



DN5 & DN5-E PYRHELIOMETER

First Class Pyrheliometer for measuring Solar Direct Radiation



The Middleton Solar DN5 is an affordable precision pyrheliometer for measuring the solar direct radiation when aimed at the sun. It exceeds the international accepted specifications for a First Class pyrheliometer. The DN5 has a passive microvolt output, and the DN5-E version has an in-built amplifier to give a millivolt output for easy signal measurement.

Performance Specification	ISO 9060 First Class	DN5 & DN5-E (typical)
Response time (to 95%)	< 20s	< 10s
Zero offset response (5°C/hour)	$\pm 3 \text{ W.m}^{-2}$	$< \pm 1 \text{ W.m}^{-2}$
Non-stability (1 year interval)	$\pm 1\%$	< 0.2%
Non-linearity (100 - 1000 W.m^{-2})	$\pm 0.5\%$	$< \pm 0.3\%$
Spectral selectivity (350-1500nm)	$\pm 1\%$	$\pm 0.5\%$
Temperature response (50°C span)	$\pm 2\%$	$\pm 1\%$ (-10 to +40°C)
Tilt response (at 1000 W.m^{-2})	$\pm 0.5\%$	none

EXCELLENT PERFORMANCE, USER FRIENDLY, DURABLE

Optical sapphire window for broad bandwidth and superior durability

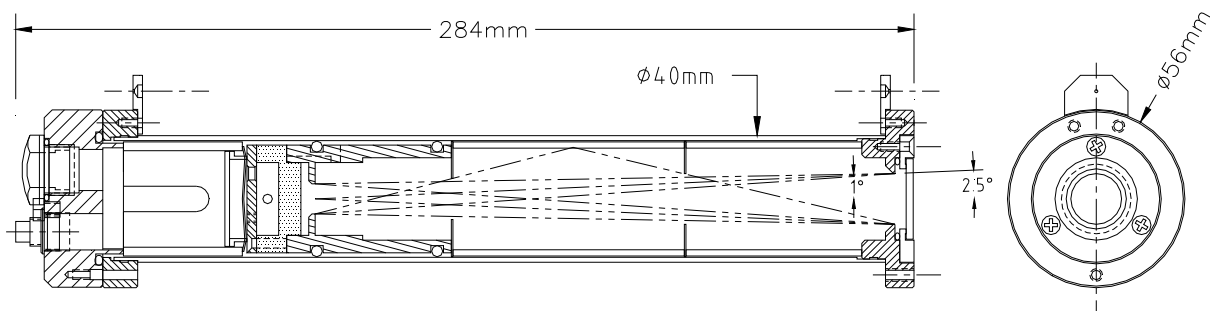
Flush-mount window to prevent obstruction by rain or debris.

Marine-grade anodised aluminium for corrosion resistance.

Compact size and light weight.

Optional Filterwheel, Pyrheliometer Mount, and Tracker are also available.

Middleton Solar DN5 & DN5-E Pyrheliometer Detailed Specification



Exceeds the ISO9060 specifications for a First Class Pyrheliometer.
The DN5 has a passive microvolt output, and the DN5-E version has an in-built signal amplifier to give a millivolt output for easy measurement.
Can be operated with all Middleton Solar Trackers: APT-01, AST-02, AST-03
Aiming diopter conveniently located on top of instrument.
Temperature compensated twin-thermopile sensor has flat spectral response and is isolated from the instrument body to give low thermal error.
Optical geometry, and baffling, is set by four precisely located apertures.
Easy to dismantle, and window is simple to replace.
Supplied with User Manual and Calibration Certificate.

General Specification

full opening angle	5.0°
slope angle	1.0°
limit angle	4.0°
irradiance	0 – 4,000 W.m ⁻²
spectral range (nominal)	200 – 5,000nm
sensitivity (typical)	7-9 μV/W.m ⁻² (DN5) 1 mV/ W.m ⁻² (DN5-E)
calibration accuracy	± 2% (factory certificate, traceable to WRR)
operating temperature	-40 to +60°C
operating humidity	0-100% RH
output impedance	DN5 45-50Ω, DN5-E 65Ω,
power supply requirement (DN5-E)	5 to 15VDC, 6mA
window material	optical sapphire, 2mm thick
body construction	anodised marine-grade aluminium
fasteners	stainless steel
desiccant	silica gel (orange, non-toxic), externally accessible
IP rating	sealed to IP67
lead	6m, with connector at instrument end
net weight	0.75kg (excluding lead)
shipping size & weight	310 x 225 x 110mm, 1kg

Available Options

- Temperature output, YSI 44031 thermistor (10KΩ @ 25°C)
- DH1 Hood
- PM02 Pyrheliometer Mount (for Ø25mm Tracker axle)
- FW01 Filterwheel (Schott OG530, RG630, RG695, open position, and blocked position)
- DN5-2.5 and DN5-E2.5 versions with full opening angle of 2.5°, overall length = 462mm