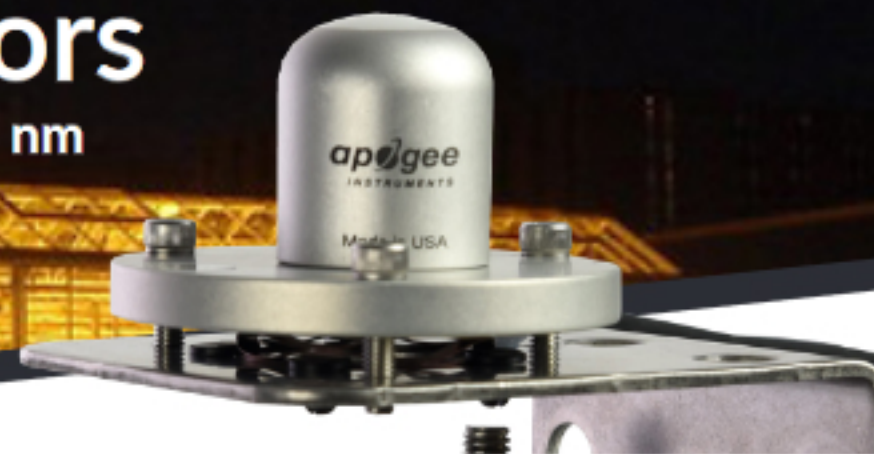


Quantum Light Pollution Sensors

Designed to detect trace amounts of stray light from 340-1040 nm



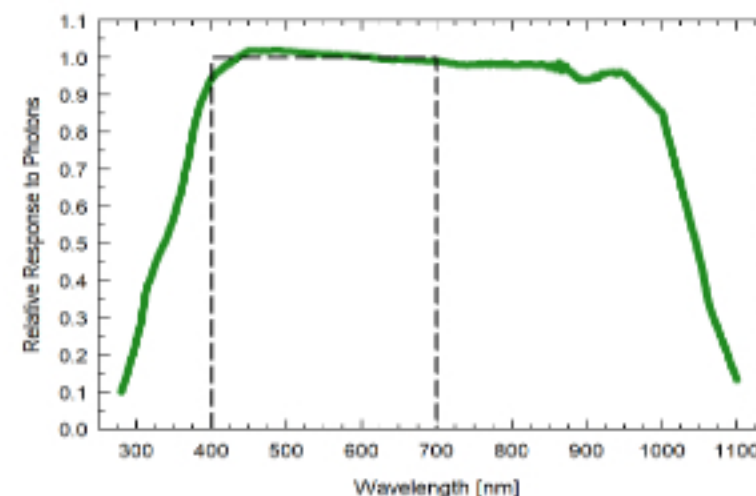
	SQ-640-SS	SQ-642-SS	SQ-644-SS	SQ-645-SS	SQ-647-SS
Power Supply	Self-powered	5 to 24 V DC	12 to 24 V DC	5.5 to 24 V DC	
Sensitivity	1 mV per $\mu\text{mol m}^{-2} \text{s}^{-1}$	12.5 mV per $\mu\text{mol m}^{-2} \text{s}^{-1}$	0.08 mA per $\mu\text{mol m}^{-2} \text{s}^{-1}$	25 mV per $\mu\text{mol m}^{-2} \text{s}^{-1}$	—
Calibration Factor (reciprocal of sensitivity)	1 $\mu\text{mol m}^{-2} \text{s}^{-1}$ per mV	0.08 $\mu\text{mol m}^{-2} \text{s}^{-1}$ per mV	12.5 $\mu\text{mol m}^{-2} \text{s}^{-1}$ per mA	0.04 $\mu\text{mol m}^{-2} \text{s}^{-1}$ per mV	Custom for each sensor
Calibration Uncertainty	± 5 %				
Calibrated Output Range	0 to 200 mV	0 to 2.5 V	4 to 20 mA	0 to 5 V	SDI-12
Measurement Range	0 to 200 $\mu\text{mol m}^{-2} \text{s}^{-1}$				
Measurement Repeatability	Less than 0.5 %				
Long-term Drift	Less than 2 % per year				
Non-linearity	Less than 1 % (up to 200 $\mu\text{mol m}^{-2} \text{s}^{-1}$)				
Response Time	Less than 1 ms			Less than 0.6 s	
Field of View	180°				
Spectral Range	340 to 1040 nm ± 5 nm (wavelengths response is greater than 50 % of maximum)				
Directional (cosine) Response	± 2 % at 45°; ± 5 % at 75° zenith angle				
Temperature Response	-0.11 ± 0.04 % per C				
Operating Environment	-40 to 70 C; 0 to 100 % relative humidity, can be submerged in water up to depths of 30 m				
Dimensions	30.5 mm diameter, 37 mm height				
Mass (with 5 m of cable)	140 g				
Warranty	4 years against defects in materials and workmanship				

Overview

Many plants are affected by interruptions in dark periods, even by extremely dim light. Apogee's new Quantum Light Pollution Sensor is designed to detect photons from 340-1040 nm that are below the sensitivity level of a typical quantum sensor. Detecting stray photons that disrupt the night period is critical in preventing negative effects in plants, such as hermaphroditism and poor flowering.

Typical Applications

- Preventing dark period disruptions for sensitive plants like cannabis
- Incoming PFD measurement of combined UV-A, PAR, and Far-red light
- Measuring light leaks and light pollution in greenhouses and growth chambers



Above: The Quantum Light Pollution sensors have a spectral range of 340 to 1040 nm ± 5 nm.



Case Study

An Apogee SQ-640 and a μ Cache Bluetooth Micro Logger on a retort stand directionally-characterized stray light pollution in cannabis photoperiod treatment plots at the **University of Guelph**.