

NEW

# DNI Sensor

*Attained the world's fastest response time.*

*Perfectly suits for the evaluation of CPV(Concentrated Photovoltaic) and CSP(Concentrated Solar Power).*

- Fast Response time
- Accurate temperature compensation
- Thermally balanced detector
- Double body temperature sensor
- Low-power 12V window heater
- Compact, light weight, and stylish design

The ISO First Class pyrheliometer "MS-56" is a high quality DNI (Direct Normal Incidence) solar radiation sensor which is well suitable to be used as a reference instrument for precise and accurate direct solar irradiance measurements and routine operation on a solar tracker.

EKO adopted most recent technological innovations such as the ultra fast new thermopile detector with 95% response time <1s and excellent thermal stability.

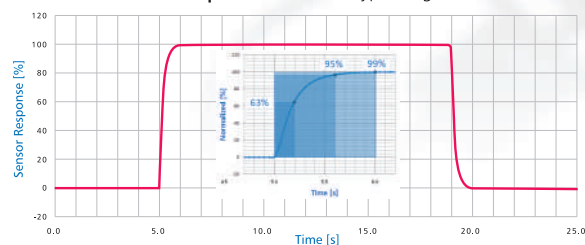
Even though the MS-56 is a relatively light-weight construction zero-offset effects were eliminated and the stability of the sensor made excellent, also under various environmental and solar irradiance conditions.

The MS-56 sensor includes a passive temperature compensation module to minimize the detector temperature dependency to less than  $\pm 0.5\%$  over a wide temperature range ( $-20^{\circ}\text{C}$  to  $50^{\circ}\text{C}$ ).

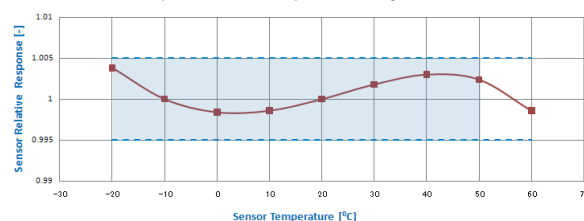
The detector temperature can be accurately monitored with the built-in PT-100 RTD or YSI 44031 10k $\Omega$  NTC.

The possibility of dew-deposition or condensation on the outside of the entrance optics is significantly reduced with the built-in low-power heater at the inside of the sensor.

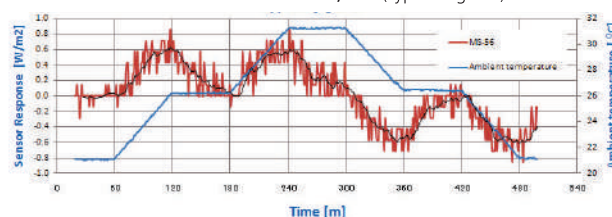
Response Time (Typical figures)



Temperature dependency (Typical figures)



Zero Offset B ( $5^{\circ}\text{C/h}$ ) (Typical figures)



## Specifications

|                                                                      | MS-56                                 | ISO 9060 First Class         | WMO Good quality         |
|----------------------------------------------------------------------|---------------------------------------|------------------------------|--------------------------|
| Response time (95%)                                                  | < 1 s                                 | < 20 s                       | < 30 s                   |
| Non-Linearity (100-1000W/m <sup>2</sup> )                            | < +/- 0.5 %                           | < +/- 0.5 %                  | < +/- 0.5 %              |
| Zero offset (response to 5 K/h change in ambient temperature)        | < +/- 1 W/m <sup>2</sup>              | < +/- 3 W/m <sup>2</sup>     | < 4 W/m <sup>2</sup>     |
| Spectral selectivity<br>(350 to 1500 nm ISO / 3000 nm WMO)           | < +/- 1 %                             | < +/- 1 %                    | 1 %                      |
| Tilt response                                                        | < +/- 0.2 %                           | < +/- 0.5 %                  | 0.5 %                    |
| Temperature dependency<br>(-20 to +50°C @ 20°C)                      | < +/- 0.5 %                           | < +/- 2 %<br>(for 50°C band) | < 2 %<br>(for 50°C band) |
| Non stability (Change per year)                                      | < +/- 0.5 %                           | < +/- 1 %                    | < +/- 0.5 %              |
| Expected daily uncertainty                                           | < +/- 1 %                             | —                            | < +/- 1 %                |
| Irradiance range                                                     | 0 - 2000 W/m <sup>2</sup>             | —                            | —                        |
| Spectral range (FWHM)                                                | 200 - 4000 nm                         | —                            | —                        |
| Sensitivity                                                          | Approx. 10 $\mu$ V/W·m <sup>-2</sup>  | —                            | —                        |
| Detector impedance @25°C                                             | Approx. 5 k $\Omega$                  | —                            | —                        |
| Operating temperature                                                | -40 to +80 °C                         | —                            | —                        |
| Calibration traceability (ISO9847)                                   | WRR                                   | —                            | —                        |
| Outer dimensions<br>(Length x Diameter)                              | 217 x 55 mm                           | —                            | —                        |
| Cable length (standard)                                              | 10m                                   | —                            | —                        |
| Weight                                                               | 0.6 kg<br>1.6kg (including 10m cable) | —                            | —                        |
| Heater power for optional window heater<br>to prevent dew deposition | DC12V / 0.5W                          | —                            | —                        |



Mounted on the sun tracker, STR-21G.

## Outline drawing

(mm)

