

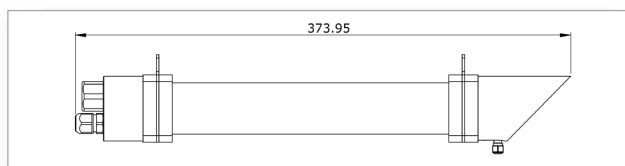
DR02-FR



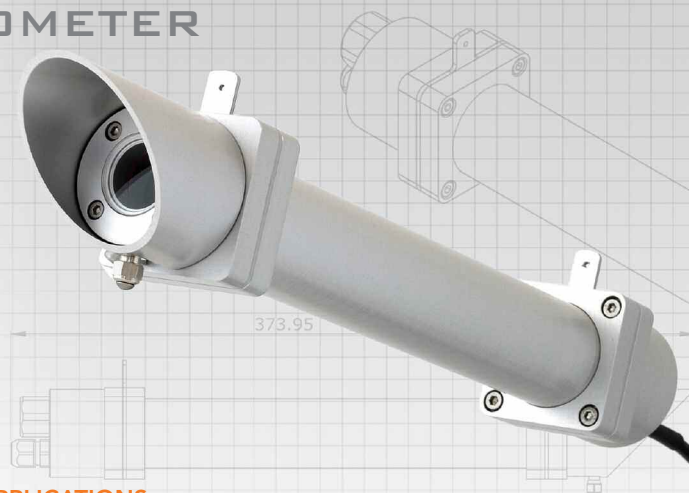
FAST RESPONSE PYRHELIOMETER

The DR02-FR Fast Response Pyrheliometer is the fastest response 'First Class' pyrheliometer on the market. Due to cutting edge advances in thermopile sensing technology, the DR02-FR achieves a blistering 99% response time of just 1 second. Comparable in response time to photodiode based radiometers, the DR02-FR possesses all the spectral and thermal performance benefits of a conventional high performance ISO Class thermopile pyrheliometer. Intended for tracker mounted operation, the DR02-FR is ideal for high accuracy short-wave direct solar irradiance measurement research requiring rapid response.

The DR02-FR foreoptic assembly features a precision ground and polished quartz window/lens, for true spectral solar transmission from 0.2 - 4.0 μm . As per the latest ISO-9060 and WMO standards, the full opening view angle of the DR02-FR is collimated precisely to 5.0° degrees, making the instrument ideally suited for normal incidence direct solar irradiance measurement. Applicable for shortwave normal incidence irradiance measurement up to two suns, 2000 W/m^2 , the DR02-FR pyrheliometer is intended for field deployment anywhere on Earth. The instrument employs a passive state-of-the-art high speed thermopile detector which generates a DC millivolt output signal proportional to the normal incident direct solar flux received at the detector surface. The DR02-FR also features a thermally isolated low power window/lens heater in the foreoptic. When cycled on/off prior to sunrise, the window heater effectively eliminates the formation of dew on the pyrheliometer window/lens, resulting in improved post sunrise early morning measurement accuracy. Determining direct solar disk irradiance with the DR02-FR 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 DR02-FR measurement applications include scientific meteorological/climate observations, material testing research, solar collector/PV panel efficiency and solar renewable resource assessment validation.



▲ Figure 1: DR02-FR Pyrheliometer mechanical dimensions



APPLICATIONS

- ▶ Climatology / Meteorology
- ▶ Material Testing Research
- ▶ Solar Collector & PV Panel Efficiency Validation
- ▶ Solar Renewable Resource Assessment

Note: Above applications are inclusive of, but not limited to the entire DR02-FR application range.

The signal cable of the DR02-FR can be easily replaced by the user onsite, thus minimizing down-time and expense otherwise associated with instrument re-cabling and/or cable connector replacement by the manufacturer. Each DR02-FR pyrheliometer is calibrated upon manufacture and delivered standard with a WRR (World Radiometric Reference) traceable certificate of calibration.

DR02-FR SPECIFICATIONS

ISO classification:	First Class
Spectral range:	200 to 4000 nm
Sensitivity (nominal):	15 $\mu\text{V}/\text{W}/\text{m}^2$
Response time:	0.2 sec. (1/e signal) 1 sec. (99%)
Range:	0 to 2000 W/m^2
Full opening view angle:	5.0° degrees
Slope angle:	1.0° degree
Non-linearity (to 1000 W/m^2):	$\pm 1\%$
Temperature range:	-40 to +80° C
Temperature dependence:	$< \pm 0.1\% / ^\circ\text{C}$
Non stability (drift):	$< \pm 1\%$ per year
Calibration traceability:	WRR
Cable length:	5 meter standard (longer lengths optional)