

# SP1110 Pyranometer & SKP215 Quantum Sensor



**For environmental monitoring with  
Campbell Scientific dataloggers**

## **Introduction**

These field-proven sensors are manufactured by Skye Instruments and are ideal for use with Campbell Scientific dataloggers.

## **SP1110 Pyranometer**

This is a compact high-output thermally stable solar radiation sensor based on a silicon photo-cell. It is calibrated against a precision reference thermopile pyranometer in natural daylight conditions. Applications include weather stations for agriculture or horticulture and the study of ecosystems.

## **SKP215 Quantum Sensor**

The SKP215 measures incident quanta between 400 and 700nm. Light in this waveband is used for photosynthesis and is often referred to as 'PAR' (Photosynthetically Active Radiation).

Quanta below 400nm are not generally used in photosynthesis and those above 700nm have insufficient energy for the process. The number of quanta is related to sugar production and this measurement is now a standard referred to in scientific papers worldwide. Filtering in the sensor means that the measurement may be made accurately under any light source (sun, tungsten, fluorescent, xenon, etc.).

## **Measurement of Net Radiation**

Net radiation is an important parameter in studies involving evaporation estimates (in assessment of irrigation requirements, for example).

The SP1110 and SKP215 are not suitable for the measurement of net radiation, but we offer dedicated sensors for this purpose – see overleaf.

## **Key Features**

High-quality sensors for measurement of solar radiation and photosynthetically active radiation (PAR)

Direct connection to datalogger

No power required

On-line processing for maxima, average, flux density or total flux

## **Typical Applications**

Meteorology

Horticulture

Agricultural research

Energy balance studies  
in buildings

## Typical Applications of the SKP215

- Comparison of photosynthetic efficiencies of light sources differing in spectral emission
- Assessment of drift in radiation sources
- Design of lighting arrays in greenhouses and environmental chambers
- Predicting the efficiency of photosynthetic activity in plant growth, particularly under fluctuating light conditions such as plant canopies
- Choice of planting sites in gardens or indoor growth facilities

## Other Pyranometers

For pyranometers which conform to WMO specifications, please refer to our leaflets on the Kipp & Zonen CM 3 and CM 6B.

## Specifications

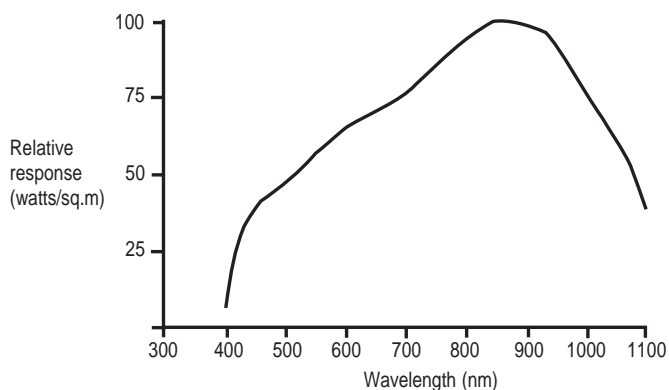
### SP1110

- Sensitive to light between 350nm and 1100nm
- Preset output 1mV per 100Wm<sup>-2</sup>
- Cosine corrected head (typical errors zero 0-70°, <10% 85-90°)
- Blue-enhanced silicon photocell detector with low fatigue characteristics
- Constructed from Dupont 'Delrin', sensor head fully sealed to IP68
- Operating temperature -35°C to +75°C
- Absolute accuracy ±5% (typically <±3%)
- Standard cable 3m

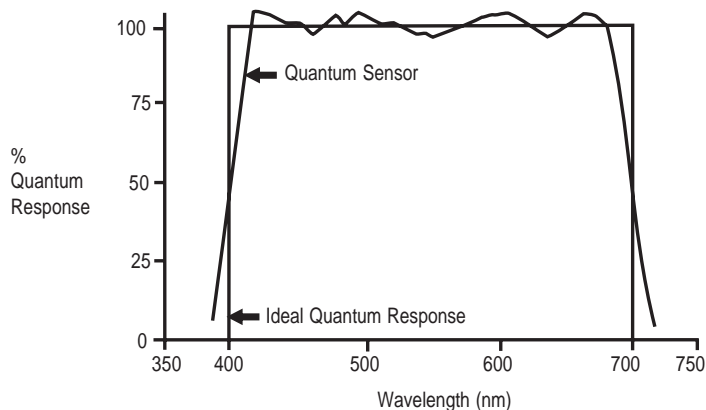
### SKP215

The sensor is calibrated in units of  $\mu\text{molm}^{-2}\text{s}^{-1}$ . A  $\mu\text{mol}$  is the new name for the unit  $\mu\text{Einstein}$ , which is one millionth of Avagadro's number of quanta or photons.

- Sensitive to light between 400nm and 700nm wavelength
- Preset output 1mV per 100 $\mu\text{molm}^{-2}\text{s}^{-1}$
- Other specifications as for SP1110



Typical spectral response of SP1110



Typical spectral response of SKP215

## Net Radiation

Net radiation refers to the algebraic sum of incoming and outgoing all-wave radiation (i.e. short-wave and long-wave components). Incoming radiation consists of direct (beam) and diffuse solar radiation plus long-wave irradiance from the sky. Outgoing radiation consists of reflected solar radiation plus the terrestrial long-wave component.

For standard applications, we recommend the Kipp & Zonen NR-LITE Net Radiometer, which is described in a separate leaflet. Higher quality net radiometers are available to special order.

**Please call for further  
information on sensors and  
datalogging systems.**

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Campbell Scientific products are  
available from: