



# Solar Radiation

Quantum sensors, pyranometers, net radiometers, and pyrhemometers




*Rugged, Reliable, and Ready for any Application*



Campbell Scientific offers pyranometers, net radiometers, and quantum sensors, all designed to measure various aspects of the energy imparted by the sun on the Earth's surface.

A leveling fixture fitted with a bubble level may be required to accurately install solar radiation sensors.

## MAJOR SPECIFICATIONS

	Sensor	Measurement Description	Spectral Range	Sensitivity	Operating Temperature
<p><b>CS320</b>   Digital Thermopile Pyranometer</p> <p>For measurement of global solar radiation under changing weather conditions</p> 	Thermopile detector, acrylic diffuser, heater, and signal processing circuitry mounted in an aluminum housing	Measures broad-spectrum short-wave radiation	385 to 2105 nm	digital output	-50° to +50°C
<p><b>CS301</b>   Silicon Pyranometer</p> <p>Accurate, dependable, and ideal for long-term deployment in harsh conditions</p> 	Silicon photovoltaic detector mounted in a cosine-corrected head	Measures sun plus sky radiation	360 to 1120 nm	0.2 mV/W/m <sup>2</sup>	-40° to +70°C
<p><b>CS310</b>   Quantum Sensor</p> <p>Accurate and versatile</p> 	Blue-enhanced silicon photodiode and custom optical filters	Measures Photosynthetic Photon Flux Density (PPFD), in both natural and artificial light	389 to 692 nm ±5 nm	0.01 mV per μmoles s <sup>-1</sup> m <sup>-2</sup>	-40° to +65°C
<p><b>SP230SS</b>   Heated All-Season Pyranometer</p> <p>Heater prevents snow, frost, and dew accumulation</p> 	Silicon photovoltaic detector mounted in a cosine-corrected head	Measures sun plus sky radiation	360 to 1120 nm	5 mV/W/m <sup>2</sup>	-40° to +70°C
<p><b>SR20-T2</b>   ISO Secondary-Standard Pyranometer</p> <p>Double glass dome and high-quality detector</p> 	High-quality blackened thermopile protected by two glass domes	Monitors solar radiation for the full solar spectrum range	285 to 3000 nm	7 to 5 μV/W/m <sup>2</sup>	-40° to +80°C
<p><b>SR30</b>   ISO Secondary-Standard Digital Pyranometer</p> <p>RS-485 Modbus communications and integrated heating and ventilation</p> 	High-quality blackened thermopile protected by two glass domes with integrated heater and ventilation	Monitors solar radiation for the full solar spectrum range	285 to 3000 nm	digital output	-40° to +80°C

More info: 435.227.9120

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		<i>Sensor</i>	<i>Measurement Description</i>	<i>Spectral Range</i>	<i>Sensitivity</i>	<i>Operating Temperature</i>
<p><b>MS-80</b>   ISO Secondary-Standard Pyranometer</p> <p>Single dome, isolated thermopile detector, quartz diffusor</p>		Internal desiccation, single dome, isolated thermopile detector, quartz diffusor	Monitors solar radiation for the full solar spectrum range	285 to 3000 nm	~10 $\mu\text{V}/\text{W}/\text{m}^2$	-40° to +80°C
<p><b>MS80M</b>   ISO Secondary-Standard Digital Pyranometer</p> <p>Single dome, isolated thermopile detector, quartz diffusor with RS-485 Modbus communication</p>		Internal desiccation, single dome, isolated thermopile detector, quartz diffusor	Monitors solar radiation for the full solar spectrum range	285 to 3000 nm	digital output	-40° to +80°C
<p><b>CMP10</b>   ISO Secondary-Standard Pyranometer</p> <p>Double glass dome and high-quality detector</p>		High-quality blackened thermopile protected by two glass domes	Monitors solar radiation for the full solar spectrum range	285 to 2800 nm	7 to 14 $\mu\text{V}/\text{W}/\text{m}^2$	-40° to +80°C
<p><b>LP02</b>   ISO Second-Class Pyranometer</p> <p>High quality device with protective dome</p>		Blackened thermopile protected by a dome	Monitors solar radiation for the full solar spectrum range	285 to 3000 nm	15 $\mu\text{V}/\text{W}/\text{m}^2$	-40° to +80°C
<p><b>SR11</b>   ISO First-Class Pyranometer</p> <p>Double glass dome</p>		High-quality blackened thermopile protected by two glass domes	Monitors solar radiation for the full solar spectrum range	285 to 3000 nm	15 $\mu\text{V}/\text{W}/\text{m}^2$ nominal	-40° to +80°C
<p><b>SR20-D2</b>   ISO Secondary-Standard Digital Pyranometer</p> <p>Double glass dome and internal 10 k thermistor for optimized measurements</p>		High-quality blackened thermopile protected by two glass domes	Monitors solar radiation for the full solar spectrum range	285 to 3000 nm	digital output	-40° to +80°C
<p><b>CMP3</b>   ISO Second-Class Pyranometer</p> <p>Protective glass dome and solar shield</p>		Blackened thermopile protected by a dome	Monitors solar radiation for the full solar spectrum range	300 to 2800 nm	5 to 20 $\mu\text{V}/\text{W}/\text{m}^2$	-40° to +80°C
<p><b>CMP6</b>   ISO First-Class Pyranometer</p> <p>Double glass dome and increased thermal mass improve performance</p>		High-quality blackened thermopile protected by two glass domes	Monitors solar radiation for the full solar spectrum range	285 to 2800 nm	5 to 20 $\mu\text{V}/\text{W}/\text{m}^2$	-40° to +80°C
<p><b>CMP11</b>   ISO Secondary-Standard Pyranometer</p> <p>Double glass dome and high-quality detector</p>		High-quality blackened thermopile protected by two glass domes	Monitors solar radiation for the full solar spectrum range	285 to 2800 nm	7 to 14 $\mu\text{V}/\text{W}/\text{m}^2$	-40° to +80°C



