



## PAR Line Quantum Sensor



**SKP 215LQ (V & C versions)  
'SW-11L/V/A'**

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## Skye Instruments Ltd.

Skye Instruments is based in the UK and we are very proud to be celebrating being in business since 1983. Our products are designed and built in the UK. We have a very wide product base and our sensors & systems are used for plant & crop research; micro-climate, global climate change studies; environmental monitoring and controlled environment installations.

Products include light sensors & systems, weather monitoring sensors, automatic weather stations, plant research systems, soil and water research systems.

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Please be aware that the information in this manual was correct at time of issue, and should be 100% relevant to the accompanying product. We take great pride in our ever-evolving range of products, which means that sometimes the product may change slightly due to a re-design. If you have any queries, please do not hesitate to contact our technical team by any of the methods above.

## CONTENTS

	Page
1. INTRODUCTION	1
2. COSINE CORRECTION	2
3. CALIBRATIONS	2
4. SPECIFICATIONS	2
5. WIRING DETAILS	3
6. SPECTRAL RESPONSE	4
7. TROUBLESHOOTING	4
8. REFERENCES	4

# PAR Line Quantum sensor

## 1. INTRODUCTION

Skye Instruments Limited family of specialist light sensors include sensors to measure different parts of the ultra violet, visible and infra-red spectrum for a wide range of applications.

All sensors use high quality photodiodes and spectral filters, and are individually calibrated. Each is supplied with a Calibration Certificate. Recalibration is recommended every two years.

The sensor was originally manufactured by SW and WS Burrage, but Skye Instruments Ltd have recently taken over the manufacture of these sensors. We have continued to manufacture them in a similar way, but with one significant change where the voltage output versions 'V' have an individual calibration factor of nominally  $1 \text{ mV} / 10 \mu\text{mol m}^{-2} \text{ s}^{-1}$ .

The SW-11L is designed for the measurement of photosynthetically active radiation (PAR) within plant canopies. 33 sensors are mounted within a 1 metre anodised "U" section tube. The sensors are covered with a 3mm diffuser providing an integrated reading over 850mm section of the sensor. At the cable end there are no sensors in the first 70mm and in the last 50mm at the distal end to provide for attachment. An integral "bulls eye" levelling sensor is provided.

# PAR Line Quantum sensor

## 2. COSINE RESPONSE

The SW-11L is designed to give an integrated value of the PAR inside plant canopies. Its cosine response varies whether direct and diffuse light is being measure. In diffuse (overcast conditions) there is no difference between the readings from the SW-11L and a cosine corrected reference sensor. In direct sunlight the SW-11L shows a true cosine response when mounted at a right angle to the radiation source and rotated around its axis (0- 50° angle ). When mounted in line with the radiation source and rotated (0 - 50°) along its long axis indicated PAR output from the SW-11L falls from 100 to 93% of that from the reference sensor. Where high levels of direct radiation a East-West orientation is recommended.

## 3. CALIBRATION

It is advisable to check the calibration at two year intervals to ensure no shift in response has occurred. The instrument can be returned to Skye Instruments Ltd for servicing.

## 4. SPECIFICATIONS

Materials	Anodised Aluminium, Acrylic. IP65 sealed
Cable	5m 7-2-2C (2 Core Screened)
Sensor	33, GaAsP Photodiodes, 350 – 680nm, peak at 640nm*
Temperature sensitivity	±0.15%/°C at peak response, from 0 - 50°C
Linearity	1% over 0 – 2000 $\mu\text{mol m}^{-2} \text{s}^{-1}$
Uniformity of sensing surface	better than 2% over 0.85m sensing length
Response time	2 $\mu\text{s}$ . 10 - 90%
Output: Voltage version Current version	$\sim 200 \text{ mV} / 2,000 \mu\text{mol m}^{-2} \text{s}^{-1}$ * $\sim 1.8 \text{ mA} / 2,000 \mu\text{mol m}^{-2} \text{s}^{-1}$ *
Operating temperature range	-20°C - + 60°C
Dimensions	1.2 x 1.5 cm x 1m
Material	Anodised aluminium and acrylic

***\*Please refer to the supplied calibration certificate for the exact outputs***

# PAR Line Quantum sensor

## 5. WIRING DETAILS

### Wire ended sensors

Wire Colour	SKP 215LQC	SKP 215LQV
Red	+ve current output	+ve voltage output
Blue	-ve current output	-ve voltage output
Green	Uncommitted cable screen	Uncommitted cable screen

