

# CSD 3 Sunshine Duration Sensor

**CSD 3 measures sunshine duration. Sunshine duration is defined by the World Meteorological Organization as the time during which the direct solar radiation exceeds 120 W/m<sup>2</sup>.**

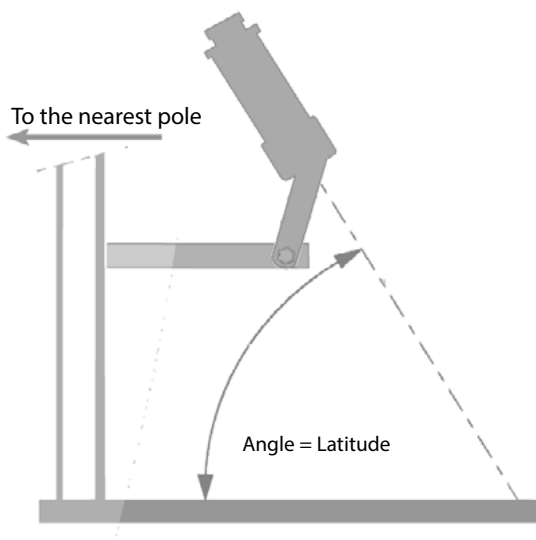
It has no moving parts and uses 3 photo-diodes with specially designed diffusers to make an analogue calculation of when it is sunny. The output is switched high or low to indicate sunny or not sunny conditions. The calculated direct irradiance value is also available.

Sunshine Duration Sensors are widely used in weather networks and holiday resorts to provide the number of sunshine hours per day for tourist information. In health spas and clinics they contribute to the measurements used in treatment and recovery. In agronomy the amount of sunshine received by crops can be used to help forecast yields. In building automation the CSD 3 can be used as an input to the systems for the control of the internal environment, such as the deployment of sun blinds.

The humidity indicator shows clearly when a change of drying cartridge is necessary. A waterproof plug-and-socket cable connection for easy installation and servicing. The larger screw on drying cartridge is easier to change at extended intervals.

CSD 3 operates from 12 VDC power and has built-in heaters to dissipate rain, snow and frost. These are normally switched externally but an optional internal thermostat control is available.

CSD3 is installed at an orientation parallel to the north-south plane, pointing towards the nearest pole, at an angle from horizontal equal to the latitude of the measurement location.



## Features

- **Waterproof plug-and-socket cable connection**
- **Easy installation and servicing**
- **Humidity indicator**
- **Easy to change drying cartridge**
- **Glass tube for improved resistance to scratching**
- **Extended operating temperature range**



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## Specifications

Spectral range	400 to 1100 nm
Sunshine YES signal	$1 \pm 0.1$ V if direct irradiance signal $> 120$ W/m <sup>2</sup>
Sunshine NO signal	0 to 0.1 V if direct irradiance signal $< 120$ W/m <sup>2</sup>
Accuracy of sunshine hours	$> 90$ % in monthly total hours
Analogue output signal	1 mV per W/m <sup>2</sup> (direct solar radiation)
Accuracy	$> 90$ % (direct signal for clear sky)
Non-stability	$< 2$ % change per year
Response time	$< 1$ m s
Temperature response	$< 0.1$ % / °C
Impedance	1 kΩ
Power supply	$< 0.1$ W at 12 V DC (9 - 15 V DC)
Heater level 1	$1 \pm 0.1$ W at 12 V DC (dew removal)
Heater level 2	$10 \pm 1$ W at 12 V DC (ice and snow removal above -15 °C and wind speed $< 1$ m/s)
Thermal switch (optional)	Level 2 ON $< 6$ °C $\pm 3$ °C Level 2 OFF $> 14$ °C $\pm 3$ °C
Humidity	(0 to 100) %
Operating temp.	- 40 °C to + 70 °C
Weight without cable	0.9 kg
Cable length	15 m standard, 25 m optional

