

Model GEO-SD6

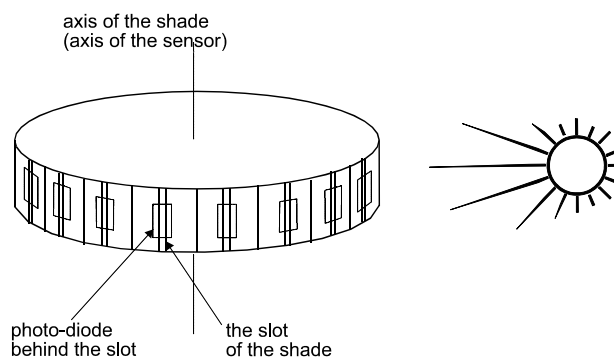
DIGITAL SUNSHINE DURATION SENSOR



The GEO-SD6 digital Sunshine Duration Sensor is intended for indication of direct sun radiation up from the 120 W/m^2 limit value.

The measurement is based on optical principle. The basic part of the sensing unit is a circular shade. There are 16 slots evenly distributed along the shade perimeter. Behind the slots, screened photosensitive elements (photo-diodes) are placed. During the installation, the sensing unit shall be oriented so that the axis of the shade runs parallel to the rotation axis of the Earth. The orientation of the sensing unit, evenly distributed photodiodes, and a suitable size of slots in the shade ensure that solar and sky radiation is absorbed at any position of the Sun.

Solar radiation together with sky radiation falls on a glass cupola, goes through the exposed slots and falls on the photodiodes. Each photodiode is connected to the evaluation electronics of the sensing unit. By comparing the intensity of the radiation an executive programme of the detector evaluates if the radiation is scattered (i.e. the Sun is hidden in clouds, fog, etc.) or direct ($> 120 \text{ Wm}^2$). The output information is a piece of two-state information "YES – NO" (shining – not shining). The Sunshine Duration Sensor is designed for connection to our Data Logger / Transmitter model METEODATA-2000/3000, which monitors the current status of the sensing-unite-output in a given time-period. In such a way we can obtain information about the character of direct solar radiation. There are **no moving parts** in GEO-SD6, which is a great advantage.



The sensor is heated in order to avoid effects of icing or fogging of the optical system to measurement results.

GEO-SD6 Sunshine Duration Sensor – Technical Specification	
Measurement	Measuring solar radiation through a high quality glass cupola
Number of photodiodes	16 photodiodes
Range of the measured power of the incident sun radiation (per m²)	0 .. 1300 W/m ²
Response time of sensing elements	< 1 ms
Maximum of relative spectral sensitivity (λ_p) at	900 nm
Spectral range (for $\lambda \geq 10\%$ of λ_p)	400 ... 1100 nm
Accuracy	> 94 % (monthly sunshine hours)
Non-stability	< 1 % / year
Temperature dependence	< 0,1 % / °C
Supply voltage	10 .. 24 VDC
Current consumption at 12V	23 .. 40 mA
Output – current output	- current output 10 .. 14 mA (in case of sunshine, electric current flows into the output). Voltage of the current output equals to supply voltage. - At the request, the producer is able to provide the negative output logic of the sensor.
Output - relay	the contacts separated from the sensor in a galvanic way Maximum switched current 0.5A Maximum switched voltage 100V
Heating of the sensor	
- Voltage for heating	12 .. 48V AC/ DC (36 ... 48 V AC/DC recommended, then heating is regulated to provide constant heating output)
- Current	1.1 .. 0.5 A
Body of the sensing unit - material	stainless steel
Dimensions (diameter x height)	Ø 92 mm x 195 mm (without holder)
Mounting	by using the adjustable holder with base
Weight	930 g (without holder)
Protection	IP 68
Operating temperature	- 40.. + 60 °C
Accessories (optionally)	the holder with lugs for mounting on Ø 25 ..35 mm tube the possibility to increase the heating power for extreme temperature conditions



METEODATA-2000/3000
Data Logger/Transmitter Unit
(3G/GPRS, Radio or Satellite)