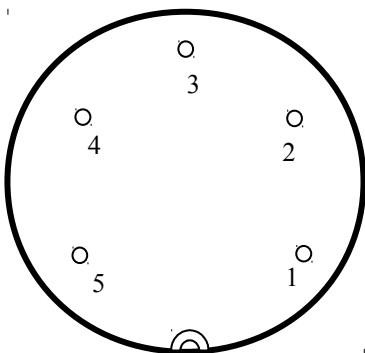
### Sensors fitted with plugs for connection to a Skye meter or data logger

These sensors have been fitted with a 5 pin plug and wired for a current input socket;

Pin Number	SKP 215LQC/I	SKP 215LQC/SS2
1	Not connected	Not connected
2	Not connected	Red
3	Red	Not connected
4	Blue	Blue
5	Green and cable screen	Green and cable screen

These sensors have been fitted with a 5 pin plug and wired for a voltage input socket;

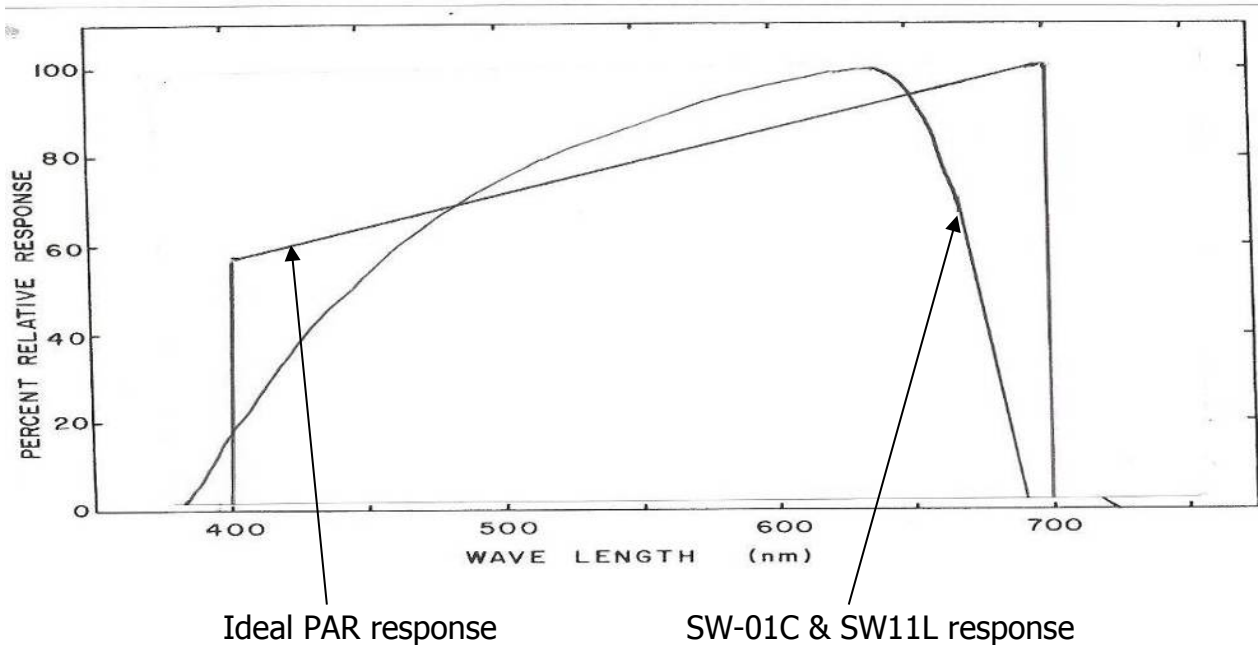
Pin Number	SKP 215LQV/I & SKP 215LQV/SS2	SKP 215LQV/I/SE
1	Not connected	Not connected
2	Not connected	Red
3	Blue	Not connected
4	Red	Not connected
5	Green and screen	Blue and Green



Waterproof Binder 5 Pin Plug for  
DataHog2, SpectroSense2, Apollo and Display Meter  
Outside Pin View

# PAR Line Quantum sensor

## 6. SPECTRAL RESPONSE



## 7. TROUBLESHOOTING

Please contact Skye Instruments if you're having issues with your sensor.

## 8. REFERENCES

- McCree, K.J., 1972a. The action spectrum, absorptance and quantum yield of photosynthesis in crop plants. *Agricultural and Forest Meteorology* 9, 191-216.
- McCree, K. J., 1972b. Test of current definitions of photosynthetically active radiation against leaf photosynthesis data. *Agricultural and Forest Meteorology* 10, 443-453.