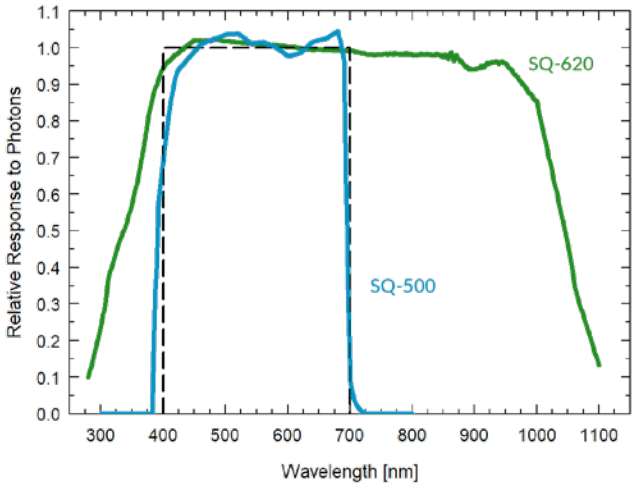
EXTENDED RANGE PFD SENSORS

SQ-620 Series

Spectral Response



Spectral response of SQ-620 series (green) compared to the SQ-500 series (blue) and the defined PAR response of plants (dashed).

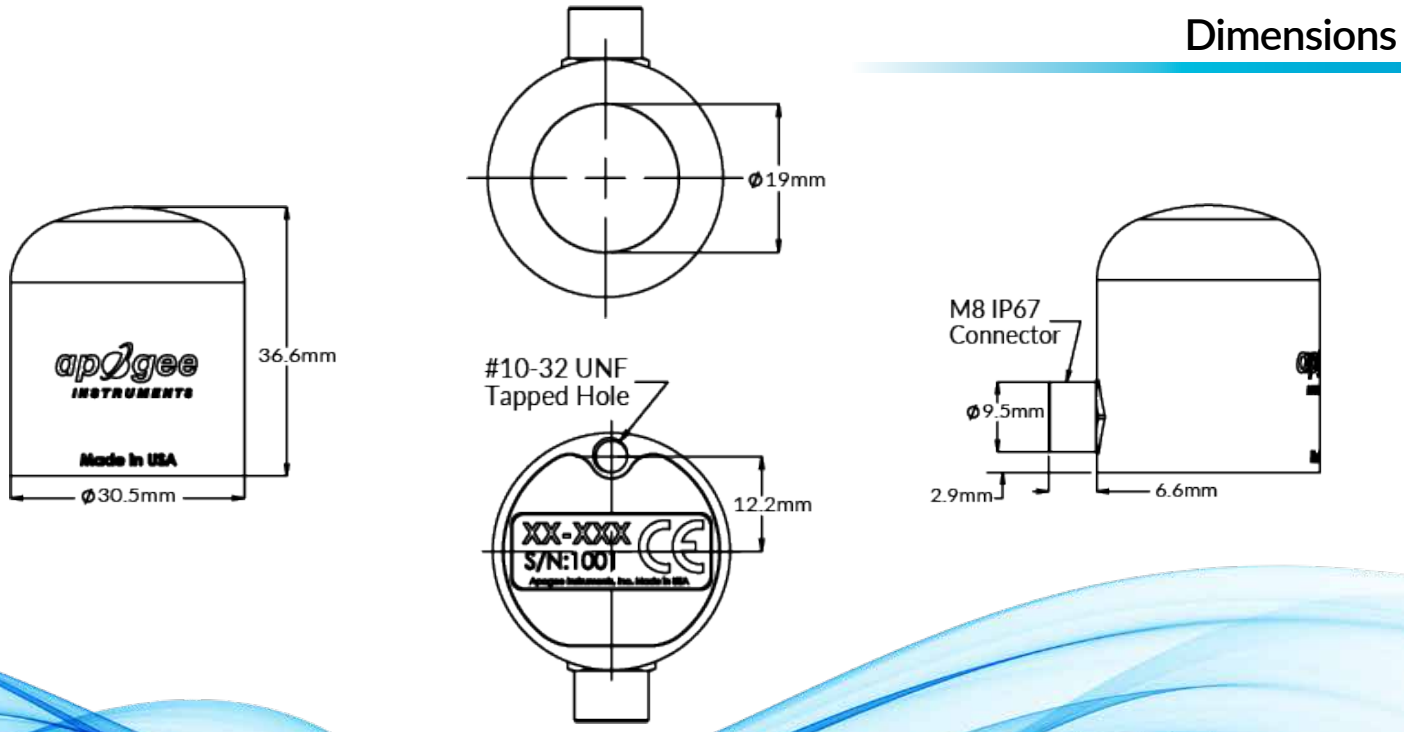
Product Specifications

	SQ-620-SS	SQ-622-SS	SQ-624-SS	SQ-625-SS	SQ-626	SQ-627-SS
Power Supply	Self-powered	5 to 24 V DC	12 to 24 V DC	5.5 to 24 V DC	5 V USB power source	5.5 to 24 V DC
Current Draw	–	at 12 V is 57 µA	Maximum of 20 mA	at 12 V is 57 µA	61 mA when logging	1.4 mA (quiescent), 1.8 mA (active)
Sensitivity	0.05 mV per µmol m^{-2} s^{-1}	0.625 mV per µmol m^{-2} s^{-1}	0.004 mA per µmol m^{-2} s^{-1}	1.25 mV per µmol m^{-2} s^{-1}	–	
Output Type	0 to 200 mV	0 to 2.5 V	4 to 20 mA	0 to 5 V	USB	SDI-12
Resolution	–				0.1 µmol m^{-2} s^{-1}	–
Calibration Factor	20 µmol m^{-2} s^{-1} per mV	1.6 µmol m^{-2} s^{-1} per mV	250 µmol m^{-2} s^{-1} per mA	0.8 µmol m^{-2} s^{-1} per mV	Custom for each sensor and stored in the firmware	
Calibration Uncertainty	± 5 %					
Measurement Range	0 to 4000 µmol m^{-2} s^{-1}					
Measurement Repeatability	Less than 0.5 %					
Calibrated Output Range	0 to 200 mV					
Long-term Drift	Less than 2 % per year					
Non-linearity	Less than 1 % (up to 4000 µmol m^{-2} s^{-1})					
Response Time	Less than 1 ms					
Field of View	180°					
Spectral Range	340 to 1040 nm ± 5 nm (wavelengths where response is greater than 50 % of maximum)					
Directional (Cosine) Response	± 2 % at 45° zenith angle, ± 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

