

- Precise measurement of sunshine duration
- No moving parts
- Low maintenance at long intervals
- Low power consumption
- Suitable for remote stations
- Rugged and durable
- Optional: Thermostat



Description

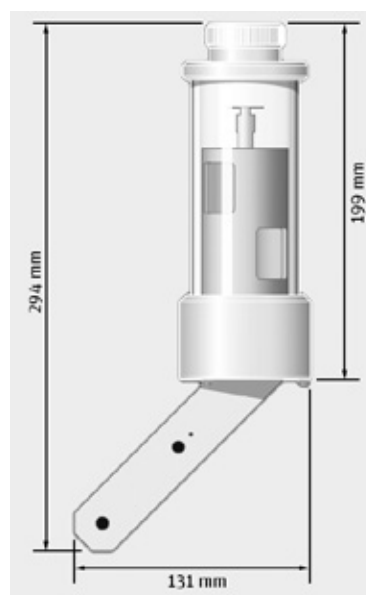
CSD 3 measures sunshine duration. Sunshine duration is defined by WMO as the time during which the direct solar radiation exceeds the level of 120 W/m².

CSD 3 measures solar radiation through a high quality glass tube. It has no moving parts and uses 3 photo-diodes with specially designed diusers 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.

The waterproof plug-and-socket cable connection enables easy installation and servicing. The standard cable is 15 m long, 25 m is an option. The large drying cartridge with screw-on cap gives extended change intervals, and a humidity indicator shows clearly when this is necessary.

CSD 3 operates from 12 VDC power and has two levels of built-in heating to dissipate rain, snow and frost. These are normally switched externally, but an optional internal thermostat control is available. A robust mounting arm is fitted to the base of the instrument.

Schematic



Specifications

| Characteristic | Description |
|----------------------------|--|
| Spectral range | 400 ... 1100 nm |
| Direct irradiance signal | 1 mV per W/m ² |
| Sunshine Yes signal | 1 V ± 0.1 V if direct irradiance signal > 120 W/m ² |
| Sunshine No signal | 0 V ± 0.1 V if direct irradiance signal < 120 W/m ² |
| Response time | < 1 ms |
| Accuracy of direct signal | > 90% 1000 W/m ² |
| Accuracy of sunshine hours | > 90% in monthly total |
| Non-stability | < 2% change per year |
| Temperature dependance | < 0.1%/K |
| Impedance | 1 kΩ |
| Operational temperature | -40 ... 70 °C |
| Power requirements | |
| Sensor without heating | < 0.1 W @12 VDC (9 ... 15 VDC) |
| Heating level 1 | 1 ± 0.1 W @ 12 VDC (dew removal) |
| Heating level 2 | 10 ± 1 W @ 12 VDC (ice and snow removal above -15 °C and wind speed < 1 m/s) |
| Thermal switch (optional) | Level 2 on if case temperature < 6° ± 3 °C Level 2 off if case temperature > 14° ± 3 °C |
| Cable length | 15 m (Optional: 25 m) |

Delivery includes calibration certificate.

Sensor Connection

| Function | Plug Pin No. | Wire Colour (Kipp & Zonen) | Meteo-40 Analog Voltage | | Supply Sensor |
|---|--------------|----------------------------|-------------------------|----------|------------------------|
| | | | Irradiance | Sunshine | |
| 1 mV = 1 W/m ² Direct Irradiance | 5 | grey | Ax | | |
| Signal Ground | 2 | blue | Bx | | |
| 0 / 1 V Sunshine (yes/no) | 1 | red | | Ay | |
| Signal Ground | 2 | blue | | By | |
| + Power Supply | 6 | brown | | | +12 VDC (9 ... 15 VDC) |
| - Power Supply | 4 | yellow | | | Main Ground (GND) |
| 10 W Heater (level 2) | 7 | white | | | +12 VDC (1A, Fuse) |
| Heater Ground | 8 | black | | | Main Ground (GND) |
| 1 W Heater (level 1) | 3 | green | | | +12 VDC (0.1A, Fuse) |
| Shield (Housing) | | | | | Main Ground (GND) |

Select measurement of irradiance and sunshine duration (two analog channels) or only irradiance (one analog channel).

Note:

The status module (M83510) can be used to extend the number of analog channels, if there is no analog channel left over for sunshine duration measurement.

Last Modification: 05 April 2013