

LP02



SECOND CLASS PYRANOMETER

The LP02 is general purpose solar radiation sensor (otherwise known as a pyranometer), intended for routine global and surface reflected short-wave (SW) solar irradiance measurement. The LP02 is a 'Second Class' compliant instrument, as per the latest ISO and WMO pyranometer standards.

The LP02 pyranometer is suitable for measuring global short-wave solar irradiance incidenting a plane surface, offering a full 180° field of view (FOV). Suitable for both indoor and outdoor applications, the LP02 has a maximum measurement range of two suns, 2000 W/m². Employing entirely passive thermopile-based sensing technology, the LP02 generates a low level DC millivolt output signal proportional to the solar short-wave flux received at the detector surface. Contrary to competing low cost photodiode type and 'black & white' model pyranometers that suffer from long-term stability and spectral selectivity related error effects, the LP02 offers a spectrally flat/non-selective response across the entire solar spectrum for improved measurement accuracy and long-term stability. Determining short-wave solar irradiance requires connection to either a data logger or digital voltmeter with a measurement resolution of ten micro-volts or better; simply divide the LP02 millivolt output signal by the factory supplied calibration factor to arrive at irradiance in W/m² units. Typical LP02 measurement applications include meteorological observations, building physics, climate and solar collector/PV panel efficiency testing. For conventional horizontal plane mounting applications requiring accurate leveling, the LP02 is equipped standard with adjustable leveling screws and a bulls-eye bubble level; see leveling screw (7) and bubble level (11) illustration in Figure 1. The LP02 signal cable can be easily installed and replaced by the user, thus minimizing down-time and expense otherwise associated with instrument re-cabling by the manufacturer.

APPLICABLE STANDARDS

ISO 9060 and 9847, WMO (World Meteorological Organization) and ASTM E824-94. The LP02 can also be used for stability estimations according to EPA (EPA-454/R-99-005); also see SR11 Pyranometer model where ISO First Class compliance may be required.



APPLICATIONS

- ▶ Agrometeorology
- ▶ Climatology / Meteorology
- ▶ Industrial Light Measurement & Process Control
- ▶ Material Testing Research
- ▶ Solar Collector & PV Panel Efficiency Validation

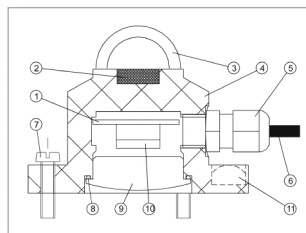
Note: Above applications are inclusive of, but not limited to the entire LP02 application range.

LP02 SPECIFICATIONS

ISO classification:	Second Class
Spectral range:	305 to 2800 nm
Sensitivity (nominal):	15 $\mu\text{V}/\text{W}/\text{m}^2$
Response time (95%):	18 sec.
Directional error (1000 W/m ² beam):	$\pm 25 \text{ W}/\text{m}^2$
Range :	0 to 2000 W/m ²
Non-linearity (to 1000 W/m ²):	$\pm 2.5\%$
Temperature range:	-40 to +80° C
Temperature dependence:	$< \pm 0.1 \%/^{\circ}\text{C}$
Calibration traceability:	WRR
Non stability (drift):	$< \pm 1\%$ per year
Cable length:	5 meter standard (longer lengths optional)

OPTIONS

Additional cable length by the meter, AC100/AC420 amplifiers, LI 18 hand-held display unit



◀ Figure 1: LP02 pyranometer. (1) printed circuit board, (2) sensor, (3) glass dome, (6) cable, standard length 5 m, (10) screwed cable connection, (9) access for cable connection/replacement.