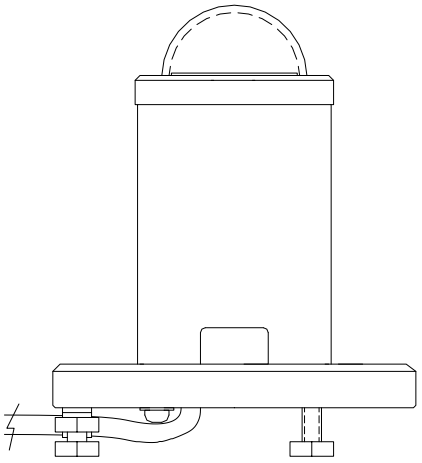
MIDDLETON SOLAR
SK08 & SK08-E CLASS B PYRANOMETER
USER'S INSTRUCTIONS

CE 2005



The SK08 is an ISO 9060 Spectrally Flat Pyranometer of Class B for measuring solar global radiation. It is. 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 9 to 10µV per W/m^2)
blue = output -ve

The measurement equipment should range up to 20mV and have an input impedance of at least 1M Ω.

The SK08-E cable cores are:

red = supply +V (5 to 15VDC, < 6mA)
yellow = output +ve (1mV per W/m^2)
blue = supply 0V
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 Class A 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 (typical)	9 to 10 μV/W.m^{-2} (SK08) 1.0 mV/W. m^{-2} (SK08-E)
viewing angle	2π steradians
maximum irradiance	2000 W.m^{-2}
response time (95%)	7s (typical)
zero offsets	
a) thermal radiation (200 W.m^{-2})	< + 2.5 W.m^{-2} (unventilated)
b) temperature gradient (5K/hr)	< ± 4 W.m^{-2}
non-stability (change/year)	< - 0.5%
non-linearity (100 - 1000 W.m^{-2})	< ± 1%
directional response (1000 W.m^{-2} at 80°)	< ± 20 W.m^{-2}
spectral error (0.28 to 4μm)	< ± 1 W.m^{-2}
spectral selectivity (0.3 to 3μm)	< ± 3%
temperature response	< ± 2% (-10 to +40°C)
tilt response (0-90°, at 1000 W.m^{-2})	< ± 1%
spectral range	0.3 - 3 μm (nominal); 305 – 2800 nm (50% points)
resolution	± 2 W.m^{-2}
fullscale output	< 20mV (SK08); < 2V (SK08-E)
daily uncertainty (95% confidence)	5%
operating temperature	-35 to +60°C
impedance	33 Ω (SK08); 65 Ω (SK08-E)
level accuracy	0.2°
power requirement (SK08-E only)	5 -15VDC; < 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