



Horticultural Sensor

For the measurement of photosynthetically active radiation

Exposure to light is essential for the growth of a plant. Under the influence of light from the sun, or from artificial sources, plants convert carbon dioxide and water into glucose and oxygen. This process is called Photosynthesis and occurs mainly under the influence of light in a number of discrete wavebands within the range between 400 nm (blue) and 700 nm (red). Light within this spectral region is referred to as Photosynthetically Active Radiation (PAR).

To monitor and optimize the development, quality and yield of plants, accurate determination of the amount of PAR radiation received is essential. In addition to high quality PAR radiation measurement durability is an important factor.

Especially in greenhouses conditions can be very harsh due to high temperature and humidity, artificial lighting, and possibly spraying with pesticides. For sensors to operate reliably they must be designed to resist the influences of these conditions.

Kipp & Zonen offers the PQS1 that is sensitive to light with a quantum response that matches the differing energies of photons within the PAR spectral region.

With an excellent price-performance ratio, and superior durability for virtually any environment, PQS1 is the ideal choice for greenhouse automation applications as well as for use outdoors in crop research and monitoring.

PQS1



PQS1 measures the Photosynthetically Active Radiation (PAR) from the sun, or artificial light sources, that produces chlorophyll and promotes growth in plants, and is a key input for agriculture, horticulture and greenhouse automation. PQS1 features optimised quantum response providing an excellent match with the ideal PAR spectrum.

The PQS1 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 and fertilisers.

No power is required; the detector generates a small voltage output proportional to the PAR received. Two PQS1 instruments can easily be bolted back-to-back to make a simple net PAR sensor. The standard cable length is 5m with an option of 15 m.

Specifications	
Spectral range (50% points)	400 to 700 nm \pm 4 nm
Sensitivity	4 to 10 μ V/ μ mol/m ² ·s
Impedance	240 Ω (typical)
Expected output range (0 to 3000 μ mol/m ² ·s)	0 to 30 mV
Maximum operational irradiance	10,000 μ mol/m ² ·s
Response time (95%)	< 1 μ s
Non-stability (change/year)	< 2%
Non-linearity (0 to 10,000 μ V/ μ mol/m ² ·s)	< 1%
Directional response (up to 80° with 1000 μ mol/m ² ·s beam)	< 30 μ mol/m ² ·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

Part number	Instrument
0373900-001	PQS1 PAR Quantum Sensor • 5 m cable
0373900-003	PQS1 PAR Quantum Sensor • 15 m cable
0373900-701	PQS1 PAR Quantum Sensor • METEON • 5 m cable
0373900-703	PQS1 PAR Quantum Sensor • METEON • 15 m cable
0373900-801	PQS1 PAR Quantum Sensor • AMPBOX • 5 m cable
0373900-803	PQS1 PAR Quantum Sensor • AMPBOX • 15 m cable

Note: AMPBOX is adjusted so that 4 to 20 mA output = 0 to 3200 μ mol/s.m²

Part number	Accessories
0338720	Mounting Rod Screw-in 300 mm long x 12 mm ϕ
0369701	CMB1 Mounting Bracket In combination with mounting rod for easy attachment to a pole or a wall