

CSD 1 Sunshine Duration Sensor



Features:

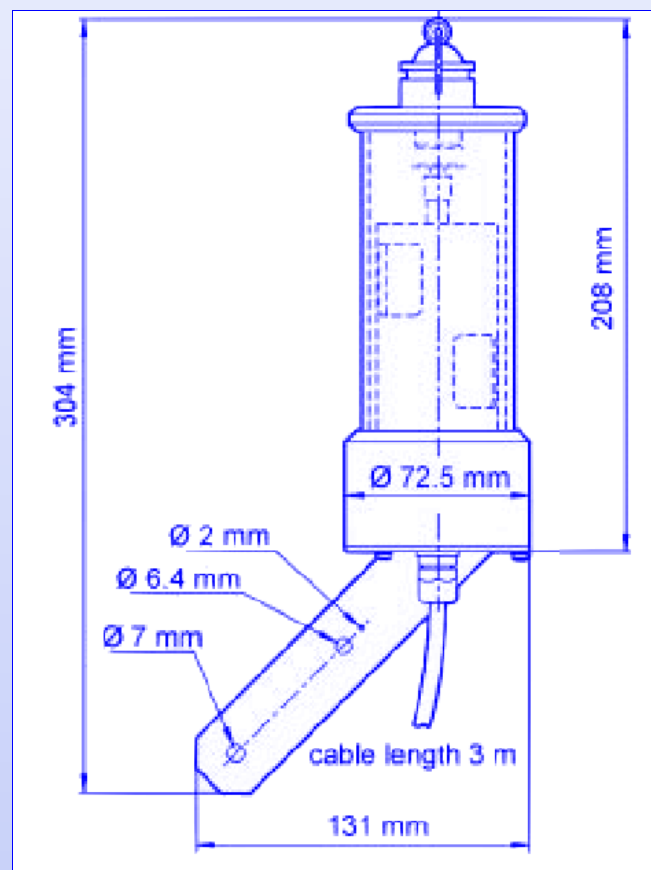
- use at any longitude latitude
- wide temperature range
- no seasonal effects, high accuracy
- integrated heater
- no moving parts, long lifetime
- three identical sensors
- low power consumption, suitable for remote stations
- two levels of heating, increasing accuracy and reliability

The **CSD 1** is a sensor for measurement of sunshine duration. Sunshine duration is defined by WMO as the time during which the direct solar radiation exceeds the level of 120 W/m^2

The **CSD 1** is designed for use in agricultural meteorology (evaporation), for tourist information (number of sunshine hours), for building automation (automatic control of sunblinds), and for health resorts.

The heating is of great importance in climates where dew, frost or ice can exist. Heating in such climates greatly improves the reliability of the measurements. The integrated heating has two levels. Level 1 prevents formation of dew. Level 2 prevents frost and even ice forming on the instrument.

Using the **CSD 1** is simple. Just connect the output of the sunshine duration sensor to a data acquisition system or (integrating)



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Technical Specifications CSD 1

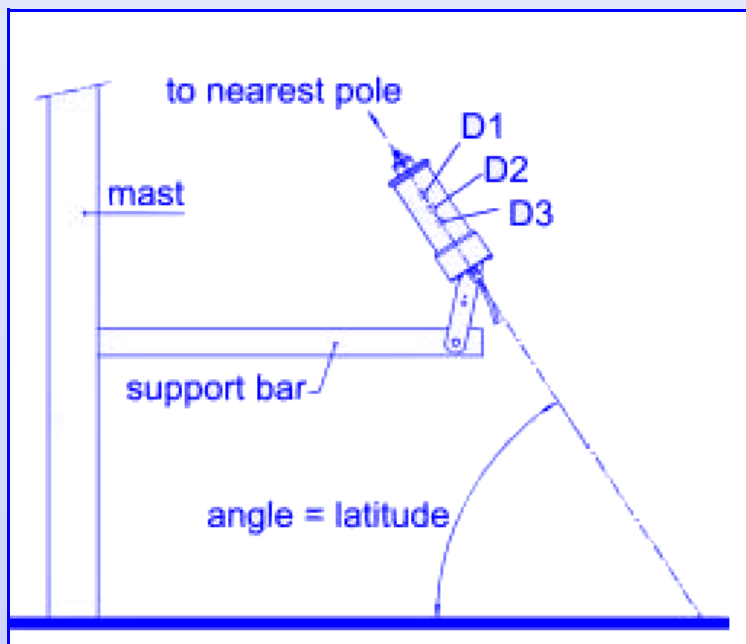
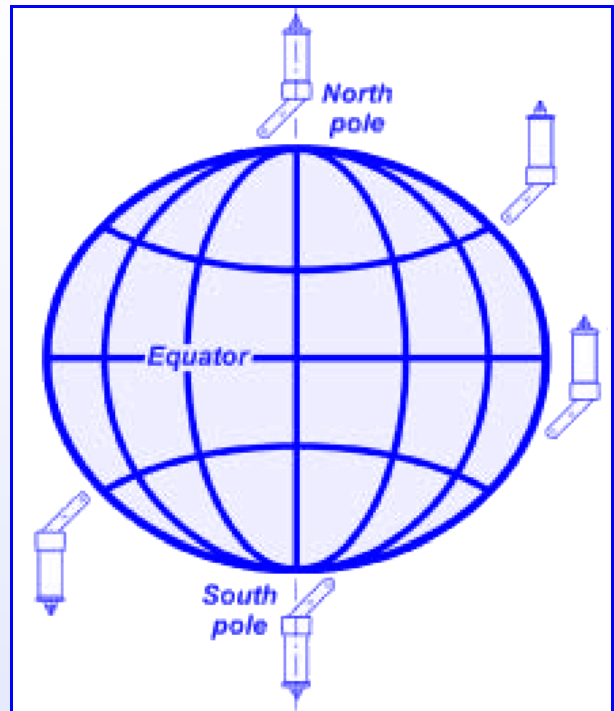
Specifications

The high measurement accuracy and stability of the **CSD 1** and the calibration by side-by-side comparison with reference instruments that are traceable to the WRR (World Radiometric Reference) makes the **CSD 1** an ideal instrument for a variety of applications.

Operating temperature: -30 °C to +70 °C
 Location: any longitude and latitude
 Heating level 1: dew removal
 Heating level 2: ice and snow removal above -15 °C (wind speed <1 m/s)

Output for sunshine duration: 0 VDC or 1 VDC \pm 0.1 V
 Test output, for checking: 1 mV per W/m² (nominal),
 (for performance checks) typical range is: 0 to 1000 mV

Power requirement:
 without heating 12 \pm 3 VDC, <10 mA
 with heating level 1 12 \pm 3 VDC, 1 W (nominal)
 with heating level 2 12 \pm 3 VDC, 10 W (nominal)



Installing the CSD 1

The unit 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

Radiation measurement

The sensors are shown in fig 3. as D1, D2 and D3. D1 measures the solar radiation from all around.

D2 and D3 each measure separate segments of the sky;

Direct radiation level = $D_1 - C \cdot D_x$

D_1 = signal of detector D1

D_x = signal of detector D2 or D3 whichever is smaller

C = geometrical correction factor

Sunshine Duration output is 1 Volt if Direct radiation level is above 120 W/m².

Omni Instruments reserve the right to alter specifications of the equipment described in this documentation without prior notice