






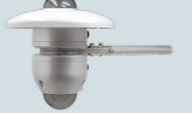



PYRAsense Series Comprehensive Pyranometer Guide



MEASURING SOLAR IRRADIANCE
IN THE MOST EFFECTIVE AND ACCURATE WAY



	PYRANOMETER				PYRANOMETERS WITH SHADOW RING		ALBEDOMETERS		
Model	LPR10	LPS10	LPS02	LPS03	LPS13	LPS12	LPS11	LPS05	LPS06
Classification according to ISO 9060:2018	Fast Response Class A	Class A	Class B	Class C	Class A	Class B	Class A	Class B	Class C
									
Sensor	Thermopile	Thermopile			Thermopile		Thermopile		
Typical sensitivity	only digital output	6...15 $\mu\text{V}/\text{Wm}^{-2}$			5...15 $\mu\text{V}/\text{Wm}^{-2}$		6...15 $\mu\text{V}/\text{Wm}^{-2}$		
Measuring range	-200...4000 W/m^2	-200...4000 W/m^2			-200...4000 W/m^2		-200...4000 W/m^2		
Resolution	0.1 W/m^2	0.1 W/m^2			0.1 W/m^2		0.1 W/m^2		
Viewing angle	2π sr	2π sr			2π sr		2π sr		
Spectral range (50%)	285...2850 nm	283...2800 nm			300...2800 nm		283...2800 nm		
Output	Isolated RS485 Modbus-RTU	<ul style="list-style-type: none"> Passive in mV 2-wire (current loop) 4...20 mA RS485 Modbus-RTU + configurable analog 4...20 mA (default), 0...20 mA, 0...1 V, 0...5 V or 0...10 V RS485 Modbus-RTU 			<ul style="list-style-type: none"> Passive in mV 2-wire (current loop) 4...20 mA RS485 Modbus-RTU + configurable analog 4...20 mA (default), 0...20 mA, 0...1 V, 0...5 V or 0...10 V RS485 Modbus-RTU 		Passive in mV		
MTBF	> 10 years	> 10 years			> 10 years		> 10 years		
Additional sensors	Yes	In digital models, internal sensors for temperature, relative humidity and pressure			In digital models, internal sensors for temperature, relative humidity and pressure		no		
Tilt sensor	Yes	optional			optional		no		
Shadow ring	no	optional			no		yes		
Heater	Integrated	optional with external ventilation unit			no		no		
Operating conditions	-40...+80 °C - 0...100 %RH	-40...+80 °C - 0...100 %RH			-40...+80 °C - 0...100 %RH		-40...+80 °C - 0...100 %RH		
Bubble level accuracy	< 0.2°	< 0.2°			< 0.2°		< 0.2°		
Protection Degree	IP 67	IP 67			IP 67		IP 67		

ISO 9060:2018 TECHNICAL SPECIFICATIONS

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Response time (95%)	< 0.3 s	< 5 s < 2 s (digital models)	< 10 s	< 18 s	< 2 s	< 10 s	< 2 s	< 10 s	< 18 s
a) response to a 200 W/m^2 thermal radiation	< ± 1 W/m^2	< ± 7 W/m^2	< ± 10 W/m^2	< ± 15 W/m^2	< ± 7 W/m^2	< ± 10 W/m^2	< ± 7 W/m^2	< ± 10 W/m^2	< ± 15 W/m^2
b) response to a 5 K/h change in ambient temperature	< ± 1 W/m^2	< ± 2 W/m^2	< ± 4 W/m^2	< ± 4 W/m^2	< ± 2 W/m^2	< ± 4 W/m^2	< ± 2 W/m^2	< ± 4 W/m^2	< ± 4 W/m^2
c) total zero offset including the effects a), b) and other sources	< ± 4 W/m^2	< ± 10 W/m^2	< ± 15 W/m^2	< ± 20 W/m^2	< ± 10 W/m^2	< ± 15 W/m^2	< ± 10 W/m^2	< ± 15 W/m^2	< ± 20 W/m^2
Long-term instability (1 year)	< ± 0.5 %	< ± 0.5 %	< ± 1 %	< ± 1 %	< ± 0.5 %	< ± 1 %	< ± 0.5 %	< ± 1 %	< ± 1 %
Non-linearity	< ± 0.2 %	< ± 0.2 %	< ± 1 %	< ± 1 %	< ± 0.2 %	< ± 1 %	< ± 0.2 %	< ± 1 %	< ± 1 %
Directional response (up to 80° with 1000 W/m^2 beam)	< ± 10 W/m^2	< ± 10 W/m^2	< ± 18 W/m^2	< ± 20 W/m^2	< ± 10 W/m^2	< ± 18 W/m^2	< ± 10 W/m^2	< ± 18 W/m^2	< ± 20 W/m^2
Spectral error	< ± 0.2 %	< ± 0.2 %	< ± 0.5 %	< ± 1 %	< ± 0.2 %	< ± 0.5 %	< ± 0.2 %	< ± 0.5 %	< ± 1 %
Temperature response (-10...+40°C)	< ± 0.5 %	< ± 0.5 %	< ± 1.5 %	< ± 2 %	< ± 0.5 %	< ± 1.5 %	< ± 0.5 %	< ± 1.5 %	< ± 2 %
Tilt response	< ± 0.4 %	< ± 0.2 %	< ± 1 %	< ± 1.5 %	< ± 0.2 %	< ± 1 %	< ± 0.2 %	< ± 1 %	< ± 1.5 %

Our Services

SENSOR CALIBRATION

To ensure continuous monitoring without interruptions, sensor recalibration must be performed with minimal downtime and sensor interruptions. This can be achieved by various methods, one of which is the replacement of installed sensors with new or recalibrated units.

For Class A systems, recalibration of sensors should take place at least once every two years, or more frequently as recommended by the manufacturer.

For Class B systems, follow the manufacturer's recommended recalibration schedule.

Our **ISO 17025 accredited Photo-radiometry laboratory** is part of our facilities and guarantees an uncertainty of 1.7 % on the calibration of pyranometers.

Fully compliant with the requirements of the IEC standard!

Senseca ISO 17025
Calibration Center
is accredited for:

- Photo-radiometry
- Temperature
- Humidity
- Pressure
- Air speed
- Acoustic

- First laboratory in the world to be accredited according to ISO 17025 standard for the calibration of pyranometers.
- Extended solar irradiance sensitivity uncertainty 1.7%.
- First in Italy to be accredited for photo-radiometric quantities and still the only one for some of them.



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