		<i>Sensor</i>	<i>Measurement Description</i>	<i>Spectral Range</i>	<i>Sensitivity</i>	<i>Operating Temperature</i>
<p><b>CMP21</b>   ISO Secondary-Standard Pyranometer</p> <p>Double glass dome and internal thermistor for optimized measurements</p>		High-quality blackened thermopile protected by two glass domes	Monitors solar radiation for the full solar spectrum range	285 to 2800 nm	7 to 14 $\mu\text{V}/\text{W}/\text{m}^2$	$-40^\circ$ to $+80^\circ\text{C}$
<p><b>NR-LITE2</b>   Net Radiometer</p> <p>Weather-resistant PTFE-coated absorbers instead of fragile dome</p>		Two black conical absorbers—one facing upward and the other facing downward	Measures incoming and outgoing short-wave and long-wave radiation	0 to 100 $\mu\text{m}$	10 $\mu\text{V}/\text{W}/\text{m}^2$ (nominal)	$-30^\circ$ to $70^\circ\text{C}$
<p><b>SN500SS</b>   Digital, Low-Cost Net Radiometer</p> <p>4-way radiometer uses SDI-12 communications</p>		Two, thermopile pyranometer, two pyrgeometer	Measures incoming and outgoing short-wave and long-wave radiation	Pyranometer: 385 to 2105 nm (upward-looking), 295 to 2685 nm (downward-looking) Pyrgeometer: 5,000 to 30,000 nm	digital sensor	$-50^\circ$ to $+80^\circ\text{C}$
<p><b>NR01</b>   4-Component Research-Grade Net Radiometer</p> <p>Robust, 4-way radiometer that requires little maintenance</p>		Hukseflux's SR01 ISO-class, thermopile pyranometers, IR01 pyrgeometers, PT100 RTD	Measures incoming and outgoing short-wave and long-wave radiation	Pyranometer: 305 to 2800 nm Pyrgeometer: 4500 to 50,000 nm	10 to 40 $\mu\text{V}/\text{W}/\text{m}^2$	$-40^\circ$ to $80^\circ\text{C}$
<p><b>CNR4</b>   4-Component WMO-Class-Quality Radiometer</p> <p>Scientific-grade radiometer with internal thermistor and PRT</p>		Two, thermopile pyranometer, two pyrgeometer, PT100 RTD, and thermistor	Measures incoming and outgoing short-wave and long-wave radiation	Pyranometer: 305 to 2800 nm Pyrgeometer: 4500 to 42,000 nm	5 to 20 $\mu\text{V}/\text{W}/\text{m}^2$	$-40^\circ$ to $80^\circ\text{C}$
<p><b>CHP1</b>   Pyrheliometer</p> <p>Used with a sun tracker such as Kipp &amp; Zonen's Solys2 to keep the CHP1 aimed at the sun throughout the day</p>		Pyrheliometer	Measures the direct beam solar irradiance with a field of view limited to 5 degrees	200 to 4000 nm	7 to 14 $\mu\text{V}/\text{W}/\text{m}^2$	$-40^\circ$ to $+80^\circ\text{C}$
<p><b>LI190R</b>   Quantum Sensor</p> <p>Accurate and versatile</p>		silicon photovoltaic detector mounted in a cosine-corrected head	Measures Photosynthetic Photon Flux Density (PPFD), in both natural and artificial light	400 to 700 nm	Typically 5 $\mu\text{A}$ per 1000 $\mu\text{moles s}^{-1} \text{m}^{-2}$	$-40^\circ$ to $+65^\circ\text{C}$
<p><b>LI200R</b>   Silicon Pyranometer</p> <p>Accurate and dependable</p>		silicon photovoltaic detector mounted in a cosine-corrected head	Measures sun plus sky radiation	400 to 1100 nm	0.2 $\text{kW m}^{-2} \text{mV}^{-1}$	$-40^\circ$ to $+80^\circ\text{C}$





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