

EQ08-B & EQ08-BE PYRANOMETER

(upgrade of EQ08 & EQ08-E First Class Pyranometer)

ISO Spectrally Flat Pyranometer of Class B for Solar GHI measurement



The Middleton EQ08-B is an affordable Pyranometer for measuring solar Global Horizontal Irradiance (GHI). It exceeds the International Organization for Standardization (ISO) specifications for a **Spectrally Flat Pyranometer of Class B**. Class B is the second highest accuracy Class. The EQ08-B incorporates a precision thermoelectric sensor that has low directional error and quick response time. The EQ08-BE version has an in-built amplifier to give a millivolt output for easy signal measurement.

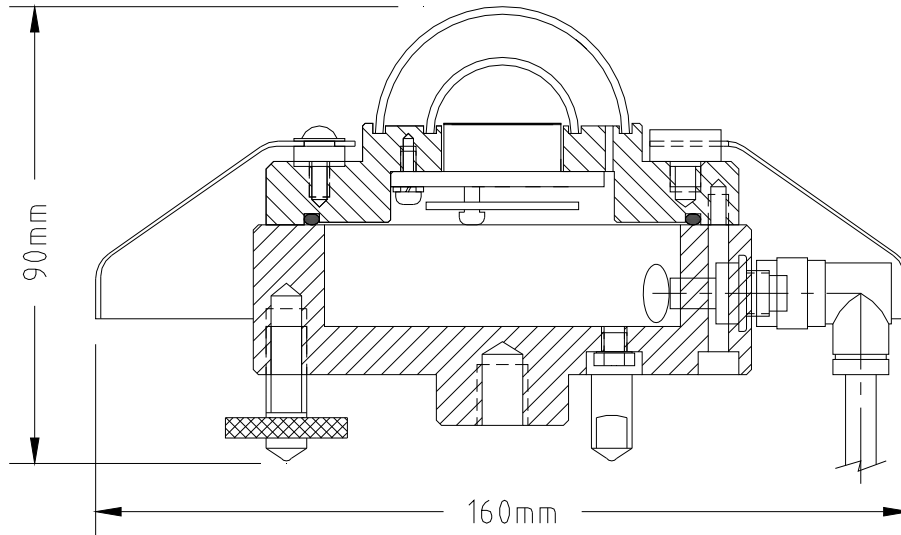
Performance Specification	ISO 9060:2018 ¹ Spectrally Flat Class B ²	EQ08-B & EQ08-BE
Response time (to 95%)	< 20 sec	7 ±1 sec
Zero off-set a) -200 W.m ⁻² thermal rad.	± 15 W.m ⁻²	< 4 W.m ⁻² (unventilated)
Zero off-set b) 5 K.h ⁻¹ ambient temp.	± 4 W.m ⁻²	< ± 2 W.m ⁻²
Zero off-set c) total response	± 21 W.m ⁻²	< ± 7 W.m ⁻²
Non-stability (1 year interval)	± 1.5 %	< ± 0.5 %
Non-linearity (100-1000 W.m ⁻²)	± 1 %	< ± 0.5 %
Directional response (w.r.t. 1000 W.m ⁻²)	± 20 W.m ⁻²	< ± 20 W.m ⁻²
Spectral error (280 to 4,000 nm)	± 1 W.m ⁻²	< ± 0.4 W.m ⁻²
Spectral selectivity (350 to 1,500 nm) ³	< 3 %	< 3 %
Temperature response (-10 to +40 °C)	± 2 %	< ± 1.5 %
Tilt response (0-90°)	± 2 %	< ± 0.5 %
Additional signal processing errors	± 5 W.m ⁻²	EQ08-B, not applicable EQ08-BE < ± 3 W.m ⁻²

¹ ISO 9060:2018 Specification and classification of instruments for measuring hemispherical solar and direct solar radiation

² ISO 9060:2018 'Class B' roughly corresponds to superseded ISO 9060:1990 'First Class'

³ This requirement designates a Pyranometer as 'spectrally flat' in ISO 9060:2018

Middleton Solar EQ08-B & EQ08-BE Pyranometer Detailed Specification



Black carbon nanotube (CNT) sensor surface has flat spectral response, excellent stability, and low directional error.

The EQ08-B has a passive microvolt output, and the EQ08-BE version has an in-built signal amplifier.

Dual glass domes protect the sensor from air temperature fluctuations.

User's Guide and Calibration Certificate included.

General Specification

viewing angle	2π steradians
irradiance	0 – 4,000 W/m ²
spectral range	300 - 3000nm (nominal); 305 – 2,700nm (50% points)
sensitivity (typical)	EQ08-B: $9.5 \pm 1 \mu\text{V}/\text{W}\cdot\text{m}^{-2}$; EQ08-BE: $1.0 \text{ mV}/\text{W}\cdot\text{m}^{-2}$
calibration	outdoors to ISO 9847, traceable to WRR
achievable uncertainty (minute totals)	$U_{95} = 3\%$ (RSS of instrument, calibration, measurement)
operating temperature	-35 to +60°C
operating humidity	0-100% RH
output impedance	20 Ω (EQ08-B); 65 Ω (EQ08-BE)
measurement input impedance	>1 M Ω
power requirement (EQ08-BE only)	5 to 15 VDC, 6mA
bubble level resolution	0.1°
level adjustment	one fixed foot, two adjustable feet
construction	anodised marine-grade aluminium & stainless steel
desiccant	orange silica gel (non-toxic)
IP rating	sealed to IP67
mounting method	central M10 hole in base (mounting fastener included)
output lead	6m, with connector at instrument end
net weight	0.8Kg (excluding lead)
shipping size & weight	230 x 230 x 180mm, 2Kg
warranty	2 years (standard) / 5 years (conditional)

Available Options

- temperature output (EQ08-B only), YSI 44031 thermistor (10K Ω @ 25°C)
- additional output lead length, up to 20m
- expanded operating temperature, -40 to +80°C
- EV2-H Ventilator / Heater Unit