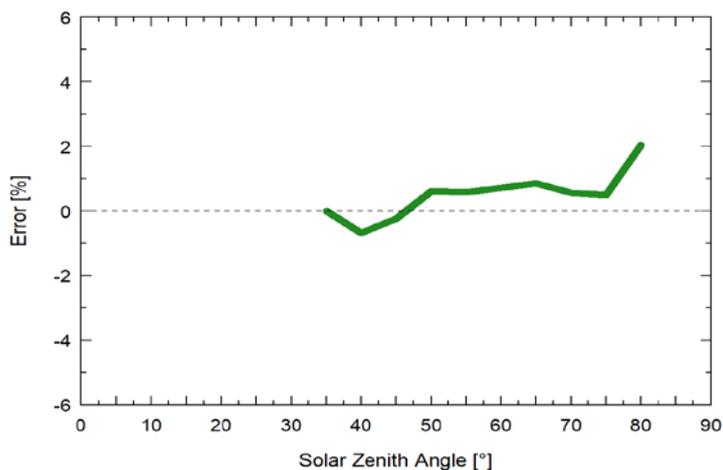
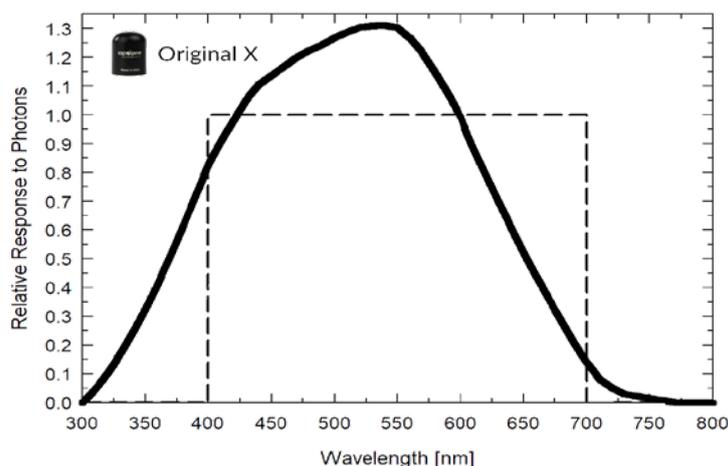




## Response Graphs



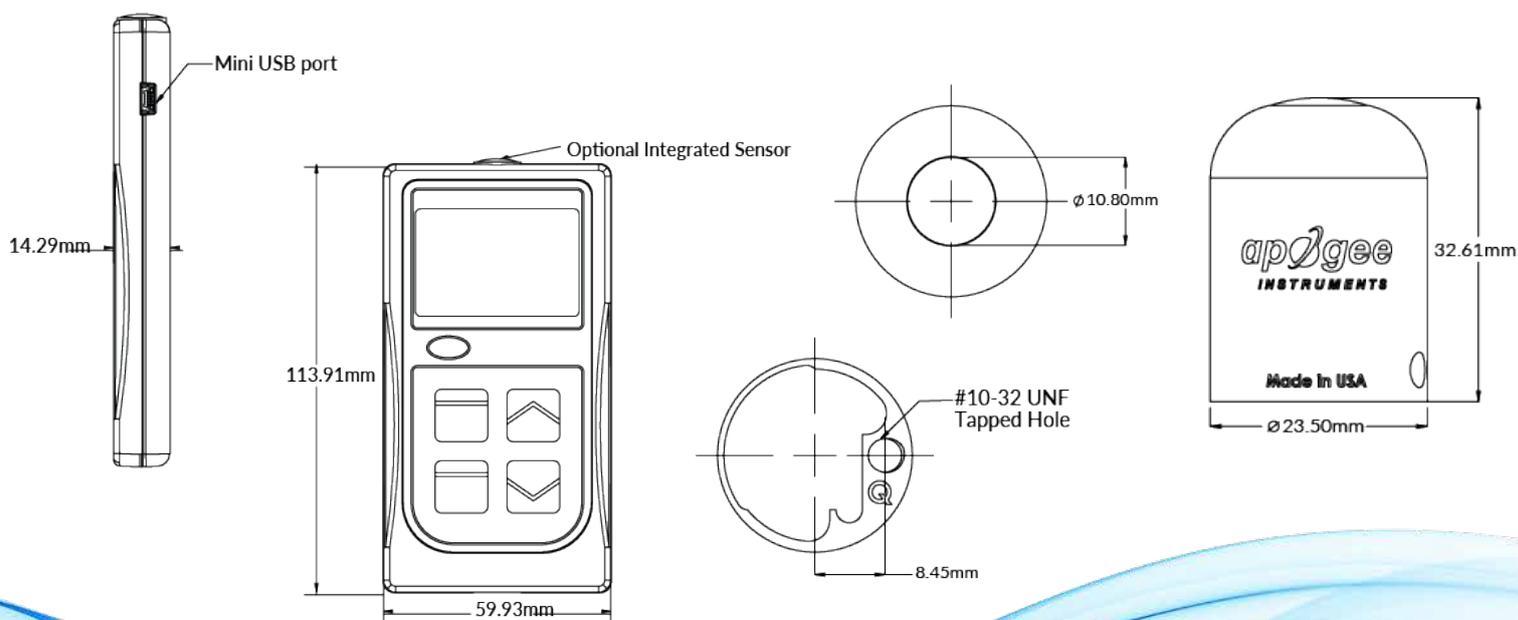
Mean **cosine response** of twenty-three SQ X series quantum sensors.



