



## APOGEE ULTRA VIOLET METERS | MU-100 & MU-200

Measure total radiation from 250 to 400 nm



### Features

#### Wide Range

Sensitive from 250 to 400 nm, spanning the solar UV and range of electric lamps.

#### Measurement Units

Calibration factors for photon flux density units [ $\mu\text{mol m}^{-2} \text{s}^{-1}$ ] and energy flux density [ $\text{W m}^{-2}$ ] are provided with each sensor allowing for rapid unit conversions.

#### Rugged, Self-cleaning Housing

The patented dome-shaped sensor head facilitates runoff of dew and rain, helping to keep the detector clean and minimizing errors caused by dust blocking the radiation path. Sensors are housed in a rugged anodized aluminum body and electronics are fully-potted.

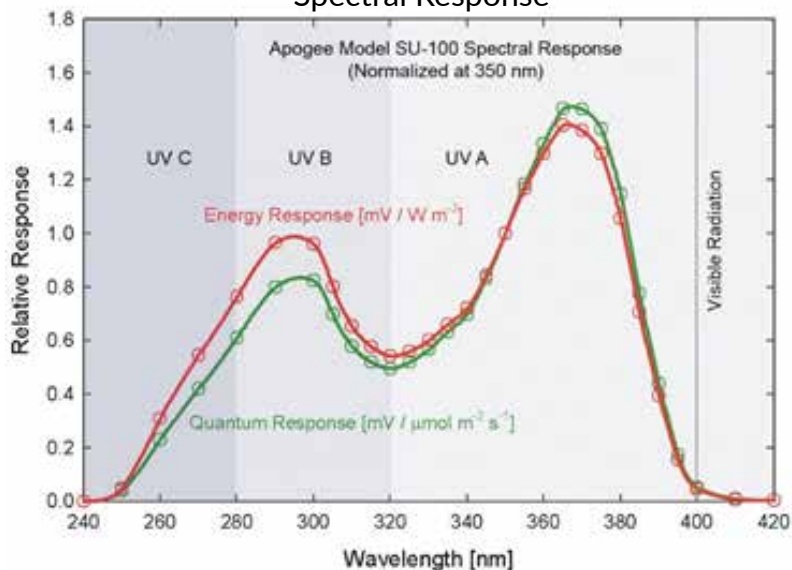
#### Typical Applications

Applications include: UV radiation measurement in outdoor environments (sensor is not recommended for long-term continuous outdoor deployment), laboratory use with artificial light sources (e.g., germicidal lamps), and monitoring the filtering ability and stability of various materials.

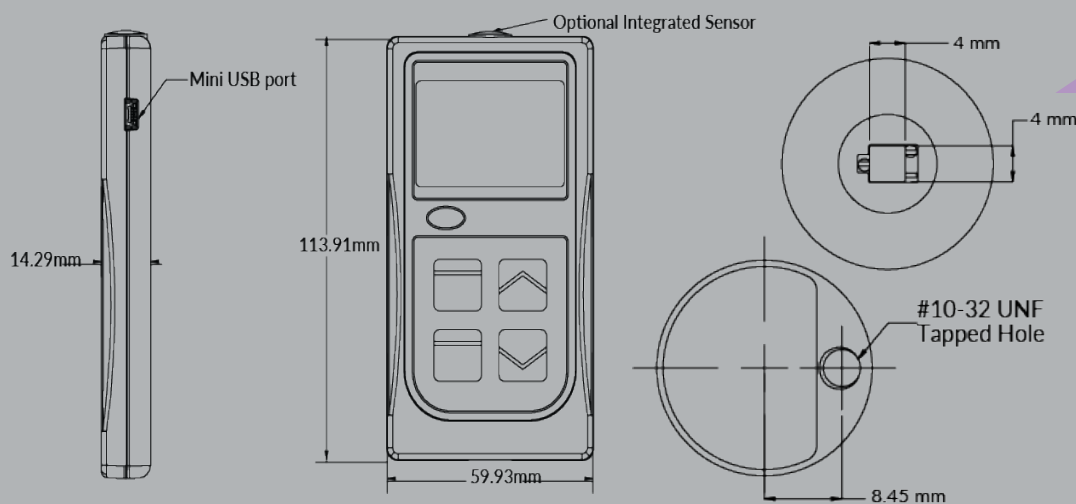
### Product Specifications

	MU-100
Calibration Uncertainty	$\pm 10\%$
Measurement Repeatability	Less than 1%
Long-term Drift (non-stability)	Less than 3% per year
Non-linearity	Less than 1% (up to $300 \mu\text{mol m}^{-2} \text{s}^{-1}$ )
Response Time	Less than 1 ms
Field of View	$180^\circ$
Spectral Range	250 nm to 400 nm
Direct onal (Cosine) Response	$\pm 10\%$ at $75^\circ$ zenith angle
Temperature Response	Approximately 0.1% 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
Sensor Dimensions	24 mm diameter, 28 mm height
Meter Dimensions	126 mm length, 70 mm width, 24 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

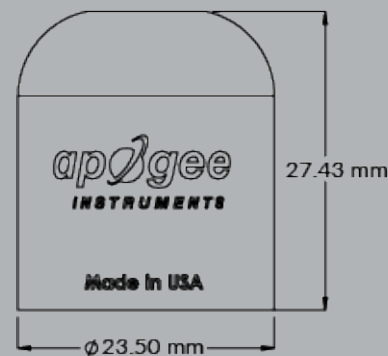
## Spectral Response



Spectral response estimate of Apogee SU-100 UV sensors. Spectral response measurements were made at 10 nm increments across a wavelength range of 200 to 450 nm in a monochromator with an attached electric light source. Measured spectral data were normalized at 350 nm.



## Dimensions



Radiation Source (Error Calculated Relative to sun, Clear Sky)	Error [%]
Sun (Clear Sky)	0.0
Sun (Cloudy Sky)	< 0.5
Reflected from Grass Canopy	< 0.5
Reflected from Deciduous Canopy	< 0.5
Reflected from Conifer Canopy	< 0.5
Reflected from Agricultural Soil	< 0.5
Reflected from Forest Soil	< 0.5
Reflected from Desert Soil	< 0.5
Reflected from Water	< 0.5
Reflected from Ice	< 0.5
Reflected from Snow	< 0.5
Cool White Fluorescent (T5)	9.0
Metal Halide	2.8
High Pressure Sodium	-1.7
Incandescent	-3.3
Mercury Arc	17.8

## Spectral Errors

### Spectral Error

Although the relative wavelengths of UV radiation differ among sunlight and electric lights, the error estimates shown in the table below indicate that the SU-100 provides reasonable estimates of UV radiation coming from electric lamps.

### Calibration Traceability

Apogee SU-100 UV sensors are calibrated through side-by-side comparison to the mean of four Apogee model SU-100 transfer standard UV sensors under high intensity discharge metal halide lamps. The transfer standard UV sensors are calibrated through side-by-side comparison to an Apogee model PS-200 spectroradiometer under sunlight in Logan, Utah. The PS-200 is calibrated with a LI-COR model 1800-02 Optical Radiation Calibrator using a 200 W quartz halogen lamp. The 1800-02 and quartz halogen lamp are traceable to the National Institute of Standards and Technology (NIST).