

APOGEE RED - FAR-RED SENSORS | S2-131-SS & S2-431-SS

Features

Overview
Apogee Red - Far-Red sensors combine two photodetectors designed to measure wavelength ranges and peaks that approximate phytochrome absorption. The red / far-red ratio can be calculated from these measurements. Red and far-red wavelengths are of particular interest because they influence photosynthetic and morphogenic activity. Phytochrome pigments sensitive to varying ratios of red and far-red light provide information to the plant about its light environment.

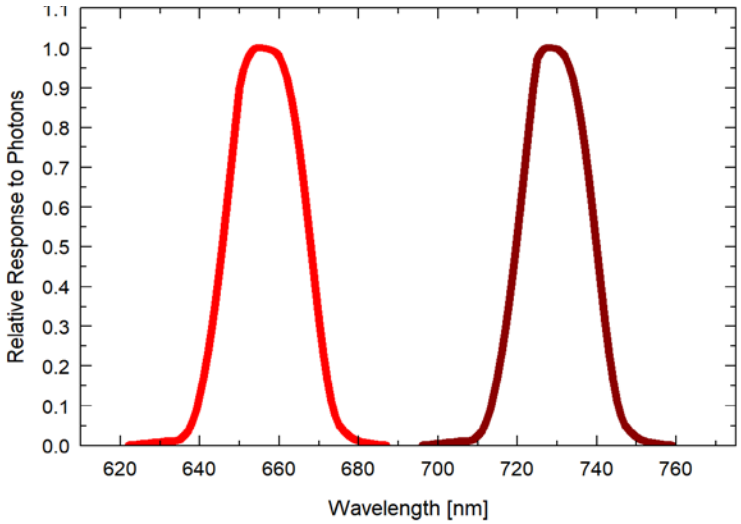
Typical Applications
- Monitoring plant light environments
- Research plant morphogenic activity
- Photobiology studies

Key Features
Digital SDI-12 output is standard with analog options available. A domed diffuser promotes self-cleaning to minimize errors from dust and debris.

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

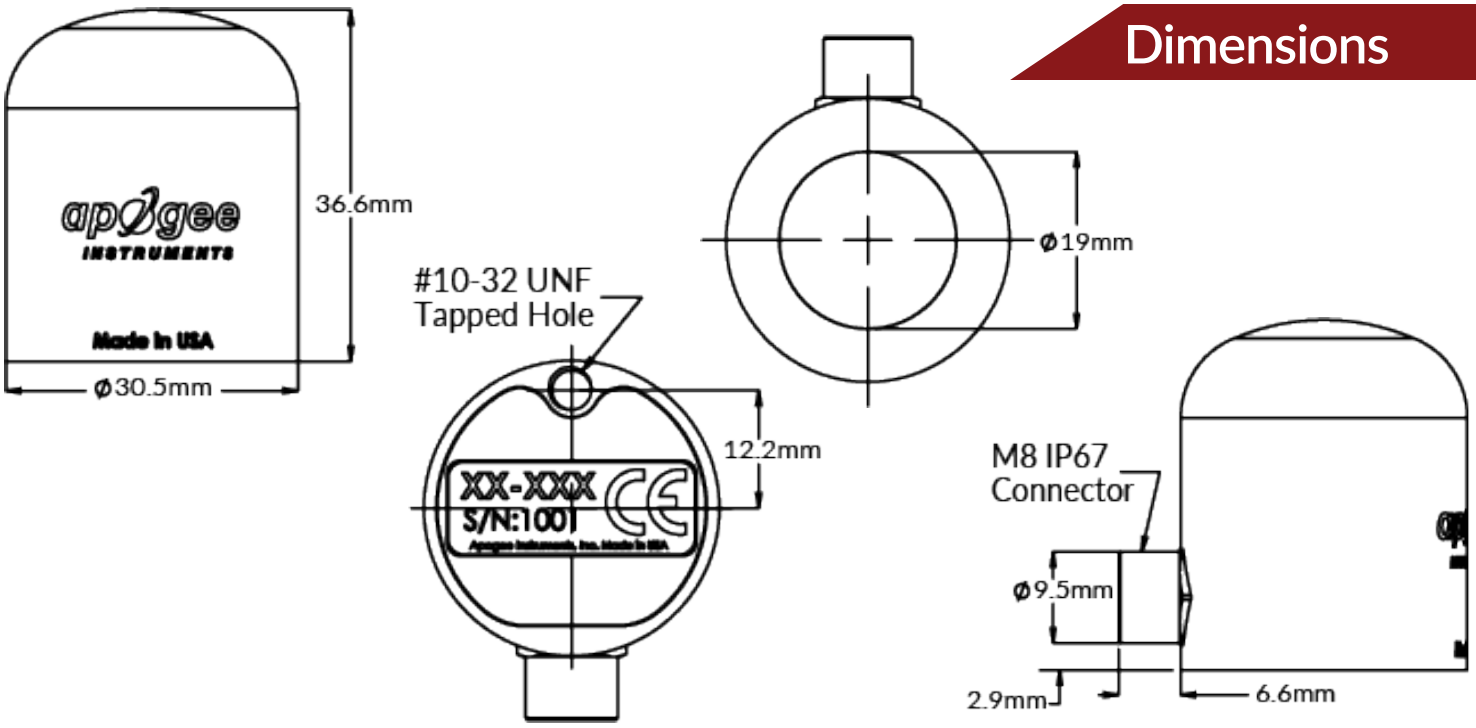
Two-band radiometer to measure Red / Far-Red ratio

Spectral Response



Above: Spectral response of Red detector (red) and Far-red detector (maroon).

Dimensions



Product Specifications

	S2-131-SS	S2-431-SS
Power Supply	Self-powered	5.5 to 24 V DC
Current Draw	–	1.4 mA (quiescent), 1.8 mA (active)
Output (sensitivity)	0.01 mV per µmol m^{-2} s^{-1} (Red and Far-red)	–
Calibration Factor (recipricol of sensitivity)	100 µmol m^{-2} s^{-1} per mV (Red and Far-red)	Custom for each sensor and stored in firmware
Calibration Uncertainty	± 5 %	
Output Range	0 to 4 mV (Red and Far-red)	SDI-12
Wavelength Ranges (see graph)	645 to 665 nm ± 5 nm (Red) 720 to 740 nm ± 5 nm (Far-red)	
Measurement Range	0 to 400 µmol m^{-2} s^{-1} (Red and Far-red)	
Measurement Repeatability	Less than 1 %	
Long-term Drift	Less than 2 % per year	
Response Time	Less than 1 ms	Less than 0.6 s
Non-linearity	Less than 1 % (up to 400 µmol m^{-2} s^{-1}) (Red and Far-red)	
Field of View	180°	
Directional (Cosine) Response	± 2 % at 45°; ± 5 % at 75° zenith angle	
Temperature Response	Less than 0.1 % per C	
Housing	Anodized aluminum body with acrylic diffuser	
IP Rating	IP68	
Operating Environment	-40 to 70 C; 0 to 100 % relative humidity	
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	