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SIAP+MICROS
Environmental Monitoring Solutions

SUNSHINE DURATION SENSOR

t057 TSD-ET



No positioning adjustments in operation

Integrated heating element

Designed for: meteorology, agriculture, renewable energies

Description

The TSD Sunshine Duration Sensor measures sunshine status and duration. The WMO (World Meteorological Organization) defines the sunshine duration as the time during which the direct solar radiation exceeds the level of 120 W/m². The measuring principle is based on the use of 16 sensors arranged in such a way that, in the presence of sun, at least one of the photo-detectors is exposed to sun light directly from the sun (besides the diffusion component).

Those sensors which are not directly illuminated by the sun are used for the measurement of the diffused light that is subtracted from the measurement of the sensor which sees the sun directly to get direct radiation.

The cylindrical glass protects the sensors and the internal circuits of the instrument from the weather and at the same time provides an excellent transparency to sunlight. This solution avoids the use of mechanical moving parts and ensures high reliability in the time. The TSD is available with both RS485-Modbus output and SDI-12 one, and it is also equipped with a heating element separately powered and galvanically isolated which prevents the formation of condensation on the sensitive elements.

Mean Features

- **No moving parts**
- **Integrated heating element**
- **High long-term stability**
- **High accuracy**

Technical Specifications*

Measurement performance

Transducer type	16 silicon photodiodes
Spectrale range	360 ÷ 1100 nm
Accuracy	Better than 90% on the monthly total
Resolution	1 sec
Responses time	< 1 ms
Threshold value	120 W/m ²

Operating conditions

Temperature	-40 °C ÷ +80 °C
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Outputs

RS485-Modbus	Sunshine Duration
SDI-12	Sunshine Duration

Power supply and consumption

Voltage supply	7 ÷ 30 Vdc		
Power consumption (mA)	Min	Typical	Max
	-	5	-
Voltage supply of heating system	12 ÷ 15 Vdc		
Anti-condensation device consumption	1 W @ 12V		
Antifreezing device consumption	5 W @ 12 V ON for internal Temp. < 6 °C OFF for internal Temp. > 10 °C		

Mechanical specifications

Protection class	IP66
Weight	900 g

*Changes on technical performances can be applied upon request of specific calibration

