

LP02 SOLAR RADIATION SENSOR

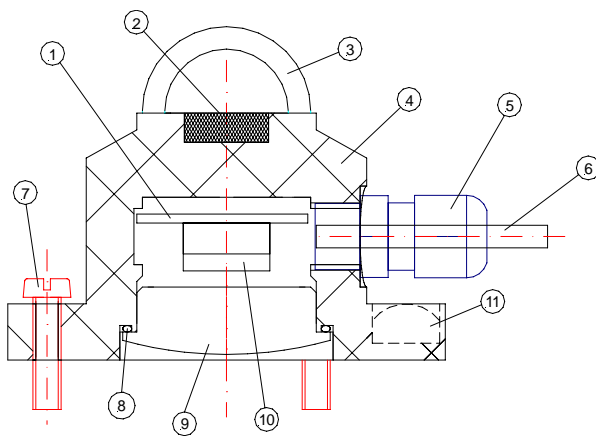


Figure 1 LP02 solar radiation sensor: (1) printed circuit board, (2) sensor, (3) glass dome, (6) cable, standard length 5 m, (10) screwed cable connection, (9) access for cable connection/replacement.

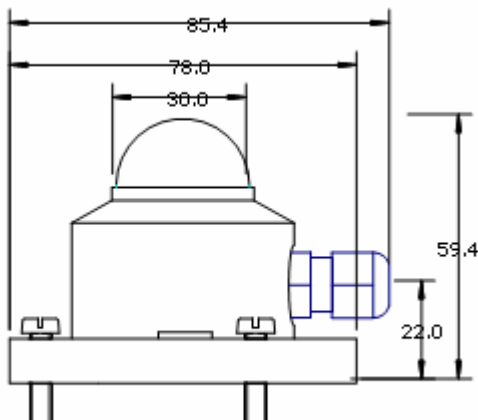


Figure 2 LP02 dimensions. Standard cable length is 5 m.

LP02 SOLAR RADIATION SENSOR COMPLIANT WITH ISO AND WMO STANDARDS

LP02 is a solar radiation sensor that can be applied for most common solar radiation observations. It complies with the latest ISO and WMO standards. The scientific name of this instrument is pyranometer. LP02 is a modern alternative for the so-called "star" or "black and white" pyranometers overcoming the problem of poor stability of the white reflective paint.

LP02 serves to measure the solar radiation flux that is incident on a plane surface in W/m^2 from a 180 degrees field of view (also called global solar radiation). Working completely passive, using a thermopile sensor, LP02 generates a small output voltage proportional to this flux. Contrary to photodiode-based and "black and white" instruments LP02 has a spectrally flat response across the full solar spectrum.

Using LP02 is easy. For readout one only needs an accurate voltmeter that works in the millivolt range. To calculate the radiation level, the voltage must be divided by the sensitivity; a constant that is supplied with each individual instrument. LP02 can directly be connected to most commonly used datalogging systems. LP02 can be used for general meteorological observations, building physics and solar collector testing. A common application is for outdoor solar radiation measurements as part of a meteorological station. This application requires horizontal levelling; levelling feet (7) and a level (11) are included. Applicable standards are ISO 9060 and 9847, WMO (World Meteorological Organisation), and ASTM E824-94. LP02 can also be used for stability estimations according to EPA (EPA-454/R-99-005).

LP02 SPECIFICATIONS

ISO classification:	second class
Response time 95%:	18 seconds
Zero offset a (response to $200 W \cdot m^{-2}$: net thermal radiation)	< $15 W \cdot m^{-2}$
Zero offset b (response to 5 k/h change: in ambient temperature)	< $4 W \cdot m^{-2}$
Non-stability:	< 1% change per year
Non-linearity:	< +- 2.5 %
Directional error:	within $25 W \cdot m^{-2}$
Spectral selectivity:	+ - 5% (305 to 2000 nm)
Temperature response:	within 6% (-10 to +40 °C)
Tilt response:	within +- 2%
Spectral range:	305 to 2800 nm
Sensitivity (nominal):	10 - 40 $\mu V / W \cdot m^{-2}$
Expected voltage output: (Application with natural solar radiation)	0 - 50 mV
Temperature range:	-40 to +80 °C
Measuring range:	0 to $2000 W \cdot m^{-2}$
Temperature dependence:	< 0.1%/°C
Calibration traceability:	WRR

OPTIONS

AMF 01 Albedometer Fixture (used with 2 x LP02)