

MODEL GEO-DR01 FIRST CLASS PYRHELIOMETER

The GEO-DR01 is a research grade normal incidence direct solar irradiance sensor (also known as a pyrheliometer). Suitable for tracker mounted operation, the GEO-DR01 is intended for short-wave direct solar irradiance measurement of the sun. The GEO-DR01 is a 'First Class' compliant pyrheliometer, as per the latest ISO and WMO standards.

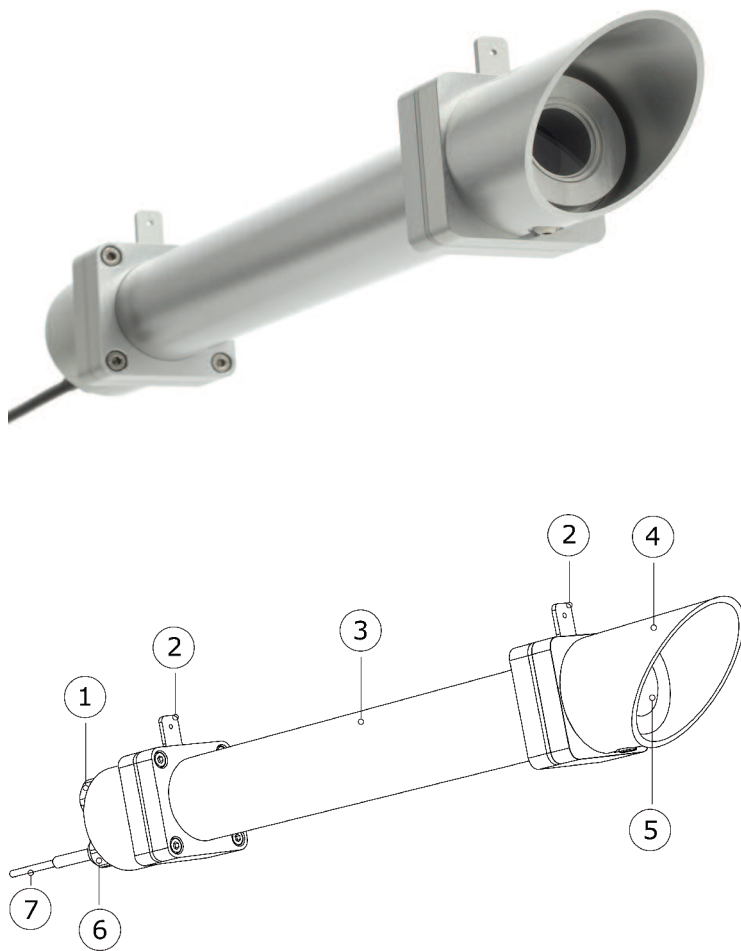


Figure 1 GEO-DR01 pyrheliometer: (1) humidity indicator, (2) sights, (3) aperture tube, (4) protection cap, (5) window with heater, (6) cable gland, (7) cable

INTRODUCTION

The GEO-DR01 foreoptic assembly features a precision ground and polished quartz window/lens, for true spectral solar transmission ranging from 0.2 - 4.0 μm . As per the latest ISO-9060 and WMO standards, the full opening view angle of the DR01 is collimated precisely to 5.0° degrees, making the sensor ideally suited for normal incidence direct solar irradiance measurement.

Capable of measuring up to four suns, 4000 W/m^2 , the GEO-DR01 pyrheliometer can be deployed anywhere on earth. The instrument employs a passive thermopile-based sensing technology that generates a low level DC millivolt output signal proportional to the normal incident direct solar flux received at the detector surface. The DR01 also features a thermally isolated low power window/lens heater in the foreoptic; when cycled on/off prior to sunrise the heater effectively eliminates the formation of dew on the pyrheliometer window /lens, thus resulting in improved post sunrise early morning measurement accuracy.

Determining direct solar irradiance with the DR01 requires connection to a data acquisition device with a measurement resolution of ten micro-volts or better, and an autonomous two-axis solar tracker platform. Typical DR01 measurement applications include scientific meteorological/climate observations, material testing research, solar collector/PV panel efficiency and solar renewable resource assessment. Each DR01 is calibrated upon manufacture and delivered standard with a WRR (World Radiometric Reference) traceable certificate of calibration.

SUGGESTED USE

- climatology / meteorology
- material testing research
- solar collector and PV panel efficiency validation
- solar renewable resource assessment

MORE OPTIONS

- Additional cable lengths (per 5 m)
- Temperature Sensors (Pt100 or 10K thermistor)
- AC100 / AC420 amplifiers



GEO-DR01 SPECIFICATIONS

ISO classification	First Class
Spectral range	200 to 4000 nm
Response time	18 s (95% response time)
Resolution	Analogue output, so the resolution depends on the data acquisition only. For METEODATA, the resolution is 0.1 W/m ² or better.
Non-Linearity	< ±0.3%
Full opening view angle	5 degrees
Slope angle	1 degree
Irradiance range	0 to 4000 W/m ²
Sensitivity (nominal)	10 µV/ W/m ²
Temperature range	-40° to +80° C
Temperature dependence	< 0.1%/°C
Relative Humidity range	0 - 100%
Non stability (drift)	< ±0.5% per year (full scale)
Output signal	Analogue voltage 0 to 30 mV
Calibration traceability	WRR
Impedance	400 to 500 Ohm
Cable length	5m standard (longer lengths optional)
Window Heating	0.5 W @ 12VDC



Meteorological Station with SunTracker-3000



Model METEODATA
Datalogger with integrated comms
(3G/GPRS, Line, Radio or Satellite)