Mean **spectral response** of six SQ X series quantum sensors compared to defined PAR 400-700 nm (dotted line).

## Product Specifications

	MQ-100X	MQ-200X
Calibration Uncertainty	± 5 %	
Measurement Repeatability	Less than 1 %	
Long-term Drift	Less than 2 % per year	
Non-linearity	Less than 1 % (up to 4000 $\mu\text{mol m}^{-2} \text{s}^{-1}$ )	
Response Time	Less than 1 ms	
Field of View	180°	
Spectral Range	370 to 650 nm (wavelengths where response is greater than 50 % of maximum)	
Directional (Cosine) Response	± 5 % at 75° angle	
Temperature Response	-0.04 % per C	
Operating Environment	0 to 50 C; less than 90 % non-condensing relative humidity up to 30 C; less than 70 % non-condensing relative humidity from 30 to 50 C; separate sensors can be submerged in water up to depths of 30 m	
Meter Dimensions	113.9 mm height, 59.9 mm width	
Sensor Dimensions	Integrated with Meter	24 mm width, 33 mm height
Mass	150 g	180 g
Cable	2 m of shielded, twisted-pair wire; additional cable available; TPR jacket (high water resistance, high UV stability, flexibility in cold conditions)	
Warranty	4 years against defects in materials and workmanship	



## Features

### TYPICAL APPLICATIONS

- Incoming and reflected PPFD over and under plant canopies in greenhouses, in fields, and in growth chambers
- Aquatic environments including salt water aquariums and freshwater lakes and streams

### UNIQUE DESIGN

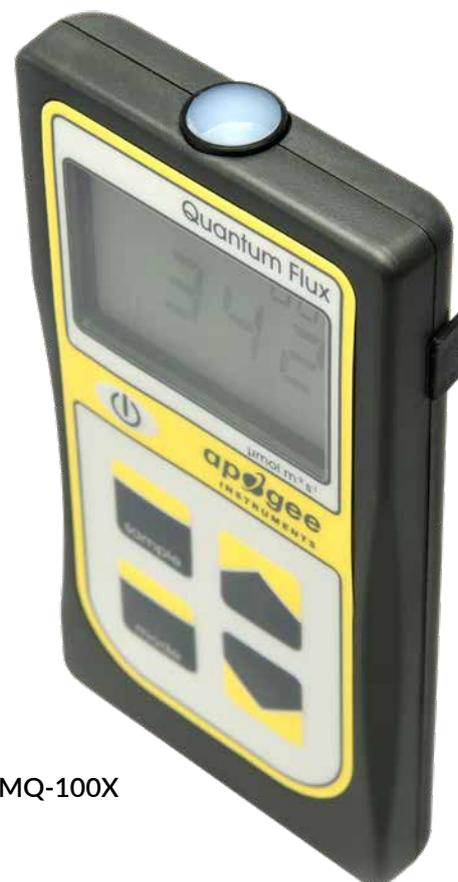
Cost-effective, original quantum sensors work well for broadband radiation sources. The patented, dome-shaped aluminum head is cosine-corrected, self-cleaning, and fully-potted for a waterproof design.

### ACCURATE, STABLE MEASUREMENTS

Cosine-corrected with directional errors less than  $\pm 5\%$  at a solar zenith angle of  $75^\circ$ . Long-term non-stability less than  $2\%$  per year.

### CALIBRATION TRACEABILITY

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



MQ-100X