

SP02 and SP02-L SUNPHOTOMETER

Compact Instrument for Spectral Optical Depth Measurement



The Middleton Solar SP02 Sunphotometer is a simple low-cost instrument for the determination of the spectral optical depth of the atmosphere. It can be configured for total & aerosol optical depth measurement, column ozone measurement, and assessment of water vapour amounts. It consists of four precision spectro-pyrheliometers axially aligned in a sealed enclosure. The SP02-L version has a 35mm longer body to give a narrower field of view.

Performance Specification	SP02	SP02-L
field of view	5.0° (2.5° opening angle)	2.5° (1.25° opening angle)
slope angle	1.6°	0.7°
limit angle	3.5°	1.8°
output signal x 4 channels	-0.05 to +4.5 VDC max.	
resolution	<0.005OD (Langley method)	
response time	0.2s to 99%	
operating temperature	-30°C to +70°C	

EXCELLENT STABILITY, COMPACT, RELIABLE

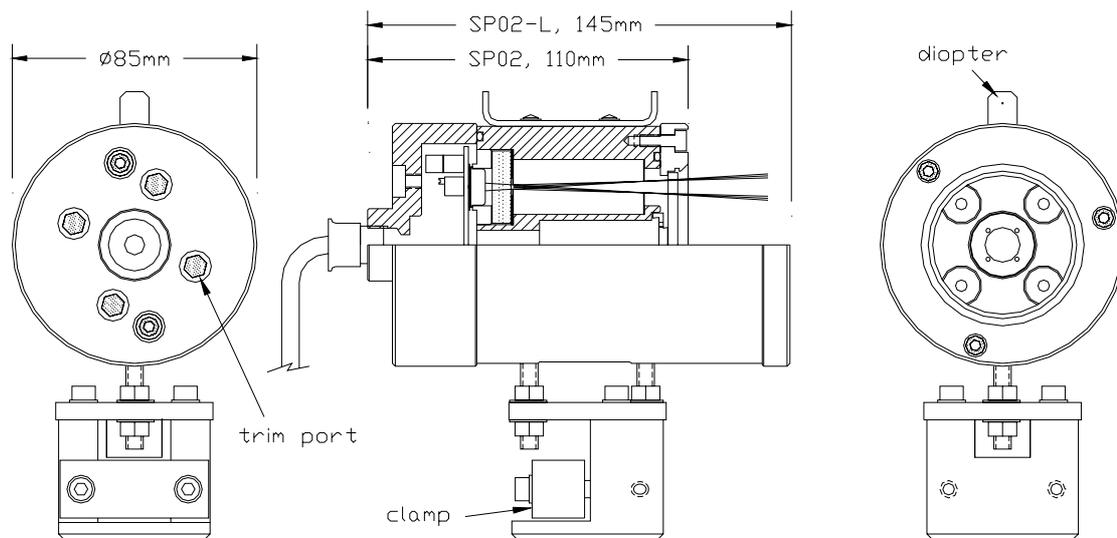
Four channels operate simultaneously.

Large Ø25mm interference filters for long-term stability.

Negligible temperature error.

Excellent Optical Depth resolution.

Middleton Solar SP02 & SP02-L Sunphotometer Detailed Specification



Compact and light-weight.
Moderate power requirement.
Output of core temperature provided.
Low-noise signal amplifiers with negligible drift.
External gain trim for each channel (via rear access ports).
Can be interfaced with most common data acquisition systems.
Marine-grade aluminium, hard anodised for corrosion resistance.
Negligible temperature error, in the range 300-930nm, due to:
- Si-photodiode detector used has a thermal coefficient of zero in this range;
- Interference filters used have very small thermal coefficients (0.016-0.023nm/°C).
Can be operated with manual sun-tracking, or mounted to common trackers with 25mm (1in) shafts.

General Specification

standard filters ¹ : center wavelength (10nm bandpass interference type)	aerosol version: 412, 500, 675, 862nm ozone version: 368, 500, 610, 778nm water vapour version: 500, 778, 812, 862nm
cavity, size; CWL tolerance	3-cavity, Ø25mm; ±2nm
side-band blocking	OD5, UV to 1,200nm
detector type; active area	UV si-photodiode; 33mm ²
sensitivity gain setting x 4 channels	high/low by jumper; trim via multi-turn pot
power supply requirement	5.5 to 14.5VDC, 20mA
temperature output	10mV/°C (0.20V = 20°C)
desiccant	non-toxic silica gel (visible thru front window)
interface lead	8-core shielded cable, 5m (free end is unterminated)
mounting method	Ø25mm (1") female clamp, with adjustable alignment
weight (excluding 0.5Kg lead)	1.25kg (SP02); 1.75kg (SP02-L)

¹ Alternative filters in the range 310 to 1000nm, 5 or 10nm bandpass, can be specified.

Available from: