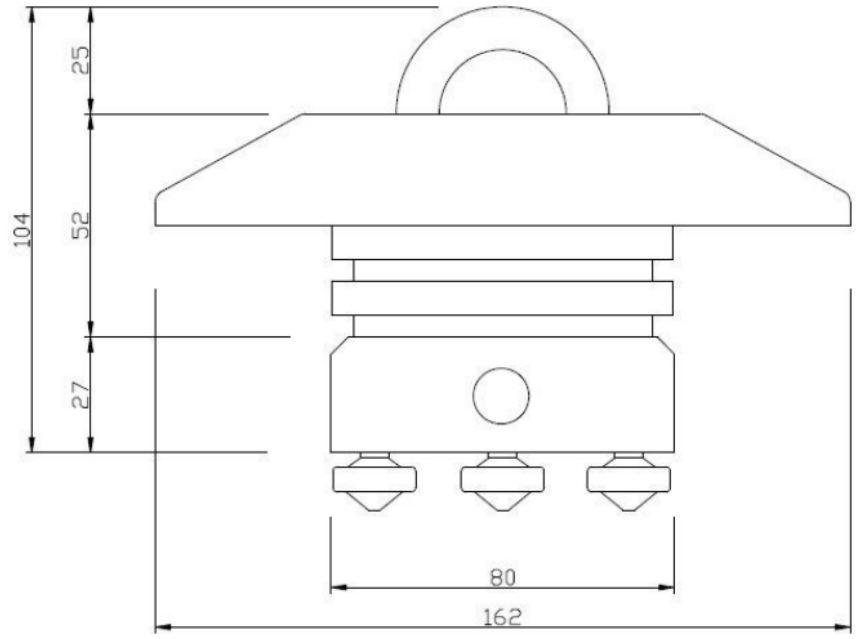
PIECE'S LIST

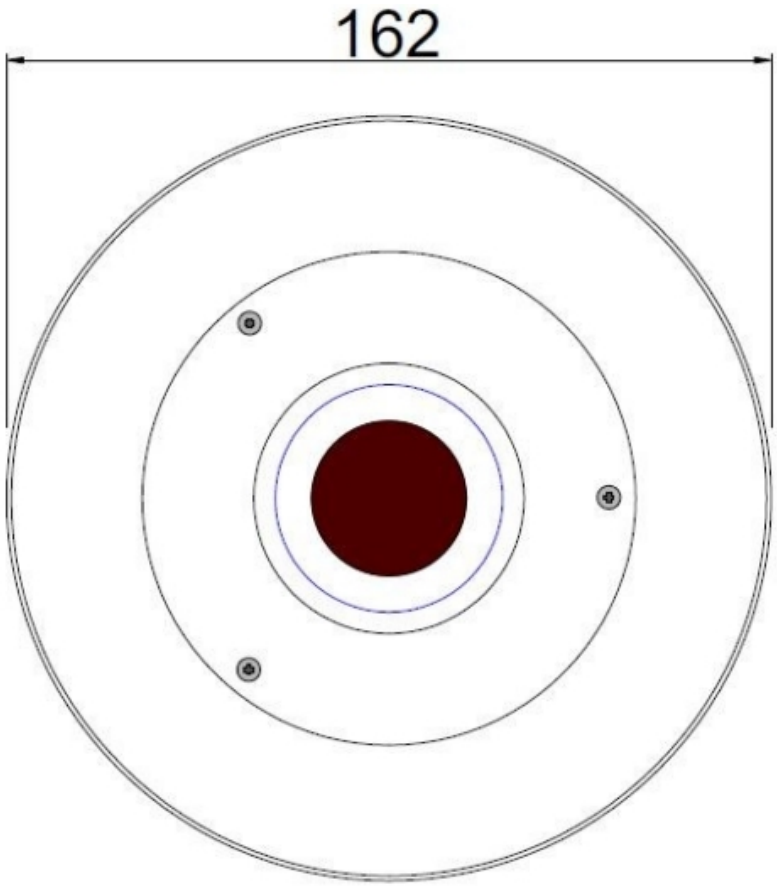
- Pyranometer with sun screen
- M8 4pin male connector
- Instruction sheet
- Calibration Report

CALIBRATION

Date:.…….
Operator: …….
S/N:…….
Modbus Node: ……

DIMENSIONS





CONNECTIONS

See the table below. Once connected the irradiance values comes out instantly (Fig.1 has correspondence with the rear side where you have to connect wires)

# pin	SolSol Cable Color	Description
1	Green	RS485+/B, communication bus non inverting bus signal
2	**Red**	Power supply 12 ÷ 30Vdc
3	Green/White	RS485-/A, communication bus inverting bus signal
4	Black	Power supply / 0 Vdc

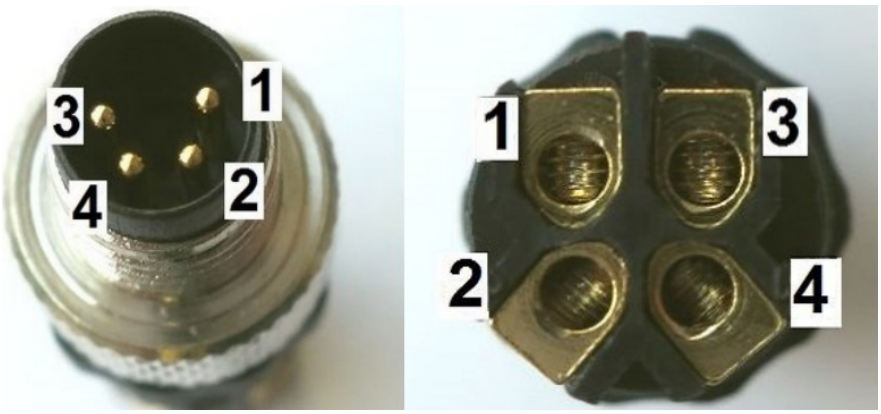


Fig.1 Front and back view of male connector

Data is accessible through Modbus's functions by 16 bits units called "registers". In the current implementation of PYRA-485 these registers are available:

Register hex	Register dec	Description	Access	NV save
0x0101	**257**	**Current irradiance level** [W/m^2]	R	
0x8802	**34818**	**Current body temperature** [°C], 2-complent value, fixed point 14.2 format (14 bits integer, 2 bits fractional)	R	
		Status, bit coded		

<table>
<tr>
<td>0x0103</td>
<td>259</td>
<td>
<table>
<tr><th>Bit</th><th>Description</th></tr>
<tr><td>0</td><td>Factory calibration/configuration 1 = OK; 0 = need recalibration</td></tr>
<tr><td>1</td><td>Not volatile parameters
1 = OK; 0 = default loaded, need to be changed/saved</td></tr>
<tr><td>2</td><td>Not used</td></tr>
<tr><td>3</td><td>Not used</td></tr>
<tr><td>4</td><td>Not used</td></tr>
<tr><td>5</td><td>Watchdog
1 = reset by watchdog timeout occurred; 0 = normal operation</td></tr>
<tr><td></td><td>all undefined bits read as 0</td></tr>
</table>
</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>0x8001</td>
<td>32769</td>
<td>Serial number, least significant word</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>0x8002</td>
<td>32770</td>
<td>Serial number, most significant word</td>
<td>R</td>
<td></td>
</tr>
</table>

0x8003	**32771**	**Firmware main version**, hexadecimal	R	
0x8004	**32772**	**Firmware minor version**, hexadecimal	R	
0x8005	**37773**	**Node address**, range 1 ¸ 247, decimal, **default 1**	R/W	Y
0x8006	**32774**	**Bitrate**, coded, range 0 ¸ 4, decimal, **default 1** **0** – 9600 bps **1** – 19200 bps **2** – 38400 bps **3** – 57600 bps **4** – 115200 bps	R/W	Y
0x8007	**32775**	**Serial configuration**, coded, range 0 ¸ 3, decimal, **default 0** **0** – 8N1 (8 bit / no parity / 1 stop bit) **1** – 8E1 (8 bit / even parity / 1 stop bit) 2 – 8O1 (8 bit / odd parity / 1 stop bit) 3 – 8N2 (8 bit / no parity / 2 stop bit)	R/W	Y
0x8008	**32776**	**Serial reply delay** [ms], range 0 ¸ 100, decimal, **default 1**	R/W	Y
0x8101	**33025**	**Not volatile params save command**, write 1 to execute (then wait 1 s before to send next message)	W	
0x8102	**33026**	**Software reset command**, write 1 to execute (then wait 6 s before to se nd next message)	W	

CALIBRATION

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

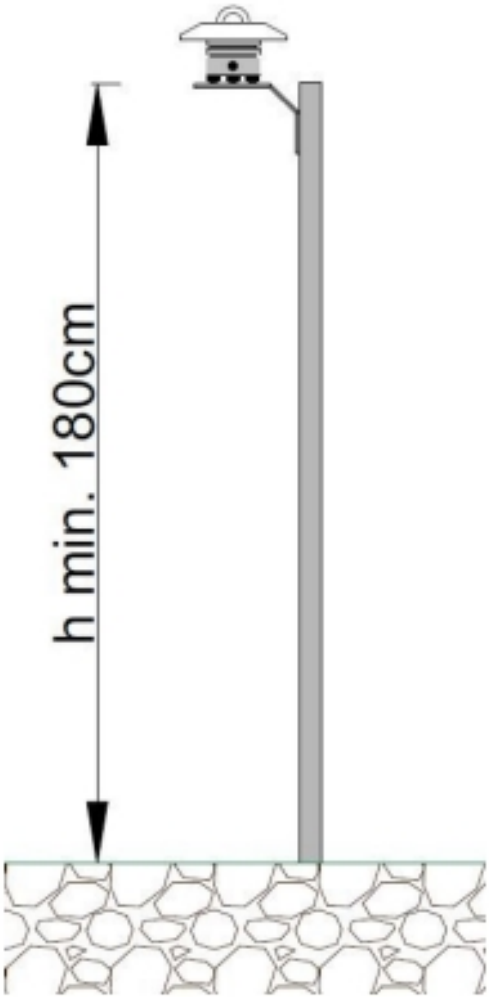
MAINTENANCE

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.

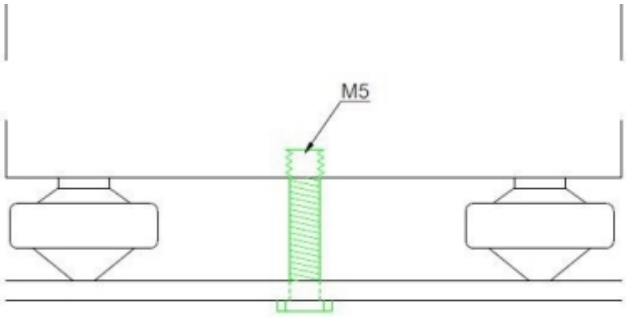
INSTALLATION

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.)

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/EEC73/23/EEC. Unauthorised modifications may void the warranty and CE validity. Visit our website for the latest product support information.

CONTACTS

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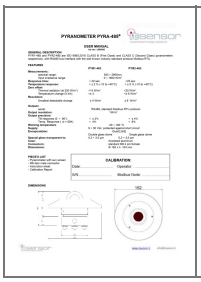
Documents / Resources

	**itsensor LM3485 Pyrano Meter PYRA-485** [pdf] User Manual LM3485, Pyrano Meter PYRA-485, Meter PYRA-485, Pyrano Meter, PYRA-485, LM3485

References

- ITSensor - Industrial Technology Webstore - ITSensor
- ITSensor - Industrial Technology Webstore - ITSensor
- Products Archives - Soluzione Solare