KIPP & ZONEN
SINCE 1830



PQS 1 PAR Quantum Sensor

FOR MEASURING PHOTOSYNTHETICALLY ACTIVE RADIATION

Designed for outdoor and indoor use
Excellent quantum response
Integrated leveling base

Introduction

Light plays a crucial part in plant and crop growth. Absorption of light (mostly by chlorophyll) drives the photosynthesis process whereby carbon dioxide and water are photo-chemically converted into glucose and oxygen. Light which a plant can use for this process is called Photosynthetically Active Radiation (PAR). The actual response differs depending on the plant or crop. A standardised PAR spectral response in the visible light range between 400 nm and 700 nm wavelength was defined by McCree (1972) such that each photon within this region is equally absorbed. 'Blue' photons of shorter wavelength (higher frequency) have more energy than 'Red' photons of longer wavelength. The amount of PAR is commonly expressed as Photosynthetic Photon Flux Density (PPFD) with a unit of µmol/m²·s.

Applications

In horticulture, to optimise crop timing and quality in greenhouses, a delicate control of light intensity is necessary. In order to achieve this continuous monitoring of the PAR levels of natural sunlight and artificial lighting inside the greenhouse is required.

In forestry applications the amount of PAR is a key research parameter. It can be measured above, within and below the forest canopy to retrieve valuable data on plant physiology and leaf area.

In agriculture measurement of PAR helps to predict growth rates and estimate crop yields.

The PQS 1 PAR Quantum Sensor is designed to provide accurate, continuous measurement of PAR outdoors or indoors. The rugged construction makes it well protected from harsh weather conditions around the world and from exposure to pesticides.

Installation and Accessories

PQS 1 PAR Quantum Sensor is designed for continuous outdoor or indoor installation or for portable field use. The diffuser provides excellent directional (cosine) response and is easy to clean.

The mounting flange incorporates a bubble level and adjustment screws for easy leveling. A threaded hole takes the accessory screw-in mounting rod for fitting to masts and poles. The standard cable length is 5 m, with an option of 15 m.

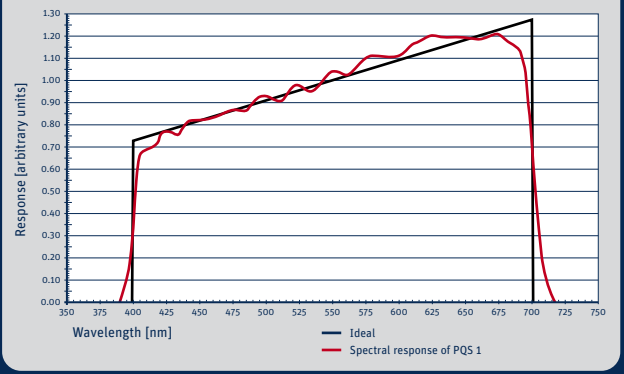
Two PQS 1 sensors can easily be bolted back-to-back, and fitted with the mounting rod, to make a simple PAR albedometer.

For field research applications where a real-time display of the measurement data is required, PQS 1 can be connected to the METEON handheld display unit that also has a data-logging function.

For permanent installations PQS 1 can easily be connected to the LOGBOX SD data logger. This compact and cost-effective unit is weather proof and can run for many months on internal batteries.

More information on the METEON and LOGBOX SD is available in our dedicated data logger brochure.

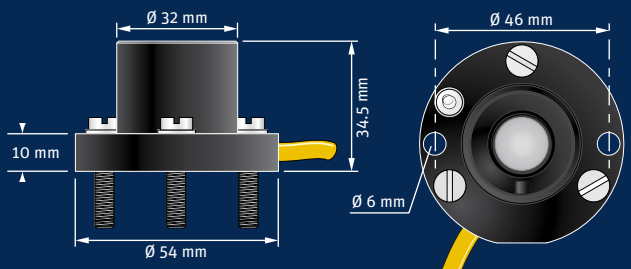
Spectral response PQS 1 PAR Quantum Sensor



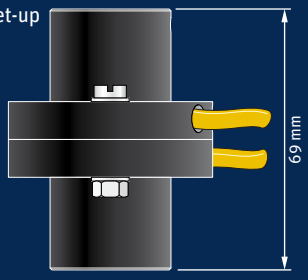
Specifications

Spectral range (50 % points)	400 to 700 nm ±4 nm
Sensitivity	4 to 10 µV/µmol/m²·s
Impedance	240 Ω (typical)
Expected output range (0 to 3000 µmol/m²·s)	0 to 30 mV
Maximum operational irradiance	10,000 µmol/m²·s
Response time (95 %)	< 1 µs
Non-stability (change/year)	< 2 %
Non-linearity (0 to 10,000 µV/µmol/m²·s)	< 1 %
Directional response (up to 80° with 1000 µmol/m²·s beam)	< 30 µmol/m²·s
Temperature response	< -0.12 %/°C
Field of view	180 °
Accuracy of bubble level	< 0.2 °
Detector type	Photo-diode
Operational temperature range	-30 °C to +70 °C
Storage temperature range	-30 °C to +70 °C
Humidity range	0 to 100 % non-condensing
Ingress Protection (IP) rating	67

Note: The performance specifications quoted are worst-case and/or maximum values



Albedo set-up



Optional mounting rod



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Go to www.kippzonen.com for your local distributor

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Kipp & Zonen B.V. reserve the right to alter specifications of the equipment described in this documentation without prior notice