Guardian CEA Multi-Sensor Monitor

with Modbus and Bluetooth® Connectivity



Introduction

- Accurate measurements of important indoor environmental parameters in one elegant device
- Works as a stand-alone operation or integrates into systems for greenhouses, grow rooms, and vertical farms

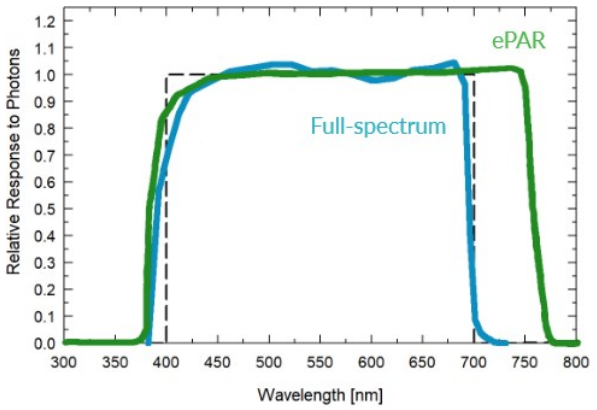
Features

- User-friendly, accurate datalogger with multiple integrated sensors
- PAR (SM-500) or ePAR (SM-600) sensor options
- Data can be downloaded to smartphones or dataloggers via Modbus or Bluetooth
- Graphical summaries of data over days, weeks, or months with the ApogeeConnect app for iOS and Android
- Can hang by thin wires or be mounted to a mast
- Integrators should contact Apogee for deployment opportunities

*DLI and photoperiod measurements are only accessible via Bluetooth

Model Options	
Full-spectrum 389 to 692 nm	SM-500
ePAR 383 to 757 nm	SM-600

Spectral Response

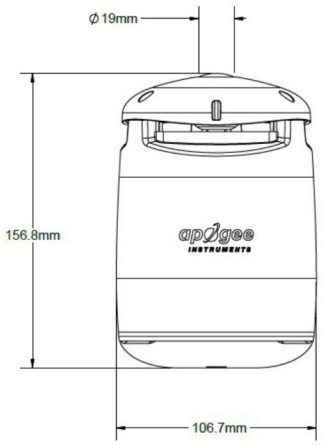


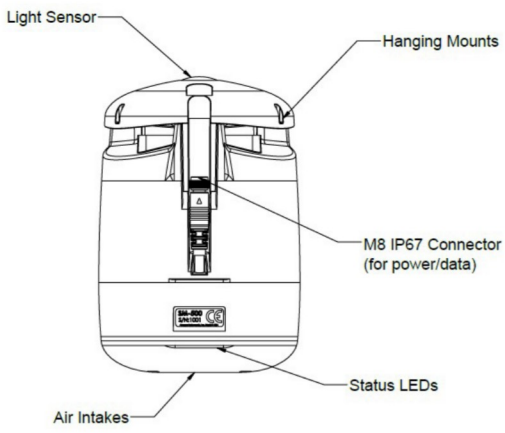
Spectral response of the SM-500 PAR sensor (blue) and SM-600 ePAR sensor (green) compared to the traditional PAR response (dashed).



Guardian Specifications

	SM-500 (PAR)	SM-600 (ePAR)	Temperature	Relative Humidity	CO_2	Barometric Pressure
Calibration Uncertainty	± 5 %		± 0.2 C	± 3 % from 20 to 80	± 50 ppm + 2 % of the measured value	-
Long-term Drift (non-stability)	Less than 2 % per year		Less than 0.02 C	-		
Measurement Repeatability	Less than 0.5 %		Less than 0.01 C	-		
Measurement Range	0 to 4000 µmol m^{-2} s^{-1}		-60 to 80 C	0 to 95 %	0 to 2000 ppm	70 to 110 kPa
Spectral Range	389 to 692 nm	383 to 757 nm	-			
Field of View	180°		-			
Directional Response	± 5 % at 75° zenith angles		-			
Azimuth Angle	Less than 0.5 %		-			
Tilt Error	Less than 0.5 %		-			
Non-linearity	Less than 1 % (up to 4000 µmol m^{-2} s^{-1})		-			
Response Time	Less than 1 ms		7 s	-	105 s	-
Temperature Response	-0.11 % ± 0.04 % per C		-			
Uncertainty in Daily Total	Less than 5 %		-			
Operating Environment	-40 to 60 C with 0 to 95 % relative humidity					
Aspiration Rate	-		7 m s^{-1}	< 1 m s^{-1}	< 1 m s^{-1}	< 1 m s^{-1}
Housing	White ASA plastic		-			
IP Rating	IP53		-			
Mass	392 g		-			
Dimensions	105 mm diameter, 157 mm height		-			
Cable	6 conductor, shielded wire with TPR jacket and M8 connector (available in 5, 10, and 20 m lengths; 5 V 1A USB power adapter and 5 m USB to M8 connector cable)					
Input Voltage	5V to 32V		-			
Power Usage	1.1W to 1.5W		-			
Current Draw	Typical: 92 mA at 12 V; Peak: 500 mA at 12 V					
Connectivity	Modbus (RS232 and RS485) and/or Bluetooth					
Data Storage Capacity	9 months of 1 min data					
Warranty	4 years against defects in materials and workmanship					







Rev: 29-June-2023