Scientific studies indicate that radiation outside the standard 'photosynthetically active radiation' (PAR) range (400 - 700 nm) can have substantial effects on plant growth, morphology, and secondary compounds. Apogee's new Extended Range PFD sensor is sensitive to light beyond just the PAR region, capturing portions of the UV spectrum as well as far-red radiation. Since the detector is sensitive to radiation with wavelengths up to 1100 nm, beyond the range of wavelengths that influence plants, **we recommend using Extended Range sensors in indoor grow environments utilizing LED lights**. The patented, dome-shaped aluminum head is cosine-corrected, self-cleaning, and fully-potted for a waterproof design.

Dimensions



Features

TYPICAL APPLICATIONS

- Incoming PFD measurements over plant canopies in indoor greenhouses or in growth chambers, and reflected or under-canopy (transmitted) PFD measurements in the same environments
- This particular sensors should only be used for photon flux density measurements under LEDs
- Measuring extremely dim light that may cause interruptions in plant dark periods

MULTIPLE OUTPUT OPTIONS

- Attached to a hand-held meter
- Analog, multiple analog models, or SDI-12 output

ACCURATE, STABLE MEASUREMENTS

Cosine-corrected with directional errors less than ± 5 % at a solar zenith angle of 75°. Long-term non-stability less than 2 % per year.

HIGH QUALITY CABLE

Pigtail-lead sensors feature on IP68, marine-grade stainless-steel cable connectors attached directly to the sensor head to simplify sensor removal for maintenance and recalibration.

CALIBRATION TRACEABILITY

Apogee Instruments SQ-600 series quantum sensors are calibrated through side-by-side comparison to the mean of four transfer standard quantum sensors under a reference lamp. The transfer standard quantum sensors are recalibrated with a quartz halogen lamp traceable to the National Institute of Standards and Technology (NIST).

MQ-620