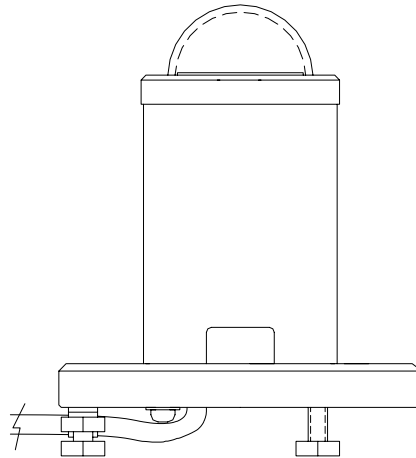




MIDDLETON SOLAR
SK08 & SK08-E FIRST CLASS PYRANOMETER
USER'S INSTRUCTIONS

CE 2005



The SK08 is a First Class pyranometer for measuring solar global radiation. It uses a passive thermoelectric sensor with a glass dome windshield. It is sealed and fully weatherproof. In the SK08-E version the sensor signal is boosted by a low-noise amplifier that is drift stabilised.

Installation. Select a site that has an unobstructed view of the sun from sunrise to sunset. Place the instrument on a flat horizontal platform and adjust the feet with a 7mm A.F. spanner until the circular level is centered. Secure the instrument to the platform with a 5mm holding screw in the centre of the base; the screw should be brass or stainless steel.

The SK08 cable cores are:

red = output +ve (typically 18-20 μ V per W/m²)
blue = output -ve

The measurement equipment should range up to 40mV and have an input impedance of at least 1M Ω .

The SK08-E cable cores are:

red = supply +ve (5.5 to 14.5VDC, 6mA)	blue = supply -ve
yellow (or white) = output +ve (1mV per W/m ²)	clear (or green) = output -ve

The SK08-E can be powered from a 6V, 9V, or 12V battery. Alternatively it can be connected to a small power supply or datalogger. The typical fullscale output is <+2V. The measuring equipment impedance should exceed 3K Ω .

Avoid ground loop induced interference in your measurement setup by ensuring there is only one ground point for the sensor and measurement system.

Calibration. The SK08/E is factory calibrated by outdoors comparison to a Secondary Standard reference pyranometer. It is recommended that the calibration be checked annually.

Maintenance. Keep the dome of the SK08/E clean and free from debris otherwise the directional response will be compromised. Damaged or faulty units should be returned to the manufacturer for repair.

Technical Specification

sensitivity	18.0 to 20.5 $\mu\text{V}/\text{W}\cdot\text{m}^{-2}$ (SK08) 1.0 $\text{mV}/\text{W}\cdot\text{m}^{-2}$ (SK08-E)
viewing angle	2π steradians
maximum irradiance	$2000 \text{ W}\cdot\text{m}^{-2}$
response time (95%)	11s (typical)
zero offsets	
a) thermal radiation ($200 \text{ W}\cdot\text{m}^{-2}$)	$< + 5 \text{ W}\cdot\text{m}^{-2}$ (unventilated)
b) temperature gradient (5K/hr)	$< \pm 4 \text{ W}\cdot\text{m}^{-2}$
non-stability (change/year)	$< \pm 1\%$
non-linearity ($100 - 1000 \text{ W}\cdot\text{m}^{-2}$)	$< \pm 1\%$
directional response ($1000 \text{ W}\cdot\text{m}^{-2}$ at 80°)	$< \pm 20 \text{ W}\cdot\text{m}^{-2}$
spectral selectivity (0.3 to $3\mu\text{m}$ nominal)	$< \pm 3\%$
temperature dependence of sensitivity	$< 2\%$ (-30 to $+50^\circ\text{C}$)
tilt response ($0-90^\circ$, at $1000 \text{ W}\cdot\text{m}^{-2}$)	$< \pm 1\%$
spectral range	0.3 - $3 \mu\text{m}$ (nominal); 305 – 2800 nm (50% points)
resolution	$\pm 2 \text{ W}\cdot\text{m}^{-2}$
fullscale output	$< 40\text{mV}$ (SK08); $< 2\text{V}$ (SK08-E)
daily uncertainty (95% confidence)	5%
operating temperature	-35 to $+60^\circ\text{C}$
impedance	40Ω (SK08); 100Ω (SK08-E)
level accuracy	0.2°
power requirement (SK08-E only)	5.5-14.5 VDC; 6mA
desiccant	orange silica gel (non-toxic)
output lead	6m
mounting method	central M5 hole; two adjustable feet
construction	aluminium, hard anodized for corrosion resistance. Stainless steel fasteners
IP rating	sealed to IP66

Middleton Solar. 20/155 Hyde Street. Yarraville. VIC 3013. Australia

www.middletonsolar.com adm@middletonsolar.com ph:+61-3-93961890 fax:+61-3-96892384

012151DSC