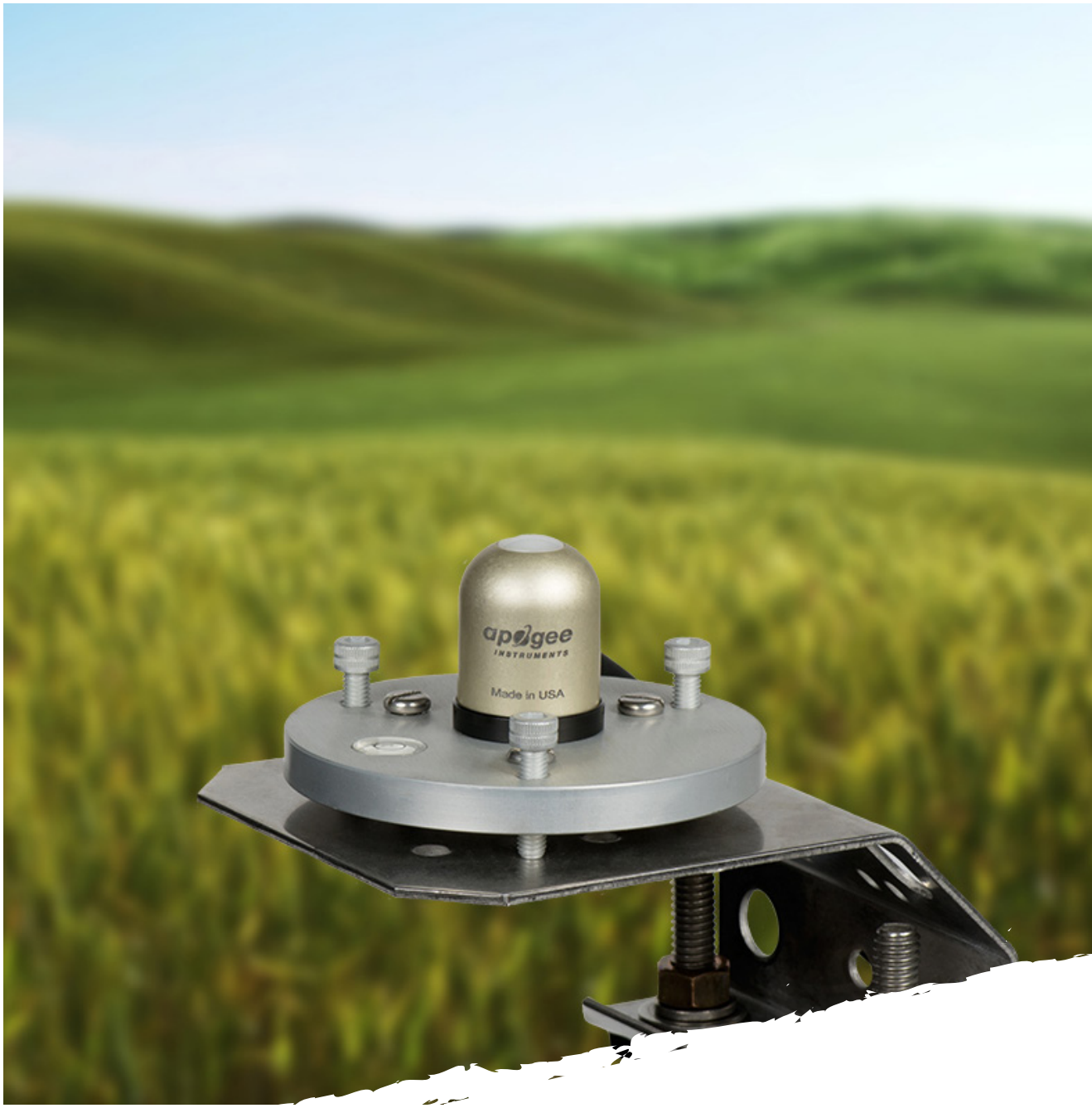
Thermopile Pyranometers | JSP-510-SS and JSP-610-SS

Apogee thermopile pyranometers feature a blackbody thermopile detector and have a larger spectral range, making them more accurate in all atmospheric conditions.

JSP-510-SS
Upward-looking

JSP-610-SS
Downward-looking



Unique Design

Designed to optimize performance and price. The upward-looking model combines a blackbody thermopile detector and acrylic diffuser, and is a significant improvement when compared to the spectral response of silicon-cell pyranometers, but keeps the price close to that of silicon-cell pyranometers. The downward-looking model combines a blackbody thermopile detector and flat glass window. It performs similarly to domed downward-looking thermopile pyranometers but without the cost of the dome.

