Sunshine Duration Sensor Kipp & Zonen CSD 3 S61910

- 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

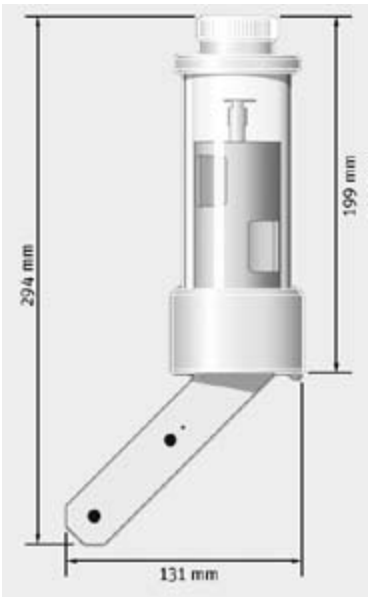
CSD 3 measures sunshine duration. Sunshine duration is defined by WMO as the time during which the direct solar radiation exceeds the level of 120 W/m².

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.

Dimensional Drawing



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Specifications

Characteristic	Description
Spectral range	400 ... 1100 nm
Direct irradiance signal	1 mV per W/m²
Sunshine Yes signal	1 V ± 0.1 V if direct irradiance signal > 120 W/m²
Sunshine No signal	0 V ± 0.1 V if direct irradiance signal < 120 W/m²
Response time	< 1 ms
Accuracy of direct signal	> 90%
Accuracy of sunshine hours	> 90% (monthly sunshine hours)
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.

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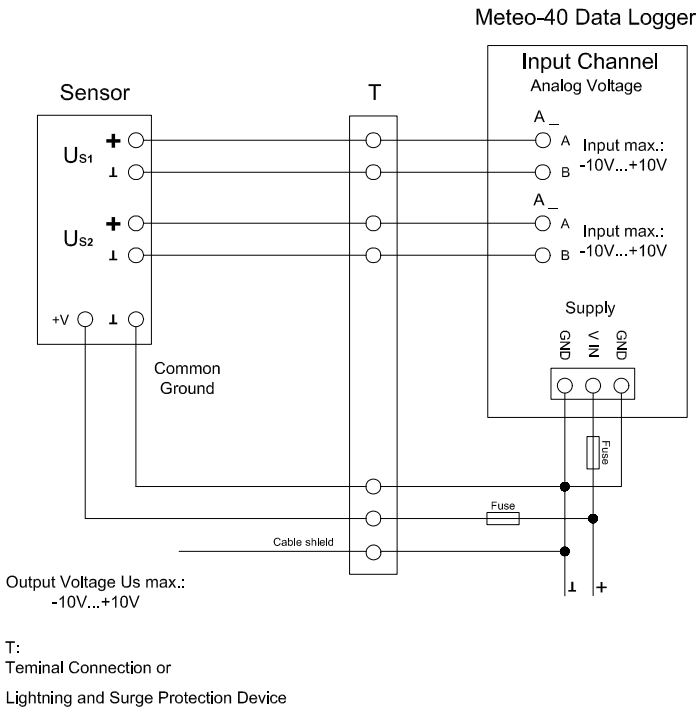
Sensor Connection to Ammonit Meteo-40 Data Logger

Function	Plug Pin No.	Wire Colour (Kipp & Zonen)	Meteo-40 Analog Voltage		Supply Sensor
			Irradiance	Sunshine	
1 mV = 1 W/m² Direct Irradiance	5	grey	A_X		
Signal Ground	2	blue	B_X		
0 / 1 V Sunshine (yes/no)	1	red		A_Y	
Signal Ground	2	blue		B_Y	
+ 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 extent the number of analog channels, if there is no analog channel left over for sunshine duration measurement.



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