Accurate, Stable Measurements

Calibration in controlled laboratory conditions is traceable to the World Radiometeric Reference in Davos, Switzerland. The upward-looking model is cosine-corrected, with directional errors less than 20 W m^{-2} at 80° solar zenith angle. Long-term non-stability determined from multiple replicate pyranometers in accelerated aging tests and field conditions is less than 2 % per year.

Rugged, Self-cleaning Head

Patented domed shaped sensor head (diffuser and body) facilitate runoff of dew and rain to keep the diffuser clean and minimize errors caused by dust blocking the radiation path. Sensors are housed in a rugged anodized aluminum body and electronics are fully potted.

On-board Heater

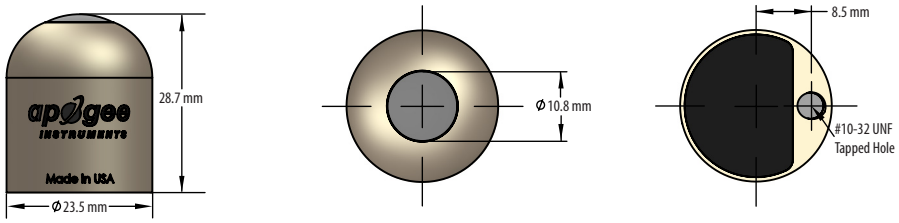
A 0.2 W heater keeps water (liquid and frozen) off the sensor and minimizes errors caused by dew, frost, rain, and snow blocking the radiation path.

Typical Applications

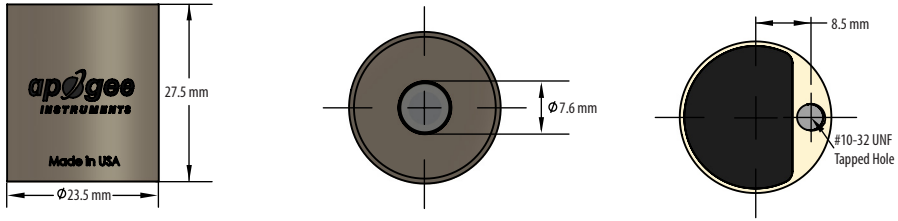
Applications include shortwave radiation measurement in agricultural, ecological, and hydrological weather networks and solar panel arrays.

Dimensions

JSP-510 Upward-looking



JSP-610 Downward-looking



	JSP-510-SS	JSP-610-SS
Sensitivity (variable from sensor to sensor, typical values listed)	0.057 mV per W m^{-2}	0.15 mV per W m^{-2}
Calibration Factor (reciprocal of sensitivity) (variable from sensor to sensor, typical values listed)	17.5 W m^{-2} per mV	6.7 W m^{-2} per mV
Calibration Uncertainty	± 5 %	
Calibrated Output Range	0 to 114 mV	0 to 300 mV
Measurement Range	0 to 2000 W m^{-2} (net shortwave radiation)	
Measurement Repeatability	Less than 1 %	
Long-term Drift	Less than 2 % per year	
Non-linearity	Less than 1 %	
Detector Response Time	0.5 s	
Field of View	180°	150°
Spectral Range (50 % points)	385 nm to 2105 nm	295 nm to 2685 nm
Directional (Cosine) Response	Less than 30 W m^{-2} at 80° solar zenith	Less than 20 % for angles between 0 and 60°
Temperature Response	Less than 5 % from -15 to 45 C	
Zero Offset A	Less than 5 W m^{-2}; Less than 10 W m^{-2} (heated)	
Zero Offset B	Less than 5 W m^{-2}	
Uncertainty with Daily Total	Less than 5 %	
Operating Environment	-50 to 50 C; 0 to 100 % relative humidity	
Heater	780 Ω, 15.4 mA current drain and 185 mW power requirement at 12 V DC	
Dimensions	28.7 mm height, 23.5 mm diameter	
Mass	90 g	100 g
Cable	5m of four conductor, shielded, twisted-pair wire; additional cable available in multiples of 5 m; santoprene rubber jacket (high water resistance, high UV stability, flexibility in cold conditions); pigtail lead wires	
Warranty	4 years against defects in materials and workmanship	